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# I Want MY ICT: Information Communication Technology, Governance, and Poverty in the Developing World

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# I Want My ICT: Information Communication Technology, Governance, and Poverty in the Developing World.

Jack J. Barry, Ph.D.  
University of Connecticut, 2015

The contradictory findings in studies investigating the impact of Information Communication Technologies on poverty in the developing world compose the primary puzzle I tackle in this dissertation. The argument presented here can be summarized as ‘guardedly optimistic’ about the impact of the Internet and mobile phones as I believe they can contribute to improving the lives of the poor, yet only when their limitations are addressed: primarily cost, education, and language. I posit that good governance is a forgotten, yet vital, *missing link* in the literature.

The following ten claims are put forth: (1) Internet and mobile phones have *more* potential than previous ICTs to lift the poor out of poverty. (2) There is a statistically significant interaction effect between the Internet and governance that influences poverty. (3) In a large-n analysis, my proposed *interaction effect* reveals statistically significant findings between measures of good governance and the Internet. (4) Structural analysis of Mexican states indicates that ‘bubbles’ and ‘black holes’ exist regarding Internet access and states with more access have better outcomes for poverty when other factors are controlled for. (5) In my survey across Mexico, respondents with more Internet access were better informed about politics, participated more in political activities, visited government websites more often and utilized services on them. (6) Respondents reported the Internet was effective in providing pressure for government reform. (7) Where the government devoted resources to ensuring access and training for digital literacy, users were better informed, more politically active, and reported using access for economic purposes. (8) However, when access was not provided, nor were education and language issues were *not* accounted for, the Internet proved difficult for the poor to utilize. (9) Despite challenges, the indigenous in Mexico expressed and displayed a high level of interest and use of the Internet. (10) Finally, I conclude by claiming that a ‘Right to Internet Access’ is an effective way to ensure access for the poor. In sum, all of these findings indicate a strong



Jack J. Barry – University of Connecticut, 2015

*interaction effect* between governance and Internet access that can create the necessary conditions for the poor to benefit economically.

I Want My ICT: Information Communication Technology, Governance, and Poverty in the  
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APPROVAL PAGE

Doctor of Philosophy Dissertation

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Developing World.

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## Chapter 1: Introduction and Literature Review

For twenty years, people have been calling this era of computers, the Internet, and telecommunications the ‘information age.’ But that’s not what it is. What we’re really in now is the empowerment age. If information is power, then this new technology—which is the first to evenly distribute information—is really distributing power (4).

Joe Trippi, *The Revolution Will Not be Televised*

The history of economic development is a story of rising productivity. Notwithstanding the structural and institutional barriers to access to innovations, developing countries desire new technologies on the assumption that productivity growth could lead to greater social welfare in terms of income and wealth. Today, the availability of information and communication technologies (ICT) has raised new hopes of many poor countries of extricating themselves from the low-productivity, low growth trap (xv).

Anthony P. D'Costa, *The New Economy in Development*

The Internet is the most important single development in the history of human communication since the invention of call waiting.

Dave Barry

The medium is the message. This is merely to say that the personal and social consequences of any medium that is, of any extension of ourselves result from the new scale that is introduced into our affairs by each extension of ourselves, or by any new technology.

Marshall McLuhan, *The Medium Is the Massage*

## 1.1 Introduction

In the summer of 2012 I undertook an adventurous research trip across Western, Central, and Southern Mexico. I had two primary goals during my trip: the first was to talk to people from all walks of life about their use of technology for economic and political purposes, and the second was to investigate how people were getting online, whether it was via personal devices, Internet cafés, or government sponsored telecenters. Over the course of my trip I talked with many people, ate great food, and stayed with generous families in the metropolitan centers of Guadalajara, Puebla, Mexico City, and in several rural indigenous villages in Oaxaca. By way of introduction to this work, I will highlight two individuals I met on the trip whose experiences and practices online provide a glimpse into the ways the Internet has infiltrated everyday life in Mexico.

I met Carlos at the Guadalajara Language Center, located in the heart of the Tlaquepaque neighborhood of Guadalajara. He was there to practice his English and I was there to work on my Spanish before heading out into the Mexican countryside. We quickly formed a bond, meeting to talk politics many times over my three-week stay. Carlos, a middle-aged taxi driver who resided on the outskirts of Guadalajara with his wife and two children, had recently returned from a five-year stint living apart from his family as an illegal immigrant in California. Happy to be reunited with his family in Mexico, he was also eager to go back to the U.S., this time as a legal immigrant. In Guadalajara he made a middle class income, but had to work long hours with no overtime pay or consistent salary. Some days he would make decent money, driving, usually business class people, around the city – especially to and from the airport – but on days when business was slow he was unable to recoup his expenses.

Carlos told me that he did not utilize the Internet much in his work, but used it a few times a day, primarily to check the news, particularly political news, as he was incensed about the recent presidential election victory of the Institutional Revolutionary Party's candidate Enrique Peña Nieto. Carlos saw the 2012 election as fraudulent, due to voting irregularities and the alleged vote buying by

the Institutional Revolutionary Party (PRI) – the party accused of providing money cards and grocery vouchers in exchange for votes. Carlos said that he searched the Internet for news on fraud in the election, and for updates about protests against the outcome of the election. Primarily orchestrating the protests was Andrés Manuel López Obrador, Peña Nieto’s opponent from the Party of the Democratic Revolution (PRD) and it was clear that Carlos sided with Obrador. In the days following the election, Obrador pressured the Mexican government to do something about the alleged election fraud of the PRI. Carlos also used the Internet to get news of the upstart, Internet-fueled movement Yo Soy #132 (I am student #132). Yo Soy #132 staged protests, information sessions, and meetings around the country, focusing its critique on Mexican mainstream media’s favoring of Peña Nieto and the PRI. Carlos told me about a Yo Soy #132 protest march that would be taking place in Guadalajara during my stay—which was being ignored by mainstream Televised media. I attended the large protest, which was a joyous but politically poignant event in downtown Guadalajara, culminating in a 6-mile march across the city (finding out only after the fact that it was technically illegal for foreigners to even attend protest marches in Mexico). Citing the dearth of information available on mainstream Mexican TV and other government-sponsored media, Carlos said that it was much easier for him to follow alternative news about politics, including the Yo Soy #132 movement online. Thus, he saw an opening of news, domestic and international, basic information, and government services due to the Internet. With his middle class income, Carlos could afford access at home, which allowed him to surf the web at his leisure. Although he could not afford Internet on a smartphone, he was very impressed with its mapping ability, as I used mine to help him navigate the confusing streets of Guadalajara in his taxi when he was driving me back to the neighborhood I was staying in. A mobile phone with Internet capability on the go would have certainly been helpful for him on the job, as avoiding the legendary traffic jams of Guadalajara would be advantageous, but it also would have allowed Carlos greater access to the latest information on the developing political situation of his country.

An individual on the other end of the spectrum, at least in terms of cultural environment, was Tonantzin, a young indigenous woman of Mixe descent. Tonantzin lived in the rural village of

Tlahuitoltepec, located in the heart of the Oaxacan highlands. Tlahuitoltepec was three hours from Oaxaca City; reachable only via winding mountainous roads, with curves so acute foreigners were advised to take anti-seasickness pills before beginning their ride. Possessing a population of 4,000, all of Tlahuitoltepec's residents are of Mixe indigenous heritage, with the primary tongue of the village being the Mixe language. Despite its apparent isolation – 15 minutes down a bumpy dirt road from the nearest paved road and its daily dose of electrical blackouts – the village had five Internet cafés and one CCA (*Centros Comunitarios de Aprendizaje*) – a government sponsored free Internet café with instructional services open to the public on how to use the Internet, computers, and printers. At the time of our meeting, Tonantzin was a recent college graduate from the local state university of Oaxaca; currently living between Oaxaca City and her family's home in Tlahuitoltepec, she was looking for reliable work in the white collar sector. I employed her as my translator to interpret the Mixe language into Spanish; despite her aspirations to find permanent work as a translator, Tonantzin did not know *any* English.

A frequent Internet user, Tonantzin accessed the web multiple times a day both at the CCA and the Internet cafés of Tlahuitoltepec. She did not have a smartphone, using instead a small, low cost, flip phone for calls and texts. In 2012, owning a smartphone was unusual among poor, working class, and also middle class Mexicans, as its associated high data charge priced many out of the market across Mexico. She said she did not mind accessing the Internet outside the home, as her family could not afford access and they also lacked a stable supply of electricity. Tonantzin said she mainly used the Internet to read local stories, regional news from Oaxaca City, and national political news, but she noted that she primarily employed it to stay in touch with her friends from university and to look for work. In fact, the only reason I met her was her efficient, and timely, use of email. A friend of a friend familiar with the area put me in touch with Tonantzin, recommending her as a translator of the Mixe language. After making initial contact via email while still in Guadalajara, Tonantzin remained in touch with me via email until I reached the village of Tlahuitoltepec weeks later. After I finished my interviews in the village I asked her about her plans for the future and she said that she was applying

for jobs in Oaxaca City—all via the Internet while residing in Tlahuitoltepec. For her, the Internet was a vital personal and professional connector. She used it effectively, despite living in a village where electrical blackouts were daily occurrences and the Internet line into the village frequently failed, yet it was still a compelling, and consistent enough, mode of communication to use it extensively in her daily life.

Clearly, for both Tonantzin and Carlos, the Internet is important to get information about politics, and especially to look for work. Despite their successful use of the web in many ways, Carlos' lack of Internet access on the go for work and Tonantzin's lack of access in the home indicate just some of the ways in which access to the Internet can be compromised. The importance of the Internet to the daily lives of Carlos and Tonantzin, and millions more across the developing world, is evident yet currently many of the world's poor are consistently denied access. In fact, only 2.5 billion of the world's 7 billion have ever been online as of the fall of 2014. In general, two types of denying access take place: (1) denial by cost to the private consumer—when no public option is available; and (2) denial by law and public policy. The evidence is overwhelming that people around the world, regardless of their income are demanding access to the Internet.<sup>1</sup> In fact, the title of this dissertation is a play on the MTV advertising slogan in the 1980s 'I Want My MTV'; today many across the world could heartily shout: 'I want my Internet' or more broadly 'I want my ICT.' There is a rather stark, even ironic, difference between the commercial bent of MTV's 'I want my MTV' advertising campaign in the 80s, with its rather superficial cable TV station product, and the non-commercial desire of millions in the developing world 'wanting' access to the Internet and all it offers for improvement of economic livelihoods. The irony in the title, and the importance of the Internet to the daily lives of individuals around the world, will be fully fleshed out below; but first the following section will introduce key terms employed and the primary puzzle this dissertation addresses.

ICTs (Information Communication Technologies) are defined in this dissertation in broad terms as technologies that *enhance communication processes* over great distances, specifically

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<sup>1</sup>People have been demanding access to the Web in countries around the world since it first connected people across great

measured by Internet, mobile phone, computer, radio, and television penetration rates (per capita). ICT's influence proves to be difficult to discern on various aspects of development, society, and politics. Here my focus is on the *impact* of access to the Internet and ICTs on the poor, a still understudied topic in the developing world context. Clearly, people are being denied access, but does it really matter? Do ICTs help the poor pull themselves out of poverty? Can ICTs be harmful? Are new digital technologies, such as the Internet and mobile phones, hindering the poor's economic and political opportunities by exacerbating the digital divide? Is Internet access a human right? These are some of the overarching questions that will be addressed in this dissertation.

In general, there are two oppositional viewpoints expressed by scholars investigating the questions above: one optimistic and one skeptical. Currently, there is an emerging strong contingent of technology enthusiasts composed of scholars who are excited about potential positives of the ICT/poverty relationship. This optimistic view purports that ICTs will bring 'light' to developing economies and open up the 'black box' of corrupt governments. These scholars point to an abundance of examples of increased ICT use benefiting the poor (Dyson, 1997; Friedman, 2006; Schmidt and Cohen, 2013). One is the story of small scale fishermen in India checking market prices via their mobile phones and moving to more productive markets for the first time in their fishing history as a result. Another is poor people in Mexico using community centers (CCAs) that provide free use of the Internet, along with instructional classes on how to use it, to pursue education opportunities otherwise not available to them. Furthermore, as seen in the Arab Spring, the power of the Internet is quite evident for enhancing political mobilization. Although it should also be noted that despite the obvious influence various ICTs have had in mobilizing the Arab Spring protests across the Middle East – leading to the subsequent fall of seemingly entrenched authoritarian leaders Ben Ali of Tunisia, Hosni Mubarak of Egypt, and Moammar Gaddafi of Libya – the impact of these technologies on the everyday lives of the poor remains to be seen.

Despite readily supplied examples of success there is also a darker side to the story. More skeptical scholars, with far less rosy outlooks, point out that acquiring ICT access requires substantial

investment in time, resources, education, and human capital. These requirements encourage consolidation of businesses, increase economic inequality, and squeeze the poor out of work (Kenny, 2006a). For instance, although the Internet has the ability to transfer more information than any technology before it, putting vast swaths of information to productive use also requires certain degrees of infrastructure, human capital, education, literacy, and technical skills, which are often lacking in developing countries. Compounding these required investments is the hurdle faced by the poor regarding language on the Web. Many potentially useful websites for the poor not yet translated into minority languages. Over half of the world's poor (those living under \$2 per day) speak a minority language, which are often conspicuously absent from the Web.<sup>2</sup> Due to their more extensive resources, larger companies, farms, and the upper classes are able to harness the informational power of new ICTs in ways that the poor cannot. Economic consolidation, spurred by investment in ICTs, can be seen in the vast regional ICT disparities in India, and across diverse countries in Latin America and Africa (Kenny, 2006a). In areas of the world where starvation is prevalent, disease runs rampant, and access to clean water is rare, the decision to fund investment in ICTs can seem a bit premature. After all, how useful is access to the Internet to someone who is faced with more harrowing difficulties, such as providing food for one's family?

To begin the investigation of this vexing intellectual quandary, the following section will pin down a few important definitions—and provide a brief explanation of the puzzle this dissertation addresses. I focus on ICT related technology (as defined above), instead of technology, broadly defined. A broad definition of technology often encompasses ICT, yet its relationship with development is quite different. For instance technology was central to India's Green Revolution of the 1960s, but this technology did not include ICTs. This non-ICT type of technology will not be studied in depth here; this is not to say it is unimportant for development outcomes. From here on the term 'technology' will refer to technological change, broadly conceived (unless stated otherwise to include

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<sup>2</sup>A language is considered to be minority if it is not the dominant language of the country. For example, Igbo is a minority language in Nigeria despite being the mother tongue of over 25 million people (English is the dominant language used throughout Nigeria).



ICTs). Also, the focus on poverty will be on the poor in developing nation-states rather than the poor in developed states. I employ a broad-spectrum definition for what constitutes a developing country: any nation state with per capita GDP below \$20,000 in adjusted 2012 dollars.

Exploring the impact of ICTs on the poor and determining effective policy to mitigate challenges they face in utilizing ICTs is the main goal of this dissertation. Although grossly simplifying, boiling down the puzzle this dissertation addresses to one sentence: Why are there contradictory, inconclusive, and even baffling findings in the literature of the impact of ICTs on poverty over the last 25 years? In fact, despite the media's focus on the 'glitz and sparkle' of technology, from the latest unveiling of Apple's hippest new gadget or the creative headquarters nurtured at Google Inc., the actual impact of new communications technologies on human behavior is just beginning to be understood.<sup>3</sup> Particularly ignored has been the impact on the poor.

In honor of full disclosure, and transparency, overall I enter into this debate as 'guardedly optimistic' about the impact of ICTs as I believe they can – and already have – contribute to improving the lives of the poor, but only if their limitations are addressed – in particular cost, education, type of language, and geography. In addressing these limitations, I will argue that government proves to be a forgotten actor. In fact, analysis of government is the *missing link* in the ICT literature. Addressing its impact on ICTs and poverty will prove vital to answer the primary puzzle in this dissertation.

Although there are many minor points made, theories elucidated, and new data produced in this dissertation, the following ten findings will be the most thoroughly defended: (1) The Internet and mobile phones have more potential than previous ICTs to lift the poor out of poverty, and relatedly, to allow more pressure to be applied by the masses for government reform. Subsequently, this government reform, driven by public pressure, tends to lead to better outcomes for the poor, collectively speaking. (2) There is a statistically significant interaction effect between Internet and

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<sup>3</sup> Research ranges from innovative cognitive science performing brain scans to determine behavior/psychological effects from television watching to the impact of texting on daily human interactions. For example, Wang *et al.*, (2013) investigates the impact of differing content in TV public service announcements on the brain through neuroimaging investigation. Another explores texting's impact on multitasking actually contributing to lower grades among college students (see Clayson & Haley, 2012). Yet another example is an intriguing study on the difference between talk and text communication among people with social anxiety or loneliness (see Reid & Reid, 2007).

governance that is important for determining outcomes for those in poverty. I find, when other factors are controlled for, the strongest effect of this interaction is among the lowest-income countries. (3) The World Bank Governance Indicators, Freedom of Expression and Rule of Law, were statistically the strongest measures of good governance across the various measures I tested. Most measures of governance in the interaction effect proved statistically significant, but the two listed above proved most efficient. (4) Structural analysis of Mexican states indicated that there are ‘bubbles’ and ‘black holes’ regarding Internet access and states with more access had better outcomes for poverty. (5) In Mexico, where people have more Internet access, they tended to be better informed about politics, participated more in political activities, visited government websites more often and used services on government websites. (6) Survey respondents in Mexico reported that the Internet was effective in providing pressure on the government for reform. (7) Where the government provided access, and education for digital literacy, users tended to be better informed, more politically active, and used the services for economic purposes. (8) When access was not subsidized, and education and language barriers were *not* accounted for, the Internet proved difficult for the poor to utilize very effectively. (9) Despite challenges, the indigenous in Mexico expressed and displayed a high level of interest and use of the Internet (especially for political purposes). Finally, I will conclude with policy recommendations, specifically (10) claiming that a ‘Right to Internet Access’ is the most effective way to ensure governmental policies be adhered to in providing a minimal, but adequate, level of access to the poor. Thus, I will argue that Internet access should be conceptualized as an instrumental human right in the modern interconnected world.

These findings and claims are discussed throughout the dissertation and for the most part will be addressed in the order above. The focus of each of the six chapters of the dissertation is as follows. This first Chapter provides an introduction and literature review. Developed through an analysis of the literature, I posit that despite the ‘seeming’ irrelevance of ICTs to the poor, they have actually become vital tools to tackle the complex, multifaceted, and debilitating challenges caused by poverty. I will also start to construct the case for my primary argument that good governance is central to the

alleviation of poverty, and that an Internet and governance interaction is increasingly vital. In addressing the negative side effects of ICTs I explore hindrances to access—as appropriate consideration must be given to socio-economic factors, and cultural/linguistic differences, and education/literacy. However, if governance provides a helping hand than ICTs *can* get around these hindrances and enhance the poor's political and economic opportunities.

Chapter 2 develops my theoretical framework. It provides a thorough theoretical elucidation of my argument. It also situates my analysis in various literatures and argues for my contribution to advancing knowledge. Chapter 3 provides a quantitative analysis. It includes a large-n quantitative analysis of over 100 developing countries. I explore patterns, expose outliers, and explain variation between countries around the world. Using a fixed effects regression model, I investigate the impact of Internet and mobile phones using cross-national time series data. I find that there is a relationship between the governance/Internet interaction effect and poverty. However, in analysis of various data sets it becomes clear that the intricacies and complexity of the Internet/poverty relation requires a mixed methods approach. The large-n analysis in Chapter 3 is a productive start, but is not enough for a conclusive argument, as statistical analysis is limited in its ability to determine if the interaction effect is *not* picking up other noise in the data.

Chapters 4 and 5 address these limitations providing a complementary case study approach to Chapter 3. Chapter 4 is a case study of Mexico focused on its relevant historical background and structural analysis across Mexican states. It also provides a regional analysis of Latin America, with a primary focus on Mexico. Chapter 5 is a complementary case study of Mexico, but it is centered on original survey and interview analysis, providing an in-depth analysis of the Mexican case with an interview-based survey, directly asking the poor how they are employing ICT (if at all) in their interactions with each other, the government, and their local economy. The survey was conducted in two urban areas and two rural villages. The urban areas were Guadalajara, in Jalisco state, and Puebla in Puebla state. The indigenous villages were in the southern state of Oaxaca.

Chapter 6, the final chapter, addresses policy implications of this work and investigates a

human rights approach. The first section of Chapter 6 employs a human rights lens to the problem of provisioning of Internet access to the poor. Second, I argue that Internet access should be provided to the poor as a public good. Chapter 6 concludes by framing a ‘Right to Internet Access’ as a prioritarian instrumental human right. Lastly, the final portion of Chapter 6 provides a brief conclusion to the dissertation.

## **1.2 Literature Review: Where Have We Been, Where Are We Going?**

The following literature review explains why solving the primary puzzle addressed in this dissertation fills an important gap in academic approaches to the problem. There have been contradictory findings in rigorous academic studies regarding the impact of ICTs on poverty. This has also been the case across very diverse academic literatures—ICT and development, development economics, political science, and communications—with none providing a satisfactory comprehensive analysis of ICTs impact on the poor in developing countries. Forestier, Grace, and Kenny (2002) point out that large-n quantitative analysis and small-n case studies reach differing conclusions as to whether or not new ICTs are helping to improve quality of life for the poor—including measurements of education and infant mortality. Their findings ring true in 2014. Answers are correspondingly fuzzy in the more specialized ICT and development literature. Theoretical and empirical studies in these literatures reach opposing conclusions with scholars noting that theory and praxis are not being adequately integrated (Forestier, Grace, and Kenny, 2002; Kenny, 2006a; Smith, 2009). In other words, scholars are talking past one another. This puzzle is more than simply a matter of differing opinions; it is composed of confounding, and contradictory evidence. It is this gap this dissertation attempts to fill.

This work employs analysis that most appropriately falls between the ICT and development, economic development, and political science literatures. The latter two literatures do not need to be defined, as they are well known and are addressed here in conventional ways, yet the ICT and development literature will be unfamiliar to many readers. It is defined as a rather nebulous

collection of academic studies spanning communications, developmental economics, and political science, focused on ICTs in a development context. Studies in the ICT and development literature address the impact, use, policies, political controversies, and economic effects of ICTs. A useful place to start exploring this literature—and how this dissertation will contribute to it—is to look at the history of technological change. The focus here will stick to ICT technologies rather than branch off on what would be a long-winded tangent on the many types of technology changes across history. For instance, there are many academic studies on historical change across military technologies or scientific discoveries in health sciences. Putting aside these types of technology change, arguably the most revolutionary, and also most profusely written about, evolution in the ICT and development literature since the early 1990s is the rise, popularity, and political power of the Internet. A prominent question posed was and still is: will the Internet be transformative, a so-called ‘leapfrog’ technology?<sup>4</sup> This question is not new. Historically, it has evolved to suit the latest technological fad. Currently, the question still remains unanswered for the Internet and also the increasingly dynamic mobile phone.

Taking a look at academic analysis addressing previous technological penetrations of ICT (e.g. telegraph, radio) provides some insight into what may be expected with regards to our latest challengers: Internet and mobile phones. According to the technology and business specialist Debora Spar (2001, p. 61) as telegraph use expanded in the late 1900s it generated the same kind of excitement that surrounds the Internet today: “Observers argued that it was the greatest invention of all time, the crowning glory of technological innovation” (p. 61). It was supposed to “shrink the world, widen commerce, and further the cause of world peace. And to some extent it did...more

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<sup>4</sup> A leapfrog technology (often referred to as leapfrogging) is a newly developed technology that allows skipping over often costly and time consuming intermediate technologies (see *Leapfrogging Development?* by J.P. Singh 1999). Countries and firms with incumbent technologies have less incentive to innovate than potential rivals (or developing countries in this case). Thus, those holding the incumbent technology will eventually lose their technological edge when new firms, or countries, which are ready to take the risks, adopt new radical technological innovations. Therefore, the goal is that when the radical innovations eventually become the new technological paradigm, the newcomer companies, and/or countries, can ‘leapfrog’ ahead of former leaders. An example is mobile phones in developing countries. They were able to skip the step of building telegraph lines and now they have extensive digital networks rivaling, or in some cases surpassing, developed countries. See Kenny (2006a); or Singh (1999) for a thorough investigation of leapfrogging. Also see Gerschenkron (1962) for a more historical analysis—with a focus on areas that have been slower to develop and early development theory for why they have.

dramatic, in many ways, than the Internet today...Before the telegraph, there really was no such a thing as international news; afterward, there was hardly anyway to escape it” (*ibid*, p. 62). This view sounds very similar to the rose-colored glasses view of early champions of the Internet (see Friedman, 2001, 2006; Hafner & Dyson 1997).

Spar (2001) argues that during the initial stage of any technological innovation, embodied by increasing penetration rates and societal adaptation, there emerges a 'technological frontier' where innovation, piracy and confusion reign in both politics and markets. She posits that in the second stage regulations from governments attempt to control and assign property rights along the increasingly regulated 'technological frontier.' It is during this stage that commercial development, standardization and control (often monopolistic) of the new technology, be it the telegraph, television or the Internet, is established. For Spar, if history is any judge, new ICTs are likely to follow past ICTs and *not* prove to be leapfrog technologies that upend poverty, at least in how we know it in the 21<sup>st</sup> century.

According to Spar (2001), there is a clear pattern displayed in the adaption of earlier technologies. Their interaction with their commercial utilization, and the politics that surround them, can be seen to be beginning to take shape in the development of the Internet, where the greatest pressure for rules in cyberspace is not likely to come from consumers, or parents or even the innovators of the World Wide Web. Instead, as exposed in the following quote, pressure for rules and regulations will come from the same direction that they usually hail:

the same groups that tend to dominate politics along most technological frontier. It will come, that is, from private firms, and from those who have cased their commercial lot with the Net...As the technological cycle unwinds, however, and the pirates turn bourgeois, the joys of anarchy pale before the demands of profit. The pioneers want property rights, as we have seen; they want standards and competition laws, and they turn to the state as private regimes fail. It is this commercial pressure that compels the state to regulate what was once untamed turf, and to create rules on top of chaos. There is a delicious irony in all this, a twist that would have made Marx smile. For it turns out that even as capitalism shifts and evolves, even as technologies push both business and society far beyond what was once even barely conceivable, the patterns of power remain unchanged. There are exceptions of course, and people like Martin Luther and Gaillot who can use technologies to break the binds of power without hoping to profit from them. But once commerce enters the game, it appears, the players demand both rules and a state to enforce them. (Spar, 2001, p. 381-382)

Her conclusion does not seem to bode well for the poor to potentially shape 'the rules' of the Internet for their benefit. It also would not seem to help in the eradication of poverty. Empirically, this seems to play out, for instance, depending on how it is measured, there has *not* been radical transformation of the number (or percentage) of people living in absolute poverty around the world (Easterly, 2001, 2002, 2003, 2006; Sachs, 2005; World Bank, Development Research Group, 2008).

Despite the overwhelming historical evidence of previous failure to reverse poverty, there was an initial exuberance in the ICT and development literature during the late 1990s. The notion was that the Internet was going to be the 'savior' of development. Many scholars purported it to be the transformative leapfrog technology that the development community was waiting for. This mentality is apparent in work by Thomas Friedman (2001, 2006), Esther Dyson (Dyson, 1997; Hafner & Dyson 1997), early work by Manuel Castells (1989), and Nicolas Negroponte (at least in his view on education and technology in *Being Digital*, 1996). For instance, Negroponte a writer for *Wired*, and now the director of the Massachusetts Institute of Technology media lab, or perhaps better known as the founder of One Laptop Per Child, never seems to shy away from seeing the positive impact technology can have on education. Traditional U.S. political figures also jumped on the Internet bandwagon, a la Al Gore, Ed Markey, and Newt Gingrich.<sup>5</sup>

Yet by the early 2000s this exuberance waned because of the 'dot com' crash and the slow realization that development projects that employed the Internet were running into substantial difficulties across the developing world (Kenny, 2006a). A manifestation of this failure was the initial lackluster response in developing countries to an English language dominated Internet. In both governmental and foreign aid sponsored technology rollouts in African countries, such as Cameroon, Congo, Guinea, and Burundi, the Internet failed to transform poverty or anything else for that matter

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<sup>5</sup> For instance, Jeffres (2007) gives credit to Al Gore in freeing up the Internet to the American public: "The Internet became widely accessible to the American public in 1992, when then Senator Al Gore's bill 'liberated' and opened up the Internet from a medium primarily utilized for scientific research purposes by universities, technology laboratories, and the military ("Gore Stumps for Info Highway Bill" 1994). Subsequently, AOL helped popularized the WWW (the graphic-capable hypertext markup language [html] system in the US by turning it into a consumer service, along with such portal services (or search engines) AltaVista and Yahoo" (p. 126-127).

(Kenny, 2006a). According to Kenny (2006a), locals in these countries displayed little interest in a text-based Internet, which had little to offer them in their language (assuming that they were literate).

However, beginning in the mid-to-late-2000s and continuing today, enthusiasm began to shift back towards investigating the impact of ICTs on development, and poverty alleviation. I argue this renewed vigor has been fueled by three dominant trends seen in the ever-evolving Internet: The first is the diffusion of technology—which is apparent in the explosions of penetration rates of the Internet in developing countries.<sup>6</sup> According to Solingen (2012) the “speed and reach of contemporary diffusion are unprecedented” (2012, p. 613). Diffusion is a hot topic in International studies<sup>7</sup>; and a lot of the attention generated is because of the speed, and influence, of ICT diffusion. Particularly, due to the Internet and mobile phones affecting many aspects of contemporary society. Diffusion of ICTs also often corresponds with the ‘democratization’ or ‘flattening’ in availability of these technologies (Friedman, 2006), as penetration rates of the Internet and mobile phones have exploded across the developing world.<sup>8</sup> In fact, the Internet and mobile phones have reached high penetration rates faster than any previous ICT technology.<sup>9</sup>

My second dominant trend is the 'deepening' of technology, seen in the spread of Web 2.0 technology, defined as the increased technical and qualitative advances steadily progressing on the Internet since the early 2000s, and on mobile phones with Internet capability in the late 2000s. These Web 2.0 advances include: video, audio, social networking, podcasting, and multimedia blogging. For Bertot *et al.*, (2010) “Social media include but are not limited to blogs, wikis (e.g. Wikipedia), social networking sites (e.g. Facebook), micro-blogging services (e.g. Twitter), and multimedia

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<sup>6</sup>See Chapter 3 for a updated detailed graph of this rise.

<sup>7</sup>For example, it was the promoted academic theme of the International Studies Association Annual Conference in 2013.

<sup>8</sup>See Cairncross (1997) a pioneer of the idea of the related, yet slightly different, 'death of distance' argument.

<sup>9</sup>According to Joe Trippi (2004), former campaign manager for Howard Dean for President, in his book *The Revolution Will Not be Televised*, he states that in the U.S. “It took the telephone sixty-seven years to go from 1 percent of households to 75 percent. Took the car fifty-two years. The radio fourteen. The fastest innovation to get into 75 percent of households was the television, which took seven years. And that’s about how long it took 75 percent of Americans to get on the Internet” (58). There is no evidence that this trend in penetration growth rates of these ICTs are very different in middle-income developing countries (e.g. Chile, Algeria), which also have high growth rates, actually even rivaling those in the developed world (e.g. Eastern Europe, Asia).



sharing services (e.g. Flickr, YouTube). Social media are often associated such concepts as user-generated content, crowd sourcing, and Web 2.0” (p. 266). Put simply, much more multimedia on web pages, and increasingly available on the move via mobile devices. Social media has especially been getting a lot of attention among Web 2.0 scholars for the power it has to connect people across geographic divides. There will be a much longer discussion of social media in Chapter 2

The third dominant trend purports that the Internet is a convergence technology, in that digital text, radio, TV and various audio technologies, are now all being provided (at least in some form) on the dominant Internet data line. Furthermore, these capabilities are also increasingly available away from one's home via 3G and 4G cellular phone infrastructure onto smartphones, tablets, and across innovative operating systems such as Android, Linux, or Ubuntu that provide common functions on various types of devices. Some ICT scholars have dubbed the 2000s the 'age of convergence' (Pontin, 1998; Pagani, 2003; Jenkins, 2006; Shin *et al.*, 2006). In fact, among the few common threads in the communication literature is the predictions of “more convergence of information and communication technologies, blurring the lines between tasks and activities and between work and play” (Borgman, 2000, p. 5). It appears that the Internet pipeline may be the only one that will matter in the near future. Thus, developing countries have an opportunity to invest, in this potentially 'leapfrog' technology, with early indications that it will—at a minimum—be a 'convergence' technology. Despite widespread enthusiasm, its ability to be the *transformative* leapfrog technology that the developing world has been waiting for is far from certain. Also not to be forgotten is the surprisingly dynamic mobile phone, which is proving to be increasingly important in the lives of the poor, due to rapidly falling prices and their ability to provide relevant information to the poor (e.g. market prices). In fact, reliable and relevant price information has proven to be quite useful for the often geographically dispersed poor (see Yunus, 2007; Smith, 2009).

Before the focus turns to specific differences between types of ICT and their varied impacts on poverty, the following section provides a needed discussion of scholarly work regarding the 'big picture' of technology change. The following summation quote from Kinsella, Russett and Starr

(2010), exposes the grandiose changes the world has experienced from the so-called ‘information revolution’:

Technology has expanded the physical capabilities of people to interact with each other. However, interdependence is also about people’s enhanced awareness of such interactions. A major consequence of the ‘information revolution’ is the rapid expansion of analytic capabilities to individual citizens throughout the world. These capabilities come from the ability to access information from the radio, television, and the Internet, and to communicate via telephone and electronic mail. The cost of a three minute telephone call from New York to London has fallen more than fifty dollars in 1950 to less than twenty cents today (even accounting for inflation). The explosive growth in computer usage, and especially the widespread use of the Internet to disseminate and retrieve information, has added a significant new dimension to the information revolution. Neither the personal computer nor the Internet are new inventions, but their availability to ever-increasing numbers of people from most segments of most societies is a relatively recent development... Thus, the ‘new’ interdependence is based to a large degree on new patterns of human attention. Individuals can see things that are happening in far away places, anywhere on the planet—what James Rosenau calls ‘distant proximities.’ The democratic revolutions across Eastern Europe were often called the ‘television revolutions’ because people in each country watched and then emulated what had just happened elsewhere in the region. (2010, p. 420)

Clearly, the ability to garner attention towards far off places, events, social upheavals, etc. is one of the overarching effects of ICTs. These types of grandiose claims are widespread in ‘big picture’ analysis and scholars throw around buzzwords just as far-reaching in their scope.

The quote above used the term ‘information revolution’ but what does this, and the many terms like it, actually signify for ‘big picture’ analysis of ICTs? Are terms used to explain the changes from ICTs even worth employing? The terms ‘information revolution,’ ‘Knowledge Society,’ ‘Information Society,’ ‘Network Society,’ ‘Post-industrial Society,’ ‘ICT Revolution,’ ‘IT Revolution,’ or ‘Informationization’ are just a few of the more prominent buzzwords used to describe the technological changes the world has experienced since the late 1970s with the development of computers and microelectronics. Although they are often focused on the ‘big picture’ regarding economic growth and development, rather than poverty *per se*, it is worth broadly explaining what, in essence, these terms are trying to capture. The terms mean various things depending on who is using them (for instance an economist employs them differently than a communications scholar), yet for sake of brevity, I posit that, in essence, they are too similar to justify a significant semantics

digression here. Simply stated, they all focus on the increasing importance of information, shared through various ICTs, staking various but similar claims that ICTs have fundamentally altered the economies, politics, and social fabric within and between countries around the world.<sup>10</sup> Most of them posit that the changing nature of work has been rapidly migrating towards more information based outputs, away from manufacturing and agriculture, and that this transformation of the work world is, or soon will be, as important as the Industrial Revolution was in reshaping society. This transformation will have ramifications in the political, economic, cultural, and social spheres.

An appropriate place to start looking at this 'big picture' is the work of Manuel Castells, who is currently the leading intellectual, even 'father figure,' for explaining the information revolution. His term of choice for the phenomenon of modern communication technology is one he coined: 'Network Society.' He is now the most cited modern social scientist—which speaks to the increasing attention and importance of technology change across the social sciences. In his renowned trilogy, perhaps the most influential set of scholarly works addressing the varied impacts of ICTs on society, Castells (2000) argues that a technological revolution centered on information technologies has begun to reshape the material basis of society. The first volume of his trilogy, *The Network Society*, Castells deals primarily with the logic and processes of the Net and how it impacts society. His three volumes helped create and popularize the term 'Network Society' arguing that human societies are increasingly structured around a bipolar opposition between the Net and the self. For Castells, technology is a point of departure demarcating the process of revolutionary change occurring in the economic, social, political, and cultural spheres at the dawn of the 21<sup>st</sup> century. Castells' theoretical contribution can be traced to one of his earlier works: *The Informational City* (1989). In this book, he argues that there have been three modes of development in human history, agricultural, industrial and informational:

Productivity levels are themselves dependent on the relationship between labor and matter as a function of the use of means of production by the application of energy and

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<sup>10</sup> For a more detailed explanation of these terms, their differences, and their corresponding scholars who coined them see Manuel Castells' full trilogy: *The Network Society* I, II, III; Hassan, 2006; or Webster, 2002.

knowledge. This process is characterized by technical relationships of production, defining a *mode of production*. Thus, modes of development are the technological arrangements through which labor acts upon matter to generate the product, ultimately determining the level of surplus. Each mode of development is defined by the element that is fundamental in determining the productivity of the production process. In the agrarian mode of development, increases in the surplus result from quantitative increases in labor and means of production, including land. In the industrial mode of development, the source of increasing surplus lies in the introduction of new energy sources and in the quality of the use of such energy. In the informational mode of development, the emergence of which is hypothesized here, the source of productivity lies in the quality of knowledge, the other intermediary element in the relationship between labor and the means of production. It should be understood that knowledge intervenes in all modes of development, since the process of production is always based on some level of knowledge. This is in fact what technology is all about. (p. 10)

Thus, for Castells, technology is central to development, productivity, and economic growth. He is far from alone in claiming this. For instance, work by Schumpeter (1942, 1962), and Solow (1957, 1958) find technological innovations are central to long run economic growth—in fact, not many rigorous modern economic growth models work without technology change. Although for Castells, technology is central to social-economic relationships as well: “When historical circumstance create a convergence between social change and technological change, we witness the rise of a new technological paradigm, heralding a new mode of development. This, I [Castells] contend, is what has brought the rise of the informational mode of development in the last quarter of the twentieth century” (p. 12). This convergence of social change and technological change is even more apparent since Castells was writing about it in the late 1990s, especially with the diffusion of smartphones in developed countries. It is now hard to escape the presence of technology in our daily lives in much of the world.

What is actually different about the new information, ICT driven, development paradigm?

How does the information revolution differ from previous revolutions? Again, I turn to Castells for an explanation:

The new technological paradigm is characterized by two fundamental features. First, the core new technologies are *focused on information processing*. This is the primary distinguishing feature of the emerging technological paradigm. To be sure, information and knowledge have been crucial elements in all technological revolutions, since technology ultimately boils down to the ability to perform new operations, or to perform established traditions better, on the basis of the application of new technologies....However, what

differentiates the current process of technological change is that *its raw material itself is information, and so is its outcome...* The second major characteristic of the new technologies is in fact common to all major technology revolutions. The main effects of their innovations are on processes, rather than on products. There are of course, major innovations in products, and the surge of new products is a fundamental factor in spurring new economic growth. However, the deepest impact of innovation is the transformation of processes. This was also the case with the two industrial revolutions associated with technical paradigms organized respectively around the steam engine and around electricity. In both cases, energy was the pivotal element which, by gradually penetrating all processes of production, distribution, transportation, and management, revolutionized the entire economy and the whole society, not so much because of the new goods and services being produced and distributed, but because of the new goods and services being produced and distributed, but because of the new ways of performing the processes of production and distribution, on the basis of a new source of energy that could be decentralized and distributed in a flexible manner. (2000, p. 13-14)

Thus, a fundamental consequence is derived from the essential process orientation of technological innovation. Castells seems to have hit the nail on the head in describing the changes seen as ICTs producing differing *processes* rather than simply differing products. Many social scientists adhere to this conception of technological change (Spar, 2001; Hanson, 2008; Hassan, 2006; Webster, 2002; and Zuckerman, 2013). Castells (2000) moves further out on a limb by claiming “Because processes, unlike products, enter into all spheres of human activity, their transformation by such technologies, focusing on omnipresent flows of information, leads to modification in the material basis of the entire social organization” (p. 15). The 'entire' basis for social organization changing has not happened, yet perhaps Castells may be a visionary on the technological future, but this last claim is too much of a stretch for this author and many other social scientists (see Kenny, 2006a; Smith, 2009; Webster, 2002; and work by Jürgen Habermas (for a public sphere critique) and Herbert Schiller (for a neo-Marxist critique). In fact, I side with Webster (2002) in his book *Theories of the Information Society*, where he argues that scholars can agree on the ‘informationization’ of social life, but not necessarily a total change of the social structure from ICTs. On the contrary, Castells, Daniel Bell, and other scholars point towards an information society, absolutely changing the social, industrial, and political structure of the wired world (Webster 2002). Yet, as will be seen in the empirical sections of this dissertation, these claims remain quite a stretch in most of the world, especially among the poorest populations.

Castells does remain in line with other influential scholars regarding the importance of information *processes*. In fact, the main process in the transition to an information society is not the shift from goods to services, but of the centrality of information processes.<sup>11</sup> Castells notes that the emergence of information processing as “the core, fundamental activity conditioning the effectiveness and productivity of all processes of production, distribution, consumption, and management. The new centrality of information processing results from evolution in all the fundamental spheres of the industrial mode of development, under the influence of economic and social factors and structured largely by the mode of production” (1989, p. 17). One would be right in noting that Castells use of terms, language, and outcome points to a Marxist conclusion as he states: “because the new productive forces are information based, their development is more closely related than ever to the characteristics of the hypothesis proposed by Marx on the relationship between social structure and techno-economic development” (p. 16). While not a dogmatic Marxist by any stretch of the imagination, Castells does purport that evidence exposes trends in the information revolution indicating that Marx was correct regarding the concentration of information, knowledge and resources. This is not exactly positive theoretical ‘foreshadowing’ if the lives of the poor in the developing world are going to be improved by technology.

To briefly illustrate the use of processes, scholars such as Castells, Daniel Bell, Elizabeth Hanson, Robert Hassan, and others, have used them to point to how neoliberal globalization and ICT have matured hand-in-hand, helping to shape the modern world. Robert Hassan (2006) provides a succinct synopsis positing that three interdependent processes have influenced and shaped our contemporary world in a profound way:

The first [process] is neoliberal globalization. This is the foremost economic dynamic that has, since the late 1970s, spread throughout the world to the point where, for the first time in history, an economic system has no serious challengers (Klein, 2007). It is a logic that has become the 'basic grammar' that informs our understanding of how the world operates (Anderson, 2007, p. 6). Second, and flowing directly from neoliberal globalization, is the

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<sup>11</sup> It should be noted here that the nebulous category of ‘services’ is now the largest economic sector in many developed economies, at least as far as employment is concerned. Two influential technology theorists of the ‘post industrial society’ made similar claims well before Castells, Alain Touraine (1971), and Daniel Bell (1973).

information technology revolution. In the 1960s and 1970s the economic imperatives of an emergent globalization began to dramatically super charged basic research into computers that had, until that time, been largely within the purview of military research and university lab tinkering—and brought it into the commercial realm. The third result from the effects of the first two. Principally, this has been the 'speeding-up' of time and the 'shrinking' of space....it seems to me that much flows from this 'time-space compression.' (Harvey, 1989, 241) (p. x)

The three processes working hand-in-hand, neoliberal globalization, IT revolution, the speeding up of time and shrinking of space, all occurring since the 1970s, have dramatically altered the contemporary world. All three of these processes show little sign of abating. Developing countries wanting to engage with the global economy are required, pressured even, by strong states and international institutions with lending power such as the IMF, World Bank, and U.S. Treasury to adhere to neoliberal policies and platforms, such as free trade (although loans are not as strictly tied to neoliberal policies as they were during the Washington Consensus period in the 1990s-early 2000s). IT has also helped to 'speed up' the process of neoliberal consolidation through increasing instantaneous flows of information and financial capital.

Finally, one more segment of the literature needs to be addressed regarding the 'big picture.' Despite the focus of this dissertation on poverty, it is worth noting the prominent findings of previous research on the relationship between ICT and inequality. An influential economic theorist to begin with is Simon Kuznets who argues that the process of economic development is accompanied by increasing inequality in the early stages of industrialization, yet he argues inequality tends to decline as industrialization deepens (Kuznets, 1955; Conceicao & Galbraith, 2001, p. 139). His theories have been expanded on through the rise of J-curve theories, which make similar arguments as Kuznets regarding the process of economic development.<sup>12</sup>

The literature proposing that the rise in inequality around the globe, especially in developed countries, since the 1970s, was caused—or at least augmented—by technological change has gained momentum. Inequality rates between individuals, both globally and within countries, have steadily

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<sup>12</sup> Some scholars have expanded the J-curve theories to other forms of analysis such as investigating how nations behave (see Bremmer, 2006 for an example of this expansion).

risen since the 1970s (Easterly, 2006; Rodrik, 1997, 2007; Williamson, 1997). However, this may simply be a story of correlation rather than causation. No definitive studies have been able to make a convincing causally claim linking the new 'information society' to the rise in inequality seen around the world (Castells, 2000; Friedman, 2006; Hassan, 2006).<sup>13</sup> According to Berman, Bound and Machin (1998) there has been a rapid, but certainly *ad hoc*, convergence toward a consensus that technology is to be blamed for rising inequality. Conceicao & Galbraith (2001) note that the main assumption behind such claims is that technological change is—or has become—skill-biased, in the sense that it creates jobs that demand workers with high skills compared to lower skills. Thus, one of the dominant causal mechanisms proposed is that technology change drives increases in demand for highly skilled labor lead to a higher wage for high skilled labor compared to non-skilled labor (Conceicao & Galbraith 2001, p. 146). This has led to the skill-biased technological change hypothesis for inequality of wages.

Investigating the example of the U.S. during its strong period of sustained economic growth of the 1950s and 1960s, the “conventional wisdom was that there was a complementarity between technology and aggregate labor. If the skill-biased technological change hypothesis is valid, this era ended, and it gave place to an age of complementarity between technology and skill. Therefore, the questions that arise are, when did the skill-biased technological change emerge, and what were the causes behind that emergence?” (Conceicao & Galbraith 2001, p. 146). Despite sophisticated answers to these questions (see Caselli, 1999; Goldin & Katz, 1998), for Autor, Katz, and Krueger (1997) digital computers and information technologies are considered the 'trend-breaking technology' responsible for rising inequality due to demand for higher skill labor.

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<sup>13</sup> Although productivity is even less central to analysis of poverty than inequality, it is worth briefly mentioning what previous scholars have found with regards to previous technology revolutions. Andersen & Corley (2006) claim that looking at previous technology revolutions expose the surprisingly lack of productivity gains from the 'information revolution': “Previous technology revolutions include for example (I) the early mechanization period (1770-1840) with mechanization as key factor input, (ii) the steam power and railway period (1830-90) with steam powered transport as key factor input, (iii) the electrical and heavy engineering period (1880-1940) with steel as key factor input for wide applications (Freeman & Perez, 1988). However, regarding the information and communication technology (ICT) period (from about 1990), with microelectronics as key factor input, we did not experience the jump in productivity levels or productivity growth rates, as expected” (p. 15). Thus, similar to the ICT and inequality relationship, proving causation between ICT and the lack of gains in productivity is difficult and currently a matter of strenuous debate.



However, for Conceicao & Galbraith (2001) despite its surface plausibility, the skill-biased technological change hypothesis has faced considerable empirical and conceptual difficulties.<sup>14</sup> A major issue with the argument is associated with the mismatch between the timing of the diffusion of information technology and the rise in inequality in the U.S.<sup>15</sup> plus, another issue is the fact that computers and information technology, in general, do not seem to have contributed to increases in productivity. Instead, in the 1980s productivity growth was stagnant with growth rates much lower than the records set in the two decades following WWII (see footnote above noting that this was a larger trend and not just a phenomenon in the U.S.). A puzzle emerges, as there certainly was motivation to hire highly educated people who can work with computers, aimed at increasing productivity, yet why was there *no* substantial increase in productivity? A standard answer from scholars of technological change (Rosenberg, 1982, 1994; David, 1985) is that major new technologies simply take a long time to make their effects felt; but then the impact should be seen in the labor market (Conceicao & Galbraith, 2001, 146). However, so far scholars are still waiting. On the basis of this evidence, I conclude that the 'big picture' is mixed with regard to ICT causing increased inequality, which is coupled with corresponding weak evidence regarding the impact of ICT on rates of productivity. If this evidence proved robust then analysis of ICTs impact on inequality would need to be discussed more fully when addressing the ICT/poverty relationship. From others work, notably Conceicao & Galbraith (2001); we cannot conclude that inequality is substantially enhanced by ICTs.

Thus, as of 2014, it is pretty clear that the empirical evidence is mixed. Therefore I take the position that while ICT plays a role in creating more inequality the *extent* of the impact is far from certain. Furthermore, this dissertation is focused on those at the bottom of the economic ladder, particularly in their ability to move out of poverty rather than whether or not they achieve high-income status. Social mobility is related, but is a different conceptual measure of social class/income

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<sup>14</sup> Galbraith (1998a) provides a thorough analysis of the main criticisms of the skill-biased technology change hypothesis.

<sup>15</sup> Howell (1996) provides an equally critical assessment of the empirical validation of the skill-biased technological hypothesis.

than poverty *per se*. I will leave it up to another dissertation/book to tackle the *extent* of the impact of ICT on inequality, social mobility, and productivity. For now we can conclude that the impact of ICT on all of these factors is up for debate.

### **Do the Internet and Mobile Phones Impact Economic Growth?**

ICT scholars have prodigiously attempted to answer the poverty/technology conundrum for many new technologies; the Internet and mobile phones are simply the latest to receive attention and scrutiny. In fact, most studies on the Internet in developing countries are interested in tackling two questions: (1) whether or not it is increasing inequality; and (2) or contributes to economic growth? However, despite rather extensive scholarship devoted to the former (elucidated above) there seems to be convincing evidence on both sides of the debate with no clear consensus emerging. This lack of a consensus for the inequality relationship is mirrored in scholarship on developed countries, notably apparent in disparate work by skeptics Kenny (2006a); Dani Rodrik (1997, 2007); and the more optimistic Thomas Friedman (2006, 2008); and Ester Dyson (see Dyson, 1997; Dyson & Hafner, 2007). The evidence for the Internet contributing to economic growth, is more clear cut with a consensus emerging that the Internet 'helps' economic growth (Friedman, 2006, 2008; Forestier, Grace and Kenny, 2002; Hanson, 2008; Rodrik, 2007). However, by how much it 'helps,' and which economic/social groups benefits from this Internet driven economic growth, is still rather unknown and is debated extensively. Exposing the typical fissure of this debate is the vast gulf between neoliberal approaches to the Internet/economic growth relationship (see Dyson, 1997; Friedman, 2006) and more Marxist theoretical analysis (see Burkett, 2000; Crush, 1995; Pieterse, 1998; Tucker, 1999). These 'big picture' approaches in developing countries relate to the ICT and poverty relationship, but they only indirectly speak to reality on the ground. The following section addresses the ICT and poverty puzzle more specifically. This will help to tease out the arguments for causality claims that scholars have posited.

## **1.3 The Primary Puzzle**

Literature addressing the 'big picture' of technology change often focuses on developed countries, economic growth rather than development, and making grand theoretical claims with little empirical backing, with scant attention devoted to those at the margins of connectivity. I now turn to more detailed oriented studies of ICTs and poverty in the developing world. In fact, a goal of mine is that more targeted approaches will be a hallmark of this dissertation. For sure, the 'big picture' is worth exposing the reader to, however the following sections will fully elucidate my primary puzzle.

It is easy to get carried away with claims of ICTs now affecting many aspects of contemporary life and to get lost among all the buzzwords. Therefore, the following section attempts to clarify the primary puzzle that this dissertation addresses by exploring the findings of the literature on the specific issue of whether or not the Internet and mobile phones are influencing poverty. A good place to start is a prominent academic study investigating the direct impact of ICTs on poverty is Forestier, Grace and Kenny (2002). Despite their research being conducted over a decade ago, their approach and conclusions are worth exploring in detail. They purport a disparity in small-n and large-n analysis, stating that there has been over 20 years of accumulated cross-country evidence on the link between telecommunications provision and economic development. Looking at small-n studies from a range of countries including Bangladesh, Botswana and Zimbabwe, they find that provision of telephones has an impact on the income and the quality of life of the rural poor. They examine cross-country evidence to try to discover if the number of telephones per capita has a pro-poor economic growth impact.<sup>16</sup> Furthermore, they also evaluated the impact of other ICT penetration rates on quality of life variables including infant mortality and literacy, and they tested if the Internet had an impact on pro-poor economic growth. Unfortunately, at least for technological determinists, they found that historically telecommunications penetration has a statistically significant impact on *increasing* inequality and *little* impact on quality of life variables associated

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<sup>16</sup> Pro-poor growth, pro-poor development and pro-poor economic development will be synonymous terms for the remainder of this dissertation. Mwangi Kimenyi (2007) provides a definition of pro-poor growth: "pro-poor growth...means that the poor benefit disproportionately from economic growth" (Kimenyi, 2007, p. 186). He finds that "the effect of growth on poverty reduction is neutralized by high inequality. In other words, growth is a powerful vehicle to lower poverty, but only when associated with decreases in inequality" (2007, p. 186).

with poverty. They conclude by stating that quantitative analysis “confirmed that rollout has (historically) only benefited the wealthy” (2002, p. 623).<sup>17</sup>

However, there is much more of a puzzle than their 2002 study lets on. In 2014, Forestier, Grace’ and Kenny’s (2002) assessment of the literature, claiming that small-n and large-n findings reach differing conclusions remains true, yet their empirical study is riddled with inconsistencies, furthermore it does not explain the changes to the ICT landscape seen around the world since the early 2000s. For instance, Forestier, Grace’ and Kenny (2002), and many counterpart studies done in the late 1990s and early 2000s do not capture much higher, perhaps ‘threshold’ levels, of ICT penetration seen since. The existence of threshold levels of ICT penetration will be explored in the quantitative and case studies of this dissertation, as there is no consensus on where threshold levels may actually lie.<sup>18</sup> The late 2000s saw the diffusion of Internet access and mobile phones to the masses in many developing countries. Furthermore, another fatal flaw with Forestier, Grace’ and Kenny (2002), and the vast majority of other studies, is that they do not include time series data. One of the contributions of this dissertation will be to address these significant shortcomings.

Exploring my puzzle exposes extensive confirming evidence for the contradictory findings in the literature posited by Forestier, Grace’ and Kenny (2002). First, I will start by explaining some examples of *successful* ICT implementation. An often-cited success story is that ICTs can empower the poor through their ability to provide vital information to those that could not obtain it through traditional avenues (e.g. mobile phones and Internet networks in rural, geographically isolated areas). Mobile phones have been particularly effective around the world in providing relevant, up to date, price information to the rural poor. Case studies show that for many in sub-Saharan Africa, the first telephone they use will be a mobile phone rather than a landline (Jensen, 2007). An example is

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<sup>17</sup> When rollout is referred to in this dissertation, I mean it to be synonymous with penetration rates, unless otherwise stated. For Forestier, Grace’ and Kenny (2002) it refers to a government policy to increase penetration rates by investing in public good provisioning of ICT. Malaysia would be a country that is a prime example of a government that has extensively pushed public good provisioning of ICT to the forefront of its economic development planning.

<sup>18</sup> Although cyber crime is not the focus here, a 15% threshold level for Internet penetration has been found for the existence of substantial amounts of cyber crime coming from a country (Kshetri, 2010). There are some indications from Arab Spring mobilizations that a similar threshold level might exist around 15% penetration—but it is a matter of debate.

research in Kerala State in India displays that since the introduction of the mobile phone in 1997, the number of fishermen who travelled beyond their local markets to sell their fish in more productive markets jumped from zero to over 35%. In providing the fishermen with better access to relevant market information, mobile phones also helped eliminate waste and 'smoothed' prices across local markets (Jensen, 2007). The fishermen who travelled beyond local markets were among the first to do so in that community's history.

Although not perfect, the community center model in Mexico, called *Centros Comunitarios de Aprendizaje* (CCA) provides one of the best examples of free public Internet access proving helpful to those in poverty in a developing country. The evidence from my visit to the high tech village of Tlahuitoltepec and the lower tech village of Flores in the state of Oaxaca displayed the ability of the CCA to help people learn how to use the Internet. The education provided at CCAs helps small farmers look for the most productive local markets for their goods, it also helped people look for jobs outside the community (their impact is discussed fully in Chapter 5). It was also evident from the survey that people with access to the CCA were more likely to know more about politics, and to participate more in politics and community projects/programs. Finally, those with access to the CCA were more likely to say that government officials were held more accountable due to the Internet. They were more likely to try and expose government corruption via the Internet than those without access to the CCA—or the Internet. All of this will be discussed in great detail in Chapter 5.

Despite clear success stories in case study analysis from around the world, it appears that social, economic, and political contexts matter greatly in determining the success or failure of ICT poverty-alleviating projects.<sup>19</sup> An example of how important context can be is geography.

Governments can provide incentives to NGOs or the private sector to produce ICT rollouts in remote geographic locations. For instance, a spinoff from the micro-credit giant, Grameen Bank, is Grameen

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<sup>19</sup> What factors lead to higher ICT penetration rates is a different question, yet worth addressing briefly. GDP per capita can explain about 90% of the variance of ICT diffusion (Corrales & Westhoff, 2006). Other factors influence diffusion as well. Chinn and Fairlie (2006) find evidence indicating that increased income, legal quality, democratic governance, human capital and banking sector development are associated with higher technology penetration rates. They argue that human capabilities and human development could be a more productive avenue for the ICT and the development literature to focus on.

Phone, which allows the poor to purchase minutes on a mobile phone and resell the minutes to those without access to a phone. Sein and Ahmed state, “The success of the Grameen Phone can be attributed to the advent of cellular technology and its inherent advantage over landlines. However, the specific context of Bangladesh’s geography may also have contributed to its early success: the country’s flat terrain, dense population, and the existence of Grameen Bank’s micro-credit structure” (2001, p. 21). Many of the same conclusions emerge from Andrew and Petkov’s (2003) study of the rural telecommunications system in South Africa (Sein & Harindranath 2004, p. 21). Quite a different picture is seen in a country such as Afghanistan, where rugged mountain terrain hinders the ability of even the technologically advanced U.S. Military to communicate easily (Grau & Falivene, 2011) and also the lack of ICT infrastructure where the Taliban forbid Internet access across the sprawling country (Wenzt *et al.*, 2008).

Furthermore, the type of ICT employed is important in determining success for poverty alleviation across the vastly different socio-economic contexts of countries. The success of the mobile phone in providing market information indicates that, in some cases, it might be more cost effective than the provision of the Internet. However, perhaps it is even more effective if farmers, who are often illiterate, receive this information via short-wave radio (audio), rather than a computer hooked up to the Internet (text-based), or mobile phones reliant on cell towers in mountainous terrain? Yet, overall, the Internet should not be discounted due to its ability to share detailed information in document form (PDFs and Microsoft Word Docs), to spread video widely,<sup>20</sup> and is instrumental to the full realization of many human rights. This makes the Internet an intriguing ICT to enhance transparency, social interactions, economic opportunity, and political mobilization all at the same time. It also allows for more agency than other ICTs. These claims about the Internet as a medium will be explained in much greater detail in Chapter 2. In the words of a ‘father figure’ of

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<sup>20</sup> The Internet has been shown to help focus media, and the public’s attention on corrupt or illegal activity. It is unclear how much overall as the quantitative section of this dissertation will display, but there are many examples of success, for instance, see the case of [www.ipaidabrib.com](http://www.ipaidabrib.com) in India (I paid a brib.com, 2014), where over 30,000 videos of officials taking bribes has been caught on camera and posted to the web.

modern communication studies, Marshal McLuhan, the Internet as a medium of communication exchange may even prove to be the real “Message” (McLuhan, 1967).

In stark comparison to these success stories, there are also many case studies purporting ICT failure, and in the worse cases, actually causing development nightmares.<sup>21</sup> An example of failure is ironically the award winning Gyandoot project in the Dhar district in India, an intranet connecting rural cybercafés supposedly catering to the ‘everyday needs of the masses.’ The project was a Stockholm Challenge Winner (Gyandoot was declared winner in 2000 in the category of “Public Service and Democracy” out of 109 IT projects from all over the world), an award that is given to projects that effectively contribute to the UN Millennium Goals. The Stockholm Challenge judges praised Gyandoot as “a unique government-to-citizen Intranet project...with numerous benefits to the region, including a people-based self-reliant sustainable strategy. ‘Gyandoot’ is recognized as a breakthrough in e-government” (Ndou, 2004). What Gyandoot did was to try to introduce computer literacy throughout the state of Madhya Pradesh in local kiosks, schools, colleges and in distance education. It attempted to provide land records in computerized form. The goal in Gyandoot was to provide Internet to the masses enabling them to take part in governmental decisions across the largest state in India, Madhya Pradesh, through engaging and integrating villages (Srinivasan, 2011).

Nevertheless, an in-depth analysis of Gyandoot found significant problems with implementation. A survey of the telecenters found 36 percent closed during working hours over the course of the survey visit (Kenny, 2006a) and open centers, 35 percent had no electricity at the time of the visit, and 50 percent had no regular intranet connectivity. Monthly revenues per center averaged only \$3—which was far too low to suggest sustainability in India. Perhaps most devastatingly the survey found an average of just over one user per center to interview, even after searching for users both in the centers and in nearby community meeting areas. Survey results

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<sup>21</sup> For the many ‘nightmarish’ examples see (Soeftestad & Sein, 2002; Warschauer, 2003; Kenny, 2006a; and Basel Action Network, 2010).

suggest an average of perhaps nineteen users per month per center—largely from upper income brackets—for the e-government services offered by the program (Center for Electronic Governance, Indian Institute of Management, 2002).<sup>22</sup>

According to Kenny (2006a) one cannot say for sure that the Gyandoot experiment,<sup>23</sup> involving e-government targeted to the poorest has been a total failure (p. 8), yet this was an award-winning project. It was supposed to be head and shoulders above the many failed ICT and development projects. These projects often end up with their technological components rusting away in digital dumps and damaging the environment in many African, Asian and Latin American countries.<sup>24</sup> These rather spectacular failures highlight the difficulties with scalability of sustainable ICT projects, and the low impact ICT can have on economic opportunities for the poor despite high praise and often overly exuberant recommendations from the development community (see Kenny, 2006a; Basel Action Network, 2011).

Another difficult hurdle to clear for Internet development projects has been language. Their disparate representation on the Web has proven to be very problematic in attempts towards one-size fits all rollout policies. According to Kenny (2006a) “there is a significant language skills gap, with perhaps one-half of the populations of the LDCs not speaking an official language of their own countries—let alone English, the predominant language of the Internet” (p. 77). In 1994, English was used by approximately 98% of the world's websites. By 1999, 72 percent of websites were in English, yet “Conversely, the number of sites that can be found in languages such as Quecha (spoken

<sup>22</sup> For more info on the Gyandoot project see Cecchini, S. (2002), and Arya (2009) for an update.

<sup>23</sup> Although a later study, in 2009, by Ayer found that the Gyandoot project was successful, particularly as a public space to air grievances. It proved to be especially useful for the literate poor and working class. Ayer (2009) found that it was also effective as an e-governance experiment—but he argued that electricity and infrastructure should come before e-governance.

<sup>24</sup> Another indicative example of type of failure is the obsolete computers and other forms of used technology often left behind by these projects when interest, or utility fades. There are many instances of technology being disposed of in grotesque 'digital dumps' throughout the developing world (Basel Action Network, 2011). Making digital dumps even worse is that a high percentage of supposedly recycled digital waste from the developed countries actually ends up in unregulated digital dumps in developing countries. Companies, and NGOs in developed countries that claim to be disposing of digital waste properly, often end up simply dumping it illegally in developing countries in vast digital dumps because it is cheaper than recycling it correctly (Basel Action Network, 2011). Digital waste is the fastest growing type of waste stream in the world and is expensive to dispose of (Basel Action Network, 2011). Here is link to Basel Action Network's collection of photos of digital dumps around the world (prepared to be disturbed if you are concerned about the environment): <https://www.flickr.com/photos/basel-action-network/>



by 10 million people in Bolivia, Ecuador and Peru)...can be counted on the fingers of one hand—and none of them offer interactive features” (Kenny 2006a, p. 77).

This is the case for many languages used by the poor, not only Quecha. Websites devoted to minority languages, or even those offering translations in them, are not simply outnumbered, but are almost completely absent from the Web. For example this disparity is evident in the case of Igbo (Ibo), a language spoken by 25-30 million people in Nigeria. It barely exists in the online world. A search conducted by Kenny (2006a) in 2002, lasting two hours—or about the average yearly length of Internet access that is affordable by people living on a dollar a day—came up with just five sites: a translation of the Universal Declaration of Human Rights; a translation of a religious document called ‘the four spiritual laws’, a translation of the food pyramid, a two page Igbo phrase book, and a prayer manual. According to Kenny: “by 2006, there were additional sites on learning the language but still under fifty sites in Igbo for Igbo speakers. There are no sites offering an automatic page translation service from English to Igbo” (2006, p. 99). This is clearly not very helpful information to lift oneself out of poverty.

Even in developed countries language plays an important role in usage. Language is a “significant barrier to use, as is suggested by a study of users in Slovenia, which found that 75% of those who considered themselves fluent in English used the Internet, compared to 1% of non-English speakers (Kenny, 2002)” (Kenny, 2006a, p. 77). Guillen & Suarez (2001) find that, across countries, and allowing for a range of other factors, in “countries where English is the official or most widely spoken language see significantly higher Internet users per capita. This is hardly surprising given the quality and quantity of non-English web material” (Kenny, 2006a, p. 77). There are some indications that this all might be changing as English becomes less dominant on the web, but the problem remains for lessor spoken languages. Currently, as estimated by Internet World Stats, English is the largest language in percentage terms on the Internet with 43.4% of users English speakers (Internet World Stats, 2014).

Investigating Mexico as a case study, this lack of a digital existence is also apparent for many of the 68 indigenous languages spoken in the country—as about 15% of the population are speakers of indigenous languages. I conducted a brief survey searching the Internet for the indigenous languages of Mexico, following the approach Kenny (2006a) took in looking for the Igbo language on the Web. I searched for 2 hours in each language (about the average time a poor person uses the Internet over the course of a month in Mexico) and found that the extent of their availability varied substantially online. Yet, overall their presence was *very* limited. Take the case of Tu'un sávi, which is spoken by the Mixtec people—with over 400,000 speakers in Mexico—however there are only a handful of websites employing this language, most of the sites simply stated the existence of the indigenous community, not exactly very useful for those in the Mixtec community. A blog by Scannell, Indigenousblogs.com (2011), which tracks indigenous languages on the Web, has documented only three blogs in total writing in the Tu'un sávi language. Scannell's blog makes approximations of the amount of content produced in indigenous languages on the Internet, estimating that about 1500 languages exist in some form in the online world (Scannell, 2011). In the case of Tu'un sávi and most of the indigenous languages spoken across Mexico, the Internet is rather devoid of content, especially any meaningful content to those mired in poverty. Overall, these findings are not backed up by statistics, yet clearly web presence is limited compared to dominant languages such as English, Spanish, Portuguese, and French.

Other scholars seem to confirm these findings, as Dyson (2011) claims that it is not exactly known how many websites there are in Indigenous languages but that research indicates they are limited. Even if exact figures remain hard to come by 'ballpark' estimates are helpful to lay some groundwork. Crystal (2006) estimates that there are probably more than a 'quarter of the world's 6,000 languages' have some sort of Internet 'presence.' This would put his estimate very close to Scannell's publication five years later (2011). Crystal (2006) makes an intriguing point for the potential of the Internet, positing that it is not hard to find minority languages on the Internet, especially in the more technologically advanced developed countries, as the Internet is the "Ideal

medium for minority languages, given the relative cheapness and ease of creating a web page, compared with the cost and difficulty of obtaining a newspaper page, or a programme or advertisement on radio or television” (Crystal 2006, p. 234). However, the problem arises when more in depth knowledge is sought. As Dyson (2011) notes: “Many Indigenous languages are represented on the Internet, in the form of dictionaries, word lists, grammars, stories in text or on audio recordings, translations, etc., but most are not used as media of communication (Osborn, 2006). The sites are generally about Indigenous languages: they form linguistic and educational resources for those wishing to learn or teach the language or acquire background information about the language” (p. 262-63). This is similar to Kenny's (2006a) finding with the Igbo language in Nigeria, as only 50 substantial websites existed—most dealing with tourism or about the existence of language itself—with not very useful information for those mired in poverty.

Language differences have proven particularly problematic for one-size fits all development projects that do not take differences in local cultures into much consideration. By 2014, language barriers are becoming less and less of a problem as much more content in languages besides English can now be found on the web. Most of these studies were done in early 2000s, not fully capturing the changes that have been seen across the developing world. However, as will be clarified in great depth in the Mexican case in Chapters 4 and 5, analysis of ICT, especially those focusing on the Internet, must be aware—and account for—language differences. Especially for lessor spoken languages and minority languages.<sup>25</sup>

Turning to large-n scholarship, a continuing problem is that many studies do not disaggregate ICT. Instead these studies simply lump different ICTs into simplistic numeric measures. There have been less rigorous studies in developing countries devoted simply to the Internet, or to mobile phones, as the following quote from Kenny (2006a) indicates: “As of December 2005...there had not been a survey-based, academically rigorous study of the economic

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<sup>25</sup> Both Quecha and Igbo are classified as minority languages, as are all the 68 recognized indigenous languages spoken across Mexico.

impact of an Internet access program in any developing country. At the macroeconomic level, we have even less empirical knowledge about the impact of the Internet on economic growth than we do about older technologies or policies” (p. 3). Despite the methodological differences between small-n and large-n academic studies, it is not readily apparent why these studies reach such varying theoretical and empirical conclusions.

To get to the root of the puzzle addressed in this dissertation, with the plethora of contradictory scholarly evidence, the more salient *specific causal mechanisms* posited in the literature must be explored at greater depth. A prominent explanation is that ICTs create a 'death of distance' and this helps the poor by making remote and economically forgotten areas more competitive, to finally have the ability to participate in the global or national economy (Cairncross, 1997). However, the empirical evidence for this conclusion is mixed. Some studies such as Suriñach *et al.* (2007) state that ICT and the 'death of distance' is a widely debated concept with *no clear answer*. They purport that in the 1990s, ICTs were declared to be leading to a 'death of distance' (following Cairncross, 1997), making space less significant for human activities (Dodge & Kitchin 2006). Specifically, since ICTs are mostly based on human capital investments they might offer real chances for bringing economic growth to areas that have historically suffered from isolation, high transportation costs, and/or a lack of public and private physical infrastructures (Suriñach *et al.*, 2007, p. 137). However, Suriñach *et al.* (2007) find that these assumptions are not supported by rigorous data driven analysis.

Relatedly, a wide empirical literature has also shown ICT diffusion to be unequally distributed spatially, which meant that ICTs' role for the development of peripheral areas should be put into proper perspective (Khiabany, 2003). Significant spatial disparities still persist in the intensity of ICTs adoption and use (van Dijk, 2005), as there is strong evidence showing that rural areas are much further behind with respect to ICT penetration and use. According to Mills & Whitacre (2003) this has been shown in many studies across the developing world. The lack of ICT access among the geographically isolated and the poor is commonly referred to as the digital

divide.<sup>26</sup> This dissertation will use the term digital divide intermittently following the definition used in the footnote below. It will be employed in such a manner because I side with the scholars claiming that the digital divide needs to be re-contextualized as non-binary (i.e. access or non-access), and I do not want to use the term too loosely, which would increase the opportunity to lose the complexities that come with my more nuanced argument regarding disparities of ICT usage. I do not want my theoretical framework, or my empirical analysis, to be taken as simply as ‘trying to solve’ the digital divide as it is often construed (especially in non-academic circles). There are gradations to access, rather than a binary ‘access or no access’ as is often assumed.

It is true that there is no doubt that differences in ICT penetration between the poorest and richest countries are staggering. Chinn & Fairlie find that “[r]ates of technology use are especially low in African countries. For example, in Ethiopia there are 0.31 computers and 0.16 Internet users per 100 people. On the other hand, some developing countries have much higher rates. Malaysia has computer and Internet penetration rates of 38.6 and 19.2 percent. Among larger developing countries Brazil, Mexico and Iran have relatively high computer rates, and Argentina, Turkey and Mexico have relatively high Internet rates” (2006, p. 16).” Many developed countries are now approaching 90% penetration rates for both PCs and Internet. Internet World Stats (2014) reports that 39% of the world can now be considered Internet users, and that there are rising rates of penetration in laggard developing regions such as Africa (21.3%), Asia (31.7%), and Latin America (49.3%). Thus, there are substantial differences between rich and poor countries and also between rich and poor people within countries (see Chapter 3 for statistical estimates of the amount of Internet users).

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<sup>26</sup> The digital divide refers to the disparity in a lack of access to ICT, and the resulting lack of information, between the rich and the poor. It can be used with regard to disparities between countries or disparities between groups within a country. Statistical analysis of the vast differences in ICT penetration rates between the developed world and the developing world expose the evidence behind the digital divide. Norris (2001) finds that “estimates from the International Telecommunications Union (ITU) indicate that only 3 percent of the population in India used the Internet in 2004. In contrast, more than 50 percent of the population in all developed countries used the Internet, with rates of technology use being substantially higher in many European and North American countries” (5). Globally, “about 7% of the world’s population in 2000 was online” (Norris 2001, p. 5). By 2004 estimates are closer to 14%. Chinn & Fairlie (2006, p. 6), for example statistically conclude that it reached around 13.7% in 2004 and has kept increasing since. Internet World Stats (2014) reports that in December 2013 39% of the global population can be considered Internet users even the lowest regions in terms of Internet penetration, Africa (21.3%) and Asia (37.3%) are growing fast. See Chapter 3 for a more detailed analysis, up to date data on ICT penetration rates throughout countries in different stages of economic development.

However, there is a much more complex relationship between poverty and Internet penetration rates that is not necessarily captured by these national level statistics. Most analyses of the digital divide simply employ national level statistics and leave analysis there. The extent of the digital divide is not equal across the wide-ranging geographic/social/economic intricacies of a country. National level statistics may be limiting analysis, as strong causal evidence for ICTs leading towards poverty alleviation is difficult to come by. According to Kenny (2006a) many studies simply attempt to prove a correlation story using only national level statistics. I will argue further on that sub-national analysis is needed as a supplement. Overall, it appears that the claim that ICT is leading to a 'death of distance' is certainly questionable.

Another prominent causal explanation posits the opposite, that ICT may create *worse* outcomes for poverty alleviation through the fostering of 'economic concentration.' This claim is a widely investigated one that deals with the rather open question of whether or not ICTs lead to more or less inequality, and concentration in economic activities. It is specifically tied to the so-called 'urban to rural gap' (Forman & Goldfarb, 2007). Does the Internet actually limit opportunities for the poor because of their lack of ability to make investments due to the high cost of Internet in rural areas? According to Suriñach *et al.* (2007), most studies agree with the idea that ICTs favor the economic concentration argument. The causal link posits that using more ICT requires extensive investment in hardware and software that smaller firms are less likely to be able to afford, the results are incentives for business consolidation. Economies of scale are also at work, in that firms that are able to employ ICTs in their production process reap larger gains in efficiency.<sup>27</sup> However, this is a

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<sup>27</sup> Larger gains in efficiency relate to the much written about ICT and productivity relationship. This is a rabbit hole that this dissertation unfortunately will not attempt to navigate. For now it is worth noting that there is substantial debate with unclear evidence on the topic. For instance, according to D'Costa: "the evidence of productivity growth based on ICT diffusion is not robust, certainly not for developing countries (Heeks, 2002). For example, the data on adoption of ICT by SMEs in Kenya, Tanzania and India show a negative or weak relationship between adoption and productivity (Chowdhury & Wolf, 2006). Also, there are considerable productivity lags with the diffusion of ICT...Consequently, it may not seem realistic or attractive for poor countries to participate in the new economy which rests heavily on a highly skilled and educated workforce, a developed communications infrastructure, high investment in fixed and high income (Clarke, 2003; Pohjola, 2001). At the same time it would be foolhardy to ignore the benefits of ICT in poor societies. If anything, ICT is an enabling carrier technology, applicable in both new and old economies (OECD 2003, p. 92). While ICT is not a panacea for poverty, developing countries, if they fail to actively engage in the use and production of ICT goods and services, are

slightly different issue than what this dissertation addresses. Concentration of economic activity does not 'necessarily' hurt the poor. Even when inequality is increasing, overall levels of poverty may actually be decreasing—especially among the working poor. Although one group that concentration seems to be detrimental to is rural poor rather than the urban poor—which augments the 'urban/rural gap' in development. As cities expand, there is more economic concentration in cities, which already have higher concentrated ICT usage.<sup>28</sup> High investment costs for ICT access and economic concentration in cities could be a continuing problem for the rural poor. The case study section of this dissertation attempts to tackle these issues head on by investigating both rural and urban areas in Mexico.

Finally, concluding this section on the causal claims in the literature, it is worth noting that a continuing difficulty faced by studies addressing whether or not ICTs are 'actually' contributing to poverty is that many of the determinants of the digital divide are *also* determinants of poverty. Endogeneity and spurious correlations have proven difficult for large-n analysis to maneuver around with this topic. For instance, academic studies have found that there are many factors influencing the digital divide: disparities in income (Pohjola, 2003); human capital (Dewan, Ganley and Kraemer, 2005); enforcement of regulations—state capacity issues (Guillen & Saurez, 2005); and socio-political features (Beilok & Demitrova, 2003). Income is reported to explain around 90% of the variance in the Digital Divide in terms of access, both between countries and within them (Corrales & Westhoff, 2006, p. 138). It is clear from the literature that ICTs have the potential to help people move out of poverty, especially through causal mechanisms of enhancing different aspects of human development (e.g. education, health information—see Sachs, 2005) and by providing new forms of information/communication exchange (e.g. mobile banking—see Menon, 2011). Also geographic/infrastructure concerns remain relevant, as does economic concentration. Studies need to

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likely to be impoverished further and experience a pronounced form of global digital divide (Clarke, 2003)” (D’Costa, 2006, p. 4-5).

<sup>28</sup> Evidence showing the backwardness of the rural areas with respect to ICTs adoption has been provided in many studies according to Mills & Whitacre (2003, 2007).

take these factors into account, however I posit that they should also consider the interactive impact of governance to understand the impact of ICTs on poverty. Clearly, from the section above we can see my puzzle emerge with extensive contradictory findings in the literature of the impact of ICTs, particularly the Internet and mobile phones, on poverty over the last 25 years. Before concluding this Chapter, the following section addresses the important concept of the digital divide and how this dissertation relates to it.

### **Deconstructing the Digital Divide.**

The statistical evidence for the presence of the digital divide is difficult to dispute (Norris, 2001; Internet World Stats 2014). However, the context in which it is often placed needs to be deconstructed. Tucker (1999) claims that focus only on alleviating the digital divide may be harmful for any hope of finding effective solutions to poverty reduction. He states: “the theme ‘enlightening the lives of people everywhere’ runs through much of the ICT and development literature. Such assumptions underlie the emergence of a classification of people as ‘information-rich’ or ‘information-poor’ depending on the availability of ICTs or the so called digital divide” (Tucker 1999, p. 9). Tucker further argues:

This category of people, the ‘information-poor’, forms an integral part of a discourse of development based on assumptions of a binary opposition between the developed and underdeveloped, the imperative being for the underdeveloped to ‘catch-up’ with the developed—the essence of modernization theory. This binary understanding of what it means to be developed or underdeveloped has been shown to be too simplistic an understanding of both countries/societies themselves and of what development and change means. (Tucker, 1999, p. 9)

There is evidence to back up his claims in theoretical work by Crush (1995); Munck & O’Hearn (1999); and Pieterse (1998). Burkett (2000) also agrees with Tucker noting that focusing on simply the ‘digital divide’ diverts attention from the structures of poverty: “These lines of thinking [the digital divide’s binary distinction] limit the potential for ICTs to be used to challenge structures of poverty. Instead, the aim becomes to provide as much technology to as many people as possible so that they may emulate the developed world” (Burkett, 2000, p. 692). Throwing technology at as many people as possible in developing countries assumes a deterministic digital divide and



utilitarian solution.

Furthermore, I concur that conceptualization of the digital divide as a binary distinction between the information ‘haves vs. have-nots’ is too simplistic and can be misleading. One of the most prominent scholars who first made this claim is Warschauer (2003) positing that there are two problems with the conception of information as ‘haves and have-nots.’ The first is that it is too simple. Digital divide literature needs to consider complexities such as language, literacy, physical and social resources in utilizing ICT effectively. The second is the digital divide’s implication of a bi-polar societal split (those with access and those without). However, instead of falling into this simplistic line of categorizing, other ICT scholars contend that there are gradations of access to ICT rather than a binary split. I wholeheartedly agree with the gradation scholars. Warschauer (2003) lucidly states: “The notion of the binary digital divide between haves and have-nots is thus inaccurate and can even be patronizing because it fails to value the social resources that diverse groups bring to the table” (p. 7). An example of this is that minorities appear to be on the wrong side of the digital divide in the U.S., however there are gradations among minorities in their access to ICT. For instance, the more income people have in the U.S., regardless of whether they are racial minorities or not, they will be more likely to have access to ICT.<sup>29</sup> Another example is that language plays a role in whether or not ICT is actually utilized by diverse groups. Many minority languages are not well represented on the Internet, thus it does not really matter if the speed of the connection is fast, or that the population can afford access, if they cannot understand the content on the Web there is not much interest in it.

A prime illustration of the importance of a social/educational factor determining effective ICT usage is literacy. Warschauer (2003) argues that literacy has important effects on the extent and effectiveness of ICT access on economic opportunity. He makes four points outlining his contention:

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<sup>29</sup> One reason that some of the examples in this dissertation come from the U.S. is that it has been a leading “creator” of the Internet (Castells, 2000), and much of its innovative content, and until recently has overwhelmingly contained the most Internet users in both absolute numbers and percentages. Thus, although this dissertation is primarily concerned with the poor in developing nations being left on the wrong side of the digital economy, it is worth noting that this technology is inherently based off the U.S. experience. Yet adoption of technology often follows similar patterns across time.

(1) There is not just one type of literacy but many; (2) the meaning and value of literacy varies depending on social contexts; (3) literacy is a social practice, involving access to physical artifacts, content, skills, and social support; (4) acquisition of literacy is a matter not only of education but also of power. Therefore literacy rates, language, and social context affects whether or not access to ICT will actually impact the economic opportunities of the poor (Chapter 3 provides a summary on which languages are most dominant on the Internet). Warschauer notes that these points on literature “serve well as the basis for a model of ICT access: There is not just one type of ICT access, but many types. The meaning and value of access varies in particular social contexts. Access exists in gradations rather than in a bipolar opposition” (Warschauer 2003, p. 46). I side with Warschauer and conclude that the digital divide should *not* be simply conceptualized as a binary phenomenon. Socio-economic context, literacy, education, and language all matter greatly.

#### **1.4 I Want My MTV...ICT?**

Finally, before concluding this introductory Chapter, I want to explain the reasoning behind the title of the dissertation: *I Want My ICT: Information Communication Technology, Governance, and Poverty in the Developing World*. The 'I Want My ICT' part of the title is not particularly central to the theoretical argument presented in this dissertation; however, it is worth explaining how it is related and why I chose it. The idea for my title originated out of the 1981 MTV marketing campaign ‘I Want My MTV’ coined by the rather notorious advertising legend George Lois. The phrase was used along with a revamped logo for MTV with the now familiar Rolling Stones tongue sticking out of the logo. This Rolling Stones-branded logo accompanied an [infamous 1983 TV commercial](#) campaign featuring Mick Jagger shouting "I want my MTV!" that “got thousands of teens to ask their cable operators in the USA to carry the channel. Pretty soon, [according to George Lois] stars like David Bowie, Stevie Nicks, and Boy George were recording their own versions—with their own matching logos” (Bostwick, 2010). While rock superstars screamed “I Want My MTV” in the commercials, a voice in the background announced: “If you don’t get MTV where you

live, call your cable operator and say ‘I Want My MTV.’ In cities across the USA thousands were contacting their cable operators asking for their MTV (Inspirationbit, 2007). According to Lois: “Within ‘months, MTV was in 80% of all household [with cable subscriptions]; record companies begged to have their videos on the channel, advertisers looked at MTV as a must-buy for viewers 14 to 28; and every Rock star in the world pleaded with us to mimic Mick Jagger’s plea in our follow-up commercials” (Inspirationbit, 2007).

The phrase was also immortalized in the Dire Straits song “[Money for Nothing](#).”<sup>30</sup> Mark Knopfler, the world renowned creative guitarist of Dire Straits claimed that his controversial lyrics for the song originated from his overhearing a working class guy delivering appliances to a New York media technology store Knopfler heard him stating: “That ain't working, that is the way you do it, you play the guitar on the MTV.” The working class sentiments expressed here was not what was controversial about the lyrics. In the first released version of the song, Knopfler's lyrics read:

See the little faggot with the earring and the makeup  
Yeah buddy that's his own hair  
That little faggot got his own jet airplane  
That little faggot he's a millionaire.

Gotta install microwave ovens  
Custom kitchen deliveries  
We gotta move these refrigerators  
Gotta move these colour TV's

That ain't workin' that's the way you do it  
You play the guitar on your MTV  
That ain't workin' that's the way you do it  
Money for nothin' and your chicks for free  
Money for nothin' and chicks for free.  
I want my, I want my, I want my MTV  
(Sing365 Lyrics.com, 2014)

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<sup>30</sup> On a personal note, as a child growing up in the pre-Internet 1980s this is where I first heard the phrase, and upon hearing the song fell in love with the high, distorted tremolo guitar sound, typified in Knopfler's cascading guitar solos. One had to listen to the newly invented CD if one wanted to hear the song over and over, as there was no option of looking up the song on an Internet music sharing platform or a free and easy to find YouTube video. Truly shaping my research has been seeing in my lifetime the rise of the Internet from slow dial-up, with little in the way of media online, to fast speed broadband and wireless capable of streaming video, music, video games and innovative web platforms. It has been very interesting for me to see the rise of cable TV, and the Internet, thus the ‘I Want My MTV’ advertising campaign seemed an appropriate signifier of ICT change over time, plus the demand from the populace for it.

The 'little faggot' references were considered offensive, anti-gay, and stirred a controversy on whether to play the song across the airwaves. The controversy still gets stirred up today, for instance in 2011 Canada banned the song from the radio because of the connotations of anti-gay lyrics (CTV news staff, 2011). The song today is mostly heard on radio airwaves in an edited version that removes the anti-gay lyrics, yet keeps the working class sentiments. Knopfler distanced himself from the lyrics stating in a Rolling Stone interview:

The layers of irony in "Money for Nothing" have certainly confused people.... (I)t suggests that maybe you can't let it have so many meanings—you have to be direct. In fact, I'm still in two minds as to whether it's a good idea to write songs that aren't in the first person, to take on other characters. The singer in "Money for Nothing" is a real ignoramus, hard-hat mentality—somebody who sees everything in financial terms. I mean, this guy has a grudging respect for rock stars. He sees it in terms of, well, that's not working and yet the guy's rich: that's a good scam. He isn't sneering. (Rock 'n' Roll 101, 2012)

How does all this relate to ICT? MTV and other popular cable channels helped to drive the increased demand for cable and satellite television. The copious choice of channels on cable, combined with falling prices, made cable and satellite TV a popular choice of media across the U.S. and later in many EU countries. Broadcast TV did not offer much beyond the big three networks (ABC, NBC and CBS), thus, 'wanting your MTV' is in line with wanting more options in information technology seen also fueling the demand for the Internet since the mid-1990s. This demand is analogous to what is now seen for new ICTs, as many want access to them around the world. ICT, namely the Internet and mobile phones, have proven to be in continuous demand across countries, cultures, and economic status. I am not positing that every person or group, or culture, feels the draw of ICT technology equally, but on the whole, it would be hard to refute arguments claiming that demand has been extensive (see Friedman, 2006; Hanson, 2008; and Norris, 2001). This demand is obvious from the data on increasing penetration rates of the Internet and mobile phones across taking place across developing and developed countries (see the graphs in the Chapter 3). Thus, 'I Want My ICT' seems to apply, broadly speaking, to a large segment of the global population. The electronic pull of MTV might not be what many are interested in anymore; instead the plethora of media options online beckons. For instance, one might consider YouTube as the

Internet's MTV. Finally, many of the poor perceive ICT as increasing their opportunities to move out of poverty and the entertainment factor comes with the service as well. Thus, beyond the entertainment pull, the Internet also allows for the potential for a better future, one people of all classes want to participate in. Wouldn't you want your ICT?

## **1.5 Conclusion.**

To recap, the literature above certainly displayed contradictory findings in rigorous academic studies regarding the impact of ICTs on poverty. This was also the case across very diverse academic literatures—ICT and development, development economics, political science, and communications—with none providing a satisfactory comprehensive analysis of the impact of ICTs. This produced the primary puzzle I will address, a puzzle that is more than simply a matter of differing opinions; but also composed of confounding evidence.

To summarize my findings, I first looked into the history of different technological penetrations of ICT (e.g. telegraph, radio) and they provided some insight into what may be expected with regards to Internet and mobile phones (see analysis by Spar and Castells above). Despite the historical evidence of previous failures to reverse poverty of many ICTs (such as TV, radio, landline phones), there was an initial exuberance in the ICT and development literature during the late 1990s as the notion became that the Internet was going to be the coming savior of development. However, by the early 2000s this exuberance waned because of the 'dot com' crash and the slow realization that development projects that employed the Internet were running into substantial difficulties across the developing world (Kenny 2006a). I argued that this renewed vigor seen since the late 2000s (especially after the Arab Spring) has been fueled by three dominant trends seen in the ever-evolving Internet: (1) diffusion of technology; (2) deepening of technology, seen in the spread of Web 2.0; (3) the Internet as a convergence technology. I then turned to the 'big picture' of technology change, where Castells seems to have hit the nail on the head as far as describing the changes seen as producing differing *processes* rather than simply differing products. Also, the evidence from the 'big

picture' was mixed with regard to ICT causing increased inequality, which is coupled with weak evidence regarding the impact of ICT on rates of productivity.

Subsequently, I discussed the more salient *specific causal mechanisms* posited in the literature. The prominent 'death of distance' argument proved to have mixed empirical evidence to support it. Another prominent causal explanation posited the opposite that ICT may create *worse* outcomes for poverty alleviation through the fostering of 'economic concentration' and this also proved mixed, as it is difficult to sift out the inequality argument. I also noted that a continuing difficulty is that many of the determinants of the digital divide are also determinants of poverty (this must be adequately accounted for in the theoretical framework and methodology sections of this dissertation). Finally, I concluded by deconstructing the digital divide, as the statistical evidence for the presence of it is difficult to dispute, however, the context in which it is often placed needs to be deconstructed. In fact, I contend that conceptualization of the digital divide, as a binary distinction between the information 'haves vs. have-nots' is too simplistic and can be misleading. Instead 'gradations of access' should be the standard for academics to follow. Overall, despite the arguments and evidence presented by pessimistic ICT scholars I emerge from this study of various literatures 'guardedly optimistic' about the potential impact of ICT on the poor—especially the Internet and mobile phones—if they are targeted correctly and their limitations are addressed.

Lastly, my intention was for Chapter 1 to provide a synopsis of the relevant literature, exposed the primary puzzle that this dissertation addresses, and discussed the approaches that have been taken to tackle the puzzle across the relevant literature. To reiterate, the primary puzzle this dissertation addresses in one sentence is: Why are there contradictory, inconclusive, and even baffling findings in the literature of the impact of ICTs on poverty over the last 25 years? Chapter 2 introduces my theoretical framework for addressing the puzzle, and will further unpack more literature not mentioned in Chapter 1.

## Chapter 2: Theoretical Development

### 2.1 Theoretical Framework, Hypotheses and Argument.

How does this dissertation contribute to solving the theoretical and empirical puzzles explored in Chapter 1? The literature already investigated suggests that the impact of ICT is a dynamic double-edged sword: it can enhance the economic and political opportunities for the poor, yet it can also hinder them. The theoretical arguments for economic concentration and for 'death of distance' are both valid, yet the evidence for each remains inconclusive. To tackle this puzzle and all its complexities, I adhere to three approaches that differentiate my work from other scholars. First, I will disaggregate ICT, because distinct types of ICTs have differing effects on the poor. Secondly, I take the role of context<sup>31</sup> into account, and argue that scholars employing the term 'digital divide' *need* to consider the complexities of usage of ICT rather than as a simple binary conceptualization of 'access or no access.' If socio-economic factors and language/literacy are not adequately taken into account then attempts to increase access, speed up diffusion, and ensure productive usage of ICT are bound to fail. Thirdly, I will focus on the role of government in the analysis of ICT and poverty. I argue ICTs have little impact on poverty if they cannot improve governmental effectiveness or open up more economic opportunities for the poor. Thus, governance plays a central, interactive role in the ICT and poverty relationship despite its having been overlooked as an important intermediary factor in the literature. Ultimately, this chapter makes a theoretical claim that governance is the missing link in the ICT and development literature; furthermore the lack of inclusion of governance in many ICT studies may be the primary reason for the many disparate conclusions in the literature. The following section expands on governance's role as a vital actor influencing the ICT and poverty relationship.

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<sup>31</sup> Literacy rates are an example of how social context matters. If a polity has many illiterate people then mobile phones rather than computers can be more effective in distributing information. Also a surprising finding is that education alone does not seem to be correlated with ICT penetration rates. Chinn & Fairlie (2006) find that "education level is not associated with computer penetration. The lack of strength in this relationship is likely to be partly due to the removal of the largest source of variation in education levels (i.e. the difference between developing and developed countries (p. 14))."

Skeptics of my argument may question whether those who are poor, starving, and/or constantly worrying about the provenance of their next meal, actually care about acquiring access to ICT. Can it really impact the day-to-day lives of poor rural farmers who have to provide for their children? Does it actually matter to those living in urban slums without access to clean water? For ICT to effectively alleviate poverty, it is vital that the important local, social, economic and political contexts be taken into consideration. It is true that health-related issues such as starvation should certainly be dealt with before resources are devoted to provision of the Internet. However, if administered correctly, with specific targeting of the poor, I argue that ICT can be an effective tool in providing the poor – especially the educated working poor – enhanced opportunities to move out of poverty than they had prior to the advent of ICTs. Moreover, I will argue that innovations in ICT (e.g. digitization, mobile phones, convergence of the Internet pipeline with TV) need to be conceptualized as distinct from previous more top down communication advances. For example, the Internet is much more dynamic in its ability to allow *agency* than previous technologies. In social science, *agency* refers to the capability of individuals to act individually and make their own free choices (often in an institutional structure). It stands in opposition to structure in the agency/structure debate where class, race, gender, religion, culture, etc. are structures that can limit individual choice. I will argue that due to its high levels of agency the Internet is inherently different than other ICTs as well as previous ‘information delivery services.’ For instance, I contend that there is no utility to comparing the Internet to a book, or an information delivery service, or even to a “horse” as Vinton Cerf—a founding father of the Internet—did rather famously (at least among ICT scholars) in *The New York Times* (2012). Finally, understanding how variation in the nature of governance affects the ability of poor people to access and use ICT is vital because citizens in developing countries are increasingly using these new technologies regardless of governmental policy.

Before explaining my theoretical framework, it is important to acknowledge the deeply interdisciplinary nature of ICT research. In tackling this interdisciplinary puzzle, it is my goal to



bring together multiple literatures that tend to look past each other. In fact, this dissertation attempts to bring the following literatures closer together: ICT and development, information communication technology, developmental economics, and political science. Thinking across disciplines will aide in bridging the historical disconnect in standard economic development theory where many models tend to ignore governance as an influential variable for long-term economic growth, development, and stemming inequality (North, 1981; Easterly, 2006). For example, in trying to explain global inequality, Acemoglu & Robinson state in their 2012 bestseller *Why Nations Fail*:

Traditionally economics has ignored politics, but understanding politics is crucial for explaining world inequality. As the economist Abba Lerner noted in the 1970s, ‘Economics has gained the title Queen of the Social Science by choosing solved political problems as its domain.’ We [Acemoglu and Robinson] will argue that achieving prosperity depends on solving some basic political problems. It is precisely because economic has assumed that political problems are solved that it has not been able to come up with a convincing explanation for world inequality. (2012, p. 68-69)

Clearly for Acemoglu & Robinson, looking at both the economic and the political is important for explaining inequality; this is also true for solving my primary puzzle. An interdisciplinary approach exposes the information communications technology literature to the importance of governance in influencing effective ICT access strategies. This is a two-way exchange as ICTs are increasingly being recognized as dynamic engines of change in their impact on creating demand for good governance. Thus, political scientists will be especially interested in the unveiling of my primary puzzle because it appears that governance plays a vitally important role.

My theoretical framework, illustrated below, employs governance as a vital interactive variable. However, a few definitions and policy prescriptions need to be clarified in advance. First, while political institutions are important to ICT and poverty, especially in determining penetration of the Internet and TV<sup>32</sup>, even more so is governance. In this dissertation, I will

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<sup>32</sup> It is worth briefly noting that there is a symbiotic relationship between political institutions and ICT penetration. I argue later on in this Chapter that ICT can improve the functioning of government, particularly from evidence in the e-governance literature, yet political institutions also play a role in ICT penetration. For instance, Corrales & Westhoff (2006) posit that political institutions matter in understanding ICT penetration rates. They provide quantitative (regression analysis) and qualitative (case studies) analysis explaining why authoritarian regimes are suppressing

follow the lead of the World Bank for defining 'good governance' in terms of its fostering *mechanisms*, including but not limited to: civil rights; transparency; rule of law; and efficient distribution of public services (World Bank, 2010a). Although wide ranging, the World Bank Governance Indicators attempt to capture the *mechanisms* needed to promote good governance through the following conceptualizations:<sup>33</sup> (1) Voice and Accountability;<sup>34</sup> (2) Political Stability and Absence of Violence;<sup>35</sup> (3) Government Effectiveness;<sup>36</sup> (4) Regulatory Quality;<sup>37</sup>

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Internet in both penetration rates and content allowed. They find that authoritarian regimes with higher incomes tend to not suppress the Internet as much because their richer citizens can afford it and in fact demand it. They argue that this is because allowing more access to the Internet lets authoritarian regimes placate their richer citizens, which bolsters the ability of the rich to engage in the enhanced economic activity that the Internet allows. Corrales & Westhoff (2006) find that the more authoritarian the regime, the stronger the impact of income on Internet expansion. Allowing more access may be beneficial for economic development, but contrary to modernization theories, it may not necessarily bolster the forces of democratization in these regimes. Interestingly they find that authoritarian regimes at all income levels allow television access because it is a more hierarchical easily controlled technology. The example of President Hosni Mubarak of Egypt's failure in 2011 to completely shut down the Internet in a desperate attempt to control the protests for reform displays how the Internet cannot be controlled as easily as television, which is more hierarchical, and has less entry points for the populace to use to mobilize in the case of Egypt. Citizens still managed to get online through various innovative uses of old and new ICT technologies.

<sup>33</sup>The World Bank Governance indicators are the primary measures of governance I will be utilizing in this dissertation. I argue that ICT influences many of them, especially I, III, V, VI.

<sup>34</sup>The first WGI (I), Voice and Accountability (VA), is defined as "capturing perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media" (World Bank 2010a). It is clear that enhancing the ability to share information improves the ability and/or opportunity to participate (especially across large geographic distances).

<sup>35</sup>The second WGI (II) Political Stability and Absence of Violence/Terrorism (PV) have a more complex relationship with ICT than the other WGIs. It is defined as—"capturing perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism" (World Bank 2010a). Because of the complexity and long time horizon in applying this concept as a DV, this WGI indicator is probably the least impacted by ICT. The impact of ICT is a double-edged sword because it is likely to increase the ability of the government to be able to coordinate activities to stop overthrows or rebellions, but those fighting against the government can also employ ICT to communicate and recruit supporters. This can be seen in many cases, ranging in diversity from Al Qaeda using one email account to communicate with sleeper-cells around the world, to many examples of protestors of the government in Turkey, Iran, Syria, Bahrain, Egypt, Libya, Tunisia using Facebook and Twitter to organize and rally supporters (see Arquilla and Ronfeldt (2001) on "networks").

<sup>36</sup>The third WGI (III) is Government Effectiveness (GE), defined as—"capturing perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies" (World Bank 2010).

<sup>37</sup>The fourth (IV), Regulatory Quality (RQ) is defined as—"capturing perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development" (World Bank, 2010a). The efficiency argument may go the furthest with this WGI because it is likely that governments will be able to harness the power of ICT related advancements to create and implement more effective policies. It would seem that ICTs help make regulation itself more effective and efficient. ICT also facilitates private sector development because it is now essential for the recruitment of FDI, especially to countries employing ICT technology in their business model (e.g. India tech/service industry).

(5) Rule of Law,<sup>38</sup> and (6) Control of Corruption<sup>39</sup> (World Bank, 2011).<sup>40</sup> The concepts embedded in these indicators are integral to my theoretical framework.

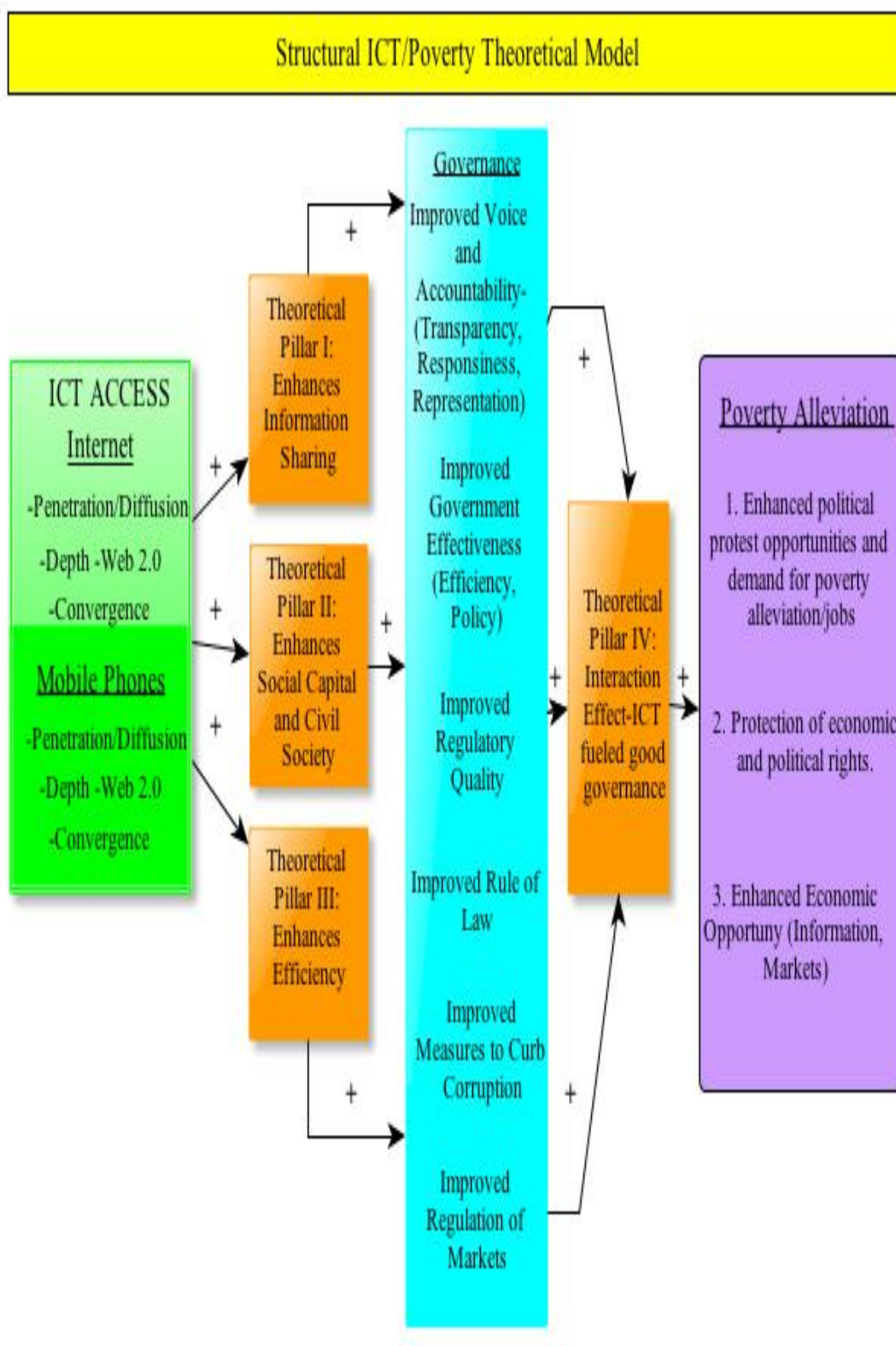
Employing the World Bank's definition of good governance, my theoretical framework rests on four pillars, including my proposed interaction effect between governance/ICT and poverty that explains how ICT impacts poverty. I denote these points as pillars because they are the backbone of my structural theoretical model, and the empirical sections of this dissertation will test my pillars in hypothesis form. The aim of my theoretical framework is to be as parsimonious as possible, and also allow testing of my hypotheses for 'falsification' of my theory—keeping insights on the importance of falsification to theory testing by Popper (1972) always in mind. As far as measurement is concerned, when analyzed at the national level, governance is measured by the World Bank Governance Indicators (WGIs). To stay consistent at lower levels of analysis of governance (Mexican regions, states, cities, and villages), I adhere to the definitions provided by the WGIs to operationalize my variables, which will be explained in the introduction of each variable in the empirical chapters (although I will also test other measures of governance besides those of the World Bank in the quantitative analysis in Chapter 3). What follows is my structural model in diagram form and a thorough discussion of all its moving parts:

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<sup>38</sup> The fifth WGI (V) is Rule of Law (RL), defined as—"capturing perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence" (World Bank, 2010a).

<sup>39</sup> The sixth WGI (VI), Control of Corruption (CC), defined as—"capturing perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests" (World Bank, 2010a). Corruption is notoriously difficult to measure; yet making information more widely available has been consistently shown to help reduce corruption (Shleifer & Vishny, 1993; Sturges, 2004).

<sup>40</sup> For more detail on the World Bank's methodology see (World Bank 2010a). Also for extra info see the World Bank Website for a detailed explanation of the methodology for how the indicators are calculated.  
<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/MENAEXT/EXTMNAREGTOPGOVERNANCE/0,,contentMDK:20513159~pagePK:34004173~piPK:34003707~theSitePK:497024,00.html>



Pillar I: *ICT Affects Governance by Allowing Enhanced Opportunities for Information Sharing.*

Pillar I is based on the premise that better-informed citizens (i.e. citizens who are aware and knowledgeable about administrative processes and their results) are more able to closely monitor their governments' performance and to hold the government accountable (Bertot *et al.*, 2010; Mulgan, 2007; Norris, 2001). Historically, there has been tension between citizens' demands for more access to information on government policy and a government's willingness to provide it.

Quinn (2003) provides an illustrative case of this tension in the case of the U.S.:

A basic tenant of citizenship is ready access to information about the issues at hand, not just for the moment, but as a permanent record available for citizens and scholars to reflect upon indefinitely, which then become evidence for the future to connect with the past. In other words, there needs to be community memory in addition to the public record of our government to record true democracy in action. The *Patriot Act*, coupled with the *E-Government Act of 2002*, underscores one of the longest battles in the history of the U.S. government—the control of information. (p. 282)

The recent debate surrounding the 2013 revelations about the National Security Agency's spying on U.S. citizens' Internet activity is another high profile example of this tension as the NSA has stonewalled at every possible opportunity in providing the public with information on their specific surveillance policies.

Besides the tension between public access to information and security/monitoring, government transparency has the potential to be enhanced by the Internet. What factors influence government transparency is difficult to determine using quantitative analysis, yet a few general conclusions can be made. De La Porte *et al.*, (2002), using an umbrella term for transparency, labeled 'openness,' find through statistical analysis that national income is the only variable influencing government 'openness' that is statistically significant. ICTs offer the technological capability to efficiently share information, thus reducing the information gap between citizens and governments, helping to promote transparency, and also lessening corruption (Bertot *et al.*, 2010; Norris, 2001). ICTs are therefore important channels for enhancing both government transparency (Cullier & Piotrowski, 2009) and accountability (Bertot *et al.*, 2010). ICTs achieve this through increasing speed of communication, higher penetration rates, and deepening of technology (Web

2.0—similar to a printing press for all, and extensive easy video sharing around the world).

Furthermore, enhanced information sharing through ICT impacts governance by helping political organizing—especially in political mobilization—and it even has the potential for enhancement of the 'quality of democracy.'<sup>41</sup>

A primary avenue that ICT allows enhanced information sharing to impact governance is through lessening corruption. Corruption and transparency are often interrelated terms, but differ conceptually and empirically. Transparency is usually associated with the degree that governments are open in their policies, allowing documents to be public, and greater insight into their inner workings with more behind the scenes access to policy making. Corruption ranges from low level bribes, such as to get paperwork through a governmental office or to get out of a police citation, to high level 'graft' occurring in presidential palaces, offices of public officials, and behind the closed doors of the legislature. In the developing world context, corruption is more broadly defined by Nathaniel Leff (1964) in an early article on corruption as “an extra-legal institution used by individuals or groups to gain influence over the actions of the bureaucracy. As such, the existence of corruption *per se* indicates only that these groups participate in the decision-making process to a greater extent than would otherwise by the case” (p. 8). Corruption is now widely recognized as a strong barrier to ending extreme poverty (Gupta *et al.*, 2002; Easterly, 2006). Corrupt practices diminish the impact of social programs on income distribution and poverty, reduce the resources available for social spending crucial to the formation of human capital, and negatively affect the quality of education and health services (Gupta *et al.*, 2002). Although notoriously difficult to model from a quantitative perspective, making information more widely

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<sup>41</sup> The 'quality of democracy' is certainly different than governance. There is a long, rather messy, literature exploring this concept that space hinders a long discussion of. However, I should note that new ICT have the ability to create better environments for political participation of various forms. Norris (2001) argues that: “Digital networks have the potential to broaden and enhance access to information and communication for remote rural areas and poorer neighborhoods, to strengthen the process of democratization under transitional regimes”(6). On the other hand, “Cyber skeptics argue that the impact of the Internet has not had a dramatic impact on the practical reality of ‘politics as usual’ for good or ill, even in countries at the forefront of the digital technologies” (Norris, 2001, p. 13). Although the argument of the cyber skeptics has some merit, I agree Norris who sides with those asserting that ICT has led to more “improved political engagement” (2001) and participation rather than less.

available has consistently been shown to help reduce corruption (Shleifer and Vishny, 1993; Sturges, 2004). Clearly, ICTs offer the technological capability to share information easier, thus reducing the information gap between citizens and their governments, thereby helping to reduce corruption (Bertot *et al.*, 2010; Norris, 2001). The underlying logic here is that better informed citizens, who are aware of administrative processes and their results, will be better able to monitor their governments' performance and to hold the government more accountable (Bertot *et al.*, 2010; Mulgan, 2007; Norris, 2001). In other words, 'Leviathan' needs to be monitored by its citizens, as the notion is that the more information available to citizens the more effective they will be at corralling absolute power.

An example of the dynamic, game changing power of ICTs is illustrated in the 'deepening' of technological capability and its impact on corrupt practices. The wide sharing of online video documenting explicit cases of corruption has led to reductions of corruption internationally. The diffusion of camera equipped mobile phones and the ability to disseminate recorded material quickly and widely through file sharing platforms such as YouTube, has opened new avenues for the exposure of official wrongdoing (graft) and lower level bribery. On more than one occasion, videos shared through such platforms—for instance, government officials caught taking bribes—have not only served to draw greater attention to corruption issues, but have galvanized public opinion against corrupt practices with greater efficacy than print-based media.<sup>42</sup> Another example of ICT-enabled corruption exposure is whistle blowing on international platforms such as WikiLeaks.

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<sup>42</sup> One example is a bribery scandal that considerably tainted the image of the Brazilian right-wing Democrats party (DEM) during the election campaign of 2010. In November 2010, Jose Roberto Arruda, governor of Brasilia and a top-tier prospective vice-presidential candidate for Jose Serra, fell into disgrace when he and several political allies in Brasilia's state government were caught accepting bribes on camera. A video, circulated widely on YouTube and other video sharing platforms showed Arruda accepting large amounts of money during his 2006 election campaign. Other politicians were seen stuffing wads of cash into their pockets and socks. One group was shown praying with an aide of Arruda and thanking God for the cash they had received. <http://www.youtube.com/watch?v=BBAq0t5quaw>

Since its inception, video has been a dynamic form of information exchange. For many crimes it has become a recorder of reality, increasingly used in court cases around the world. Powerful video imagery of poverty in developing countries has had the power to galvanize international giving to fund AIDS research, disaster relief, and development initiatives. Mobile phones video cameras have been increasingly used by citizens to record police abuse and low-level corruption by government officials. Recent proliferation of the online video-sharing phenomenon is particularly prevalent in India, where footage of officials taking relatively small bribes made front-page news in traditional media outlets around the country after being posted and popularized on the Internet (*Times of India*, 2009). This type of bribery is not rare in India, yet the online video exposure proved decisive in elevating the issue to the forefront of public awareness, resulting in citizens demanding that the government address these corrupt practices. The government responded with stepped-up enforcement of existing laws and the enactment of new legislation (Ibid). Examples of whistle-blowing websites abound, from the notorious WikiLeaks, to India's stalwart ipaidabribe.com, which as of January 2013 has reported over 22,000 bribes paid in India alone. In sum, Bertot *et al.*, (2010) claim, "Case studies and statistical analyses indicate that ICTs hold a great deal of potential for—and are already demonstrating benefits in—anti-corruption" (p. 265). The power of ICTs manifests itself though enhancing the effectiveness of internal and managerial control over corrupt behaviors and by promoting government accountability and transparency (Shim & Eom, 2008).

However, there have been some instances where technologies have aided in corrupt behaviors by governments and politicians, from attempts to violate the secrecy of the ballot box to the controlling of information flowing through domestic Internet providers. In both instances, it is exceedingly difficult to empirically evaluate the impact of corrupt regimes filtering content online. In fact, most developing countries, excluding China, Iran, and a few others, do not have the technical ability to restrict website access and often resort to drastic, ineffective measures. For example, in the waning days of his dictatorial rule over Egypt, Hosni Mubarak employed a so-



called ‘Internet kill switch’ in which his administration attempted to shut down Internet access across the entire country. Although in hindsight this move proved disastrous for the Mubarak regime. Another example is the 2014 attempt to curb civil disobedience by outlawing text messaging (SMS) in Central African Republic. Despite these examples of technology coopted by authoritarian leaders, I believe that *Enhancing Opportunities for Information Sharing* more often improves governance, especially in improving transparency and accountability as they serve to combat corrupt practices.

Pillar II: *ICT Affects Governance by Generating Social Capital and Civil Society.*

It is well documented that social networks, associations, and affiliations within a society, more popularly known as *social capital*, benefit in many ways from increased access to information and communication provided by ICTs (Lin, 2001; Norris, 2001; Wellman, Hasse, Witte, Hampton, 2000). Since the early 2000s, it is hard to deny the evolution of Web 2.0 and social media into powerful new platforms for online community engagement—that can turn quickly into offline action. Also, the emergence of citizen-created content has opened additional avenues for dialogue between citizens and communities in ways that facilitate creativity, interaction, and free expression of diverse opinions, thus enriching socio-political debates (Bonsón *et al.*, 2012; Chun *et al.*, 2010; Zinnbauer, 2007).

Social capital is an emergent concept in political science (coined in late 1980s and popularized in the early 1990s) that has substantial ramifications for the study of ICTs. Robert Putnam (1993, 2000) is often considered the earliest scholar of social capital, although James Coleman deserves credit for much of its early theoretical foregrounding. I adhere to a definition of social capital from Putnam (2000):

social capital refers to connections among individuals—social networks and the norms of reciprocity and trustworthiness that arise from them. In that sense social capital is closely related to what some have called ‘civic virtue.’ The difference is that ‘social capital’ calls attention to the fact that civic virtue is most powerful when embedded in the dense network of reciprocal social relations. (p. 19)<sup>43</sup>

Putnam (2000) breaks down the concept of social capital into 'bonding' and 'bridging.' Bridging social capital is social interactions between members of different social groups; bonding social capital is social interaction between members of the same group (also see Bourdieu, 1986).

Connecting social capital to ICTs, Chun *et al.*, (2010) posit that governments are facing unprecedented demands for transparency from grassroots social networks fueled by ICT advances; enhanced social capital/social networks stimulates political participation, civil engagement, and community governance. In fact, Bonsón *et al.*, (2012) state: “Web 2.0 has favored the emergence of citizen-created content that enriches socio-political debates and that increases the diversity of opinions, the free flow of information and freedom of expression” (p. 124). Furthermore, they argue “The evolution and popularity of social media has provided new techniques for online community engagement and additional avenues for consultation and interaction with citizens and communities in ways that can facilitate dialog, creativity, collaboration, and participation” (p. 126). Clearly, both bonding and bridging social capital are enhanced by ICTs, especially the Internet and mobile phones.

The power of new ICTs in reaching populations that have been traditionally excluded from participation in society is also an exciting development in the study of social capital. ICTs and social capital formation seem to go hand-in-hand in the social exclusion literature. For example, Zinnbauer (2007) argues that social capital can bridge an important gap in reaching people who have been excluded by enhancing eInclusion programs: “At the operational level, [a social capital approach to eInclusion] directs attention to the pivotal role of civil society and

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<sup>43</sup> In fact, as Shim & Eom (2009) have demonstrated, social capital serves as a major factor to reduce corruption as citizens living in a society with a high level of social capital are more likely to become actively involved in the political decision-making process, thus increasing the likelihood that public employees' corrupt behaviours will be exposed to a densely connected public.

bottom-up community initiatives in reaching out to people at risk of exclusion. Civil society and bottom-up community initiatives are indispensable partners in the design and implementation of social inclusion initiatives, including eInclusion efforts” (p. 10). Thus, ICT-fueled social capital can play an important role in reducing social exclusion. This ability to harness grassroots social capital is especially apparent when compared to traditional mass media, as the Internet (thus far) has been a much less top down mass media tool than TV or radio.<sup>44</sup> ICTs enhance bridging social capital because they can improve trust and coalesce groups regardless of race, ethnicity, distance, and physical disability at least among those with affordable access to ICTs and the ability to use them effectively. Mobile phones also open up new opportunities for connecting across distances, talking about politics (Campbell & Kwak, 2011), and connecting people with lower levels of literacy who might otherwise be unable to manipulate Internet and print mediums to their advantage. Also connecting on the Internet may be the *only* way that citizens in far-flung geographical locations can find each other and forge networks.<sup>45</sup> Advocates of this perspective have emphasized the potential of ICT to build social networks beyond the limits of space and time by providing a virtual meeting place through which people can maintain social relations they could not otherwise (Cole, 2000; Hampton & Wellman, 1999; Papacharissi, 2002; Wellman *et al.*, 1996; Wellman, 2001). However, the notion of ICTs as enablers of social inclusion is still widely disputed (see Kenny, 2006a and other pessimistic viewpoints in the literature reviewed in Chapter 1).

Studies have shown that improved social capital enhances transparency and responsiveness in governance; the development and implementation of ICT may serve to further augment government accountability to the demands of its citizenry. High levels of social capital strengthen

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<sup>44</sup> According to Corralas & Westhoff (2007), in both a large-n analysis and case studies, leaders of authoritarian regimes are more likely to encourage, and allow, higher levels of television penetration than Internet penetration, which they seem wary of allowing it to proliferate freely. Although a note of caution is a finding of Castells (2000) that Internet communications appear to expand the amount of ‘weak’ social ties that people have rather than ‘bonding’ ties.

<sup>45</sup> An example of this is the ability of rural citizens to be in touch with NGOs and interest groups in capital cities, where geographic distance makes face-to-face meetings impossible or impractical.

civil society (Putnam, 2000), and a stronger civil society applies pressure on governments to reduce corruption.<sup>46</sup> It is clear from the Arab Spring, Occupy Wall Street, protests in large Brazilian cities in 2013-14, that ICTs, especially mobile phones and the Internet (text messages, using social networking sites with the mobility of access through mobile phones), are proving to be effective mobilization tools for groups demanding large scale reform, often taking on authoritarian, repressive regimes. This is not actually 'new' as these tools were important in mobilization of protests in the cases of Moldova in 2009, Iran's student protests in 2009, and Ukraine's 'Orange Revolution' in the winter of 2004. The use of ICTs in mobilizing massive protest movements only appears as 'new' to the mainstream media, and also to rigorous academic analysis, as both have been surprisingly slow to analyze the mobilization capabilities of ICTs in the late 1990s and early 2000s. Noticeably absent was analysis of the transformative nature of mobile phones for mobilization in developing countries.

Expanding from social capital to the broader frame of civil society development, there are studies addressing the strong connections between social movement mobilization and ICTs. Social movements often, but not always, put economic class first and foremost in their calls for justice (see Piven & Cloward, 1977). Therefore, exploring the relevance of ICTs to political mobilization of social movements is also important for mobilization of the poor. Here I follow Diani's (1992) definition in which social movements are "networks of informal interaction between a plurality of individuals, groups and/or organizations, engaged in a political or cultural conflict on the basis of a shared collective identity" (Diani, 1992, p. 13). For Van Laer & Van Aelst (2010) social movements have a "repertoire of collective action" (p. 1174); originally conceptualized by Tilly (1984).<sup>47</sup> The impact of the Internet and mobile phones on social movement mobilization has been strong. For Van Laer & Van Aelst (2010):

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<sup>46</sup>For elucidation of this process see Adsera, Boix, and Payne, 2003; or Sturges, 2004.

<sup>47</sup>Also see McAdam *et al.*, (2001); Taylor & Van Dyke (2004).

Two main suggestions can be identified in the literature: on the one hand, internet facilitates and supports (traditional) offline collective action in terms of organization, mobilization and transnationalization and, on the other hand, creates new modes of collective action. The internet has indeed not only supported traditional offline social movement actions such as the classical street demonstrations and made them more transnational, but is also used to set up new forms of online protest activities and to create online modes of existing offline protest actions. By doing so, the internet has expanded and complemented today's social movement 'repertoire of collective action' (Tilly, 1984; McAdam *et al.*, 2001). Virtual activities may range from online petitions and email bombings, virtual sit-ins to hacking the websites of large companies, organizations or governments. (p. 1147)

Furthermore, according to Campbell & Kwak (2011) the Internet now plays a vital role in political discourse moving from online to offline political participation:

[W]ith the uptake of new media, scholars have begun to examine the links between political discourse online and its relationship to participation offline. This research reveals trends consistent with offline political talk, with positive direct relationships between discussion online and engagement offline (Wyatt *et al.*, 2000; Price & Capella 2002; Johnson & Kaye 2003; Shah *et al.*, 2005; Hardy & Scheufele, 2005, 2006), and findings that discussion online complements and is complemented by other sources of news and information (Hardy & Scheufele, 2005; Shah *et al.*, 2005). (p. 1008)

The evidence is clear that the online political participation leads to more participation offline, particularly as the modern distinctions between online and offline communication has become increasingly blurred.<sup>48</sup>

Although the global protests against the Iraq War in 2003 are quite different from indigenous (Van Cott, 2000, 2005, 2010) or poor peoples' social movements (Piven & Cloward, 1977), it is worth mentioning how the anti-war protests used a wide, inclusive political frame and employed the Internet effectively. In fact, the diverse protests against the Iraq War occurred in

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<sup>48</sup> Also, Van Laer & Van Aelst (2010) provide strong evidence of the extensive use of the Internet by social movements, which they have translated into offline action noting: "Social movement organizations wanting to mobilize for a mass street demonstration make extensive use of the internet to enhance coordination and mobilization efforts (Van Laer 2010). This concerns mainly the distribution of information, both about the reasons and goals of the action, as more strategic information concerning the action itself. Via the internet, organizations provide detailed information on time, place and perhaps even a practical field guide for activists to 'inform people on how to organize, on their rights and how to protect themselves from harm' as was the case during the FTAA protests in Quebec city, 2001. This lengthy document took activists by the hand and guided them through all the obstacles to effective participation (Van Aelst & Walgrave 2004). During the Seattle WTO protests, a main rallying point was the StopWTOround distribution list, which enabled subscribers to receive detailed information on different aspects of the WTO (George 2000). A recent study among diverse types of demonstrations (like trade unions, anti-war, immigrant rights, but also right-wing mobilizations) showed how activists use the internet to cross movement and protest issue boundaries thereby significantly increasing their mobilization potential (Walgrave *et al.*, 2008). The processes of 'brokerage' and 'diffusion' these authors describe are important mechanisms that in cyberspace do not stop at national boundaries either, making every mobilization call in theory inherently transnational" (p. 1152-53).

over 60 countries with many millions of protestors taking to the streets.<sup>49</sup> Similar to many indigenous movements, the Iraq War protests ultimately failed in achieving their goal, however by employing inclusive political frames—anti-war in this example (with every related movement invited)—the protests were able to greatly expand their reach to hundreds of national anti-war movements. The Internet clearly played an important role in spreading and fueling these protests; recent examples abound of ICTs stoking the fire of protest from Occupy Wall Street to the Arab Spring.

Despite the rather obvious positives that ICTs bring to social interactions, social movements, and political participation/mobilization, there are also purported negative effects. According to Lee and Lee (2010) early research reported extensively on the negative effects of ICTs for social capital formation, especially the Internet and TV:

...argued that media use decreases sociability and face-to-face communication and loosens social networks (Kraut *et al.*, 1998; Nie & Erbring, 2000; Putnam, 2000; Nie, 2001). People brought their work home, did the work through the internet and spent more time on it than on other social activities (Nie 2001). As a result, the advent of the internet caused people to stay indoors, resulting in reduced social interaction with other people. (p. 714)

These early studies were more speculative than empirical, often concluding that ICTs was the culprit for the reported decline in social capital in the U.S. since the 1970s. Another claim of ICTs and social capital skeptics is that as a medium of information exchange, ICTs also create the ‘splintering’ of social groups, knowledge structures, and (ultimately) political groups. This is not necessarily a positive development for the poor, who are already fractured into disparate groups, with often-inconsequential political power and/or clout. ICTs may actually make it more difficult

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<sup>49</sup> Van Laer & Van Aelst (2010) note: “Several authors have shown that this protest event would not likely have been as massive and diverse without the coordinating and mobilizing capacity of the internet (Vasi, 2006; Bennett et al., 2008; Gillan et al., 2008; Verhulst, 2010). Van Laer (2009) contends that the internet was especially conducive in terms of ‘mesomobilization’, which is the efforts of groups and organizations to coordinate and integrate other groups, organizations and networks for protest activities (Gerhards & Rucht 1992: 558). In a historical comparison of three eras of peace and anti-war mobilization, his research showed how several face-to-face international meetings each time served as the principal basis for coordination and collaboration, but that on the advent of the second war in Iraq in 2003, the internet was fundamental in ‘spreading the fire’, bringing the call for a global day of action on an unprecedented worldwide scale, among hundreds of other national anti-war networks and social movement organizations, with a speed and efficiency that was not possible before” (Van Laer, 2009) (p. 1154).

for the poor to access, create, and support dominant ‘class’ based demands on the government and ruling classes. Furthermore, a lack of ICT can lead to greater exclusion of groups (see Chigona *et al.*, 2009; Sturges, 2004; for detailed studies on exclusion, social capital and ICT).<sup>50</sup>

Contrary to claims of the ICTs social capital skeptics, other scholars see a much different picture from the evidence. Lee and Lee (2010) report that optimistic scholars:

argue that internet use improves relations between individuals with advanced technology and strengthens social networks (Wellman *et al.*, 1996; Hampton and Wellman 1999; Cole 2000; Wellman 2001; Papacharissi 2002). They claim that society can benefit from the information distributed online and that the information makes society more effective and connected. (Lee & Lee, 2010, p. 714-15)

Wellman, Papacharissi, and other optimistic scholars posit that one of the greatest merits of the Internet is that it goes beyond limits of time and space, providing a virtual meeting place through which people can maintain social relations with others that they could not otherwise (see Papacharissi, 2002). Furthermore, the Internet allows for social interactions beyond the limits of geography, which can improve social capital between people in different countries. For instance, the “Internet allows people to encounter mass audiences by extending the boundary of social networks in real life to virtual places, and therefore fosters global interaction with people who have common interests (Wellman, 2001)” (Lee & Lee 2010, p. 714-15). Another proposition that is commonly put forth by the more optimistic scholars, as illustrated in de La Porta *et al.*’s assertion that: “Better contact and information in turn will promote better accountability of public officials to citizens and produce fertile ground for reinvigorated civil society” (de La Porta *et al.*, 2002, p. 412). Overall, I concur with optimistic scholars who view ICTs as having a positive influence on social capital formation, while also making careful note of limitations. A strong argument is made by Lee & Lee (2010) who posit from data on U.S. college students:

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<sup>50</sup> There is also an argument that posits ICT leads to increasing inequality as discussed above (the empirical results for this claim is mixed). Although poverty is the focus in this dissertation, increased inequality is not a positive development for the poor, or even societal health in general, as seen in Pickett & Wilkinson’s (2009) *The Spirit Level: Why Greater Equality Makes Societies Stronger*.

...online community use neither decreases nor increases social capital. Rather, depending on the nature of the internet use, the online community may supplement the traditional community's accrual of social capital. This conclusion also implies that despite the evolution in people's relationships with the help of ICT, the online community by itself does not ratify the role of the traditional or local community, and face-to-face communication between community members is still required in order to fully benefit from communities (p. 721).

Therefore, due to strong evidence in newer studies, such as rigorous analysis by de La Porta *et al.*, (2002); Lee & Lee (2010); Papacharissi (2002); Wellman (2001); I conclude that ICT fosters social capital.

Finally, ICTs can improve governance through their ability to enhance social capital through linkages to international actors. Although only indirectly impacting the poor, ICT does help to provide a potentially powerful 'bridge' of communication and idea sharing between the developed and developing worlds. As a 'bridge,' ICT fosters new forms of development techniques implemented by NGOs, and allows for average citizens in developed countries to lend money, support, and political capital to citizens in the developing world.<sup>51</sup> Increasing *links to international actors* has been shown to effect governance in multiple ways, including improving the opportunities (and incentives) to attract FDI, foreign aid, and debt financing (Friedman, 2006). Secondly, international actors can put demands on the government for reform; one example is the public 'naming and shaming' of regimes repressive of human rights by international human rights NGOs (Keck & Sikkink 1998). Keck & Sikkink (1998) argue that in the networked world there is a 'boomerang effect' wherein activists on the ground in developing countries can turn to transnational advocacy networks – usually located in developed countries, where most of the influential NGOs are headquartered – to put pressure on developing countries governments for reform. Claiming that both technological capabilities and cultural change have contributed to the emergence of transnational advocacy networks, Keck & Sikkink argue that faster, cheaper, and

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<sup>51</sup> An example of political capital is citizens donating resources to international NGOs that engage in the politics of the developing country (e.g. Human Rights Watch, Amnesty International). An example in development (e.g. economic empowerment leading to political empowerment) is the Kiva model of development which links 'average' donors (donating \$50 or less) to 'average' recipients (e.g. donors have the choice of who receives their loan online) (Kiva 2009). See Barry (2012) for a detailed analysis of changes the microfinance industry is experiencing due to the Internet.



more reliable international ICTs and transportation technologies have helped to break government monopolies over information (Ibid 1998). I would be remiss in not noting the long causal chain for links to international actors to effectively pressure governments to create policies that help the poor. In concluding this section on Pillar II, the case was made that ICTs generate social capital, including both 'bonding' and 'bridging', and ICTs create strong linkages to international actors. Clearly, the power of new ICTs in reaching poor parts of the population that have been traditionally excluded from participation in society is also an intriguing development.

*Pillar III: ICT Affects Governance by Improving Efficiency.*

My third Pillar posits ICTs can improve government efficiency through a few different mechanisms: reducing administrative costs, reducing human error, increasing transparency, speeding up data processing, and allowing for better record keeping. By reducing bureaucratic red tape and related costs of administrative processes, ICTs, especially the Internet, enable more cost-efficient delivery of public services (de La Porte *et al.*, 2002). Particularly effective have been E-government programs demonstrating positive impacts on the efficiency of government operations (Dutta & Mia, 2011). It is widely believed that ICTs, namely the Internet, enable more cost-efficient delivery of public services (de La Porte *et al.*, 2002; Dutta & Mia, 2011; Hanson, 2008). The public sector, as an information-intensive sector, benefits from the digitization of information and processes. Internet-based applications generate savings on data collection and transmission, thus reducing the effort and expense to locate archived information, enabling case-oriented workflow and better facilitating communication with customers. In terms of ICT supply, government as a provider of electronic services can influence outcomes in all areas; examples of effective strategies for implementation include the adoption of electronic processes and the provision of information via the Web or mobile phones (Dutta & Mia, 2011; Hanson, 2008). Simply having a computer to store information rather than relying on more costly paper files has improved record keeping in previous development experiments in India and Nigeria (Smith, 2009).

ICT, through new software advances including spreadsheets, word processing, data analysis, and enhanced communication across great distances has improved efficiency. This is especially the case in developing countries where the marginal gains are often greater. Also, ICT impacts the fifth WGI (V) Rule of Law by helping to improve the efficiency and functioning of court systems. There are reports of the Indian government using computerized systems to replace the old paper system of property rights in rural areas, radically enhancing efficiency in their courts (Deininger, 2008). Another example is the use of computers in record keeping in medical clinics, thereby enhancing efficiency in maintaining health records and improving performance in health treatment in many developing countries (Smith, 2007).

Digital replication is another example of efficiency gains. Mosco (2005) makes the argument that this duplication technology has led to the world entering a new digital frontier in information sharing, in what he terms a “digital sublime.” ICTs aid governmental effectiveness and allow resources to be put to more efficient use, especially in developing countries where there is much more efficiency gains due to the presence of ICT. Extending analysis beyond the realms of digital replication and recall, Alierata (2011) identifies ICTs’ reduction of human error in bureaucratic settings: “With regard to efficiency, technology promotes improved dissemination and processing of information at all levels of an organization and, moreover, significantly reduces the risk of making a mistake” (Alierata, 2011, p. 62). Thus, ICT seems to support governmental efficacy and allows resources to be put to more efficient use. This is especially true in developing countries where ICTs can result in significant efficiency gains (although maintaining local capacity can be a problem—see Singh, 1999).

In addition to the many examples of e-governance, Internet, and PCs providing efficiency gains to governments and societies (see Castells, 2000; Dutta & Mia, 2011; Hanson, 2008; Norris, 2001), mobile phones also play an increasingly important role (Menon, 2011). The growth of the mobile phone market, surpassing Internet penetration rates, is mainly due to lower cost, utility, and less infrastructure requirements (e.g. communication over the airways rather than over landlines

made of steel, fiber optics, plastics, wood, etc.). “The lack of electricity,” notes Fredriksson (2011):

...is a significant barrier to ICT take-up for the poor in developing countries, particularly in rural areas. This is less of a problem for technologies that use batteries (such as radio) or mobile handsets that can be recharged using car batteries. However, it poses a challenge for computers. A lack of electrical power also raises costs since infrastructure such as wireless base stations must be powered by more expensive diesel generators. (p. 74)

Furthermore, suggests Fredriksson, governments have a role to play in increasing the potential for efficiency gains from mobile phones:

Government services should make better use of mobile phones in supporting enterprise growth. In Bangladesh, a helpline set up to offer information and advisory services to small farmers with mobile phones now receives 100,000 calls every month. In Africa, there are few examples of such services to date, but the rapid growth of mobile access suggests that it would be sensible for governments to take a fresh look both at how business support services of this kind can be delivered and at specific requirements for assistance. (2011, p. 74-75)

Other examples from Bhutan illustrates how powerful mobile phones already have been in producing efficient exchange of information:

Micro-enterprises in low-income countries are rapidly adopting mobile phones as key tools for advancing their commercial activities. Take mountainous Bhutan as an example. In this country, one of the world’s poorest, mobile phone use has transformed the everyday lives of dairy farmers. The phones help them obtain information about market prices and stay in direct contact with customers. The result is increased income and less waste, as farmers can sell their output for higher prices and ship only sufficient milk to meet demand. Mobile phones have also led to reduced travel and waiting times, enabling the farmers to organize their work more efficiently. The government of Bhutan recognizes the business potential of the phones and has launched a mobile-based information service for the farmers. (Fredriksson 2011, p. 72)

The last line of this passage is critical, inasmuch as the government of Bhutan has been able to provide information to farmers more effectively and efficiently due to the mobile phones; Bhutan is far from an isolated example of successful governmental investment in mobile phone infrastructure.<sup>52</sup>

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<sup>52</sup> Fredriksson (2011) states: “There are an increasing number of similar observations, ranging from grain traders in Niger, who have benefited from lower transaction and information search costs as a result of mobile phone use, to women-led farming cooperatives in Lesotho. In Ghana and India, mobile phones have become critical equipment for fishermen and fishmongers, helping to make markets more efficient and improving the livelihoods of the fishermen. Similarly, for women’s weaving micro-enterprises in Nigeria, mobile phone use reduced transaction costs and saved time and money for the weavers by eliminating travel that previously had been needed to locate buyers and negotiate prices” (p. 72).

Furthermore, the use of mobile phones as a medium of monetary exchange among the poor has been powerful in enhancing efficiency, opportunity, and the reduction of poverty. Perhaps the most famous example is the M-PESA program in Kenya, which allows mobile phones to be used in a variety of monetary functions by the poor, including money exchange, a method of payment (to businesses and individuals), remittances to family members from urban to rural areas, and as a method of micro-insurance. Menon (2011) notes:

M-PESA and platforms like it attack the root cause of economic hardship across much of the developing world. It is not a shortage of funds that limits emerging populations from buying goods, paying bills, and receiving government or employer payments. Rather, it is the inability to move money promptly and reliably from sender to receiver, especially when receivers inhabit remote areas, as many do. In markets where infrastructures are poorly developed—where moving cash by couriers is risky, expensive, and inefficient—the problem is more the 'velocity' of money than its supply. (p. 111)

The popularity of M-PESA is staggering: “in a nation of 38 million people, only 4 million of whom have a bank account, over 13 million Kenyans now belong to M-PESA, and their collective cash transfers equal 11 percent of the nation’s GDP” (Menon 2011, p. 112). Furthermore M-PESA clearly is providing gains in efficiency for the poor, and especially for women: “While only 38 percent of users were female in 2008...report Jack and Suri (2010)...that number grew to 44 percent by 2009” (Ibid, p. 112). Yet, does M-PESA, an obviously popular program, actually improve the lives of the poor? Fredrickson (2011) claims that it does, citing his own work and other scholar’s empirical studies, stating:

But what of the ultimate litmus test: is there evidence that M-PESA is actually boosting the financial health of Kenyan households? The answer is 'Yes,' says [Jack and Suri's 2010] study. It appears that households with access to M-PESA are better able to protect themselves against the downside risks associated with job loss, harvest or business failure and poor health. (p. 112)

Clearly, this is an important finding for the case for ICTs improving the lives of the poor in very tangible ways. The positive impact of extending accessibility to credit – as seen in the M-PESA example – also relates to Oksan Bayulgen’s (2012) findings regarding extending credit to the poor,

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and her ultimate argument that credit for the poor should be considered a human right. If this claim materializes, ICTs could play a vital leapfrogging role.

As previously noted, the M-PESA case is not an isolated single country success story, for instance in Haiti a collaborative effort by Scotiabank and Digcel has recently spawned TchoTcho Mobile, a mobile-money program launched in 2010 to an initial market of 20,000 users (TeleGeography, 2010). Another is WING Cambodia, which is hoping to literally cash in on the fact that over half of the country's 15 million people do not have a bank account (Menon, 2011, p. 113). Even in the mountainous country of Afghanistan, “within one year from its launch, M-Paisa—a mobile-based system providing micro-finance to small enterprises—had acquired 120,000 registered subscribers and 2,500 micro-finance clients. Benefits of mobile-money transfers are particularly relevant in this country because moving cash through the country is risky, expensive, and time consuming” (Fredriksson, 2011, p. 72). Clearly, mobile phones are providing important gains in efficiency and opening new doors to the poor, both in economic opportunities and political empowerment.

In summery, Pillar III argues that ICTs can improve government efficiency through reducing administrative cost, reducing human error, increasing transparency, speeding up data processing, and allowing for better record keeping. These improvements in governance complements the claim in Pillars I that *enhancing opportunities for information sharing* improves good governance, by improving transparency and accountability. It also complements Pillar II claim of ICTs generating social capital, including both 'bonding' and 'bridging' types, and creating strong linkages to international actors. All of these Pillars are based on the premise that better-informed citizens are more able to closely monitor their governments' performance and to hold the government accountable. Furthermore, Pillar II speaks to the ability of ICT enhanced social capital, and civil society to play a vital role as well in holding governments accountable. Hence, through these primary three pillars, ICTs impact governance in a multitude of ways. Pillar IV takes the analysis a step further by investigating an interaction effect between better governance

mediated by ICT and poverty alleviation.

*Pillar IV: Interaction Effect Between ICT and Governance.*

My proposed interaction effect in Pillar IV produces beneficial outcomes for the poor and works through two primary mechanisms: (a) Increases in ICT penetration lead to strengthening of good governance; (b) Governmental policies devoted to provisioning of ICT leads to enhancements of ICT effectiveness in impacting the lives of the poor (especially if these policies are targeted to increase effective ICT *access* for the poor). Thus, these two mechanisms create an interaction effect that produces better outcomes for poverty. The following explores the logic behind interaction effects and elucidates the claims I make in my development of Pillar IV.

An 'interaction effect' is present when two independent variables interact if the effect of one of the variables differs depending on the level of the other variable (Lane, 2006). My interaction effect purports that the impact of ICT on economic outcomes for the poor is dependent on governance and effective policies of ICT implementation targeted towards the poor. In other words, governance and ICT penetration can both complement each other, generating more effective policies focused on the poor. This interaction strengthens their ability to relieve poverty as opposed to no interaction, where the unfettered market dictates who gets access based solely on ability to pay, with the occlusion of the poor due to a deeper digital divide. The interaction effect works both ways, yet my evidence in the following chapters suggests the stronger impact is from ICT penetration to good governance. Let's take a deeper look at this synergistic relationship.

First, the relationship between good governance and poverty must be established; if it can be shown that ICT penetration increases good governance, then poverty alleviation should follow suit. In fact, a major assumption I make in this dissertation is that there is a strong positive link between good governance and poverty alleviation, and it turns out that this relationship is a well-established one. Many scholars posit that good governance—however it may be defined—leads to better development outcomes (Easterly, 2001, 2004, 2006; North, 1981; Sachs, 2005, 2008). For instance, Malik (2002) states that:

Governance is a new term in the development dictionary but the underlying concept is as old as human civilization...There had always been an institutional basis for the material wealth and the political power of great nations and empires. The concept was not novel for economists either. The writings of some earlier economists, such as Adam Smith, Joseph Schumpeter, and Simon Kuznets, to name but a few, contain plenty of subtle references to some of the central concerns embodied in the present day concept of governance. (p. 2)

Malik (2002) further notes that other contemporary economic thinkers, such as Albert Hirschman, Ronald Coase, Mancur Olson, Douglas North, Joseph Stiglitz, emphasize the link between political institutions and economic forces. Thanks to these pioneering scholars and extensive work by economist Dani Rodrik (1997, 2007), it is “generally recognized that a stable political, institutional, and social framework are essential preconditions for economic growth and development” (Malik, 2002, p. 2). Governance is also clearly an important conveyor in the provision of basic economic rights and poverty alleviation programs (Hertel & Minkler, 2007; Sen, 1999).

When specific indicators of good governance improve, better outcomes for the poor are more likely. For instance, Gupta *et al.*, (1998) note that besides hampering growth, higher levels of corruption have been shown to increase income inequality and poverty. Several avenues of inquiry have been proposed for why this is the case, such as regressive taxes, poor targeting of social programs, unequal access to education, reduced social spending, and higher investment risks for the poor (World Bank, 2000). Kaufmann *et al.*, (1999) show that corruption is associated with an increase in infant mortality and a reduction in life expectancy and literacy. Similarly, the UNDP’s Human Poverty Index (HPI) is negatively related to indices of governance and corruption, even after controlling for GDP per capita (Malik, 2002, p. 12). Other indicators that facilitate better governance also tend to improve poverty. For instance, in a quantitative cross-national analysis Novel (2006) finds that a free press is strongly associated with a higher level of development and reduced poverty. In other words, poverty is higher when freedom of the press is compromised or does not exist, as evidenced by comparing measures of poverty and freedom of the press. Access to primary goods and better nutrition is also correlated with a strong freedom of the press score.

However, some countries, even if they reach decent standards of living, still do not have a free press (Ibid, p. 1).

From a structural viewpoint, for developing countries to fully take advantage of the opportunities presented by e-commerce and other ICT-fueled economic development options, governing institutions must be strong. For instance, Kenny (2006b in D'Costa) argues: “Weak institutions also lower consumer trust in e-commerce, perhaps the most important factor in determining willingness to purchase online” (p. 77). Issues of institutional strength have long been an issue across developing countries. As poorly developed financial systems, “especially when combined with poor physical communications infrastructure, can significantly reduce the potential for e-commerce in LDCs” (p. 77). For example, in a survey of business trust in the postal service, Kirkman *et al.*, (2002) claim that willingness to entrust the postal service with a package worth \$100 was strongly correlated with GNP per capita. For instance, trust was much higher in the rich countries with Finland, Japan, and Switzerland, while Venezuela, Honduras, and Nigeria were at the bottom. Regarding credit cards, results from “Latin America suggest that only 28 percent of online transactions in the region use credit cards, compared to 54 percent using cash—and this is more of a result of lack of trust, than lack of access to, the credit card system (Hilbert, 2001)” (Kenny, 2006b, p. 77-78). Clearly, institutional trust, good governance, and the development of an information communication network need to be complementary if the network is to be effective in e-commerce. A reliable distribution system (e.g. a public postal service), trust in governing institutions, and secure ICT networks are all required for e-commerce to take off economically.

Also central to the interaction effect are specific poverty alleviation policies. As many developmental economists have noted, effective poverty alleviation policies often come down to soundly implemented and designed policies (Easterly, 2006; Rodrik, 2007; Sachs, 2005; Yusuf, 2008). For instance, in Yusuf’s (2008) analysis of the World Bank’s *World Development Reports*, starting with the 2002 report, the World Bank increasingly focused on getting ‘institutions right.’



He notes that stringent government regulation are considered to be economically strangling developing states at the time:

The dead hand of a shrunken state could stifle the economy. Hence [2002], the *WDRs* directed their firepower at four target areas. First was the governance of regulatory bodies that affected the functioning of numerous private providers from financial to infrastructure to health services. The transparency, accountability, and independence of these bodies needed to be improved, and their administrative and policy making capability strengthened. (p. 39)

The other target areas were devoted to freeing markets, getting prices right, and providing adequate information for functional markets. These points are echoed among development specialists writing at the same time (Easterly, 2001, 2002, 2003, 2006; Egger & Winner, 2005). Nobel Prize-winning economist Stiglitz argues in a chapter contribution to Yusuf's (2008) edited volume that governance plays a 'vital role' towards successful development outcomes. Discussing his own term as President of the World Bank, Stiglitz states:

[O]ne could not have sustained poverty reduction without growth, which is why we [World Bank] began to focus on poverty-reducing growth strategies. The Comprehensive Development Strategies on which the Bank was then focusing called attention to important complementarities that had often been missed in the past: trade liberalization might, for instance, by itself lead to more poverty, because jobs were destroyed faster than they were created. Only if accompanied by policies to enhance access to credit and technology might trade liberalization lead to reduced poverty. (p. 145)

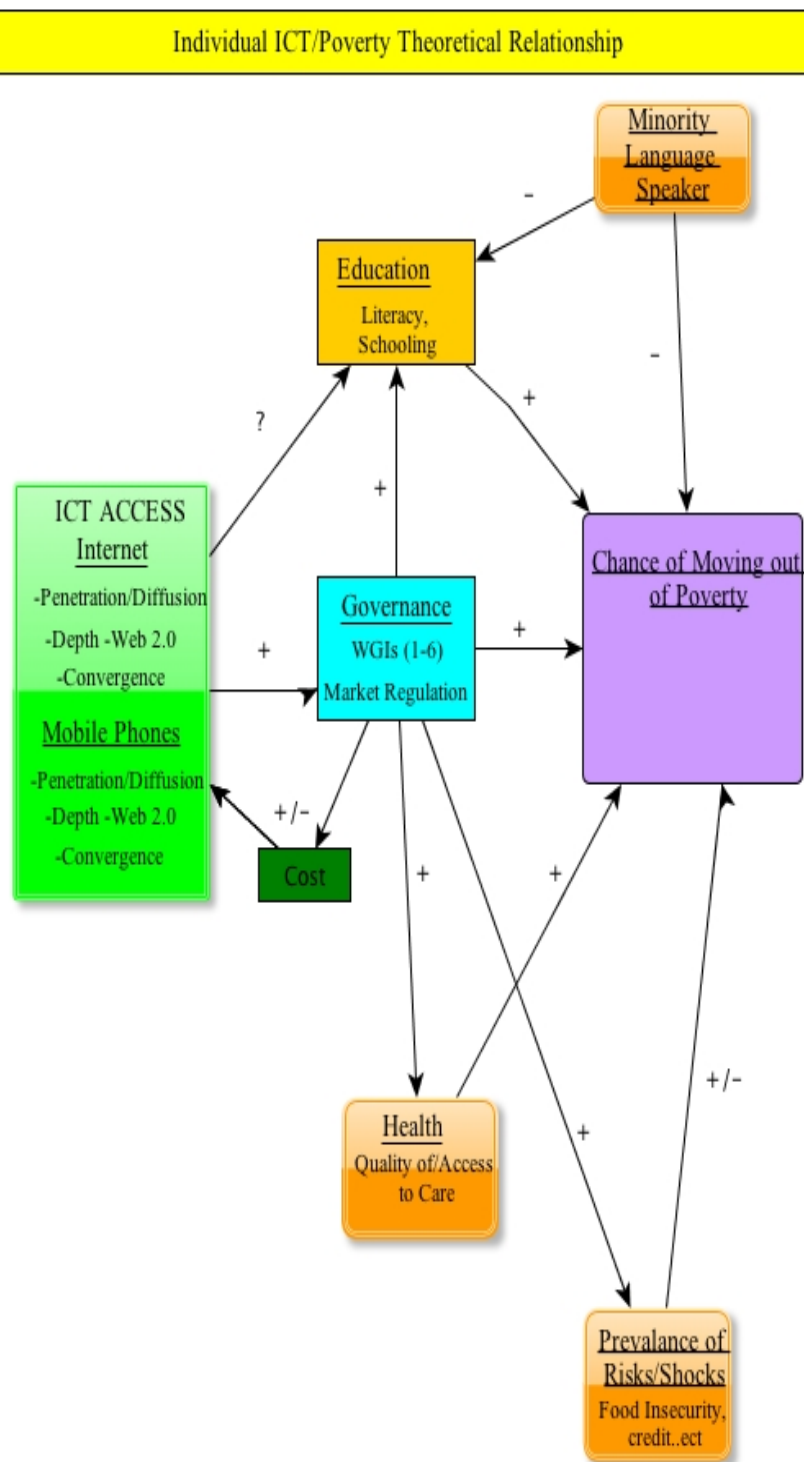
For Stiglitz, policies devoted to enhancing access to technology – among other things – is key if the poor are going to harness the opportunities of open markets. The only way to accomplish increased access for the poor is through effective governmental policy. What these governmental policies may look like will vary greatly depending on the context; those devoted to ICT implementation, such as provision of public access, infrastructure (e.g. data lines, satellites), and regulation are all important in determining how governance interacts with ICT.

As illustrated in the theoretical claims above, it appears obvious that the link between ICT and the reduction of poverty cannot be identified as one of simple technological determinism, whereby the “the mere presence of technology leads to familiar and standard applications of that technology, which in turn bring about social change” (Warschauer, 2003, p. 44). Rather, ICT may

contribute to the reduction of poverty through a combination of direct and indirect effects. On the one hand, ICT offer new tools to directly address poverty by providing access to information, equalizing opportunities in rural areas, and contributing to pro-poor market developments such as micro-finance and mobile money. Plus, ICT may indirectly influence poverty through mechanisms that positively impact good governance, such as reducing corruption, fostering civic engagement, and improving efficiency. These impacts should be even stronger in a situation where governments themselves actively pursue pro-poor policies and undertake efforts to increase ICT access, particularly for poor or otherwise marginalized communities. The exact mechanisms for how the interaction effect works is explored in greater depth in the case study of Mexico in Chapters 4, 5.

## **2.2 Individual Level ICT/Poverty Theoretical Model.**

Before moving on to empirically evaluate my structural model in Chapters 3, 4, and 5, I will introduce my second model explaining the ICT/governance/poverty relationship at the level of the individual. The core argument remains structural in this dissertation, yet the reader should be aware of its workings at the individual level:



The choice of variables in my model follows top scholars' theories on poverty models: Health (Sachs, 2005); Education (Kenny, 2006a; Sachs, 2005); Governance (Easterly, 2006; Rodrik, 2007); Prevalence of Risks/Shocks (Rodrik, 2007; Sachs, 2005); and Minority Language Speaker (Jung, 2008). Although I remain consistent with their core variables for poverty models, in my analysis I incorporate the ICT variable. In fact, one of the contributions of this dissertation is its inclusion of ICT as an important variable affecting the chances of the poor to move out of poverty in the modern world. A brief note on signs is also in order: a positive sign (+) indicates a positive relationship between the two variables of note; a negative sign (-) indicates a negative relationship, a (+/-) means that it can go either way easily depending on policy choices, and finally a (?) indicates that results from research is far from clear. As I've been arguing in Chapter 1 and this Chapter, the variables of government, education, health, all have positive signs. In fact, it should be readily apparent from the model that governance is the lynchpin affecting almost all the variables.

However, there are negative variables in the model as well. Being a minority language speaker can have a negative effect on one's ability to move out of poverty. Thus, the minority language speaker variable increases a hypothetical individual's chance of being in poverty, a relationship that is represented in the model via the presence of a negative sign (-). The final direct variable affecting one's Chance of Moving Out of Poverty is Prevalence of Risks/Shocks. As seen in the model this variable has both positive and negative signs (+/-). This choice of signage serves to reflect the varied circumstances (and attenuating outcomes) in which individuals find themselves affected by unforeseen events beyond their control.

The rest of the relationships are mediating, as the model attempt to elucidate all the interrelating relationships between the variables of interest. Education plays almost as important a role as government. That is why it is represented as a square, similar in shape to governance in the model. People's level of education has a direct positive role on their Chance of Moving Out of Poverty—which is represented by the positive (+) sign in that relationship. However, as a

mediating variable I'm hesitant to assign a positive or negative value to ICT on education. The literature is rather mixed on this (Negroponte, 1996 [positive]; Tinio, 2003 [middle ground]; Kenny, 2006a [negative]). Overall, some research found that having computers with Internet access in a school or even classroom can help teachers in developing countries, yet the deployment of ICT tools (e.g. computers, tablets, or smartphones) for the majority of students during class hours has yet to be proven more effective in the long run (see Kenny 2006a; for a negative perspective and see Tinio, 2003 for a middle ground perspective). Reflecting this ambiguity in the scholarship, this relationship is labeled with a question mark. Also, the impact of governance on the cost of ICTs can be negative as governments often prop up ICT provider monopolies (e.g. Mexico) or positive allowing corruption to influence cost (see Singh, 1999). This is because governance plays an important role in determining the regulatory framework of ICT provision in the individual countries (e.g. allowing monopolies, or tax incentives to reduce cost for the poor), thus it can have a positive or negative impact on the cost of ICT to the poor (see Dutta & Mia, 2011). The model displays this mediating variable of Cost is accompanied by both positive and negative signs (+/-).

Although the model purports that ICTs influence the ability of individuals to move out of poverty, in reality, poor people's chances are primarily mediated through non-ICT variables. As referenced in the literature above, there are cases where the introduction of Internet and mobile phones can directly help the poor (e.g. banking, information exchange, mobilization of civil society). However, simply assuming that ICT penetration – lacking mediation by governance or education – will greatly impact poverty is mistaken (see Forestier *et al.*, 2001; Kenny, 2006a, for elucidation of the non-mediated relationship that they find to be weak). Without good governance the cost of obtaining ICT access for the poor can be prohibitive, especially if ICT access is not provided with reduced rates or in community centers and schools. Furthermore, the transformative power of ICTs may be compromised if the population is illiterate, uneducated, or lives in rural areas with little in the way of infrastructure, especially electricity—although it should be noted

that reliable electricity is more important for computers than mobile phones with longer lasting batteries.

Before moving forward, it is worth noting how important information is at the individual level, particularly to the poor. Elucidating the crucial significance of information to those living in poverty, Fredriksson (2011) writes:

Poverty has an important informational dimension. Poor people often lack access to information that is vital to their lives and livelihoods, including weather reports, market prices, and income-earning opportunities. Such lack of information adds to the vulnerability of the people concerned. In terms of livelihood strategies, information plays a dual role: informing and strengthening the short-term decision-making capacity of the poor themselves, and informing and strengthening the longer-term decision-making capacity of intermediaries that facilitate, assist, or represent the poor. The contribution of ICT to poverty reduction through enterprise lies in its power to give poor women and men access to improved information and better communications to help them build assets for better living conditions. The introduction of ICT to the enterprise sector can contribute to productivity growth, innovation, economic transformation, and, ultimately, improved standards of living. (p. 72)

The informational dimension of poverty pointed out by Fredriksson cannot be ignored and ICTs have the potential to truly improve the lives of the poor via information. Whether they will or not is a matter of debate and I now shift attention back towards the structural claims to be tested in this dissertation to address this debate as best as I can. The individual causes are important for understanding underlying mechanisms, however the argument and approach taken here are fundamentally structural in nature.

### **Reiteration of Hypotheses**

To clarify the theoretical propositions of my structural model, I will test the following hypotheses:

**Table I: Hypotheses**


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**Hypothesis I:** ICT affects governance by allowing enhanced opportunities for information sharing.

**Hypothesis II:** ICT affects governance by generating social capital and civil society (especially bridging social capital).

**Hypothesis III:** ICT affects governance by improving *efficiency*.

**Hypothesis IV:** There is an interaction effect between ICT and governance that produces beneficial outcomes for the poor and works through two mechanisms:

(a) Increases in ICT leads to strengthening of good governance, which produces better outcomes for poverty.

(b) Governmental policies devoted to provisioning of ICT leads to enhancements of public ICT effectiveness, which creates better outcomes for poverty (especially if policies increase ICT access for the poor).

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The results from testing these hypotheses will be provided in the empirical chapters of this dissertation (Chapters 3, 4, 5). The following sections explore the research methods that will be used to investigate the theoretical claims made above.

### **2.3 Research Methods: Theoretical Claims of Large-n Analysis.**

The following sections explain the methodological approach used in this dissertation; my analysis will employ a mixed-method approach utilizing both quantitative large-n (Chapter 3 and parts of 4) and qualitative small-n methods (Chapters 4 and 5). The goal of the large-n analysis will be to explore broad trends and relationships between ICT penetration rates, governance, and poverty. I propose two broad models to test my hypotheses and structural theoretical framework. Model I will test the effect of ICT on good governance. The independent variable will be disaggregated ICT penetration rates (the full list of controls is provided below). Model II will test the effect of ICT, governance, and their interaction on poverty rates (also provided below). All of these variables will be explained in greater depth in Chapter 3:

### Quantitative Large-n Analysis

**Model I:** Good Governance (WGI)=a ICT penetration rates +b GNI per capita +c Democracy +d Freedom of the Press +f Trade as a Percentage of GDP +e

**DV: Good Governance (WGI)**

The dependent variable is (other measures of good governance are tested as well) the six indicators of good governance from the WGI: (I) Voice and Accountability; (II) Political Stability; (III) Governmental Effectiveness; (IV) Regulatory Quality; (V) Rule of Law; and (VI) Control of Corruption. Other alternative measurements of good governance are also tested. For instance, for measures of corruption, Transparency International's Corruption Perception Index and the World Bank's Informal Payments to Public Officials are tested and compared to the WGIs.

**IVs: ICT penetration rates**<sup>53</sup>

Model I controls for:

**GNI per capita** (GNI per capita—Atlas method from World Bank).

**Democracy** (Polity IV Data Set).

**Freedom of the Press** (Freedom House—Freedom in the World Survey).

**Trade as a Percentage of GDP** (Merchandise Trade as a percent of GDP—WTO).

**Model II:** Poverty variables =a ICT penetration rates +b GNI per capita +c Democracy +d Freedom of the Press +f Civil Violence/Ethnic Violence +g Debt +h Literacy rate +i Civil Society +j Governance +( a ICT penetration rates\* Governance)+e

**DV: Poverty variables**

Measure of poverty tested include:

- (1) Poverty Headcount: % of population below \$2 and \$1 dollar per day.
- (2) Pro-poor economic growth: HDI index, Kimenyi's (2007) measure<sup>54</sup>
- (3) HPI (Human Poverty Index).
- (4) Quality of Life Variables: Following Gani & Clemes (2006).
- (5) SERF Index

<sup>53</sup> Data is from the International Telecommunications Union's (ITU) World Telecommunication Indicators Database. Combined measure of ICT: Internet penetration, computer penetration, television penetration, radio penetration, all data is per 100 people (ITU, 2010).

<sup>54</sup> The Human Development Index (HDI) is calculated from five indicators of human development: (1) Adult literacy rate; (2) Life expectancy; (3) Primary and Secondary School Enrollment; (4) Infant mortality; (5) GDP per capita. Because of the endogeneity problem with income and ICT the income component was removed from the numerical measure. The scores from 0 to 1 with a 1 being the highest level of human development achievable.



**IVs: ICT penetration rates**<sup>55</sup>

Model II controls for:

**GNI per capita** (GNI per capita—Atlas method from World Bank).

**Democracy** (Polity IV Data Set).

**Freedom of the Press** (Freedom House—Freedom in the World Survey).

**Civil Violence/Ethnic Violence** (Center for Systemic Peace).

**Debt**

**Literacy rate**

**Civil Society** (NGOs (percentage present compared to the population)).

*I also include an interaction effect in this model using:*

**Governance** (World Bank Governance Indicators—World Bank).

**Interaction Effect:  $X*T$ =Interact X and T.**

Explaining the interaction effect: An increase in ICT → Enhanced governance (Interactive effect) → better outcomes for poverty (HDI, Poverty Headcount or Pro-poor growth<sup>56</sup>). This interaction effect purports that more ICT leads to better governance, that in turn leads to ‘better’ economic outcomes for the poor. Thus, there might be influence, or lagged influence, on poverty alleviation, which should eventually show up in the data. Model II was also tested with a lag on Internet (tested in time t-1, t-5, and t-10). A lag was used because it may take a few years to see results from higher Internet penetration rates on the dependent variable and the interaction effect. Surprisingly, at least to this researcher, results displayed no difference with or without a lag.

In summation, my models propose that the ICT and governance interaction should lead to better policy programs benefitting the poor. Overall it appears that if the indicators of good governance improve as a result of ICT, the poor will benefit, and at a minimum, gain access to more economic and political opportunities. The model, like most quantitative models, makes the case based on

<sup>55</sup> Data is from the International Telecommunications Union’s (ITU) World Telecommunication Indicators Database. Combined measure of ICT: Internet penetration, computer penetration, television penetration, radio penetration, all data is per 100 people (ITU, 2010).

<sup>56</sup> Pro-poor growth, pro-poor development and pro-poor economic development will be synonymous terms for the remainder of this paper. Mwangi Kimenyi (2007) provides a definition of pro-poor growth: “pro-poor growth... means that the poor benefit disproportionately from economic growth” (Kimenyi, 2007, p. 186). He finds that “the effect of growth on poverty reduction is neutralized by high inequality. In other words, growth is a powerful vehicle to lower poverty, but only when associated with decreases in inequality” (2007, p. 186). The pro-poor measure takes this into account.

marginal, incremental change. As the variables in the model increase or decrease over time, there is more or less likelihood of the predicted outcome. However, there is another aspect to the study of ICT, governance, and poverty that needs to be considered: large scale, fast moving, changes in governance from ICT-fueled protests, transparency, and anti-corruption measures. For instance, the Arab Spring – a large scale, fast developing, and clearly ICT-influenced movement – was basically unforeseen by experts. The unpredicted, unexpected, and radical events ICTs fuel are not adequately modeled by incremental quantitative approaches. The following section foregrounds the argument for why small-n analysis is needed to complement the large-n analysis for my puzzle to be adequately addressed.

## **2.4 Research Methods: Theoretical Propositions of Small-n Analysis.**

The second empirical section of this dissertation will be a case study of Mexico with a structural analysis of the country, and a comparative analysis of two urban areas and two small rural villages. The quantitative section's findings point to ICT affecting my variables of interest, yet fall short of a truly convincing causality argument. It also has trouble modeling the potential of a Jasmine Swan (my original conception of this concept is explained in the following section). Thus, it would be useful to employ case study analysis to investigate the causality conundrum in greater depth.

I will begin this section with some background information regarding ICTs in Latin America, and then explain the outline for my case study. With ICT penetration growth rates doubling in Latin America between 2000 and 2008 (ITU, 2010), Latin America's ICT penetration growth rate per capita is now higher than Asia's, yet lower than the Middle East and Africa where growth rates have tripled—primarily because penetration rates started much lower in those regions. Yet, historically, Latin America has had the world's highest levels of income inequality, although there are some indications that Sub-Saharan Africa and Asia are catching up (Gasparini *et al.*,

2011).<sup>57</sup> Thus, despite rising ICT penetration rates, many Latin American countries, and regions within them, contain pockets of extreme poverty, and they demonstrate some of the highest levels of inequality in the world. Mexico is a large, populous, and important developing country for study and is especially intriguing because it does not follow typical patterns of ICT penetration (this will be explained fully in Chapter 4).

Following the logic of ‘comparing to control’ (Lijphart, 1971; Sartori, 1970), my case studies will compare regions (and states) in Mexico with high levels of ICT penetration to those with less, with the goal being to hold other *key* variables constant—especially the level of economic development. This will help to expose the effects of ICT on both governance and poverty (Model I and II respectively), and help alleviate the continuing endogeneity problem for ICT analysis where income is the driving causal variable for the amount of technology the populace of a country can afford to own. As noted in the quantitative section, not controlling for income causes extensive endogeneity issues for Model I and II.<sup>58</sup>

### **My Case Study Plan: The Comparative Model.**

Case One-Urban High Tech: high ICT penetration rates → governance? → poverty reduced?  
City: Guadalajara (Mexico's so-called 'Silicon Valley').

Case Two-Urban Lower Tech: low ICT penetration rates → governance? → poverty reduced?  
City: Puebla (Similar urban area to Guadalajara except in ICT technology penetration).

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<sup>57</sup> Potentially, in future stages of my academic career this dissertation could be expanded into book form, or separate journal length articles, by adding more case studies of other countries in Latin America. Or even better, I could add countries from different regions, such as the Caucasus, India, or the Middle East, to test if the theoretical claims are exportable to other developing regions. For this dissertation, that is simply too ambitious given the time and resource constraints. Instead the comparative approach will be applied within one country (Mexico).

<sup>58</sup> For instance, Chinn & Fairlie (2006) provide empirical evidence in their study finding that “Overall, the factors associated with computer and Internet penetration do not differ substantially between developed and developing countries” (1). This implies that if income is controlled for, the same standards for ICT penetration should hold in the developing world. They state that one unambiguous finding in the ICT and development literature is the strong correlation between income (GDP per capita) and the level of ICT. This finding makes sense because most studies of ICT use technological penetration rates, which depend on consumers having enough income to buy ICT as commodities. Evidence for this relationship is abundant in the literature: “Several previous [before Chinn & Fairlie, 2006] studies have examined the causes of computer and Internet penetration rate differences across countries. Many studies find a strong positive relationship between technology use and income across countries and within countries (Quibria, et al., 2003, OECD, 2001, and U.S. Department of Commerce, 2002)” (Chinn & Fairlie, 2006). Therefore it will be of central importance in choosing case studies that will control for economic development.

Case Three-Rural High Tech Town: high ICT penetration rates → governance? → poverty reduced?

Rural Town: Tech increased due to government provision, i.e. a town with a Community Learning Center-CCA (explained below).

Case Four-Rural Low Tech Town: low ICT penetration rates → governance? → poverty reduced?

Rural Town: Similar to rural high tech town in every extent possible, except in ICT technology penetration, a town without a CCA, or Internet line at all.

I will take the following two approaches to produce analytical data regarding the case studies: (1) Structural analysis; (2) Elite and Non-elite Interviews.

(1) Structural analysis: I collected broad-based local data to produce a structural analysis of each case. Collection of the following: poverty levels, governance data, population, cultural analysis, education levels, history of the region, class struggles, local economic data, and poverty reduction programs implemented. I will then compare the case studies to national-level statistics.

(2) Elite and Non-elite Interviews: I conducted elite interviews with NGO staff working with the poor, with NGO staff, and MNC staff working with IT. I asked direct questions such as: Did the governance improve in the region? Why? Did technology help or hinder that process? Do the poor benefit economically from technology? If so, how? If not, why? I conducted much more non-elite interviews of the middle class, working poor, and poorest. In fact, conducting interviews of non-elites is a contribution of this dissertation. I also probed problems faced by non-elites in their use of ICT, such as difficulties in information gathering, assessing the quality of information, and language barriers.<sup>59</sup>

According to Powers (2001) there is a lack of focus in research on developing countries with regards to the quantity and quality of interviews with the powerless. I follow the approach taken by Powers (2001), where she argues for the importance of interviewing non-elites to get a

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<sup>59</sup> I hired a Spanish/Mixe speaking interpreter when needed.

sense of what they actually think. In the course of her fieldwork she lets the questions she asked evolve in her interviewing of non-elites in Argentina in the 1990s regarding their views on politics, wealth, and grassroots mobilization. Her flexibility allowed her to more accurately assess their views.

Many studies in the democratization and good governance literatures focus on elites and their competition for political power (i.e. Bellin, 2000; for a Mexican example see Camp, 2010). Yet Powers (2001) builds a compelling case for why researchers should bother to study non-elites. The first reason she presents, following O'Donnell (1998), is that political and electoral rights are inherent in democratic processes, which are founded on the notion of “equality of citizenship” (Powers, 2001, p. 5). Therefore it is clear that non-elite citizens still have a claim to equality in citizenship (e.g. one person one vote), and this is important for evaluating the 'quality of democracy' (see O'Donnell, 2004). Powers notes that “if political science is to provide a complete account of public life, it should 'bother to consider' the impact that political competitions and policy decisions have on the governed” (p. 5). She notes that largely missing from political science in developing countries is “research on how people who are not in positions of power perceive and evaluate the effects of policies and political practices” (p. 5). An exception to this norm is Matthew M. Singer's work on economic voting in which he models survey data of non-elites and their opinions on political performance by heads of state on matters of policy and managing the economy (Singer, 2009, 2013).

The second reason Powers posits for interviewing non-elites—in line with the pioneering work of James C. Scott's *Weapons of the Weak* (1985)—is those who are excluded from the institutions of power in society are nonetheless still important to political life, can influence the regime's policies, and functioning of the local and national government (Powers, 2001, p. 5). Non-elites may not be able to easily bring down regimes (although recent developments in the Arab Spring may be challenging this widely held assumption), but they create many indirect effects, from

influencing political life through consumer practices to attracting the attention of religious authorities, journalists, and NGOs. They are also part of the public support that elites rely on for policy implementation. Finally, when mobilized they can be important voting blocs in Latin America (p. 5).

The third reason Powers (2001) provides for the importance of interviewing non-elites is that listening to those without power can provide insight into understanding and evaluating the conditions in which they live (also see Scott 1985). Such an understanding is the basis for future economic development (p. 5). This is evident in the attention given to 'people oriented' development strategies at UNDP and other international development agencies; one prominent example is the World Bank's multi-volume series *The Voices of the Poor* (2000). This approach is also gaining credibility through academic work, such as Sen's (1999) 'capabilities approach' to development and in the Human Rights Approach to Development (Goodhart, 2013).

Finally, Powers' fourth reason maintains that through the political clout of grassroots mobilization, non-elite power can be stronger than it appears to be in a democratic, or semi-democratic state. For instance, in countries where voting is mandatory and turnout is high, such as Argentina, the lower classes have proportionally more political clout than their counterparts in many established democracies, such as the U.S. Thus, "Latin American politicians must seek their support actively" (2001, p. 6). Adding complexity to this contention is literature on economic voting and how different constituencies in Latin America react in varied ways to their state's economic performance. Matthew M. Singer (2013) finds that demographic variables in Latin America are "simply...weak predictors of government approval" (p. 151) of voters. Results from Singer's work "do show that citizens strongly consider the current conditions in their country when evaluating the sitting president. Consistent with previous work on economic voting elsewhere, evaluations of the national economy have a stronger impact on evaluations of the incumbent than do evaluations of the respondent's personal financial situation" (p. 151). Further complicating the

issue, Singer (2013) finds that workers are not uniform in their opinions on government performance. For instance, he posits from data: “vulnerable workers in turn have the ability to make politicians insecure in their own job prospects if they cannot avoid economic slowdowns. For students of the linkage between economics and government support, this article provides further evidence that not all citizens respond equally to economic shifts. While the economy is frequently important to the average voter, economically vulnerable citizens have an increased personal stake in the economy and evaluate the incumbent accordingly” (2013, p. 157). Thus, politicians in newly, semi, or fully democratic states in Latin America need to be cognizant of non-elite preferences, and the potential of revolt via grassroots mobilization, if they want to remain in office.

Overall, following Powers, I also believe that the interviewing of non-elites is needed and lacking in the vast majority of academic ICT studies. There are often implicit assumptions made by researchers from developed countries that anyone who has access to the Internet or a mobile phone has the same ability to master and manipulate technology to their needs. These assumptions usually do not take into account linguistic, educational, economic, social, or infrastructure distinctions that make ability to employ ICT differ drastically in and across developing countries. My survey attempted to address this need for non-elite surveys.

To fill the void my interview questionnaire asked simple, direct questions relating to whether or not Mexicans employed technology in their engagement with politics and governance, or in their economic situation. Questions included: How often do you have access to the Internet? Or a mobile phone? Did you participate in local community groups in the last year? Did you vote, attend a protest or sign a petition in the last year? Do you use technology to join local community groups? In analyzing their responses, comparisons are made with regards to the high and low-tech urban and rural cases listed above. To my knowledge no significant surveys or interview-based studies exist in Latin America asking these types of direct questions related to ICT use and

governance. The following section makes my case for why I chose Mexico (more on this argument is presented in Chapter 4).

### **Why Mexico?**

Mexico is the second most populous country in Latin America, and is an important developing country of approximately 105 million people. The political structure emerging from Mexico's revolution in the early part of the 20<sup>th</sup> century has been characterized by political stability, differentiating Mexico from many other Latin American countries. In an interview, Peruvian Nobel Prize winning writer, Mario Vargas Llosa, termed the Institutional Revolutionary Party (PRI) that dominated Mexico's party system since 1929, the 'perfect dictatorship.' The PRI maintained control over the electoral system in Mexico through "combined authoritarian controls with flexibility in responding to constituencies and was for the most part successful in neutralizing protests and dissident groups" (Hamilton, 2009, p. 334). Mexico's political stability benefitted from its strong economic growth from the 1940s to the 1970s. Despite a rocky economic period in the 1980s brought on by the debt crisis, and struggles with implementing neoliberal reforms since, by 2014, Mexico remains one of the most industrialized countries in Latin America. Although industrialization has been a factor in Mexico's urbanization and emerging middle class, the benefits of economic growth have been unevenly distributed and poverty remains entrenched (Hamilton, 2009).

Currently, Mexico is undergoing rapid transformations in the economic and political spheres, creating social and cultural repercussions. The elections of 2000 were considered a watershed moment in a slow, yet steady, transition to competitive democracy. Democratic consolidation, however, is being undermined by generalized social violence. Economic globalization and the debt crisis in the 1980s have resulted in a rejection of import substitution and state-led development models to an embrace of neoliberalism by Mexican policymakers (Hamilton, 2009). Yet economic crises and the acceptance of neoliberal reforms have led to painful economic



and social dislocations, including adjustments due to loss of jobs, reduced wages, and the elimination of previous economic safeguards for the poor. Although the causes were complex, these conditions helped spark a January 1<sup>st</sup> 1994 – the same day NAFTA was to go into effect – armed uprising from the Zapatista movement in the state of Chiapas. Contributing to their resistance was the worsening economic conditions for the indigenous peasantry as a result of economic restructuring and a history of political repression by state and local government officials of indigenous populations.<sup>60</sup> In the broader Mexican economy, individuals and households in Mexico rely increasingly on the informal sector and migration to the U.S. for income, which has been accompanied by increasing remittance flows—up to \$23 billion in 2006, surpassing FDI and second only to petroleum as a source of foreign exchange (Hamilton, 2009, p. 334). Furthermore, as will be discussed at length in the case study chapter, Mexico has been battling the difficulty of drug cartels since the 1990s. Their 'Drug War' has ratcheted up since President Felipe Calderon's declaration of war against the cartels in 2006 and continues today under President Peña Nieto.

According to Gallagher & Zarsky (2007), in the 1990s Mexico was a “poster child” for developing countries’ acceptance of neoliberal globalization. Throwing open its borders to trade and foreign investment, Mexico embraced NAFTA and removed government from its traditional role of building up its domestic industries (particularly IT). MNCs swarmed into Mexico, creating low wage jobs in enclaves and domestic firms. In the years to follow, many MNCs, including those in the high technology sector, went bust at a rapid clip; “the result was ever increasing unemployment and migration, a deeper and more apparent gap between globalization winners and losers, and the political mobilization of the 'losers' and their allies” (p. vii). The title of Gallagher & Zarsky's 2007 book, *The Enclave Economy*, is telling. They argue that FDI and sustainable development have *not exactly* gone hand in hand in Guadalajara, Mexico's 'Silicon Valley.’

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<sup>60</sup> The charismatic leader of the Zapatistas, Subcomandante Marcos, employed the emerging Internet to spread the tenets of the Zapatista's cause, which some claim to be the first armed resistance to economic globalization in the world. Approximately 15% of Mexico's population is made up indigenous people, chiefly in the southern and western regions (Hamilton, 2009). There are substantial amounts of indigenous people in the states where I will be doing my rural case studies.

Nevertheless, Mexico's IT exports remain comparatively strong in the Latin American rankings, coming in third behind Brazil and Argentina in 2011.

Although poverty is my focus here, Mexico's experience with globalization and FDI-led growth (including supporting FDI from the IT industry in Guadalajara), and whether or not any spillover economic growth has helped the poor escape poverty, provides an intriguing case study for a focus on ICT and its relationship with poverty. Gallagher & Zarsky (2007) claim that there are several reasons Mexico's experience with the global IT industry offers a:

fertile laboratory to study the impacts on FDI on sustainable development in developing countries. First, not all developing countries are successful in attracting FDI in general and in the IT sector in particular [Mexico was then in the top three globally]...The Mexican government identified the IT sector as a priority industry...The Mexico embraced the Washington Consensus with speed and vigor. (p. 6)

This embrace of globalization, the IT industry's investment, and high ICT penetration rates make Mexico an intriguing case to study in greater depth. Furthermore, penetration of ICT seems to be at levels worth investigating for possible threshold levels as 25% of the population uses the Internet, and 55% have access to a Mobile phone (ITU, 2010). As mentioned above, research has not yet determined what a threshold level for ICT penetration actually *is* regarding its impact on governance or poverty. Furthermore, Mexico is typical to most of the developing world as a non-English majority country and there is a substantial amount of the population speaking indigenous languages. The convoluted status of English in Mexico, for instance, makes Mexico's relationship to the global IT industry, and jobs flowing from it, similar to the average developing world experience. Also, Mexico has substantial diversity of culture, language, and economic development and possesses pockets of poverty that rival areas in Africa and Haiti. This diversity extends across its states and regions, thus making Mexico ideal for testing my theoretical models.

### **Why Guadalajara?**

Formerly a sleepy city, Guadalajara was once favored by U.S. military ex-pat retirees for its low cost of living, perfect climate, and a wind pattern that was once believed to have the 'safest refuge' from fallout following a nuclear war of any city in the Western hemisphere. Today, it offers a glimpse into a thriving developing world metropolis, with many ethnic, social, and economic groups, varying types of employment, and a legacy provided by the global IT industry – who once invested heavily enough in the city for it to be widely referred to as 'Mexico's Silicone Valley.'

Gallagher & Zarsky (2007) note that a successful incentive providing program for the IT sector – implemented by the Mexican government to promote domestic manufacturing firms and domestic markets – was dismantled following the signing of the NAFTA agreement. The 'global flagships' of the IT industry, including Hewlett-Packard and IBM, flocked to Guadalajara and established manufacturing operations there in the early 1990s. According to Gallagher & Zarsky (2007), initial hopes that local Mexican firms in the Guadalajara area would evolve into contract manufactures and suppliers to the MNCs, was short lived. By the mid 1990s, these 'global flagships' began to outsource manufacturing operations to mostly U.S. contracting firms as “less than 5 percent of inputs were sourced locally. Far from generating broad-based growth, Mexico's 'Silicon Valley' had been transformed by 2000 into a foreign enclave, and only a few of the original Mexican firms were still in business” (p. 7). When the U.S. high-tech stock market bubble burst in 2000, the 'global flagships' scrambled to find cheaper production sites, and with China joining the WTO in 2001, manufacturing operations in Guadalajara were severely cut back and many relocated to China. Gallagher & Zarsky (2007) purport that FDI does not produce as much broad-based growth as its more optimistic proponents claim. Instead, through an analysis of the IT sector, their study shows that FDI creates foreign enclaves from which there is not much spillover to domestic firms or even to broad based economic growth.

However, what I'm interested in is whether or not the poor benefitted from higher rates of ICT spillover (for lack of a better term) in Guadalajara. Thus, Guadalajara seems to be an appropriate case study due to higher rates of ICT penetration than its per capita income dictates. This makes it a perfect case study to get around the ever-troubling endogeneity problem scholars have encountered when working with my variables of choice. Employing Guadalajara as a case study sets my analysis apart from many ICT and poverty studies which do not adequately control for endogeneity.

The case study approach allows me to address the following questions: Has the city's governance improved? Have the poor benefitted? Did they employ ICT to demand better governance because it was more readily available? The questions posed by this dissertation will be explicitly teased out in the Guadalajara case, and will be compared to Puebla, which although a slightly smaller city, is similar in other areas of social organization. They are both large urban areas with populations of over one and a half million.

As far as my rural case studies are concerned, I will analyze two Oaxacan indigenous villages, one that has more of an ICT presence than the other. Following Huerta & Sandoval-Almazan (2007), I analyze a high tech village that has a telecenter called Centros Comunitarios de Aprendizaje (Community Learning Centers [CCA]): "CCA is one of the strategies of the Mexican government, which provides universal access and promotes education among marginalized populations in Mexico" (Red Educativa para el Desarrollo Social Sostenible, 2006). According to Huerta and Sandoval-Almazan (2007), CCAs are structured similarly to other telecenters in Latin America (Proenza *et al.*, 2001):

That is, a telecenter has a set of computers with Internet access. Access to these services can be either free or low cost (Red Educativa para el Desarrollo Social Sostenible). CCAs are similar to cybercafes because they provide Internet access. However, CCAs provide access to online courses and telecenter operators act as tutors. A private Mexican university provides the software platform, teaching material, and certification for online courses (Red de Centros Comunitarios de Aprendizaje, 2007). The university also provides technical support and training for telecenter operators. (p. 219)

Thus, besides improving overall access to ICT, a town with a CCA will provide the crucial impact of intermediaries to help those using the Internet to find the information they seek, rather than employing ICT broadly and blindly through the market mechanism.<sup>61</sup> Poor people rely on personal networks as their primary source of information and are reluctant to trust other sources of information (Pigato, 2001). However, it has been well documented that having an intermediary person (operator) to help people – often the poor in public telecenters – use the Internet dramatically improves the user's ability to navigate the web, regardless of whether or not the intermediary is in one's personal network.<sup>62</sup>

I follow the lead of Huerta & Sandoval-Almazan (2007), who study the ability of the poor to actually use the Internet at CCAs. I focus on two small villages in the Mixe speaking region of Oaxaca. According to socioeconomic indicators for the year 2000 provided by the National Council on Population (CONAPO), Chiapas, Oaxaca, and Guerrero form a triangle of extreme poverty in Mexico (Oaxaca borders Chiapas on the Mexican Pacific coast-Guerrero borders Oaxaca to the west, also on the coast). Oaxaca is one of the poorest states in Mexico, as 29.5% of the population is considered to live in conditions of high marginalization and 46.5% in very high marginalization. 21.5% of the Oaxacan population is illiterate; 26.7% of Oaxacan women are illiterate, compared to 15.5% of men. In 2004, Oaxaca held the first place in the country for mortality rates, with 5.2 per 1,000 people. (SIPAZ, 2011b). The infant mortality rate in 2003 was 9.7 for every 1,000 live births (INEGI, 2003).

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<sup>61</sup> Future research could take another approach investigating whether or not there is a difference in usage of the Internet in private, pay for access kiosks than CCAs. Although, I have not found studies in Mexico that compare the two, the question worth addressing would be whether or not those who pay for access use the Internet more effectively because they use it for a longer time? (CCAs often have limits of 30 minutes or an hour per person). Furthermore private kiosk users may be more likely to use the Internet for entrepreneurial pursuits. However, paying for Internet access may be prohibitively expensive for the poor, thus they may be more likely to not use it at all. Adding to this side of the argument is that at CCAs intermediaries (operators) can help people overcome technological problems faced in using the Internet, which might not be as readily available in private kiosks. Thus, there is no obvious answer supplied by inductive logic or research.

<sup>62</sup> Operators, or intermediaries, have been identified as a key success factor for telecenters (Delgadillo, Gomez, and Stoll, 2006; Proenza *et al.*, 2001).

## 2.5 Beyond the Margin: The Jasmine Swan.

As demonstrated above, there is a need for further explanation and investigation of increased ICT penetration and its influence on governance. This side of the interaction effect is vital to my argument. At the margin—as more access to mobile phones and Internet is introduced into developing countries, and poorer regions within them—governments will provide more concessions (and better services) to the poor over time. Governments are incentivized to do so because the introduction of new ICTs enhances the ability of the poor to demand *more* transparency, provides them with powerful new tools for mobilization, and increases their ability to have more direct connection with activists, scholars, and NGOs around the world. ICTs help to improve governance that, in turn, also improves poverty outcomes. All of these developments can 'help' to advance the plight of the poor at the global and local levels. Also governments in developing countries contain most of the world's authoritarian regimes still operating in the post-Cold War era. Pressure on their authority is especially compounded in countries with weak economies and a correspondingly high percentage of the population mired in poverty. Besides the incremental concessions and structural factors, there is something more profound taking place in the modern world. I posit that the diffusion and deepening of information exchange, powered by mobile phone and the Internet, produces an impact that governments, especially on those in authoritarian positions of power fear even more: The Jasmine Swan.

My conception of a 'Jasmine Swan' is related, but differs from, Nissim Nicolas Taleb's now famous 'Black Swan Theory.' Taleb's metaphor alludes to the erroneous, albeit popular, belief that all swans are white, despite the actual existence of black swans in the animal kingdom. Taleb (2007) can be credited with creating the 'Black Swan Theory' which attempts to explain the role of unpredictable, rare events in social science that do not 'fit' into Gaussian distributions (informally known as bell curves). According to Taleb (2010), for an event to be considered a 'Black Swan' it must be a surprise, have major impact (e.g. on the overall economy, or political structure), and is

usually rationalized by experts/scientists in hindsight so that it 'fits' better into 'White Swan Models' (i.e. Gaussian distributions, Bayesian analyses etc.). He claims that for mainstream, scientific approaches, these events are often called outliers or explained away as simply 'unpredictable' to scientific analysis. Furthermore, Taleb claims that our biases make us psychologically unable to consider that uncertainty is a central condition of social analysis. Thus, he posits that social scientists must do a better job of understanding the important role that Black Swan events play in world affairs. For Taleb (2010), in modern history, the following are examples of Black Swans: WWI, the disintegration of the Soviet Union, the rise of PCs and the Internet, 9/11, the Financial Crisis of 2007-08, and the Arab Spring.

In their 2011 *Foreign Affairs* article, "The Black Swan of Cairo," Taleb & Blyth apply Black Swan Theory to recent political/economic events, employing the concept of the Black Swan to try to explain why experts did not predict events such as the financial crisis of 2007-08 and the Arab Spring. They state:

Why is surprise the permanent condition of the U.S. political and economic elite? In 2007–8, when the global financial system imploded, the cry that no one could have seen this coming was heard everywhere, despite the existence of numerous analyses showing that a crisis was unavoidable. It is no surprise that one hears precisely the same response today regarding the current turmoil in the Middle East. The critical issue in both cases is the artificial suppression of volatility—the ups and downs of life—in the name of stability. It is both misguided and dangerous to push unobserved risks further into the statistical tails of the probability distribution of outcomes and allow these high-impact, low-probability “tail risks” to disappear from policymakers’ fields of observation. What the world is witnessing in Tunisia, Egypt, and Libya is simply what happens when highly constrained systems explode. (2011, p. 33)

In Taleb & Blyth's view, the more closed a political system is to information and civil liberties, and more reliant it is on authoritarian rule, the less apparent its volatility. Therefore predictions by experts and social science are likely to be largely off target. Elaborating on the unpredictability of regime stability, Taleb & Blyth explain that “the more constrained the volatility, the bigger the regime jump is likely to be. From the French Revolution to the triumph of the Bolsheviks, history is replete with such examples, and yet somehow humans remain unable to process what they mean” (2011, p. 38). This does not mean that simply because of the increased information sharing capacity

of the Internet, mobile phones, and social media networks that grandiose revolutions are going to spring up all over the authoritarian regions of the world. Instead, the crux of Taleb's work is the belief that 'we do not know as much as we think we know.' Scientists, experts, and statisticians relying on Gaussian distributions need to be more careful in their seemingly irrefutable claims of explaining risk. For Taleb, predictions made about a closed system that assume stability need to be viewed with a high level of suspicion.

Taleb (2010) claims that Black Swan events are part of his so-called 'fourth quadrant.' The 'fourth quadrant' is where statistical analysis fails to account for extreme risk. The more complex the phenomenon under consideration the more likely statistical analysis falls short, and in reality, resides in the 'fourth quadrant.' He claims that scientists should incorporate this 'fourth quadrant' into their models for risk. According to Taleb models should focus more on the outliers, or in his words 'tail risks', to get a better understanding of risk (Taleb & Blyth, 2011). The extent to which his 'fourth quadrant' exists, or whether current Gaussian models can account for extreme outliers or 'Black Swans', is a matter of debate (see Falkenstein, 2011 for a scathing critical account; see Blyth, 2009 for more of an academic, tempered, approach to 'coping' with the Black Swan world). I do not adhere to Taleb's radical, speculative, and largely untested 'fourth quadrant' claims, but his Black Swan idea is captivating in that it points to the existence of large scale changes taking place that are inadequately predicted by social scientific models. In fact, the often game-changing impact of ICT on governments, the poor, and the NGO community can be better understood through the inclusion of large scale unpredicted change, such as the rapidly spreading protests of the Arab Spring, within existing models. Evidence is mounting that the events seen in political mobilization across the Middle East were fueled in part by ICT (Edmond, 2011). Incorporation of the Black Swan idea is useful for bringing greater depth to my analysis, nuancing the attention to incremental change in a quantitative model.

In my expansion of Taleb's theory, the Jasmine Swan represents a technology-fueled social contagion with political mobilizing potential far outstripping previous advances. Following Taleb,



my proposed Jasmine Swan occurs rarely and represents an extreme change in political authority, or governance, in a country. However, unlike Black Swans – occurring outside the bounds of bell curves, traditional Gaussian distributions, or Bayesian analysis – the Jasmine Swan occurs in more regular intervals than Taleb's inherently unpredictable, always changing, and unable to be modeled, Black Swans. Jasmine Swans also rely on structural socio-political factors, often forgotten in more information-oriented social behavior championed by Taleb (2010) and exposed by Blyth (2009).<sup>63</sup>

Why jasmine? The Jasmine Swan concept captures the fact that in the digital age, the populace's ICT-fueled demands for change occur more often than Taleb's Black Swan, yet they are still rather unpredictable to model with traditional 'White Swan' Gaussian distributions (Taleb, 2010). Western media christened Tunisia's 2011 revolution the 'Jasmine Revolution' after Tunisia's national flower: Jasmine. The term originated from Tunisian journalist Zied El-Hani (*The Independent*, 2011), although the term has not been widely adopted by the Tunisian population. The use of a color describing revolutionary change falls in line with global nomenclature of the Color Revolutions mentioned above. Thus, the Jasmine Swan concept represents the ICT-driven changes demanded by the populace in the Arab Spring, yet it is more predictable than Taleb's Black Swan (as explained earlier, I am certainly not adapting his 'fourth quadrant'). Are Jasmine Swans likely in other areas of the developing world? Can my model predict their rise?

I posit that in developing countries Jasmine Swans are more likely to occur when the following factors are present: (1) technological penetration at threshold levels (over 20% of population with access); (2) authoritarian government repression; (3) weak economies, with a high proportion of the population mired in poverty; (4) cultural inflexibility and lack of respect/dignity

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<sup>63</sup> For instance Blyth (2009) states: "the need for histories to figure out the now, and for backward narratives to tell us how we got here and therefore what to do next—allow us to wander on the borders of Taleb's quadrant 3, and live some of the time in quadrant 2, without falling headlong into quadrant 4. Sometimes we trespass into that quadrant and pay the price, but perhaps our narrative fallacies and the like save us from many of the Black Swans that lurk out there, even as they also generate some of the much of we run into. The narrative fallacy surely exists, but it may not be much of a fallacy, and it may in fact be more causally important for the world we live in than Taleb admits. Taleb, I know, likes parties and advises that we should all go to more of them. I wholeheartedly agree. I suggest, however, that he might want to think about what makes a good party hang together. For me the answer lies in the social, not the informational" (461-462). I agree with Blyth here about more focus from Taleb is needed on the social rather than informational.

given to minority groups (including the poor); and finally (5) the lessening of citizens' fear of repression, either by the government or other armed groups. These conditions are not hard and fast rules, yet most of these conditions were satisfied in pre-2011 Arab Spring countries. As it will be shown in the case study in Chapters 4 and 5, most of these conditions were met in Mexico as well, helping to fuel the Yo Soy #132 movement of 2012. Due to the presence of these indicators, the Jasmine Swan is more predictable than Taleb's Black Swan. ICTs certainly are fueling uprisings rather than revolutions, although it should be noted that this could lead to messy definitional issues regarding what exactly should be classified as a 'revolution' and this digression will not be pursued here.<sup>64</sup>

The Jasmine Swan certainly needs a trigger. This can be, and usually is, from an unexpected place (i.e. fruit seller Mohamed Bouazizi of Tunisia's 2011 revolution). Triggering events usually come from the general populace for a whole host of reasons and are not fully predictable, a point shared by both Black and Jasmine models. However, the structural conditions of the Jasmine Swan are now in place in many modernizing developing states. That said, minimal thresholds need to be met for ICT technology to have an impact. Evidence from the Arab Spring, Brazil, and Mexico point toward countries surpassing threshold levels of Internet and mobile phones penetration (approximately 20%) for ICTs to fully influence political mobilization on a large scale. These structural factors help to predict the occurrences of Jasmine Swans, just not their specific local origins. When countries, and regions, continually suppress the poor and middle classes, in both political access (or at least the veneer of access to power), and economic opportunities, the likelihood of a Jasmine Swan increases.

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<sup>64</sup> For instance, for Skocpol (1994) a 'social' revolution—which require the changing of an entire social structure—are very “defined as rapid, basic transformations in a society's state and class structure, accompanied and accomplished through popular uprisings from below” (2004). She found only three such examples that fit her definition: 1700s France, 1917-1930s Russia, and 1911-1960s China. Typical dictionary type definitions are much broader in scope for example: “an overthrow or repudiation and the thorough replacement of an established government or political system by the people governed” (Dictionary.com 2014). The Arab Spring would certainly fall in this definition, but it is not clear in Skocpol's definition.

Have there been Jasmine Swans in actuality? The most telling example is Tunisia's 2011 revolution. I would also define the subsequent copycat revolutions across the Middle East as Jasmine Swans: Egypt ('relatively' non-violent revolution); Libya (successful, yet violent revolution); Syria (as of this writing unsuccessful revolution); Bahrain (as of this writing unsuccessful revolution); Yemen (as of this writing unsuccessful revolution); and protests in Turkey (as of this writing it is difficult to determine if this uprising will be successful in forcing change—but it differs in that Turkey is not a strict authoritarian regime). However, the Jasmine Swan is far from a Middle Eastern phenomenon: the Color Revolutions in the Caucasus Region, Moldova 2009, the failed attempt by students demanding change in Iran 2009, and Brazil's large scale protests by the poor in 2013-14 demanding better governmental services and more economic equality, could all be considered recent examples of the Jasmine Swan effect.

There were also revolutions taking place before the omnipresence of ICT that could be considered analogous to the Arab Spring uprisings: Prague Spring, Poland 1980, and, of course, the crumbling of the Soviet Union (1989-1991). These societies displayed many of the same structural conditions leading to demands for reform seen in the Arab Spring. Similar to the nations embroiled in the events of the Arab Spring, the weak economic conditions of Central and Eastern European Soviet bloc countries exacerbated the demands for change in many of these Cold War era revolutions, with protesters calling for better governance and freedom from authoritarian rule. In terms of technology, the revolutions of the late twentieth century were also fueled by the communication technologies of the time, such as TV (especially cable and news stations), landline phones, fax, and copy machines. The structural economic and political conditions had been difficult for a long time, but these technologies did help spread news about the protests. The development and proliferation of these technologies also helped explain why the successful protest events in the Soviet bloc countries occurred in 1987-1992 and not 20 years before. Communication technologies, were important, but certainly not the only structural factor in play for explaining the successful protests. Nor was it only TV, or fax machines, but rather a convergence of various technologies at

the time that helped fuel the protests. Likewise, the Arab Spring was not simply driven by Facebook, Twitter, and text-messages; rather ICT communications interacting with traditional mass media (TV and Internet convergence) accelerated the size and effectiveness of the protests. Overall, ICTs play a ‘fueling of the fire’ role in large-scale political mobilization.

Finally, Jasmine Swans are not only produced on the national stage, nor are they limited to ‘revolutionary type’ takedowns of corrupt regimes. They can occur at local, state, and regional levels as well, although their chances for success are likely to be lower due to a range of factors, from difficulty garnering wide support to a dearth of international attention. More localized Jasmine Swans also range greatly in their demands, from calling for more political representation for their area/region, to demanding redress from MNCs polluting the local environment (e.g. the situation of privatization of water in Cochabamba, Bolivia), or perhaps a lack of local access to markets and entrepreneurship (e.g. Mohamed Bouazizi in Tunisia). Some examples of local Jasmine Swans in Latin America include the 1994 Zapatista uprising (not successful for them-i.e. acquiring independence from the Mexican state), and the Cochabamba protests in Bolivia. The rise of some politicians implementing widespread change in government (or at least those making campaign promises to that effect) could also be seen as a Jasmine Swan. For instance, in the U.S., the rather surprising presidential campaigns of Howard Dean (mobilization and creation of a base of supporters) and Barack Obama were able to heavily use the Internet to garner support. These U.S. presidential candidates, both with rather progressive political platforms (for the U.S. at least), used new technologies to their advantage in arguing, at least for U.S. mainstream politics, that the plight of the poor and lower classes are deserving of increased national attention. Before they became frontrunners in the Democratic Party’s primary elections, the rise of both Dean and Obama to national prominence was predicted by very few of the political chattering class, or so-called experts (CNN, 2008).

If the Jasmine Swan is a real phenomenon, I would expect to find evidence of their operation at lower levels of citizen/government interactions as well. Wherever structural conditions

are conducive to the development of Jasmine Swans I would expect to find occurrences of state/government resistance. Enter Mexico; the structural conditions, especially in more repressed regions, seem ripe for introduction of a Jasmine Swan in the near future. The mobilization tools of the poor have been improving, yet how much this matters is still a mystery. Thus, my case study of cities and towns in Mexico will provide a more appropriate avenue to investigate the presence, or absence, of Jasmine Swans. Quantitatively, the Jasmine Swan is difficult to measure or model in the large-n sense. Incrementally, my large-n model is useful for analyzing the structure behind the ICT/governance interaction, yet it falls short of investigating the presence (or predisposition) of Jasmine Swans. The Mexican case study will be useful in analyzing how the introduction of ICT into poor developing regions impacts individuals and organizations at the local level. With the diffusion of ICTs in Mexico, are citizens more likely to be politically mobilized? If so, do ICT threshold penetration levels at the local level help to explain variance in political mobilization?

The paragraph above I purposely left essentially unchanged from when I wrote it in 2011. Since then, Mexico has developed its own Jasmine Swan: the Yo Soy #132 movement. No one could have predicted the rise of the Yo Soy #132 movement, which was started by university students, and was supported by poor people. Given all the similarities to the Arab Spring, the Yo Soy #132 movement is Mexico's Jasmine Swan to date. The movement will be thoroughly explained in the case study of Mexico in Chapter 4. For now, I want to leave the reader with my conclusion that while my structural model works at the margin, consideration of the Jasmine Swan as a continual possibility should *not* be an afterthought in the wired world. When the right structural conditions are present, the chance increases for a Jasmine Swan to emerge from an unexpected place.

## 2.6 Challenges to My Model.

There are three major hurdles to overcome: first, *a priori*, poverty is often a primary cause of the digital divide, thus there is a prominent and well-documented endogeneity problem to work around,

as academic literature considers GDP and ICT penetration rates to be highly correlated.

Quantitative analysis will have to account for this; although some studies already have done so through co-variance analysis, such as Gani & Clemes (2006) —but it is still a difficult problem to work around. Secondly there are many factors that influence poverty that need to be adequately controlled for, including development inputs, including domestic factors and international factors: (A) GDP; (B) debt (the logic of this control is the more debt a developing country has the harder it is to fund social welfare programs); (C) the presence of conflict (societies with more conflict tend to have more poverty); (D) Trade as a % of GDP; and (E) Official Development Assistance.

Finally, it should be noted that ICT by itself is often not that large a portion of the overall economy. In fact, in almost all countries it directly accounts for less than 5% of the economy (i.e. jobs in the IT sector). Thus, the impact may be marginal and analysis of it often hinges on how it affects larger sectors of the broader economy. Therefore those using ICT to pull themselves out of poverty are likely to indirectly employ ICT, and are not typically employed in the industry. However, the extent that ICT plays a role in improving people's lives in many other industries is extensive. These are significant hurdles to overcome. Overall, I am rather skeptical about ICT having a strong positive impact on poverty alleviation when the market fully dictates ICT access, content, and the ability to employ it effectively. I predict that ICTs will be more effective when interacting with governance.

In conclusion, if these hurdles to my model can be overcome, my dissertation will contribute towards advancing new knowledge in four broad ways. The first contribution will be its advancement of theory regarding how ICT can influence governance and how this in turn will impact poverty—with my interaction effect playing a central role. The second contribution is the quantitative cross-national time series analysis. This is innovative as it employs more detailed data and more nuanced methods (i.e. interaction effect) than previous studies. The third contribution will be the in depth comparative analysis of Latin American countries, and of urban to rural areas Mexico. The case study explores different regions in Mexico that vary in the performance of

government, ICT diffusion, and poverty. Thus, this qualitative research will provide much greater detail on the moving parts of the causality relationship between ICT, governance, and poverty that the large-n cannot explain. Finally, my conception of a 'Right to Internet access' in the final chapter makes an innovative claim that due to economic and political participation Internet access should be considered a human right in the modern world. Overall, these four broad contributions will help bridge the gap between multiple literatures that have basically ignored each other. In fact, this dissertation attempts to bring the following literatures closer together: the ICT and development, information communication technology, developmental economics, and political science. Through analysis of the 'missing link' of governance, I hope the following chapters will provide a substantial empirical contribution.

## **Chapter 3: Quantitative Analysis**

### **3.1 Introduction, Model I Equation, Explanation of Variables.**

Hopefully, the literature review in the previous Chapters clearly displayed that effective analysis of ICTs and poverty requires a multi-methodological approach. Unfortunately, there is no magic bullet method to test and evaluate the impact of ICTs on my variables of interest. Thus, I will follow a new trend in social scientific analysis towards employing multi-methodological research for questions that require it. There is simply no way to get at the heart of the complexity of the impact of ICTs on poverty without employing a multitude of methods. Thus, the analytical sections of this dissertation will be multi-methodological: quantitative large-n and qualitative small-n.

It is clearly the case that there are more than a few ways one could go about analyzing the impact of new ICTs on poverty. As exposed in the literature review approaches ranged from journalistic anecdotal pieces to rigorous data driven analysis by entities such as the MIT Media Lab. I will begin the data analysis of my inquiry by investigating quantitative data at the national level. This approach provides a bird's eye view of the vast landscape of the digital revolution that has been taking place since the 1990s. It is a good place to begin rigorous analysis of the data and allows for a causal argument.

The primary goal of the large-n analysis in this chapter will be to find broad trends and causal relationships between ICT, governance, and poverty. The unit of analysis is developing countries, at least those where data is available. In the final section of this Chapter, I will comparably analyze only Latin American countries. As theoretically laid out in Chapter 2 I will be testing two general models. Model I will test the effect of ICT on good governance, and analyzes Pillars, I, II and III in my theoretical framework with ICT penetration rates (disaggregated) as the independent variable and measures of governance as the dependent.



Model II analyzes Pillar IV—thus the dependent variable is poverty outcomes. Because poverty outcomes can be controversial/difficult to evaluate quantitatively the analysis below tests various measures of poverty. The goal of Model II is to analyze the proposed interaction effect between governance and ICT and whether or not it leads to better outcomes for poverty.

My analysis will begin with investigating the impact of ICTs on governance. The literature review displayed that improved governance helps the plight of the poor. Thus, knowing if ICTs can help improve governance would be the first step in determining if ICTs indirectly enhance the lives of those in poverty. Determining this relationship would also inform analysis of the direct impact of ICTs on poverty (i.e. perhaps the story is more complex then rising ICT and falling poverty—which it proves to be). Model I is listed below in equation form:

**Model I:** Good Governance (WGI) = a ICT penetration rates +b GNI per capita +c Democracy +d Freedom of the Press +f Trade as a Percentage of GDP +e

The following section attempts to justify why I included each term in Model I and will also explain how the concepts are operationalized. The dependent variable is **Good Governance (WGI)**. Good governance is a broad concept that attempts to capture the ‘quality’ of governing institutions. The concept estimates the functioning of the state in its various duties such as control of corruption, the ability of the state to ‘get things done,’ quality of services, functioning of governing institutions such as the court system, and more broadly, state capacity. Employing good governance as compared to democracy has clear advantages in the study of the impact of ICT as was explored in the literature review. The WGIs (World Governance Indicators from the World Bank) are the primary measures that I will use to operationalize the concept of good governance in this analysis (other measures of good governance are tested below as well). There are six indicators of good governance in the WGI measure: (I) Voice and Accountability; (II) Political Stability; (III) Governmental Effectiveness; (IV) Regulatory Quality; (V) Rule of Law;

and (VI) Control of Corruption. I test all of them in the models below, but will only report relevant results.

There have been substantive critiques leveled against the World Bank claiming that the Bank does not provide straightforward, transparent specification on how they arrive at their measures of the World Governance Indicators (Arndt & Oman, 2006; Thomas, 2006). Despite this charge, I find their response to the critics convincing (see World Bank, 2010). For instance, in answering their critics—specifically Thomas (2006), Kaufmann *et al.* (2006), the academics responsible for the creation of the WGI measurements at the World Bank, state that they categorically reject Thomas' claim that the use of their indicators by policymakers is "arbitrary" because of the supposed failure to establish "construct validity." Thomas' critique argues that the WGI project is insufficiently transparent. Besides Thomas (2006), this type of critique is also raised by Arndt and Oman (2006), and is mostly concerned with access to the data from the underlying sources on which the WGI are based. Thomas (2006) says that "...the data upon which they [the WGI] are based are not available to the research community to allow evaluation, critique or refinement', and as a consequence we have left...replication and peer review as impossibilities." Kaufman *et al.*, (2007) respond by noting:

With one important caveat we think this line of criticism is entirely unfounded. First, the caveat. Several years ago we decided to include the Country Policy and Institutional Assessment (CPIA) ratings from the World Bank, African Development Bank, and Asian Development Bank among the sources for the WGI. We included these data sources based on our judgment that they provided valuable information on the dimensions of governance we wanted to measure. Unfortunately, however, only as of 2005 have these institutions fully publicly disclosed the CPIA data, and then only for the set of low-income countries eligible for concessional lending from the International Development Association (IDA) (ibid, p. 27-28).

Kaufmann *et al.*, further argue that they find Thomas' concerns about access to underlying data, and the consequences for scrutiny and peer review, to be "vastly exaggerated. With the important partial exception of the CPIA data noted above, all of the data used to construct the WGI is in fact publicly available on our website and can be used for replication and robustness testing. In those cases where users might for some reason want to further disaggregate the data from individual data

sources, all such data are available, in most cases freely although sometimes on a commercial basis” (p. 28). The evidence presented in Kaufman *et al.* in response to their critiques I find to be convincing and will employ the WGIs extensively in this analysis. Furthermore, to double check that my results are not simply due to WGI scores but is capturing the concept of good governance accurately, I also include other alternative measurements of good governance, including various measures of corruption—Transparency International's Corruption Perception Index and the World Bank's Informal Payments to Public Officials are tested.

Turning to the independent variables and control variables there is less controversy to discuss as far as operationalization is concerned. My independent variable **ICT penetration rate** is a measure of the percentage of the population who has access to various ICTs. Data is from the International Telecommunications Union's *World Telecommunication Indicators Database*. I test ICT measures separately and also a combined measure of ICTs: Internet penetration, computer penetration, television penetration, and radio penetration (ITU, 2010). The measures by the ITU are considered the most reliable international data on ICT penetration (evidence for this is provided in my literature review as almost all the studies employing ICTs in quantitative analysis use the ITU databases. The logic for including percent of the population as opposed to overall number of devices is pretty straightforward if one wants to determine if ICT penetration rates has any impact on good governance. There is less compelling theory or empirical studies that try and make a case that the number of devices has an impact in comparison to the percent of the population that is using them.

Model I controls for **GNI per capita**, which is operationalized by the Atlas method for measuring GNI from the World Bank. This is essentially a measure of income within a country. Measures employing GDP were also used and displayed little difference in the results using GNI. GNI was used because it allowed for more data to be analyzed—as there were more countries reporting data. The logic of including income as a control is straightforward as it impacts good governance (countries with more income overwhelmingly tend to have better governance).

Model I also controls for level of **Democracy**. I operationalize democracy, which is a concept that has been notoriously difficult to define, using the widely employed Polity IV data set (for detailed discussions of the problems scholars have had in adhering to a widely accepted definition of democracy see Collier & Levitsky, 1997; Munck, 2001). Democracy needs to be a control because countries with higher levels of democracy also tend to have better governance. Choosing the Polity IV Data set comes with a few drawbacks. For instance, Munck & Verkuilen (2002) state that a significant omission that affects various quantitative indices of democracy concerns one of democracy's attributes: participation; "This omission is a particularly grave problem for the Polity index created by Gurr and his associates (1991) (Marshall & Jaggers, 2001). Indeed, because the scope of this data set reaches back to 1800, this omission results in the glossing over of a key feature of the experience with democratization in the 19th and early 20th centuries as opposed to the late 20th century: the gradual expansion of the right to vote" (p. 11). However, compared to many of the other quantitative measures of democracy, which also do not give adequate attention to participation, Polity IV stands up well to critics (see Marshall & Jaggers 2001).

Relatedly, Model I controls for **Freedom of the Press**, which I operationalize with data from Freedom House and their Freedom in the World Survey. The logic of including freedom of the press is pretty clear as it impacts the ability of a state to be considered a democracy and for citizens to put pressure on the government for reform. If citizens are not allowed free speech, online or off, we would expect democracy to suffer, as well as good governance.

Finally, the last control for Model I is **Trade as a Percentage of GDP**. This is operationalized as Merchandised Trade as a percent of GDP (data from World Trade Organization). The logic of adding this control is that the extent a country is engaged in the global economy the more likely it will be to improve its governance. Many scholars use this measure to evaluate the extent countries are engaged with the global economy (see Rodrik 2007). Initially I was hesitant to include this variable in the model, but after running the model with and without it I

decided to include it as it improved the model's performance. For more analysis on the link between activity in the global economy (measured here by trade) and improving governance see various studies by the OECD (particularly by work by Jorge Braga de Macedo President OECD Development Centre, OECD 2001). For example, the OECD states: "Examining a large sample of countries covering a 20-year long period, we found robust empirical support for the fact that increases in import openness do indeed cause reductions in corruption, a crucial aspect of governance. The magnitude of the effect is also quite strong. After controlling for many cross-country differences, openness' influence on corruption is close to one third of that exercised by the level of development" (OECD 2001). There are multiple ways to measure engagement in the global economy, for example openness, trade as a percent of GDP, Foreign Direct Investment, I chose Merchandized Trade as a percent of GDP because it was a popular measure among scholars (see Rodrik 2007) and it had an extensive amount of data for time series analysis.

In summation, both my models (Model II is outlined in the following section of this Chapter) propose that the ICT and governance interaction leads to better governance, which in turn, produces policy programs that benefit the poor. The impacts of these policies can be both direct and indirect. If the indicators of good governance improve, particularly as a result of ICT, the poor will benefit. At least it tends to open up more economic and political opportunities for them. The model makes the case based on marginal, incremental change. As the variables in the model increase or decrease overtime, depending on their sign, there is more or less likelihood of the predicted outcome. Chapter 4 also foregrounds the argument for why small-n analysis is needed to complement the large-n analysis if my complex primary puzzle is to be adequately addressed.

### **3.2 Model I Results: ICT and Corruption.**

The first aspect of governance to be analyzed is the ability of the government to control corruption. In this section I focus on investigating whether or not higher levels of ICT are associated with government control over levels of corruption (when other factors are controlled for). To do so, this

empirical section will employ cross-national statistical analysis exploring ICT as an independent variable. ICT is measured in penetration rates per capita and is disaggregated between Internet, mobile phones and TV (unfortunately, there was not enough data to perform regressions for radio penetration among the poorest countries). In the second model, I investigate an interaction effect between ICT and governance leading to reduced levels of poverty.

First, the focus on corruption must be explained. There are various data measures of corruption at a cross-national perspective. ‘Control of corruption’ is one of the World Bank's Governance Indicators and curbing corruption is now widely considered to be vital for successful development (see Easterly, 2006; Rodrik, 2007). Controlling corruption appears to both strengthen political institutions and achieve economic development simultaneously (Rodrik, 2007). Attempts to connect corruption to poverty rates in cross-national time series analysis are rather limited, yet there is extensive scholarship addressing whether or not it hampers economic development. For instance, Hodgson & Jiang (2007) purport that data from Transparency International for 2005 suggests that corruption is “rampant in more than 70 countries. These include populous and fast-growing economies such as China and India, which account for a large and rapidly increasing share of the global economy” (p. 1043). Other quantitative studies indicate that corruption has a negative effect on economic performance (Aidt, 2003, 2009; Jain, 2001; Mauro, 1995; Pelligrini & Gerlagh, 2004; Shleifer & Vishny, 1993). According to Hodgson & Jiang (2007), the World Bank (1997) has identified corruption as “the single greatest obstacle to economic and social development” (p. 1043). Aidt (2009) claims that academic scholarship gives the impression that there are two types of arguments regarding corruption and economic growth: ‘sanders’ and ‘greasers.’ Aidt (2009) states: “The ‘sanders’ believe that corruption is an obstacle to development, while the ‘greasers’ believe that corruption can (in some cases) foster development” (p. 271). Aidt further argues that the evidence supporting the ‘greasing the wheels of growth hypothesis’ is very weak, noting that there is no correlation between managers’ actual experience of everyday corruption and GDP

growth. His statistical analysis points to a strong negative correlation between growth and corruption (2009, p. 271). In reviewing the literature, I find his argument very convincing.

Turning back to technology, Shleifer and Vishny (1993), Easterly (2001, 2006), Aidt (2009), and other scholars of corruption (with the exception of a few, such as Sturges, 2004) have neglected to investigate how emerging ICT technologies are influencing corruption. However, from the limited quantitative studies I have found investigating technology's role, it appears that the 'general conclusion' of the ICT and development literature is that increased levels of ICT 'should' have a positive effect on limiting corruption (ITU, 2009; Norris, 2001; Sturges, 2004). However, rarely is this 'general conclusion' put to rigorous regression analyses that controls for other factors, thus this first section of my empirical analysis attempts to fill that gap. Moreover, no studies—to this author's knowledge—have quantitatively analyzed how ICT influences corruption since the late 1990s explosion of Internet penetration in the developing world, and the concurrent development of Web 2.0 technology. Has there been more accountability, transparency, and effective 'naming and shaming' since this technology has been deployed?

### **Corruption and Internet: Regression Results.**

The following is a quantitative report of my findings for corruption and ICT employing Model I. I tested many variations of regression analysis—employing fixed effects models (and Prais-Winsten models). I used the Internet, mobile-phones and TV as IVs. In fact, for all the regressions reported below, the Internet will be the default reported ICT. I will note when mobile phones or TV had a dramatically different quantitative impact than the Internet, otherwise it should be assumed that the impact was similar for mobile phones and dissimilar for TV (TV had no impact on my variables of interest in Models I and II). I analyzed three different measures of corruption. It appears that the results are a mixed bag. Internet and mobile phones do impact corruption, especially in the case of the first corruption variable tested—Informal Payments to Public Officials—but it is hard to make a case that there is a *strong* statistical relationship. That being said, current scholarship has had a

difficult time finding a *strong* empirical statistical evidence linking corruption with other variables either. Surprisingly this has also been the case in analysis employing with democracy and GDP (see Sturges, 2003). Corruption seems notoriously difficult to model using large-n analysis (Shleifer & Vishny, 1993). Here is what Model I looks like when configured with a measure of good governance (corruption) plugged into the equation:

**Model I (Corruption):**  $\text{Corruption} = a \text{ ICT penetration rates} + b \text{ ICT penetration rates} + c \text{ GNI per capita} + d \text{ Democracy} + f \text{ Freedom of the Press} + g \text{ Trade as a Percentage of GDP} + e$

The following regressions employ data from developing countries: defined as \$12,000 per capita income or below (World Bank, 2010b). No data points in years before 1989 were included due to a lack of the existence of emerging ICTs (particularly in large-n data sets). I used fixed effects regression models because this type of model captures the relationship between variables without numerical distortions often associated with standard OLS—thus helping to control for autocorrelation. It was the most conservative model that I could run for data I have. It is appropriate for models with endogeneity, and autocorrelation issues, which mine certainly has. I also tested Prais-Winsten models, which is a popular method to correct for autocorrelation. I will report the Prais-Winsten model in selected regressions below rather than reporting them for all the results (as the models did not differ substantially).

First dependent variable: **Informal payments to public officials (% of firms)**. The description from the World Bank states that 'Informal Payments to Public Officials' is the percentage of firms expected to make informal payments to public officials to “get things done” with regard to customs, taxes, licenses, regulations, services, and the like. This is one of the strongest of all the models I analyzed on corruption regarding the impact of the Internet:



**Regression I: All Developing Countries.**

DV: Corruption (Informal Payments to Public Officials)

<b>Fixed Effects Model</b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	-0.012	(0.003)
<b>Internet (penetration per capita)</b>	-1.291***	(0.513)***
<b>Democracy (Polity IV)</b>	-0.0451	(1.089)
<b>Freedom of the Press</b>	0.406	(0.5938)

Observations: 123

Number of Country Groups: 78

R-Squared: 0.26

F-Stat 7.67, Probability of &gt; F=0.0001.

Intraclass correlation: 72%

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Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Country level regression includes fixed effects.

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I tested variations of this model with a few other variables considered theoretically relevant for corruption, such as trade as a percent of GDP, civil violence and also civil society (operationalized as INGO penetration). It was also tested with other measures of ICTs such as mobile phone subscriptions per capita and households with a TV as a percentage of the population, yet the Internet remained the most statistically significant variable through the various iterations of the model and was by far the strongest relationship of all ICTs and/or ICT indices tested. Surprisingly, the Internet is the only statistically significant variable. The logic of including Freedom of the Press was to control for states having a relatively free press and/or society. It is also important because it impacts poverty and also studies often use Freedom of the Press as a proxy for government repression of the Internet (see Corrales & Westhoff, 2007). Thus, if it was not included it would be likely that the Internet penetration variable would be capturing the effect of freedom prevalent in the press and society, which certainly effects corruption (see Shleifer and Vishny 1993). It should be noted that the R-square is not very high, but is also not terribly low, certainly a model to keep testing in future research.

A model that addresses autocorrelation in time series data is the Prais-Winsten Autoregressive model. The problem of autocorrelation is prevalent in time series studies and I believe it is useful to provide both fixed effects models and Prais-Winsten models. The following results is from a Prais-Winsten Autoregressive model that corrects for autocorrelation and the very similar results *confirm* the findings in the fixed effects model reported above:

### Regression II: All Developing Countries

DV: Corruption (Informal Payments to Public Officials)

<b><u>Prais-Winsten AR(1) Model</u></b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	-3.411	(2.606)
<b>Internet (penetration per capita)</b>	-0.634***	(0.245)***
<b>Democracy (Polity IV)</b>	-0.317	(0.482)
<b>Freedom of the Press</b>	0.195	(0.151)

Observations: 124

R-Squared: 0.28

Adjusted R-Squared: 0.26

F-Stat 11.77, Probability of > F=0.000.

Rho: -0.1183

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Durbin-Watson Statistic Original: 0.037

Durbin-Watson Statistic Transformed: 0.035

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Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Regression contains 5 iterations—Prais-Winsten AR(1) regression.

In addition to the two similar results above—which included data from all developing countries—I also divided the data into subgroups of developing countries as defined by the World Bank: Low-income economies (\$995 or less), Lower-middle-income economies (\$996 to \$3,945); Upper-middle-income economies (\$3,946 to \$12,195); High-income economies (\$12,196 or more).<sup>65</sup> I analyzed low-income and lower-middle income countries together, but the findings were not statistically significant and will not be reported here. This might be due to there being less data available among the poorest countries yet it may be because the poorest countries are also the most

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<sup>65</sup> Source: World Bank (2010b) <http://data.worldbank.org/about/country-classifi>

corrupt with the lowest levels of good governance and ICT penetration—perhaps this indicates a threshold level for ICT penetration having an impact of \$3,946 or above per capita? However, this claim is rather speculative at this point.

Second corruption dependent variable that I investigated was **Control of Corruption (World Bank Governance Indicators)**. The definition from The World Bank of Control of Corruption indicator is: “perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as the 'capture' of the state by elites and private interests.” Here are the results from this iteration of the corruption model:

**Regression III: All Developing Countries.**

DV: Control of Corruption (World Bank-WGI)

<b><u>Fixed Effects Model</u></b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	0.000***	(0.000)***
<b>Internet (penetration per capita)</b>	-0.001	(0.001)
<b>Democracy (Polity IV)</b>	-0.002	(0.004)
<b>Freedom of the Press</b>	-0.005***	(0.001)***

Observations: 1015

Number of Country Groups: 110

R-Squared: 0.33

F-Stat 5.43, Probability of > F=0.0003.

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Interclass correlation: 81%

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Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Country level regression includes fixed effects.

In this model there are many more observations than the first (over 1,000), a higher R-squared, and yet the Internet is not statistically significant. Statistically, the strongest variables are Freedom of the Press and GNI per capita. In fact, they are only variables that predict the relationship in the correct direction (correct signs of the coefficients). These results are confirmed in a Prais-Winsten model below:

**Regression IV: All Developing Countries**

DV: Control of Corruption (World Bank-WGI)

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<b><u>Prais-Winsten AR(1) Model</u></b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	0.173***	(0.022)***
<b>Internet (penetration per capita)</b>	0.000	(0.001)
<b>Democracy (Polity IV)</b>	-0.000	(0.003)
<b>Freedom of the Press</b>	-0.007***	(0.001)***

Observations: 1018

R-Squared: 0.25

Adjusted R-Squared: 0.25

F-Stat 85.34, Probability of &gt; F=0.000.

Rho: 0.9374

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Durbin-Watson Statistic Original: 0.075

Durbin-Watson Statistic Transformed: 1.264

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Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Regression contains 6 iterations—Prais-Winsten AR(1) regression.

Again, GNI and Freedom of the Press are statistically significant with coefficient signs in the right direction. However, when tested with only lower-middle-income and low-income countries (results reported below) the Internet becomes a statistically significant variable with a correct sign:

**Regression V Results: Middle and low income countries.**

DV: Control of Corruption (World Bank-WGI)		
<b>Fixed Effects Model</b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	0.000***	(0.000)***
<b>Internet (penetration per capita)</b>	0.001***	(0.001)***
<b>Democracy (Polity IV)</b>	-0.004	(0.004)
<b>Freedom of the Press</b>	-0.005***	(0.002)***

Observations: 700

Number of Country Groups: 76

R-Squared: 0.11

F-Stat 6.89, Probability of > F=0.000.

Interclass correlation: 73%

Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Country level regression includes fixed effects.

Surprisingly, in this model, employing middle and low-income countries, the level of democracy proved to not be statistically significant. However, it should be noted that the R-squared was very low in this model, thus it was not very efficient. When another iteration, employing only the lowest-income countries was analyzed Freedom of the Press became a dominant variable along with the Internet. It should be noted that all of the iterations of the model produced rather weak results with R-squares of approximately 0.16. The model was not statistically significant when tested with only lower middle countries. The variables were all significant, but the performance of the model was weak with a really low R-squared. Thus, employing “all developing countries” proved to be the most efficient regression. This flip-flopping of the impact of Internet indicates that the threshold level of \$3,946 per capita is far from certain.

Third dependent variable tested for corruption: **Corruptions Perceptions Index (CPI—Transparency International)**. The following is a regression that employs the CPI as the dependent variable, which is a measure of corruption based on surveys asking people to report on their perception of the extent of corruption in countries around the world. The drawback with this measure

is that it is of 'perceptions of corruption' rather than instances of more measurable instances of corruption (i.e. actually documented corrupt behavior).<sup>66</sup>

### Regression VI: All Developing Countries.

DV: Corruption Perceptions Index (Transparency International)		
<b>Fixed Effects Model</b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	0.000	(0.000)
<b>Internet (penetration per capita)</b>	-0.003	(0.003)
<b>Democracy (Polity IV)</b>	-0.024**	(0.01)**
<b>Freedom of the Press</b>	-0.003**	(0.003)**
<b>Trade as a percent of GNI</b>	0.003*	(0.006)*

Observations: 480

Number of Country Groups: 98

R-Squared: 0.24

F-Stat 2.51, Probability of > F=0.02

Intraclass correlation: 81%

Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Country level regression includes fixed effects.

This regression has a high number of observations and a decent R-squared (still lower than first model of Control of Corruption). Interestingly, the Polity IV Index is now the most statistically significant variable, but its sign is in the wrong direction—higher scores of Democracy have worse scores for corruption (a surprising result). Freedom of the Press and Trade as a percent of GNI are statistically significant. Internet and GNI are both *not* statistically significant. This makes sense because of the nature of the 'perceptions' measure built into the CPI. If countries, MNCs, and private investors perceive a country as democratic, and less corrupt, then they will likely be more willing to invest their FDI dollars in the country (Bandelj, 2002). Thus, countries with higher ratings will likely have higher levels of investment, trade and in the long run—GNI per capita. Perhaps this is why trade as a percent of GNI was statistically significant in this model and not in the other two

<sup>66</sup> See Lambsdorff (1999) for a thorough discussion of the positives and negatives of the CPI measure, and how Transparency International addresses their critics.

employing corruption as the DV. The following is a similar model of the Corruption Perceptions Index with the Prais-Winsten transformation:

### **Regression VII: All Developing Countries**

DV: Corruption Perceptions Index (Transparency International)

<b><u>Prais-Winsten AR(1) Model</u></b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	0.409***	(0.061)***
<b>Internet (penetration per capita)</b>	0.002	(0.004)
<b>Democracy (Polity IV)</b>	0.000	(0.009)
<b>Freedom of the Press</b>	-0.012***	(0.003)***

Observations: 913

R-Squared: 0.49

Adjusted R-Squared: 0.49

F-Stat 217.02, Probability of > F=0.000.

Rho: 0.8603

Durbin-Watson Statistic Original: 0.2223

Durbin-Watson Statistic Transformed: 1.9999

Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Regression contains 6 iterations—Prais-Winsten AR(1) regression.

This produces some differing results than the fixed effects model. The R-squared is improved from 0.24 to 0.49, thus this latter model captures about two times as much of the variance. The Freedom of the Press variable still is significant and GNI was statistically significant in this model. However, the surprising result from democracy is nullified as well as any impact of Trade as a percent of GNI (which was removed from the model).

Exploring these models at greater depth, I also ran regressions using middle-income and low-income developing countries. The results were similar except that Internet and GNI both were statistically significant. Yet overall, this variation of the model was not very efficient with an R-squared of only 0.16. I tested the same model using only low-income countries and the results were essentially the same as regression VII above. However, results using only lower middle countries-regression proved once again to have no relationship.

Thus, in the analysis of the three corruption variables above, there is contradictory evidence, however there are some conclusions that can be drawn. GNI and Freedom of the Press proved to be significant variables most of the time (except for Regressions I, II, VI for the former and I, II for the latter) or which category of income differentiated countries was analyzed. The Internet proved strong in some models but not others, it was particularly strong for the World Bank measure of ‘Informal Payments to Public Officials’ and even more so for lower middle income and low income countries—rather than all developing countries. Internet did not prove as effective in influencing measure of ‘Perceptions of corruption’ or for the World Bank’s ‘Control of Corruption.’ Corruption has been notoriously hard to model in the large-n sense—thus the varying results are not exactly surprising. However, the Internet’s strong results for ‘Informal Payments to Public Officials’ do indicate its relevance. The following turns towards investigating other measures of governance to analyze Model I.

### 3.3 Model I Results: Analysis of Governance Indicators.

If corruption is notoriously difficult to model in the large-n sense, what about the impact of ICT on other indicators of governance? Below is a regression employing the World Bank Governance Indicator of Voice and Accountability as the DV as theory predicts:

#### Regression VIII: All Developing Countries.

DV: Voice and Accountability (WBGI)		
<b>Fixed Effects Model</b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	-0.000	(0.000)
<b>Internet (penetration per capita)</b>	-0.000	(0.001)
<b>Democracy (Polity IV)</b>	0.036***	(0.002)***
<b>Freedom of the Press</b>	-0.014***	(0.001)***
Observations: 1025		
Number of Country Groups: 110		
R-Squared: 0.88		
F-Stat 155.8, Probability of > F=0.000		
Intraclass correlation: 77%		



Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Country level regression includes fixed effects.

This proved to be a strong model (high R-squared), especially for Democracy and Freedom of the Press. Yet, GNI and Internet were not statistically significant. However, when employing the Prais-Winsten model, GNI becomes significant:

### **Regression IX: All Developing Countries**

DV: Voice and Accountability (WBGI)

<b><u>Prais-Winsten AR(1) Model</u></b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	0.093***	(0.012)***
<b>Internet (penetration per capita)</b>	0.000	(0.001)
<b>Democracy (Polity IV)</b>	0.04***	(0.002)***
<b>Freedom of the Press</b>	-0.021***	(0.001)***

Observations: 1028

R-Squared: 0.80

Adjusted R-Squared: 0.80

F-Stat 1040.94, Probability of > F=0.000.

Rho: 0.8325

Durbin-Watson Statistic Original: 0.2115

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Durbin-Watson Statistic Transformed: 1.2502

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Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Regression contains 9 iterations—Prais-Winsten AR(1) regression.

Although the R-square drops from .88 to .80 the Prais-Winsten model captures the significant impact of GNI. This is what we would expect to see following typical economic development theory. Again, the Internet is not significant when these controls are in the model. However, the following regression indicates that when only middle and low income countries (rather than all developing countries) are analyzed the results differ substantially and Internet becomes significant:

**Regression X: Middle and low income countries.**

DV: Voice and Accountability WBGI)

<b>Fixed Effects Model</b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	0.000**	(0.000)**
<b>Internet (penetration per capita)</b>	-0.009***	(0.002)***
<b>Democracy (Polity IV)</b>	0.035***	(0.003)***
<b>Freedom of the Press</b>	-0.175***	(0.07)***

Observations: 709

Number of Country Groups: 76

R-Squared: 0.86

F-Stat 122.47, Probability of &gt; F=0.000

Intraclass correlation: 62%

Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Country level regression includes fixed effects.

This is a very efficient model with Voice and Accountability as the DV, producing a high R-squared.

Internet has a slightly stronger statistical impact than GNI, but has the wrong sign, which is rather surprising. Democracy is employed as a control as well as Freedom of the Press; both are strongly statistically significant. Surprisingly, when the regression employed only the low-income countries, both the Internet and GNI proved to be not statistically significant at all. When only lower-middle-income countries were analyzed the results were similar to the above regression.

Turning to another World Bank Governance Indicator (Government Effectiveness), the following regression of all developing countries again displays strong statistical results:

**Regression XI: All Developing Countries.**

DV: Government Effectiveness (WBGI)		
<b>Fixed Effects Model</b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	0.000***	(0.000)***
<b>Internet (penetration per capita)</b>	0.003**	(0.001)**
<b>Democracy (Polity IV)</b>	-0.000	(0.003)
<b>Freedom of the Press</b>	-0.292***	(0.06)***
Observations: 1015		
Number of Country Groups: 110		
R-Squared: 0.46		
F-Stat 12.04, Probability of > F=0.000		
Intraclass correlation: 86%		
Notes: Standard Errors in parentheses. Significantly different than zero at 90% (*), 95% (**), 99% (***) confidence. Country level regression includes fixed effects.		

Also mirroring this result were models of the World Bank Governance Indicator (WBGI) measure of Regulatory Quality. The other WBGIs, Rule of Law, Political Stability, were not as impacted by my variables of choice. However, this makes sense because these two indicators require long time horizons for change, usually slow and incremental, observed in decades rather than years. For instance, substantial improvements in the rule of law take years to materialize, such as the creation of a functioning court system can be very slow as seen in the lack of them in many of the poorest countries. Political stability also takes a long time to improve, especially in post-conflict, post-colonial, newly democratic, developing states. Thus, it was not surprising to find little impact on these WGIs. Regression of middle and low-income countries proved to be very similar to the model above and will not be reported here.

Of my variables of interest, there is evidence for the impact of GNI, Freedom of the Press and the Internet on various indicators of good governance. The results are not particularly strong, and not surprisingly, different types of good governance measures/components displayed differing independent explanatory causal variables. The evidence indicated that the Internet impacted

Informal Payments to Public Officials and Government Effectiveness the strongest. In fact, it was the only statistically significant variable for Informal Payments to Public Officials. This is important for transparency, holding public officials accountable, and opening new avenues for reporting of corruption, this indicates its potential positive role for building better more effective governance in the developing world. The following section takes the analysis a step further by applying an interaction effect between ICT and governance to see if it impacts poverty. In fact, testing Model II is the prime goal of this large-n quantitative section of this dissertation.

### **3.4 Model II Equation and Results: ICT, Governance, and Poverty.**

My quantitative investigation continues by analyzing Model II and the impact of ICTs on poverty. The literature review displayed that many factors such as improved governance, literacy, and civil society can help the plight of the poor and now I will put those claims to quantitative analysis. Model II is testing my Pillar IV in my theoretical model outlined in Chapter 2, putting claims to statistical analysis. Similarly to Model I, I will begin by exploring the variables in the equation of Model II:

**Model II: Poverty variables = a ICT penetration rates + b GNI per capita + c Democracy + d Freedom of the Press + f Civil Violence/Ethnic Violence + g Debt + h Literacy rate + i Civil Society + j Governance + ( a ICT penetration rates \* Governance ) + e**

Half of these variables have already been discussed above and explanation of them will not be repeated here (i.e. ICT penetration rates, GNI, Democracy, Freedom of the Press, and Governance). However, there are five new variables to explain and operationalize: Poverty, Civil Violence/Ethnic Violence, Debt, Literacy rate, and Civil Society.

First and foremost, the all-important dependent variable **Poverty** is measured a few different ways during my analysis, yet the most widely used measure is also one of the most utilized by the international community of scholars analyzing poverty: Poverty Headcount-% of population below \$2 and \$1 dollar per day. According to the World Bank, the population living

below \$2 a day is the percentage of the population living on less than \$2.00 a day at 2005 international prices. For example, data for a country score showing as 2.0 signifies a poverty rate of less than 2.0 percent. This data was from the World Bank, Development Research Group. Data is based on primary household surveys obtained from government statistical agencies and World Bank country departments. Data for high-income economies are from the Luxembourg Income Study database; Catalog Source: World Development Indicators. This is one of the most prominent measures of poverty used in the development community and there should not be too much controversy using it for my purposes.

As poverty is the central concept that I'm interested in exploring as a dependent variable I believe it is worth testing it in a few different ways, beyond the basic measure of the amount of people in poverty. Another primary measure of poverty tested here is the Human Development Index (HDI). One of the benefits of testing the HDI is that it captures some of the deeper dimensions of poverty beyond a lack of income. The HDI is calculated by the UN Development Programme from five indicators of human development: (1) Adult literacy rate; (2) Life expectancy; (3) Primary and Secondary School Enrollment; (4) Infant mortality; (5) and GDP per capita. Because of the endogeneity problem between income and ICT the income component was removed from the numerical measure of the HDI. The HDI scores from 0 to 1 with a better score representing the highest level of human development achievable. I also tested a newer variation of the HDI, the HPI (Human Poverty Index), the only problem with that measure is that it did not yet have enough reliable time series data to produce any useful result. Another measure I tested captured the extent to which economic growth in the country was pro-poor economic growth. Unfortunately, the pro-poor economic growth measure by Kimenyi (2007) is not time series data.<sup>67</sup> I also tested the SERF Index (Social and Economic Rights Fulfillment), yet at the time of analysis

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<sup>67</sup> Pro-poor growth, pro-poor development and pro-poor economic development will be synonymous terms for the remainder of this dissertation.

the SERF did not include enough time series data to analyze properly (as of fall 2014 the SERF has data back only to 2000).

Besides the variables already listed above, there are a few more in Model II that need to be explored and operationalized. A dependent variable of poverty rates requires a few different controls than when it was governance in Model I. First, clearly impacting the level of poverty in developing states is the level of **Civil Violence or Ethnic Violence** (data from the Center for Systemic Peace). When a state is at war internally it has a difficult time reducing poverty and maintaining state programs. In the Center for System Peace's dataset for political conflict major episodes of political violence are defined by the systematic and sustained use of lethal violence by organized groups that result in at least 500 directly-related deaths over the course of the episode. The variables one called CIVVIOL (2-numeric) had magnitude score of episode(s) of civil violence involving the state, and ETHVIOL (2-numeric) Magnitude score of episode(s) of ethnic violence involving the state. The scale of these variables was as follows: 1 (lowest) to 10 (highest) for each episode; and magnitude scores for multiple episode are summed. Data from the Center for System Peace also included international wars. In some variations of the model I included 'all' violence data (civil, ethnic, and interstate war). Yet including interstate wars did not have much impact on the model, thus I kept the measure of civil wars and ethnic violence instead. Scholars studying poverty tend to agree that civil and ethnic violence are major contributors to poverty (see Easterly 2006).

On the other hand a society can have positive traits that encourage poverty reduction, such as the extent of **Civil Society**. This is operationalized as the percent of INGOs present compared to the population of the state. The more INGOs that are present, the richer the civil society of a state and the more the poor have protection, from other actors besides the government, to help improve their economic situation. Data from The World Resources Institute was used for this variable (<http://www.wri.org>). They define their measure as the density of international non-

governmental organizations with membership is the number of international non-governmental organizations that have either member organizations or individuals in each country per 1 million population. According to Resolution 288 of the Economic and Social Council of the United Nations, "any international organization which is not established by intergovernmental agreement shall be considered as a non-governmental organization." Non-governmental organizations (NGOs) can also include "organizations which accept members designated by government authorities, provided that such membership does not interfere with the free expression of views of the organization" (Resolution 1296). The Union of International Associations (UIA) compiles as complete a list as possible of international non-governmental organizations, based on seven criteria (explained below): aims, members, structure, officers, finance, relations with other organizations, and activities. The UIA codes organizations by type. The following types of organizations are included in this dataset: federations of international organizations; universal membership organizations; intercontinental membership organizations; regionally defined membership organizations; organizations emanating from places, persons, or other bodies; and organizations having a special form, including foundations and funds. Unfortunately, there was not enough data to include this measure in many of the iterations of Model II, nor was there data on domestic NGOs. However, when there was enough data the variable proved to not be statistically significant, thus dropping it from the model did not cause disruption.

Two other variables of interest were tested and dropped from the model after proving to not be statistically significant in any iteration: **Debt** and **Literacy rate**. The logic behind including debt is that states with high debt cannot fund programs to address poverty, either now or in the future. Data came from the World Bank, Global Development Finance (Catalog Source, World Development Indicators). They define total debt service as the sum of principal repayments and interest actually paid in foreign currency, goods, or services on long-term debt, interest paid on short-term debt, and repayments (repurchases and charges) to the IMF. Exports of goods and services included income and workers' remittances. However, in all variations of Model I debt was

not significant—thus it was dropped. Literacy rate, the percent of the population deemed literate at a 6<sup>th</sup> grade level in their local language also proved to have little impact on the model and is not included in the iterations of the model presented below.

Finally, I included perhaps my most important theoretical innovation: an interaction effect between governance and ICTs. Employing the same measures of governance and ICT listed in Model I the **Interaction Effect's** equation is as follows:  $X*T = \text{Interact } X \text{ and } T$ . To further explain the interaction effect: an increase in ICT leads to better governance (interactive effect) and better outcomes for poverty. This interaction effect purports that increased access to ICTs lead to better governance, which in turn leads to 'better' economic outcomes for the poor. Thus, there might be influence, or lagged influence, on poverty alleviation, which should eventually show up in the data. Model II was also tested with a lag on Internet (tested in time t-1, t-5, and t-10). A lag was used because it makes sense that it would take some years to see results from higher Internet penetration rates on the dependent variable and the interaction effect. Surprisingly, at least to this researcher, results displayed no difference with a lag or without one.

#### **Model II (HDI) Results: Interaction Effect between Internet and governance-Voice and Accountability.**

To test Model II, I will employ various dependent variables that measure poverty. The first dependent variable tested is the **Human Development Index**. The major factors that influence poverty as indicated in the economic development literature were included in initial tests of the model and some were removed from the model when they proved not statistically significant, nor did they contribute to the model. These included: (A) Foreign Direct Investment (FDI); (B) debt (in theory, the more debt a country has the harder it is to fund social welfare programs); (C) the presence of conflict (societies with conflict tend to have more poverty), which was kept in the model as Civil and International Violence. There was not sufficient data to include Official Development Assistance (ODA) but the impact is likely to be minimal as its contribution to domestic GDP output in the vast majority of receiving countries is small:



**Regression XII: All Developing Countries**

DV: Human Development Index (HDI)

<b>Fixed Effects Model</b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	0.000***	(0.000)***
<b>Internet (penetration per capita)</b>	0.001***	(0.000)***
<b>Democracy (Polity IV)</b>	0.001**	(0.001)**
<b>Freedom of the Press</b>	0.001***	(0.00)***
<b>Civil and International violence</b>	-0.002*	(0.001)*
<b>Voice and Accountability</b>	-0.001	(0.007)
<b>Interaction-(Internet and Voice and Acc)</b>	-0.001***	(0.000)***

Observations: 393

Number of Country Groups: 107

R-Squared: 0.48

F-Stat 31.87, Probability of &gt; F=0.000.

Intraclass correlation: 99%

Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Country level regression includes fixed effects.

In this regression, and in those that follow, across the board, Model II's performance was better than Model I. In Regression XII, with the HDI as the dependent variable, the R-squared is strong, the F-score is highly significant, and many of the variables of interest are statistically significant.

Surprisingly, the only one that is not is Voice and Accountability, yet when it is interacted with Internet it is significant but has the wrong sign. A problem with using the HDI is that one of its components *is* GDP per capita, which is already in the model (i.e. GNI). A possible way around this problem is to use the HDI with income removed or find another measure of pro-poor growth (see Kimenyi, 2007). However, Kimenyi's measure does not include time series data.

Dividing the country sample size into categories of income as used above (World Bank income categorization) proved to have similar results as the model employing all developing countries. I also tested various measures of good governance from the World Bank with Model II. The following

regression using lower middle-income countries and government effectiveness proved to be one of the strongest for my thesis:

### Regression XIII: Lower middle income countries

DV: Human Development Index (HDI)		
<b>Fixed Effects Model</b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	0.000***	(0.000)***
<b>Internet (penetration per capita)</b>	0.001***	(0.000)***
<b>Democracy (Polity IV)</b>	0.002***	(0.000)***
<b>Freedom of the Press</b>	0.001***	(0.00)***
<b>Government Effectiveness</b>	0.008	(0.007)
<b>Interaction-(Internet and Government)</b>	0.586***	(0.016)***

Observations: 134

Number of Country Groups: 37

R-Squared: 0.42

F-Stat 55.22, Probability of > F=0.000.

Intraclass correlation: 98%

Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Country level regression includes fixed effects.

Many of my variables of interest were highly statistically significant. Yet, this model, with its lower level of observations certainly is not the end of the story. More analysis certainly needed.

The second dependent variable for Model II uses **Poverty Headcount measured at the \$2 a day threshold:**

**Regression XIV: All Developing Countries.**

DV: Poverty Headcount (\$2.25 a day, World Bank)

<b>Fixed Effects Model</b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	-0.001**	(0.001)**
<b>Internet (penetration per capita)</b>	-0.210***	(0.077)***
<b>Democracy (Polity IV)</b>	0.246	(0.336)
<b>Voice and Accountability</b>	-7.98**	(3.59)**
<b>Freedom of the Press</b>	-0.153*	(0.089)*
<b>Interaction Governance and Internet</b>	-0.231***	(0.776)***

Observations: 255

Number of Country Groups: 92

R-Squared: 0.51

F-Stat 6.92, Probability of &gt; F=0.000.

Intraclass correlation: 95%

Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Country level regression includes fixed effects.

Higher scores of poverty are associated with lower scores of most of the variables of note—we should expect to see a negative relationship in many of the independent variables, which is the case in the results. The outcome was similar to the HDI model above, yet it has a lower F-score and some of the independent variables are not significant. These results are again encouraging for my thesis, especially because the interaction effect is statistically the strongest of all the variables (tied with Internet). Surprisingly, democracy was not statistically significant and the signs for its coefficient were in the wrong direction.

Before moving forward a note on endogeneity and collinearity is in order. Covariance tests proved negative on Internet, GNI, and HDI as all were below the 0.8 threshold for their bi-variate R-squared results to show strong covariance (I employed auxiliary regressions instead of simple correlations to detect collinearity). I used this method because there are many variables in my model and this allows for more targeted detection of collinearity. However, future research may

want to fully investigate the endogeneity problem associated with the variables employed in these models (perhaps by employing a simultaneous equation model). The following Prais-Winsten model, which accounts for autocorrelation, confirms the findings above and has a higher R-squared:

### Regression XV: All Developing Countries

DV: (Poverty headcount ratio at \$2.25 a day (PPP) (% of population))

<u>Prais-Winsten AR(1) Model</u>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	-21.012***	(1.213)***
<b>Internet (penetration per capita)</b>	-7.429***	(1.411)***
<b>Democracy (Polity IV)</b>	0.215	(0.298)
<b>Freedom of the Press</b>	-0.235*	(0.118)*
<b>Voice and Accountability (WGI)</b>	-9.583**	(4.274)**
<b>Interaction-(Internet and Voice and Acc)</b>	-3.14***	(0.138)***

Observations: 254

R-Squared: 0.76

Adjusted R-Squared: 0.75

F-Stat 129.56, Probability of > F=0.000.

Rho: 0.8024

Durbin-Watson Statistic Original: 0.0163

Durbin-Watson Statistic Transformed: 0.1039

Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Regression contains 5 iterations—Prais-Winsten AR(1) regression.

The following regression on lower income countries also indicates the interaction effect is important, and along with Internet is the only statistically significant variables:

### Regression XVI: Lowest income countries.

DV: Poverty Headcount (\$2 a day, World Bank)

<u>Fixed Effects Model</u>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	0.005	(0.022)
<b>Internet (penetration per capita)</b>	-4.599***	(1.382)***

<b>Democracy (Polity IV)</b>	0.85	(0.729)
<b>Voice and Accountability</b>	-3.539	(7.594)
<b>Freedom of the Press</b>	-0.022	(0.291)
<b>Interaction Voice and Acc and Internet</b>	-1.837**	(0.889)**

Observations: 58

Number of Country Groups: 34

R-Squared: 0.33

F-Stat 6.08, Probability of > F=0.0013.

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Intraclass correlation: 81%v

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Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Country level regression includes fixed effects.

In fact, despite the low number of observations in this model, the results are encouraging for my thesis. Many of the variables that were statistically significant in previous regressions are not in this one and yet only the Internet and the interaction effect with Voice and Accountability is. However, it also should be noted that the number of observations is low and the R-squared is not as high as previous models.

As explained above, the problem of autocorrelation must be addressed in these types of time series studies. The following model is slightly different, as it includes a measure of globalization, however it uses a Prais-Winsten Autoregressive model to correct for autocorrelation—rather than a fixed effects model. The dependent variable is from the World Development Indicators of the World Bank (2010b) **Poverty headcount ratio at \$1.25 a day (PPP) (% of population)**, which according to the World Bank (2010b) is the percent of the population living below \$1.25 per day with a comparable economic baseline to international prices of goods in 2005. As a result of revisions in PPP exchange rates, poverty rates for individual countries cannot be compared with poverty rates reported in earlier editions of the World Bank development indicators. Data showing as 2.0 signifies a poverty rate of less than 2 percent according to the World Bank Development Research Group (World Bank 2010b). This

data is based on primary household survey data obtained from government statistical agencies and World Bank country departments:

### Regression XVII: Low Income Developing Countries

DV: (Poverty headcount ratio at \$1.25 a day (PPP) (% of population))

<b>Prais-Winsten AR(1) Model</b>	<b>Coefficient</b>	<b>Standard Errors</b>
<b>GNI-Per Capita (Atlas Method).</b>	-32.685***	(0.880)***
<b>Internet (penetration per capita)</b>	-2.611***	(0.149)***
<b>Globalization (merch % trade per GDP)</b>	0.036***	(0.028)***
<b>Democracy (Polity IV)</b>	0.168	(0.349)
<b>Rule of Law (WGI)</b>	39.373***	(2.295)***
<b>Interaction-(Internet and Rule of Law)</b>	3.922***	(0.190)***

Observations: 146

R-Squared: 0.96

Adjusted R-Squared: 0.95

F-Stat 499.97, Probability of > F=0.000.

Rho: 0.999

---

Durbin-Watson Statistic Original: 0.008

Durbin-Watson Statistic Transformed: 0.568

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Notes: Standard Errors in parentheses. Significantly different than zero at 90% (\*), 95% (\*\*), 99% (\*\*\*) confidence. Regression contains 8 iterations—Prais-Winsten AR(1) regression.

In this strongest regression for my argument, the interaction effect is statistically significant and has the right sign. The signs for GNI and Internet and the interaction effect all point towards these variables reducing poverty. Yet surprisingly, globalization (the amount the state is integrated into the global economy), level of democracy and Rule of Law all are associated with raising the level of poverty (Freedom of the Press was omitted from this regression because it did not have much impact and also left the analysis with too few observations). A rather surprising result, although perhaps not that surprising considering that governance in newly democratic states is not always very strong (see Easterly, 2006; Mansfield & Snyder, 2005; Norris, 2012). The same regression was also was tested with all developing countries, \$12,000 per capita and below, yet the results were not

significant for many of the independent variables. This indicates that countries below \$3,945 seem to have different characteristics than middle-income countries. I also tested various measures of good governance from the World Bank governance indicators and they had similar results as Rule of Law. Surprisingly, countries that had more democratic governance were not associated with lower levels of poverty among developing countries. Also, this Model had a strong R-squared at 0.95, it is most convincing result of all the data, and confirm that that governance certainly matters for poverty alleviation.

#### **Large-n Regression Analysis Summery: A Hopeful Beginning For Future Research**

Overall, this large-n analysis did lend support for my thesis, especially for the strength of the Interaction effect across diverse models. It also displayed that Internet can be an important variable even when other variables deemed vital to poverty reduction do not perform as well—such as democracy. In fact, democracy was consistently weak as the regression analysis consistently displayed. It was much weaker than governance for those interested in what is more important for poverty alleviation—democracy or governance. The strength of governance held across various measures of poverty and governance. In sum, the Models varied in their performance, especially when countries were analyzed by income categorization—the poorest countries displayed the strongest results, at least for Internet as a reducer of poverty. Certainly, this is one of the most important findings in the quantitative analysis for my thesis.

Model II's performance was stronger; perhaps this is due to the combination of effective governance and higher Internet penetration jointly creating a strong platform for economic performance and for demand for pro-poor policies. The empirical results also indicate support for Internet causing some impact on good governance. This is the case even when controlling for GNI (which most quantitative analysis point to being a key variable) as it often had similar statistical impact than Internet. Generally speaking, the interaction effect preformed well, especially for regressions of the lowest-income countries. Another conclusion is that it would be worth investigating more indicators of good governance. For instance, corruption is notoriously hard to

analyze from a large-n, country focused, quantitative perspective. This might help explain why the results are rather scattered with differing results depending on the operationalization of the variables, especially in the case of corruption.

Finally, despite a lack of strong empirical differences between lagged effect of Internet and no lag, in theory, it is difficult to imagine how the impact of Internet would not need a lag to have a causal effect on the variables of interest. Thus, I hesitate to claim that these results are strong indications of causal relationships, yet they do indicate something is certainly going on between the variables of note. This large-n analysis is a start to a research agenda on the ever-changing nature of various ICT platforms, and their impact on good governance and poverty. Hopefully, this quantitative analysis will contribute to spurring on future research attempts at quantitative analysis of ICT technology, especially the Internet, good governance, and poverty.

### **3.5 Quantitative Analysis of Latin American Countries.**

After experimenting with multiple statistical models above, including pooled time series with fixed effects (and with random effects), and Prais-Winsten models, the regression analyses results above are a promising start, but not convincing enough. My findings are consistent with the results of the literature of rather weak statistical significance for the impact of ICT on poverty rates (see Kenny, 2006a). It is clear that my governance argument, and other arguments involving ICT, needs more nuance than statistical analysis allows. Thus, more case study approaches would be a fruitful complement. Taking on the whole developing world via a detailed case study approach is difficult due to the diversity of cultures, geography, and economic development. Because there are so many countries in various regions, statistical analysis is a dominant approach used to expose trends across the countries of various regions (including Latin America). This section will look at quantitative comparisons of Latin American countries with a focus on comparing and contrasting Mexico to its neighbors.



Why Latin America? Latin America proves to be a fertile region for research on ICTs and poverty for a variety of different reasons. According to Alierata (2011):

[Latin America] is evolving from a chronic developmental laggard to a strong grower, becoming one of the most dynamic areas for the implementation and use of new technologies. In Latin America, the expansion of mobile technology has been particularly relevant. It is important also to highlight how this technology reaches remote areas, underprivileged populations, and, in general, areas and social groups that otherwise would be excluded from new technologies. Therefore ICT has become instrumental in strengthening the links within communities and giving access to business and employment opportunities to large segments of the population. Mobile phone technology has contributed to narrowing the digital divide, reaching a penetration rate of more than 80 percent of the population. (p. 63)

Alierata particularly highlights the importance of mobile phones for increasing business and employment opportunities for remote areas and underprivileged populations. Despite this claim, while ICT penetration growth rates have doubled in Latin America between 2000 and 2008 (ITU, 2010), poverty and inequality have remained entrenched. Historically, Latin America has had the world's highest levels of income inequality, but there are some indications that Sub-Saharan Africa and Asia are catching up (Gasparini *et al.*, 2011). However, inequality in the region is unlikely to disappear anytime soon. Let's take the example of Brazil, according to The International Bank for Reconstruction and Development / The World Bank (2004): "Brazil's income inequality is very high and persistent over time, and it has deep historic and regional roots. With an income share of the richest 20 percent of the population equal to 33 times the corresponding share of the poorest 20 percent, Brazil has one of the highest levels of income inequality in the world. The Gini coefficient for the distribution of household incomes per capita is 0.59; that is, the expected difference in income per capita between any two Brazilians chosen at random is nearly 1.2 times the average income per capita" (p. XVIII). It is unlikely that ICTs will be able to radically upend this entrenched, and very high, levels of inequality seen historically in the region. Although Latin America's ICT penetration growth rate per capita is now higher than Asia's, it is lower than the Middle East and Africa where growth rates have tripled—primarily because penetration rates started much lower in those regions.

Over the past few years ICT-diffusion rates have soared in Latin America. With a growth rate percentage of 1,032.8%, the region ranks third among the world's regions in Internet user growth rate between the years 2000–2010 (trailing Africa and the Middle East with 2,357 % and 1,825 % respectively) (Internet World Stats, 2013). In 2011, 39% of Latin American citizens were using the Internet (Latin America and the Caribbean Key Statistical Highlights ITU, 2012). In the same year, average mobile - cellular penetration surpassed the 100% threshold in Latin America and the Caribbean (106.9%). Penetration rates can surpass 100% as they are often counted by number of devices one owns—as people frequently own 2, 3, or even more devices. The percent of the population with a phone is a different measure that tops out at 100%.

Despite these impressive developments, Latin America lags internationally in best practices for leveraging ICT advances. The World Economic Forum's *Networked Readiness Index* (NRI) is a composite measure that combines the regulatory infrastructure environment for ICT in a given country; the readiness of countries' key stakeholders (individuals, businesses, and governments) to use ICT, and actual use of ICT amongst these stakeholders (Bilbao-Osorio *et al.*, 2013). In the 2013 ranking, no Latin American or Caribbean economy figured among the top 30 countries in the international NRI ranking and only a handful were featured in the top 60: Chile (34th), Puerto Rico (36th), Barbados (39th), Panama (46th), Costa Rica (52th), Uruguay (53th), and Brazil (60th). Mexico rose from 78th in the 2011 report (Dutta & Mia 2011) 15 places to 63rd in 2013 (Bilbao-Osorio *et al.*, 2013, p. xxi).

The role of private investment is an important factor to consider for ICT rollouts. Alierata (2011) claims that private investment has played an important role in creating a conducive environment for ICTs to spread:

Latin America's great leap forward is also characterized by the development of corporations with a global dimension that are beginning to assume leadership positions in different sectors. The extent to which this is the cause or the effect of the shift in economic performance is open to debate, but it clearly reflects the rapid adoption of new technologies in the region, with everything that entails. The fast development of telecommunications in the region during the past 20 years would not have been possible without the contribution of sound public policies that pushed for the opening of markets, created competition, and

attracted the large capital investments required to create and renovate the necessary infrastructures. The current positive scenario is, to a great extent, a consequence of a private investment effort in telecommunications infrastructure. This effort has contributed to making Latin America the region with the highest rate of foreign direct investment in the world. Latin America's leap is something where, without diminishing the importance of other elements, a decisive factor is the contribution of telecommunications, essential for undertaking or participating in innovative processes. To put it simply, to be without access to global intercommunication today is not an option. (p. 64)

Notice the importance Alierata gives to public policies to create and renovate ICT infrastructure.

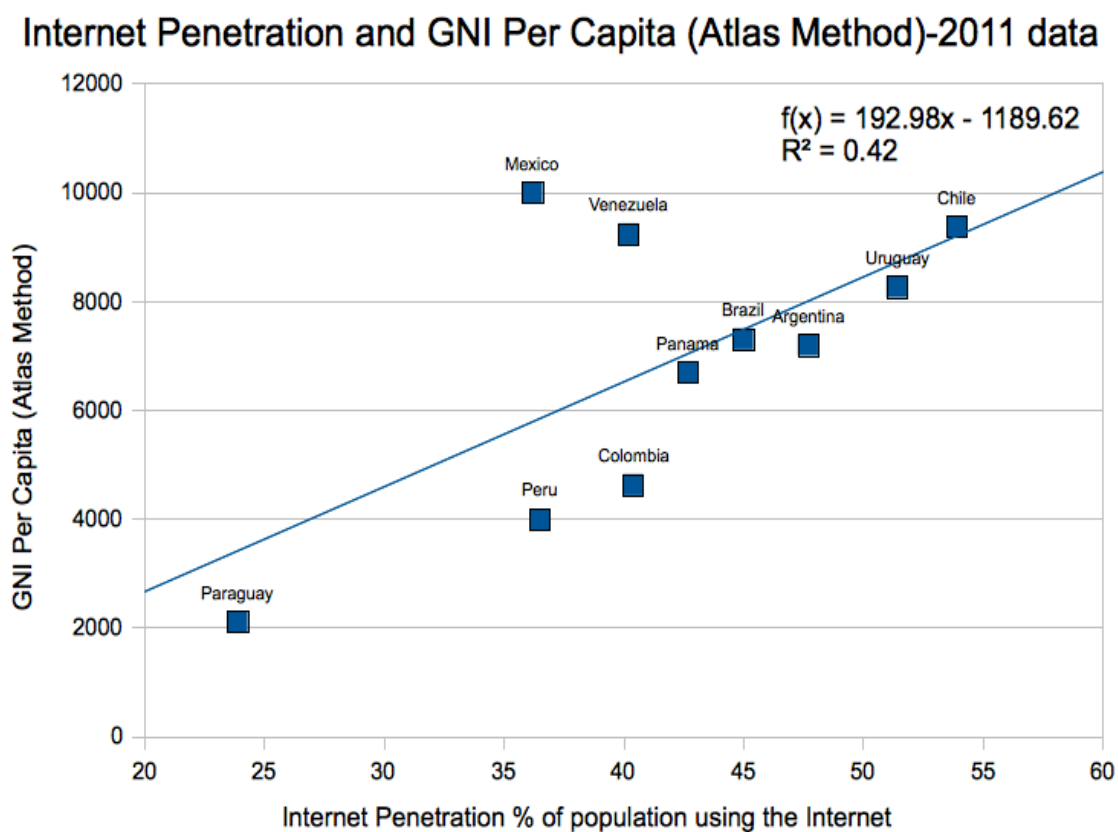
Without them it is doubtful that Latin America would be leading the world with the highest rates of foreign direct investment (percentagewise).

A final reason for choosing to analyze Latin America is that there is great room for improvement in policy for ICT access in the region. Increased knowledge and sound policy recommendations will help policy makers to shape the future of ICT throughout the region. As seen above in the data from The Global Information Technology Report 2013-14, by the *World Economic Forum*, Latin American countries have a long way to go, but there is diversity across the region, which makes it useful for analytic comparisons.

The following figures and tables compare socio-economic and Internet data across Latin American states. Figure 3.1 plots Internet penetration rates against GNI as a proxy for economic well-being. As can be seen from the trend line, in Latin America, a positive relationship exists between economic well-being and Internet penetration. This is in line with findings of international large-n cross-country studies that identify income as one of the prime determinants of Internet penetration (Dutta & Mia, 2011; Corrales & Westhoff, 2007). However, it is apparent in the following figure that Mexico is an outlier displaying a relatively low rate of Internet penetration for its income levels.<sup>68</sup>

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<sup>68</sup> The country cases were chosen following a procedure for the selection of typical cases proposed by Seawright & Gerring (2008). Selection criteria included (1) Region (Latin America); (2) Development level (lower- middle to upper-middle income countries); (3) Population (minimum 3 million citizens); and (4) Geographic location (excluding island states).

**FIGURE 3.1: Internet Penetration and GNI Per Capita in Latin America.****Table 3.1: Latin America, GNI per capita (2008), Internet penetration rates (2011).**

COUNTRY	GNI Per Capita (2008)	Internet Penetration Rate (percentage with Internet in the household) (2011)	Internet Penetration (percentage of individuals using the Internet) (2011)
Argentina	7190	38.0	47.7
Brazil	7300	37.8	45.0
Chile	9370	38.8	53.9
Colombia	4620	23.4	40.4

Mexico	9990	27.5	36.2
Panama	6690	20.7	42.7
Paraguay	2110	19.3	23.9
Peru	7300	17.7	36.5
Uruguay	8260	39.4	51.4
Venezuela	9230	16.0	40.2

Source: World Bank, (2010). Country Income Classification, *World Bank Website*: <http://data.worldbank.org/about/country-classifi>. Date accessed: February 12th 2012, World Bank national accounts data, and OECD National Accounts data files. Catalog Source: World Development Indicators. Internet data sources: *International Telecommunication Union* (2012). Measuring the Information Society 2012. ITU World Telecommunication/ICT Indicators database. International Telecommunication Union Place des Nations CH-1211. Geneva, Switzerland.

**Table 3.2: Latin America, Poverty, HDI, GINI, Internet penetration rates.**

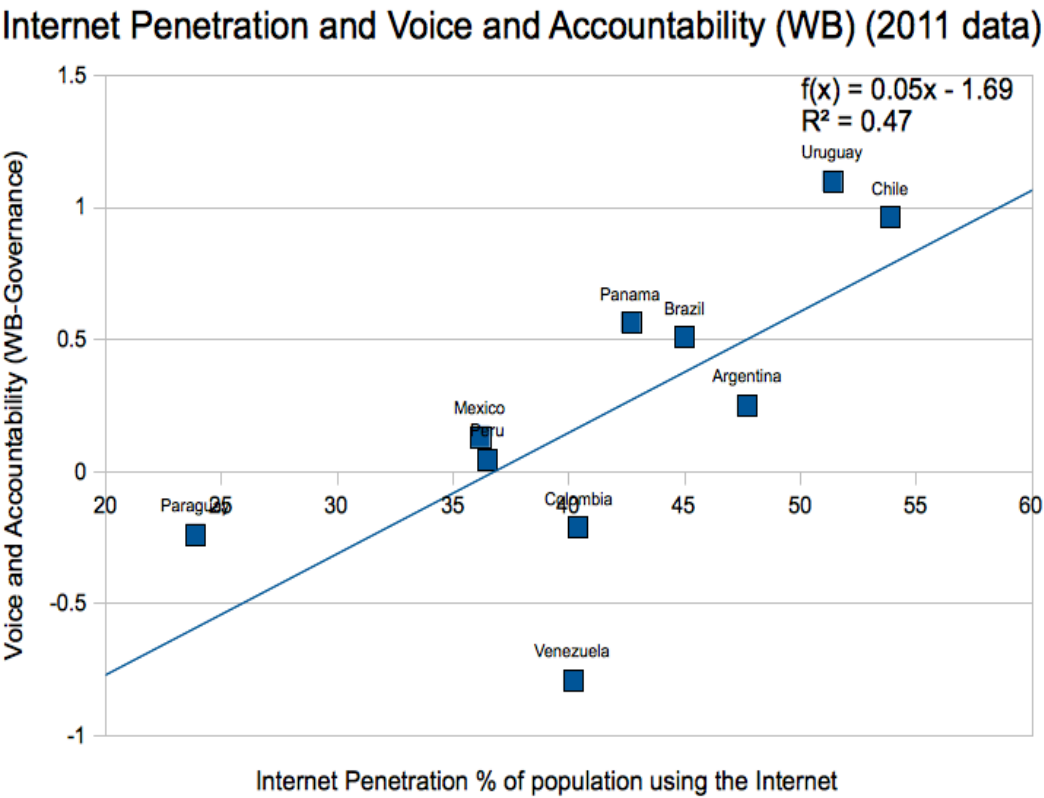
COUNTRY	PPP %	HDI (Adjusted for Inequality- 2011)	GINI (2006- 08)	Internet Penetration (percentage of individuals using the Internet) (2011)
Argentina	<b>7.34</b>	<b>0.797</b>	<b>48.81</b>	<b>47.7</b>
Brazil	<b>12.69</b>	<b>0.718</b>	<b>55.02</b>	<b>45.0</b>
Chile	<b>2.38</b>	<b>0.805</b>	<b>52</b>	<b>53.9</b>
Colombia	<b>27.88</b>	<b>0.710</b>	<b>58.49</b>	<b>40.4</b>
Mexico	<b>8.22</b>	<b>0.770</b>	<b>51.61</b>	<b>36.2</b>

Panama	<b>17.85</b>	<b>0.768</b>	<b>54.93</b>	<b>42.7</b>
Paraguay	<b>14.23</b>	<b>0.665</b>	<b>53.24</b>	<b>23.9</b>
Peru	<b>17.84</b>	<b>0.725</b>	<b>50.52</b>	<b>36.5</b>
Uruguay	<b>4.25</b>	<b>0.783</b>	<b>47.06</b>	<b>51.4</b>
Venezuela	<b>10.24</b>	<b>0.735</b>	<b>43.44</b>	<b>40.2</b>

Sources: World Bank, Development Research Group, (2008). World Development Indicators: Poverty headcount ratio at \$2 a day (PPP) (% of population). <http://data.worldbank.org/indicator/SI.POV.2DAY>; Human Development Index: United Nations Development Program (2011). Human Development Reports: IHDI Index. HDI index adjusted for inequality 2011. <http://hdr.undp.org/en/statistics/ihdi/>; GINI Index, World Bank, Development Research Group (2008). World Development Indicators: GINI Index. <http://data.worldbank.org/indicator/SI.POV.GINI>; Internet data sources: *International Telecommunication Union* (2012). Measuring the Information Society 2012. ITU World Telecommunication/ICT Indicators database. International Telecommunication Union Place des Nations CH-1211. Geneva, Switzerland.

Figure 3.1 and the two tables above displayed obvious correlations between countries with high GNI and high Internet penetration. Table 3.2 has less obvious correlations, but there are still strong relationships between the variables. In this regional comparison, my country of interest, Mexico, ranks in the middle in terms of poverty and relatively low in terms of Internet penetration, whereas Argentina, Chile, and Uruguay, the rate is higher for Internet penetration, display lower levels of poverty. This indicates that at least potentially, poverty levels could be impacted by Internet penetration. However, whether the Internet actually does reduce poverty depends on the presence of favorable contextual conditions, especially good governance aimed at poverty reduction. The following tables and figures investigate how good governance relates to Internet penetration in the region. Figure 3.2 investigates Internet penetration rates and WGI Voice and Accountability. Table 3.3 below provides an overview of Internet Penetration rates and different World Bank indicators of good governance.

Figure 3.2: Internet Penetration and Voice and Accountability in Latin America



**Table 3.3: Latin America, World Bank Indicators of Good Governance, Internet penetration rates (2011).**

		World Bank Indicators of Good Governance (2009)			
COUNTRY	Voice and Account-ability	Rule of Law	Government Effectiveness	Control of Corruption	% using the web 2011
Argentina	<b>0.250</b>	<b>-0.663</b>	<b>-0.421</b>	<b>-0.487</b>	<b>47.7</b>
Brazil	<b>0.508</b>	<b>-0.182</b>	<b>0.076</b>	<b>-0.065</b>	<b>45.0</b>
Chile	<b>0.963</b>	<b>1.251</b>	<b>1.209</b>	<b>1.371</b>	<b>53.9</b>
Colombia	<b>-0.212</b>	<b>-0.440</b>	<b>0.041</b>	<b>-0.292</b>	<b>40.4</b>
Mexico	<b>0.131</b>	<b>-0.568</b>	<b>0.168</b>	<b>-0.268</b>	<b>36.2</b>
Panama	<b>0.565</b>	<b>-0.090</b>	<b>0.246</b>	<b>-0.262</b>	<b>42.7</b>
Paraguay	<b>-0.241</b>	<b>-0.982</b>	<b>-0.928</b>	<b>-0.880</b>	<b>23.9</b>
Peru	<b>0.044</b>	<b>-0.656</b>	<b>-0.356</b>	<b>-0.359</b>	<b>36.5</b>
Uruguay	<b>1.098</b>	<b>0.723</b>	<b>0.688</b>	<b>1.220</b>	<b>51.4</b>
Venezuela	<b>-0.793</b>	<b>-1.586</b>	<b>-0.945</b>	<b>-1.196</b>	<b>40.2</b>

Sources: World Bank, Daniel Kaufmann, Aart Kraay and Massimo Mastruzzi (2010). "The Worldwide Governance Indicators: A Summary of Methodology, Data and Analytical Issues." World Bank Policy Research; Internet data sources: *International Telecommunication Union*, (2012). Measuring the Information Society 2012. ITU World Telecommunication/ICT Indicators database. International Telecommunication Union Place des Nations CH-1211. Geneva, Switzerland.

This data clearly displayed that Internet penetration is positively associated with good governance in the region. To illustrate this relationship, Figure 3.2 plots the indicator Voice and



Accountability against regional Internet penetration rates. As can be seen in Figure 3.2, Mexico is in line with the general trend, suggesting a positive association between Internet penetration and good governance. Venezuela, in turn, is an outlier, with a medium level of Internet penetration and dismal performance in terms of good governance. As elucidated in a chapter by Rodríguez Franco (2014) in *Digital Technologies for Democratic Governance in Latin America: Opportunities and Risks*, Venezuela reflects a situation in which government measures against open government and accountability proactively restrain the potential of ICT to positively impact governance.

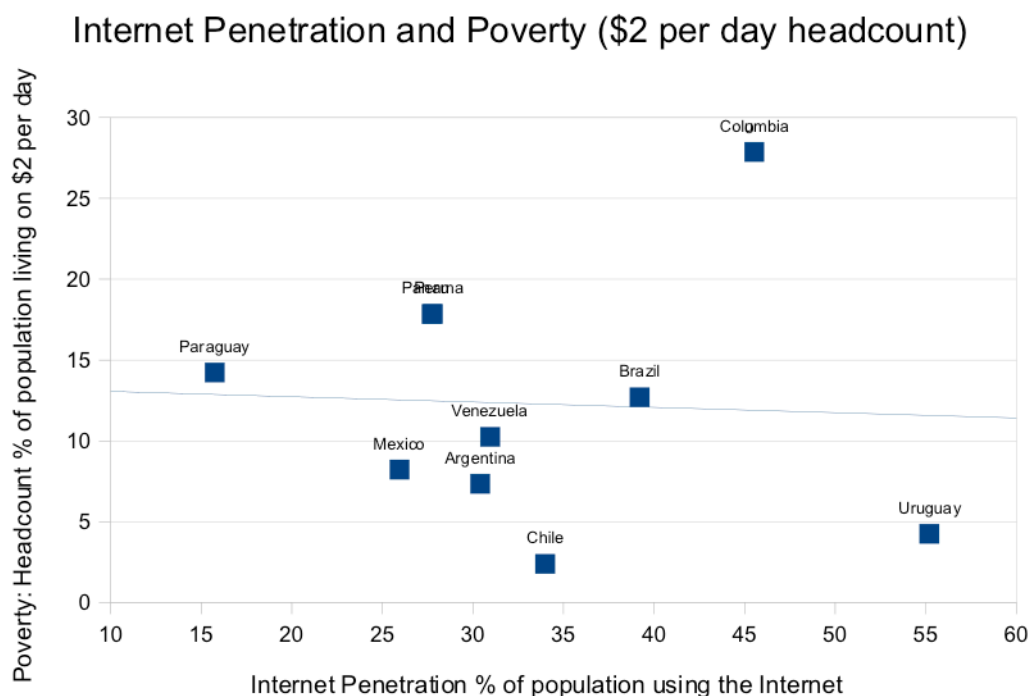
Comparing Mexico to similar countries in Latin America exposes cross-national associations indicating support for my theoretical propositions. The countries included in the comparison were chosen as *typical cases*, following Seawright & Gerring (2008) based on three criteria: (1) Development level (all countries were categorized as a 3—upper-middle income countries—by the World Bank, which means that they had income between \$4,000 and \$12,000 per capita—except Paraguay which was a 4 (lower-middle income countries with income between \$3,999 and \$1,000); and (2) by Region—Latin America (3) size and population was also used—no island states were included and the countries all have over 3 million citizens.

Before turning to poverty, it should be noted that income is a prime determinant of Internet penetration in Latin America (see Figure 3.1 above). This was upheld through regression analysis, with controls, and data from all developing countries and from a subset of Latin America. The importance of income across developing countries in determining usage is prevalent across the ICT literature (Corrales & Westhoff, 2007; Dutta & Mia, 2011). My analysis of the ICT Composite index produced similar results—not surprising since it included Internet, TV, and Mobile phone penetration rates (ITU, 2010). Mexico is exposed as an outlier in that it has low Internet penetration (and ICT penetration in general) compared to its income. This makes it an intriguing case for study because income is not strongly correlated with ICT penetration as

much as in other countries. Expanding the analysis to poverty rates creates a different picture.

Figure 3.3 below display this:

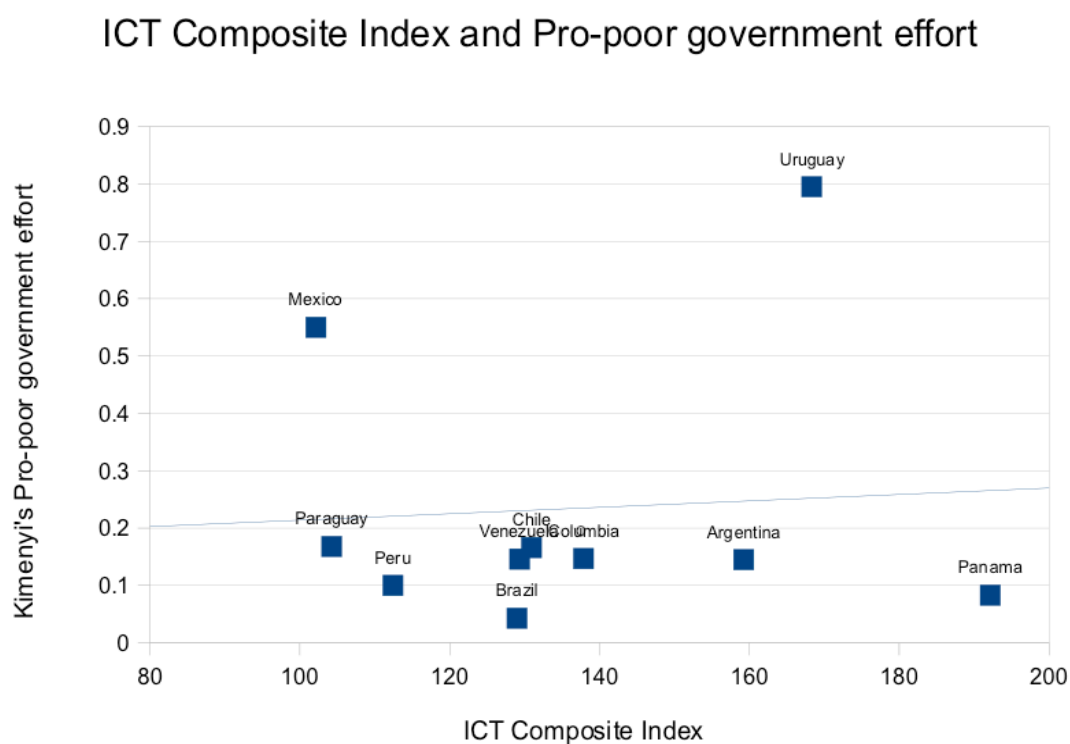
**Figure 3.3**



No upward trend line as Internet penetration displayed a minimal relationship to the amount of poverty in *these* Latin American countries. Although it needs to be kept in mind that this is only cross-sectional data for a handful of the larger countries in Latin America. This relationship did hold up using the ICT composite index as well. Furthermore, it also held for other measures of poverty including the HDI index (including when controls were employed), and for inequality measured by the GINI Coefficient (a rather surprising result), finally also for the unique measure of government pro-poor effort that was developed by Kimenyi (2007), which measures the amount a government, devotes to the poor given the government's resources. Kimenyi's measure controls for level of economic development, and state capacity, and also effectively holds constant the 'capability' of governments to implement effective pro-poor

policies. Thus, it captures pro-poor economic growth following Kimenyi's (2007) definition: “pro-poor growth...means that the poor benefit disproportionately from economic growth” (p. 186). It is also a unique method of control that helps solve the notoriously difficult problem of spurious correlation when working with these variables. His measure includes data from his (2007) study of pro-poor government effort and the UNDP's measures of development to evaluate pro-poor economic growth. Here is a graph using Kimenyi's pro-poor effort score and the ICT Composite Index:

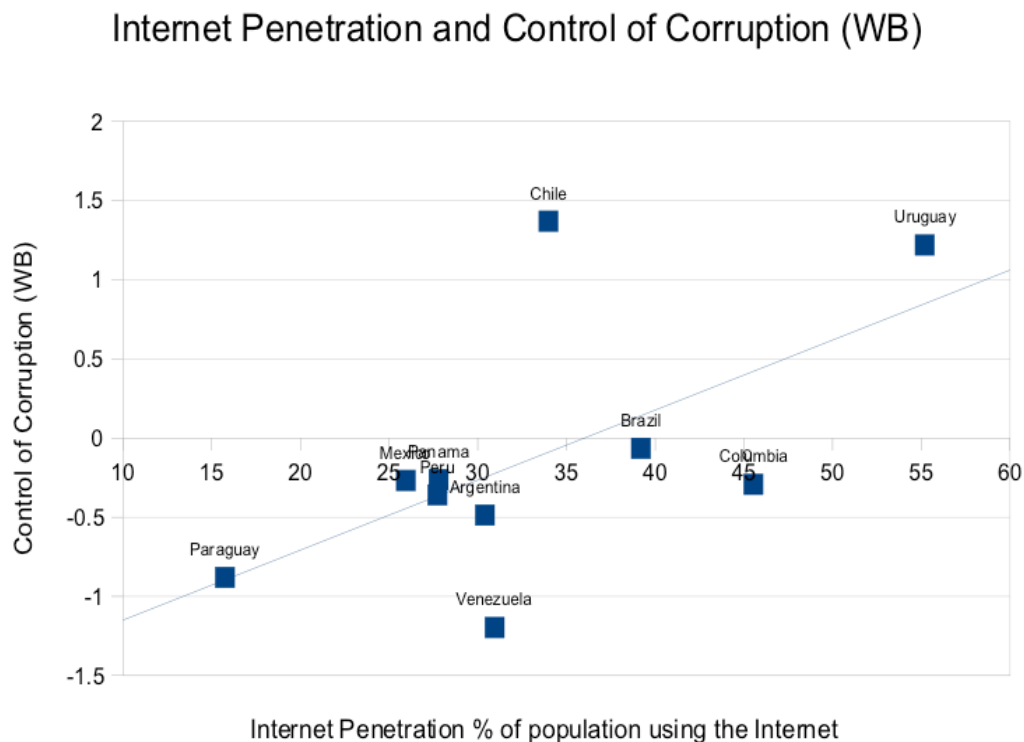
**Figure 3.4**



Again, almost no relationship, yet Mexico is an outlier (along with Uruguay). Mexico does well on Kimenyi's measure, but has a low ICT score. This is another reason that the Mexican case requires further analysis.

However, before moving on to the Mexican case in the following chapters, the relationship between ICT and good governance needs to be explored. The data above would seem to fly in the face of my proposed model, yet it also exposes the lack of success of modeling ICT and poverty using large-n data, which is seen throughout in the literature. I argue that the reason for this lack of success is because of a lack of nuanced attention given to governance as an important variable. The following graph displays the relationship between Internet penetration and one of the World Bank's indicators of good governance Control of Corruption:

**Figure 3.5**



This relationship clearly is positive, and also was when tested with the ICT Composition Index. Furthermore, the relationship maintained its strong upward slope when tested with the other good governance indicators created by the World Bank including, Rule of Law, Government Effectiveness and Voice and Accountability.

## Conclusions

The theoretical claims tested above attempted to elucidate the ways that ICTs impact governance and also how through ICT interaction with good governance there are enhanced influence on poverty alleviation. The empirical results indicate support for this, yet they are far from conclusive. Overall, the results indicate support for my thesis, but more evidence is certainly needed before strong claims can be made. Model II's performance was stronger; perhaps this is due to the combination of effective governance and higher Internet penetration jointly creating a strong platform for economic performance and for demand for pro-poor policies. The empirical results also indicate support for Internet causing some impact on good governance. This is the case even when controlling for GNI, which most quantitative analysis points to as being *the key* variable, however in my analysis it often had less statistical impact than Internet. Generally speaking, the interaction effect preformed well, especially for regressions employing data from the lowest-income countries. Another conclusion that became apparent in analyzing the data is that it would be worth investigating more indicators of good governance. For instance, corruption is notoriously hard to analyze from a large-n, country data point focused perspective. This is due to a few factors, first who would actually admit to taking bribes in a survey anyway? This might help explain that the results are rather scattered with differing results depending on the operationalization of the variables (particularly for corruption). Finally, despite a lack of strong empirical differences between lagged effect of Internet and no lag, in theory, it is difficult to imagine how the impact of Internet would not need a lag to have a causal effect on the variables of interest. Thus, I hesitate to claim that these results are strong indications of causal relationships, yet they do indicate something is certainly going on between the variables of note (I am particularly convinced about associations).

Finally, the analysis of Latin America as a region did help expose the variables of interest at the country level. It was clear that higher levels of Internet were associated with better

governance. There was strong association between higher Internet and GNI, and lower poverty. Hopefully, this quantitative analysis will contribute to future research regarding quantitative analysis of ICT technology, especially the Internet, good governance, and poverty. The analysis will now turn to investigate Latin America at greater depth, and where Mexico fits in for a case study. Mexico with its relatively high income for a developing country, lower than expected Internet, but still entrenched pockets of poverty makes it an intriguing case study. Mexico is a very diverse country, economically, culturally, and in terms of who has access to ICTs, and national statistics can only tell us so much about the causal factors at play. Hopefully, this Chapter is a start to a research agenda on the ever-changing nature of various ICTs, and their impact on good governance and poverty as well as the theoretical contributions of my interaction effect.

## **Chapter 4: Case Study Mexico – Historical Background and Structural Evidence**

### **4.1 Why Mexico? The Comparative Method and Case Study Justification.**

The bird's eye view of the global landscape presented in the first three Chapters was useful place to begin my analysis, but it became obvious that a more in-depth study, at the regional, state, municipality, and individual level is needed to supplement the literature review, theoretical contribution, and quantitative large-n approach. Chapter 3 began the large-n investigation of Latin American states and Mexico to help elucidate ICTs' impact on poverty employing national level data. However, making a convincing causal argument requires a case study approach to supplement the large-n analysis. The argument in Chapter 3 purported that Mexico is an appropriate developing state to investigate the impact of ICT on poverty—however, it displayed that a deeper exploration of the technological differences and poverty rates at the state level and municipality level would certainly help to construct the case that government has a strong influence on the quality, and quantity of ICT access, access that, in turn, will be shown to help the poor in various aspects of their lives.

This Chapter is vital because national level statistics have limitations and supplementing them with case study analysis enhances my argument. For instance, measuring the extent, depth, and characteristics of poverty is difficult solely employing national level statistics. Varied local state and municipal environments can greatly impact the lives of the poor that are not adequately captured using national level data. While national level, large-n analysis was a useful beginning it falls short of a convincing argument for my thesis. The following Chapter will begin with an explanation of why Mexico is an appropriate country to fully flesh out my argument, why the comparative method is employed, and a discussion that justifies my case study of Mexico. Secondly, the Chapter will investigate the historical background of Mexico before exploring structural evidence in data from Mexican states. Then I will explore data from Mexico's Silicon

Valley—Guadalajara, and other urban areas, particularly Puebla. Finally, analysis of the rural state of Oaxaca and indigenous peoples use of ICT will be exposed. The analysis finds that areas with “technological bubbles” (i.e. areas of high ICT access) tend to have better outcomes for poverty reduction than do “technological black holes” (i.e. areas of low ICT access). These tech terms are of my own creation and will be explained in greater detail below.

Before exploring Mexico as my case study I will explain how I am applying the comparative method, why it is appropriate, and justify the use of Mexico as my primary case. One of the strengths of the comparative method is that it is essentially a ‘way to control,’ allowing researchers to explore many variables while maintaining a high degree of precision in analysis. Comparative politics has fully evolved into an ‘approach’ to understand political phenomena across polities rather than simply a methodology.<sup>69</sup> There are various ways to use the comparative approach. One is when there is variance in the independent variable, another is the “method of agreement” (Mill, 1974, p. 392), where all cases agree on the dependent variable, which acts as a “method of exclusion” to rule out other possible causal factors. The opposite of this is also useful which is called “the most different approach” (Przeworski & Teune, 1970), where cases have similar independent variables but differ on the outcome of the dependent variable. There are also the *deviant* and most *similar case* approaches, more recently defined by Seawright & Gerring (2008), which are useful to explaining cases that follow the typical pattern researcher predicts from cases (i.e. *similar case*) and when they deviate from the norm (i.e. *deviant case*). These approaches are fully defined below. The following section grapples with how the case of Mexico and ICTs fits into the comparative approach.

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<sup>69</sup> Helping build the theoretical edifice for why we can ‘compare’ is Lijphart’s (1971) classic analysis claiming the comparative method can contribute greatly to research: “The principal problem facing the comparative method can be succinctly stated as: many variables, small number of cases” (685). He provides a few remedies to this problem such as: “Increase the number of cases as much as possible and focus the comparative analysis on the ‘key’ variables” (Lijphart, 1971, p. 690). If these problems can be resolved, comparison allows for ‘control’ and precision, providing researchers with the ability to build theory leading to universal covering laws (Lijphart, 1971). Lijphart is far from alone here, for instance early influential comparative Giovanni Sartori (1970) essentially echoes his points.



Data from Chapter 3 displayed that when compared to other developing states, Mexico is an outlier. It does not follow the typical pattern of a positive direction of associated income, and ICT penetration (e.g. Chile, Argentina, Costa Rica). Following Seawright & Gerring (2008) I classify Mexico as a *deviant case* compared to other Latin American countries:

The *deviant case* method selects a case that, by reference to some general understanding of a topic (either a specific theory or common sense), demonstrates a surprising value. The *deviant case* is therefore closely linked to the investigation of theoretical anomalies. To say deviant is to imply anomalous. (p. 302, italics in original)

Investigating Mexico, as a *deviant case* is logical as data displays that historically Mexico scores lower in ICT penetration than its income suggests. Thus, Mexico is a *deviant case* when compared to Latin American countries at the national level, however when Mexican state government entities are evaluated data from them dictates that they should be conceptualized as *similar cases* (again following Seawright & Gerring 2008). The analysis in the first sections of this chapter will be at the national level, where I will explain why Mexico is a *deviant case* through national level data, and then the following sections explore data from Mexican states, conceptualizing them as *similar cases*. Data from the states indicate that my theoretical framework holds in Mexico.

Why is Mexico a *deviant case* at the national level and also a fruitful case study? Mexico is an important large developing country, with over 117 million citizens and a growing, young population. It is comparable in geographic size and population to the world's largest developing countries, Brazil, Nigeria, Indonesia, Pakistan, Egypt, and to a lesser extent, even the much more populated India and China.<sup>70</sup> Mexico has not received much international acclaim for being a technical hub of the developing world, in either services or manufacturing of IT products, at least not in the myriad ways India and China have garnered media attention. However, it has a long track record of attracting FDI from leading U.S. technology firms looking for cheaper labor across the border. In fact, Mexico is the third largest exporter of IT products in Latin America. Also,

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<sup>70</sup> In future stages of my academic career this dissertation could be expanded into book form, or separate journal length articles, by adding more case studies of other countries in Latin America to compare with Mexico. Or even better, I could add countries from different regions, such as the Caucasuses, Southeast Asia, or the Middle East, to test if the theoretical claims are exportable to other developing regions. For this dissertation, that is simply too ambitious given the time and resource constraints.

Mexico has not received the attention levied on the Arab Spring countries from technology enthusiasts focused on the political power of the Internet, mobile phones, and even social media, in coordinating large-scale protest/reform movements. However, as will become apparent from the analysis below, Mexico is a useful case for studying the effects of ICT on poverty due to the diversity across the country in ICT usage, poverty rates, and good governance outcomes.

Studying Mexico is productive from the macro-perspective because it has similar structural conditions as many developing countries. For instance, first let us investigate language. The impact of ICT on a developing country like India is an outlier due to the fact that a large portion of the population speaks English—an estimated 20% of the population—and the country is second in the world in absolute number of English speakers (Prakash *et al.*, 2010). This has allowed India to capture and keep many service jobs that utilize ICTs. Yet English is the dominant language in only a handful of developing countries. It is estimated that in 2014 under 20% of the Mexican population know ‘some’ English, and even less speak English fluently. Approximately 15% of Mexico’s population are indigenous speakers and some are mono-linguists, not able speak Spanish or English fluently; instead they are fluent in one of the 68 recognized indigenous languages scattered across the country, in fact, Mexico has the second highest amount of indigenous speakers in all of Latin America in total amount. Thus, due to a lack of English language speakers, Mexico faces similar constraints most developing countries do in trying to attract foreign firms wanting to utilize ICT for service oriented jobs (i.e. English is not the dominant language in most developing countries).

Mexico is also rather typical in that it has struggled between competing political economy ideologies of neoliberalism and statism. It signed NAFTA, yet state monopolies across many sectors are still allowed to function (e.g. PEMEX). Thus, Mexico has had a typical experience engaging with the global economy, trying to attract FDI, and dealing with state sponsored monopolies than countries coming out of, or still even practicing versions of communism. For instance, more developing countries came out of post-colonial capitalist rulers,

rather than communistic ones, and many never developed entrenched communistic economies. Specifically, many of the Soviet Union's developing world allies during the Cold War, with the exception of a few—Cuba, North Korea, did not adapt communist economies, instead they were allies in international politics, reaping aid money, and only playing lip service to the communist economic system. Again, Mexico is a typical developing country on these fronts.

Finally, as will become clear in the historical section below, Mexico has struggled mightily in the 20th century in creating strong democratic institutions. Now that democracy is the dominant form of governance around the world, understanding regimes that are in the process of transitioning into strong democracies is an important and familiar story, which is seen through many developing countries around the world trying to strengthen their democratic institutions with varying degrees of success. Clearly, due to English not being the dominant language, Mexico's schizophrenic approach to neoliberalism and statism, and developing its democratic institutions, the country is a well-positioned representative case of a developing country dealing with the varied impacts of ICTs. Indeed, a whole host of developing states, Brazil, Argentina, Chile, Egypt, Indonesia, to name a few, can be easily compared to Mexico. This stands in stark contrast to non-representative India (English language—British colonial rule) or China (communist leftovers), which, at least as case studies, are less comparable to most developing countries.

Interestingly, Mexico does not follow the typical development pattern of strong associations between income, democracy, governance, and ICT penetration. My quantitative analysis employing national level data displayed that Mexico is an outlier as it has low Internet penetration (and ICT penetration in general) compared to its income level. This makes it an intriguing case for study because income is not strongly correlated with ICT penetration as much as in other countries. The large-n data was mainly regression analysis, but the investigation of Latin American states displayed that at the national level, Mexico scores in the middle on rankings of good governance.

Putting these findings into the frame of modernization theory, one of the most popular development theories during the past century, purports a variation of this typical pattern of rising associated development variables as the dominant avenue for developing countries to achieve upper income status. Answering *why* this pattern is not the case in national level data from Mexico is a complicated task. It also raises a significant critique of the ‘typical pattern’ and modernization theory in general, as Mexico is far from alone among developing countries in following rockier paths of development. The lower than expected impact of income on governance and on ICT penetration in Mexico is likely due to many structural factors, such as the size of the country, and vastly different levels of violence now seen across its territory, which is influenced by spillover crime from the drug war and compounded by corruption in the police force and of government officials. Historically, there have been persistent pockets of poverty among the southern states, with a high level of poor indigenous population residing there. This has contributed to uneven development across the country. For ICTs, Mexico has had historically high access cost which squeezes poor people's budgets in affording personal ICT access. A persistent quasi-Monopoly on landlines and mobile phones certainly has not helped matters.

Why does Mexico have relatively high access costs for ICT compared to its neighbors in Latin America? This is due in part due to the world's wealthiest man Carlos Slim's quasi-monopoly through Telmex (over 80% market share of fixed line telephones by 2012), plus mobile phone carriers Telcel and América Móvil, which in 2012 controlled 78% of the market (OECD, 2012). Furthermore, in the realm of television, TV Azteca and Televisa now control around 95% of the TV spectrum (not counting cable/satellite programming), and finally there have been political difficulties in passing effective laws to break up these telecommunication monopolies in Mexico (OECD, 2012; Prieto, 2011). Overall the market for telecommunications in Mexico can be classified as an emerging market following a similar trajectory that mature economies already have: “The Mexican telecommunications market has the characteristics of a market in the early stages of liberalisation, in terms of market concentration, observable behaviour and outcomes”

(OCED, 2012, p. 54). However, looking in greater depth at Mexico will be illustrative for why it has not adhered to the typical cross-national pattern in the ICT-Governance-Poverty relationship.

At the heart of the puzzle is that Mexico has the second highest GNI per capita in Latin America (Gross National Income Atlas Method, World Bank, 2010b), yet one of the lower ICT composite scores. Compared to Latin America, and for its per capita income level, Mexico has low Internet penetration per capita, mobile phone subscriptions, and landline phones. However, it has high TV penetration, but there is no pretense to media coverage being 'fair and balanced' as two companies, Azteca and Grupo Televisa, dominate the non-satellite free open air TV broadcast spectrum—watched by 90% of country—although paid cable services have been gaining. When compared to the largest developing countries, India, China, Indonesia, and Brazil, Mexico is right in the middle in Internet access per capita in the *household*. Larger developing countries have a more difficult time in procuring Internet lines to their sprawling rural populations. Before providing specific details on the telecommunications market in Mexico in the next section, I now turn to specific development outcomes.

Compared to other countries in the region Mexico performs well on measures of human and economic development. For instance it ranks high on the Human Development Index (the HDI), and government pro-poor effort measures. It has one of the highest scores among Latin American countries on Kimenyi's (2007) pro-poor effort measure; it also ranks in the upper region of the HDI—although one fourth of the HDI index is derived from GDP per capita (which is comparatively high in Mexico). Mexico scores relatively strongly on the SERF index as well, 31<sup>st</sup> among developing world countries, and 7<sup>th</sup> in Latin America and the Caribbean, behind Cuba, Uruguay, Chile, Jamaica, Brazil, and Argentina (Randolph *et al.*, 2009).<sup>71</sup> Mexico also scores

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<sup>71</sup> Randolph *et al.* (2009) explain their SERF index which accounts for a states income as: “The core Economic and Social Rights Fulfillment Index [SERF] takes into account five core economic and social rights: the right to food, education, health, adequate housing, and decent work [Mexico scores highest on work]...This approach assesses the extent to which a country is meeting its obligation of progressive realization as the percentage of the feasible level of achievement given the country’s resources and imposes a penalty on countries with resources sufficient to fully realize a given right but failing to do so...The Achievement Possibilities Frontier (APF) approach constructs an APF for each indicator that specifies the

reasonably well on World Bank Governance Indicators (WGIs) rankings, yet most experts would certainly not claim Mexico has ‘good’ governance *per se* (for evidence on Mexico’s mediocre performance on governance see Fox 1995; Morris & Klesner, 2010; OECD, 2012; Weiss & Rosenblatt, 2010). Chile and Argentina have the highest scores in Latin America on the WGIs, Mexico is in 3<sup>rd</sup> place.

Higher ICT penetration goes hand-in-hand with pro-poor policies and better governance in most developing countries. Nation states with the highest ICT penetration rates in Latin America—Panama, Uruguay, Argentina, Colombia, and Chile—also score the highest on the HDI—except Colombia, which is replaced by Venezuela in that list. High ICT penetration countries also score strongly on Kimenyi’s government effort devoted to pro-poor growth. However, there is not always a one-one relationship as Bolivia and Paraguay both score high for Kimenyi because they employ substantial programs for their poor population, despite the fact that they have the lowest income per capita of the group. Finally, the high scoring ICT countries also have the highest rating on the WGI scores. This bolsters my argument regarding the propensity of ICT to help citizens demand better governance. It also strengthens the case for better governance interacting with higher ICT penetration helping to enhance transparency and stronger governmental effort toward pro-poor policies. Despite being a typical developing country in following neoliberal capitalism, and democratization, Mexico remains an outlier with its relatively strong HDI ranking, and higher than average governance/pro-poor effort scores. The country thus constitutes a *deviant case*, the study of which may reveal new variables. Perhaps ICTs are an important new variable that can improve our understanding of theories devoted to poverty? In fact, they may display the utility of studying deviant or outlier cases (Lijphart, 1971; Seawright & Gerring, 2008). Studying Mexico as a *deviant case* will help elucidate my theoretical framework and provide an example of when a large-n analysis can be complemented with descriptive case study analysis.

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value of the indicator that can feasibly be achieved at each per capita income level” (p. 231).

## 4.2 Historical Background: Mexico in Transition—Political, Economic, and Technological Restructuring.

Again, I must dive deeper into what is actually causing Mexico to be a *deviant case*. This requires an in-depth analysis of the political economy of the country. Mexico's climate varies substantially, from dry deserts in the north to tropical rainforests in the south. Mountain ranges dissect the country from north to south making transportation and communication difficult for much of its history.<sup>72</sup> The political structure emerging from the tumultuous years following Mexico's revolution (1900-1925) has been characterized by political stability since (see Camp, 2010). This differentiates Mexico from most Latin American countries. Famously, in an interview, Mario Vargas Llosa, the Peruvian Nobel Prize winning writer once characterized the rule of the Institutional Revolutionary Party (PRI) as the 'perfect dictatorship' for the way it dominated Mexico's party system. This characterization had staying power as it captured the complete political control exhibited by the PRI and the little public support for coups that are prevalent in authoritarian regimes. The PRI totally dominated Mexican politics, maintaining power since the Mexican revolution (early 1900s). Over the course of seven decades, the PRI held tightly on to power through "combined authoritarian controls with flexibility in responding to constituencies and was for the most part successful in neutralizing protests and dissident groups" (Hamilton, 2009). Comparativists argue that during the reign of the PRI Mexico should be characterized as a one-party regime.

Beginning in the 1990s, and continuing through the 2010s, Mexico has been undergoing rapid transformations in its economic and political spheres (Domínguez & McCann, 1998; Morris & Klesner, 2010). However, it was not until 2000 that the center-right Partido de Accion Nacional (PAN), with Vicente Fox at the helm, ousted the PRI from the presidency. The elections of 2000 are considered a pivotal watershed moment in a slow transition to competitive democracy. The Presidential election of 2006 was also important in the consolidation of political parties in Mexico

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<sup>72</sup> ICT is now helping to ease this historic communication gap (Hamilton, 2009).

(Domínguez *et al.*, 2009). However, in 2014 Mexico's democracy remains deficient in many areas, such as corruption, accountability of legislators, free and fair elections, etc. Also, not helping the development of an inclusive democracy are entrenched poverty, structural corruption, and escalating violence continue to be pressing problems facing the country.

In fact, Mexico has a long way to go before democracy is consolidated. For instance, renowned Mexican scholar Camp (2010) provides a thorough analysis of the Mexican elites/leadership's role in democratic consolidation and explained that the country still has a lot of work to do. He claims that class, gender, and elite background of Mexican politicians have all influenced, and slowed down the political development of the country. Perhaps most pressing to democratic consolidation are the structural problems of violence and corruption. According to Morris & Klesner (2010), despite the PRI's fall (and recent return to presidential power), Mexico has remained mired in corruption, as exposed in Transparency International's Perception of Corruption Index (CPI), which in 2007, ranked Mexico number 78<sup>th</sup> in the world (of 179), yet by 2012 it had slipped to 105 (of 175). Thus, at least in the Mexican case, more competitive "democracy has seemingly done little to alter the levels of corruption" (Morris & Klesner, 2010, p. 1260). According to Transparency International, in Mexico, petty corruption remains a gigantic problem: Mexican households spend approximately 32 billion pesos a year on bribes (\$2.5 billion in U.S. dollars), often to do things that ought to be free or low cost, such as having their trash collected or even sending their children to school (Morris & Klesner, 2010). Worse, the burden of corruption falls disproportionately on poor families who spend an estimated one-fifth of their income on petty bribes. Corruption has also considerably tarnished the public image of state institutions and the police force.

Rankings by International NGOs such as Transparency International are not the only quantitative indicators that expose Mexico's long history of entrenched corruption plaguing the country. Turning to public opinion, a survey by Transparencia Mexicana (2001) found that 79% of



respondents agree with the statement: 'politicians are corrupt.' For Morris & Klesner (2010), in a Latin American Public Opinion Project's (LAPOP) survey:

when given the opportunity to rate a series of types of public figures on a 10-point scale where 1 was very corrupt and 10 was very honest, 38% gave congressional deputies the very worst rating. Deputies received scores of 1, 2, or 3 from 62% of respondents. Respondents rated the police as even more corrupt, with 63% of respondents giving one of the three worst scores, whereas the ratings of other categories of public figures were not as low, but hardly encouraging. (p. 1267)

These are not encouraging scores and there is no indication that they have improved since 2010.

The ongoing drug war is likely affecting the very low scores for law enforcement. Police entanglement, sometimes engaging in corrupt activities with the drug cartels is well known to the populace.

Thus, further compounding prevalent everyday bribes, high-level political corruption (i.e. graft), and police corruption, has been the rise of the drug cartels over the last three decades. Drug war related violence has ratcheted up since ex-President Calderon's declaration of 'war' against the cartels in 2006. President Peña Nieto has recently made some headway by arresting some top leaders of various cartels including one of the most infamous, and at the time of his arrest in 2014, the world's most wanted drug lord, Juan 'El Chapo' Guzman head of the Sinaloa Cartel. Yet, the drug war rages on at the time of this writing (fall 2014) despite some progress over the last five years.

As a side note, another source of disgruntlement among much of the poorer populace, especially the indigenous, is that former *Partido Acción Nacional* (PAN party) President Felipe Calderon maintained Vicente Fox's (PAN party) neoliberal reforms, leaving Mexico as one of Latin America's leading champions of neoliberal economic policy at the time of his leaving office in 2012. It is clear, that class and economics matter to elections outcomes in Mexico. For example, Gilbert (2012) analyzed the 2000 and 2006 presidential elections and found that social class played an important role in determining voter preferences for the presidential candidates. His findings indicated that the middle class vote is increasingly important for winning presidential elections.

There is no reason to suspect the importance of class to change in data derived from the 2012 presidential election, where the PRI's Enrique Peña Nieto beat runner up from the *Partido de la Revolución Democrática* (PRD) party, Andrés Manuel López Obrador, and third place finisher Josefina Vazquez (PAN). In bringing the PRI back to power, Peña Nieto has continued, and strengthened, Mexico's neoliberal reforms, and is also seen by many of the poor as not representing their interests. Overall, systemic corruption, the drug war, and economic factors, have slowed Mexico's democratic consolidation over the last three decades.

Turning more specifically to analysis of class, inequality, and poverty reveals large disparities between citizens in Mexico. Industrialization has enhanced Mexico's urbanization and growing middle class, nonetheless, the benefits of economic growth have been unevenly distributed and poverty remains entrenched (Hamilton, 2009). About 70% of Mexicans live below the national poverty line (Gates Foundation, 2010). Between 2008 and 2010, Mexico's population living in poverty grew from 44.5% to 46.2% (this was an increase of 3.2 million people, from 48.8 to 52 million people). During the same period, the population in extreme poverty—defined as those living on less than \$76 (US\$) a month in urban areas, and less than \$53 a month in rural areas—fell slightly from 10.6% to 10.4% (CONEVAL, 2010).

Almost 60% of Mexico's rural families receive a federal welfare payment known as Oportunidades, but to collect their benefits they often must travel 3-6 hours, spend money on transportation, food, and wait in long lines. In fact, the 3.4 million families who travel to receive payments spend roughly \$170 million on these transaction costs per year—8.3% of their total benefits (CONEVAL, 2010). Hopefully, ICT may begin to reduce some of these transaction costs (conclusive studies have not been done yet). In the broader Mexican economy, households increasingly rely on the informal sector and migration to the U.S. for income, which has been accompanied by increased remittance flows—up to \$23 billion in 2006—surpassing FDI and second only to petroleum as a source of foreign exchange for Mexico (Hamilton, 2009, p. 334). According to Internet World Statistics (2013), about 70% of the population lives in urban areas

and many emigrate from rural areas—including the underdeveloped southern states and the crowded central plateau—to the industrialized urban centers and to U.S.-Mexico border area (ibid).

Although poverty is my focus, Mexico's experience with globalization and FDI led economic growth, and whether or not any spillover economic growth has actually helped the poor escape poverty, provides an intriguing case for a focus on ICT and its relationship with poverty. Gallagher & Zarsky (2007) claim that there are several reasons Mexico's experience with the global IT industry offers a:

fertile laboratory to study the impacts on FDI on sustainable development in developing countries. First, not all developing countries are successful in attracting FDI in general and in the IT sector in particular [Mexico was at the time in the top three globally in overall measurements]...The Mexican government identified the IT sector as a priority industry...[and] embraced the Washington Consensus with speed and vigor. (p. 6)

This embrace of neoliberal globalization, the IT industry's investment, and Mexico's 'high enough' ICT penetration rates makes Mexico a particularly intriguing case study. Furthermore, penetration of ICT seems to be at levels worth investigating for possible 'threshold' levels as over 36% population use the Internet—42 million Mexican citizens (ITU, 2012). Just because Mexico may have lower ICT penetration scores than its neighbors by no means indicates that the impact of ICTs in the country is negligible. An important point to note here is that a *threshold level of ICT penetration* may be all that matters for my variables of note anyway.

In the technology boom of the 90s, MNCs swarmed into Mexico, creating low wage jobs in foreign enclaves, but emulating the U.S. led 'dot com' bubble bursting in 2000, started going bust at a rapid clip: “the result was ever increasing unemployment and migration, a deeper and more apparent gap between globalization winners and losers, and the political mobilization of the 'losers' and their allies” (p. vii). The title of Gallagher & Zarsky's (2007) book, *The Enclave Economy*, is telling. They argue that FDI and sustainable development have *not exactly* gone hand

in hand in Mexico's 'Silicon Valley' (i.e. Guadalajara). Although it should be noted that by 2011, Mexico ranked third in Latin America in Information Technology exports, behind Brazil and Argentina; not exactly a dead industry. The following section explores the interrelation between the Internet and good governance in Mexico.

### **The Internet and Good Governance in Mexico**

Investigating where Mexico stands today in regard to its current government support of ICT is complicated as it has performed differently across various sectors of ICT implementation. The major ICT sectors in Mexico are Internet, TV (cable, satellite and broadcast), landline, and mobile phones (installation and subscriptions) and radio. *The World Economic Forum* in their Global Information Technology Report evaluates each of these ICT sectors (except radio), across three categories, Regulatory Environment, Readiness (which is the readiness to implement ICT infrastructure) and Usage (usage by individuals). The disparity across sectors in Mexico is evident (*The World Economic Forum*—referenced in Dutta & Mia, 2011). Dutta and Mia (2011) found that Mexico maintained a stable ranking in their index from the previous year; by 2011 Mexico was 78th place out of 139 countries in their overall network readiness ranking. They further posit that Mexico displays fairly high levels of business (48th) and government (50th) ICT usage:

In particular, the government provides extensive and well-functioning e-government services to its citizens (38th) and plenty of opportunities for e-participation (32nd). At the same time, a number of long-standing deficiencies affect Mexico's networked readiness landscape, preventing the country from fully exploiting ICT potential for increased growth. Individual and business readiness—at 97th and 103rd, respectively—are extremely low, which is attributable mainly to a combination of poor educational standards and training and high ICT access costs. In particular, telephone installation costs and monthly telephone subscriptions, both for residential and business users—are high, ranked 115th and 112th for residential telephone installation and monthly telephone subscriptions, and 99th and 127th for business telephone installation and monthly telephone subscriptions, respectively. (p. 26)

This range of rankings is both encouraging and yet also discouraging for Mexico. As it is easily ranked among advanced developed countries in some categories, but behind developing countries (including many autocratic regimes) in others. Dutta & Mia (2011) also claim that:

the [Mexican] government appears not to adequately prioritize ICT or to have a coherent vision of its importance for the country's long-term competitiveness (98th for government readiness). However, it does use ICT in its daily activities (50th for government usage), with well-developed e-government services (38th) and satisfactory levels of e-participation (32nd). An enhanced government focus on the sector should go hand in hand with an improvement of the market environment (69th), particularly in its regulatory (70th) and infrastructure (72nd) dimensions, which at the moment are not totally conducive to innovation and ICT development. (p. 26-27)

In another ranking by the ITU (2010) of the telecommunication accessibility to the population Mexico rose from 77<sup>th</sup> of 159 countries in 2008 to 48<sup>th</sup> in 2009 (of 161 countries). However, this is a rather high ranking considering that the cost for ICT service is very high in Mexico compared to its neighbors. A high ranking in ICT accessibility (mainly derived from infrastructure reports) is far from the only thing that matters in measuring ICT accessibility for the poor.

Moving beyond national rankings exposes more of the intricacies of the Internet in Mexico case study. Considering the country's long history of paternalism and lack of governmental transparency, Mexico's government has actually made remarkable efforts to use the Internet to increase communication with the public and encourage citizen participation. Back in 2000, the Fox administration launched an e-Government strategy, called *e-Mexico*, as part of the Presidential Good Government Agenda (Agenda Presidencial de Buen Gobierno, 2002); the e-Mexico program originated as a Presidential mandate and had four themes: e-education, e-economy, and e-health. The program seems to have had some success in motivating government officials to provide better governance. For instance, in 2005, five years after the e-Mexico program was implemented, the OECD conducted a survey among government officials to learn about internal objectives for implementing e-Government, and in the case of Mexico *improving transparency and accountability* and *enable efficiency gains* figured top on the list of motives of Mexican government officials (OECD eGovernment Country Report Mexico 2005).

Since being implemented, *e-Mexico* and its programs have been growing at a rapid clip, in both enhancing user access and the government's presence online. Today, every Mexican state maintains a website and many states have multiple extensive websites representing various

government agencies. In addition, almost all major Mexican city governments have websites, as do many smaller cities and municipalities. The federal level also contributes with *e-Mexico*, now called *Mexico Conectado*,<sup>73</sup> maintains a portal that links to four specially developed federal government sites: *CapcitiNet*, *e-Salud*, *e-Visitantes*, *e-Mujeres*, and *e-Migrantes*. These sites provide information on issues of education, public health, opportunities for foreign investors, and gender and migration issues. They also offer access to knowledge sharing platforms and professional capacity building sites and provide information on governmental processes in general.

Government efforts to access and e-Governance places Mexico in good standing compared to its Latin American neighbors and other developing countries. As mentioned above, in its network readiness ranking, *The Global Information Technology Report 2010–2011* placed Mexico 38<sup>th</sup> out of 139 countries in providing e-government services to its citizens, and 32<sup>th</sup> in terms of providing opportunities for e-participation, yet the same report, criticized Mexico for its “*lack of a coherent vision [of ICT] for the country’s long-term competitiveness*” (Dutta & Mia, 2011, p. 26). The OECD also shares a similar view of Mexico’s e-governance, for instance in its 2005 e-government report the organization admonished that—caught in the initial enthusiasm of e-government—Mexico had opted for an approach of widespread ICT application that produces as many online services as possible and needs to refocus if e-government was to improve the overall quality of government and sustainably impact on the lives of Mexican citizens. As López (2006) put it: “There is no doubt that ICT and e-Government [in Mexico] is valuable, but the benefits that it brings do not impact yet that much of the population.” Besides this lack of strategic focus, there are several conceivable contextual factors that constrain the capacity of ICT to positively impact poverty in Mexico. Among the primary suspects are factors pertaining to the characteristics of the country’s telecommunications market and to pronounced socio-economic cleavages between the prosperous and industrialized North and the poorer, more rural, Center and South of the country.

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<sup>73</sup> Mexico Conectado (2014), see <http://www.emexico.gob.mx/> for the older version.

### **A Dysfunctional Telecommunications Market**

Regulation is an important avenue where governance plays a role in determining whether or not the populace can afford ICT access (this avenue is mapped out in Chapter 2). A critical way that government regulation can impact the cost of ICT is by monitoring and breaking up monopolistic telecommunication firms. The Mexican telecommunications market unfortunately displays an extraordinarily high degree of concentration. In 1990, the formerly state owned telecom operator TELMEX, was privatized and bought up by Grupo Carso, a global conglomerate owned by the Mexican tycoon Carlos Slim. Under Carso Global Telecom, TELMEX controlled about 80% of fixed telephone lines in Mexico and its sister company Amércia Móvil controlled 70% of the mobile phone market. This lack of competition resulted in high access costs for users. In 2013, the average cost of a local call using the subscribers' personal equipment was US\$ 0.16 per three minutes. This places Mexico as the 12<sup>th</sup> most expensive country out of 142 measured by Nation Master (2014).

In 2012, an OECD report sharply criticized Mexico's "dysfunctional" telecommunication market, estimating that it generated an annual welfare loss to the economy of US\$ 129.9 billion equivalent to 1.8% of the GDP (OECD, 2012). Another OECD report, published in 2012, described the Mexican telecommunications market as "a market in the early stages of liberalisation, in terms of market concentration, observable behaviour and outcomes" (OCED, 2012, p. 54). Previous attempts to democratize the country's telecommunication market were repeatedly hindered by the Institutional Revolutionary Party (PRI), during its seven uninterrupted decades of rule until 2000. Regulatory reform of the telecommunications sector has been on top of the government agenda ever since.

However, ambitious reform initiatives by the two consecutive PAN governments to break up the telecommunication monopoly required a constitutional amendment which, in turn, entails support from two-thirds of Congress and a majority of state legislatures. As an opposition party, the PRI, who held a majority of seats in Congress during the Fox presidency, made sure on several

occasions that presidential initiatives to democratize the telecommunications market fell short of those thresholds. Ironically, the PRI's position on this issue changed when the party's presidential candidate, Enrique Peña Nieto, won the Presidential election in 2012. In March 2013, Peña Nieto pushed through a constitutional reform that prevents one company from controlling more than 50% of the market for fixed line or mobile telephones. The telecommunications reform forces Slim to sell 30% of Telmex and 20% of América Móvil and created an independent regulatory agency, the Federal Institute of Telecommunications (Robles, 2013) to enforce the 50% market share limit. The agency has been endowed with concrete powers to set fines and even dismantle companies. The reform furthermore established a law that allows operators to provide fixed, mobile, cable and Internet services under a single concession that will be awarded after tendering and competitive bids. While the 2013 regulatory reform clearly constitutes an important step towards a more competitive and transparent telecommunications market, its positive effects will take time to materialize. Meanwhile prices remain high across Mexico, especially for the poor (see Barry, 2014).

For example Mexico Online provides broad based statistics (as seen in the quotation below) on the amount of Mexicans using the Internet in 2013, and report that 62% do not have access because they cannot afford it. They also report that about one third of Mexico's population live in villages without access to a fiber optic network at all:



Table 4.1

**How many Mexicans have internet access?**

- **Only 43.5% of Mexicans use the Internet.** Of these, 62% argued that it has no service due to lack of financial resources. This places Mexico in the number 20 position in Latin America and the Caribbean in broadband subscriptions per 100 inhabitants and percentage of Internet users.
- The number of **fixed broadband subscriptions and mobile** is 11.9 and 13.7 per 100 inhabitants in 2012, respectively, which puts us in the last places in the countries of the Organization for Economic Cooperation and Development (OECD).
- About a third of the population lives in **villages without access to a fiber optic network**, which makes access to high-speed services. In OECD countries the **average download speed** with DSL is 30 Mbps while in Mexico is 3 Mbps.
- While **service prices** in Mexico have declined 21% between 2007 and 2010, their levels are still not affordable for most people.

Source: Mexico Online (2014, p.1)

These findings from Mexico Online are confirmed in my survey and interviews. Most people reported that prices not affordable for them, including many from the middle class. This also is seen in many not being able to afford access on their mobile devices. Mexico Online is the government's response to addressing these challenges and their approach to increasing access in Mexico will be explained in detailed below.

From this section it should be apparent that there is little doubt the weak governmental regulatory environment is a primary cause of the dysfunctional telecommunications market in Mexico. A market that has consistently made consumers pay higher costs for ICT access in Mexico compared to its Latin American neighbors and to most developing countries. The cost burden of ICT access in Mexico disproportionally hurts the ability of the poor to get access. There are two significant public policies that the Mexican government has recently taken to correct the difficulties for the poor in acquiring access across the country. One of these policies is discussed in

detail in the following section and the other is discussed in the final chapter. A combination of these policies makes Mexico a good case to evaluate whether or not government can play an important role in increasing access for the poor in a challenging free market environment.

**Signs of Hope: Mexico Online and a Constitutional Amendment on a Right to Internet Access.**

By many indications the Mexican government has identified the problem of high access cost, and is undertaking active steps towards solving this problem for the poor and working class. One avenue the government has taken was to declare access a ‘right’ by law. In 2013, Article 6 of the Mexican Constitution was amended to include a ‘right to Internet access,’ which the government is supposed to provide to all. This is a giant step forward for my argument calling for Internet access to be deemed a human right and will be discussed fully in Chapter 6. The second, more policy oriented avenue, taken by the government was put in place in the early 2000s when the e-Mexico program was implemented to increase access across the country and allow more e-governance, transparency, and accountability via the web. Subsequently, a new government program replaced e-Mexico, [Mexico Online](#), which is a project by the government to ensure the constitutional right of access to broadband Internet service is realized.

As mentioned above the goals of e-Mexico were to increase digital literacy among the populace and to enhance the online presence of government websites and e-governance programs. Realizing the urgent need to increase access in the rural areas, a signature of e-Mexico was creating digital learning and community centers in remote areas where the Internet had never been before. The e-Mexico program, created back in 2000—well before the right to access was enshrined as a right—the Mexican government was already following successful telecenter rollouts in other Latin American countries by creating digital learning and community centers. By 2006, as part of the e-Mexico initiative, 7,500 telecenters, or Mexico’s version of a telecenter, called Digital Community Centers (Centros Comunitarios Digitales, CCD) had been established in 2,445 municipalities. The main services offered to citizens at CCDs is cost-free use of personal

computers equipped with Microsoft Office and Internet access, the possibility to print files and to scan documents, as well as provide advice and training to users. The CCDs aim to “to leverage the Internet to bring health and education to marginalized communities, and promote innovation” (Pérez-Jacome, 2012). Very similar to the CCD is the CCA, which is another way that the Mexican government is trying to bridge the digital divide and improve the digital skills of those who would otherwise not have access to digital technologies is through a network of digital learning centers, called Centros Comunitarios de Aprendizaje (CCA). The CCA network was created through an initiative by the Monterrey Institute of Technology and Higher Education with more of an education and digital training focus than CCDs. The first CCA opened its doors in 2001 in the municipality of Doctor Arroyo, Nuevo León. Since then, CCAs have been adopted in 700 communities across the country. Computers at the CCAs are connected to the Internet and have access to an educational portal where citizens can take online courses under supervision by a tutor. According to official language, the character of the CCA thus goes beyond that of a mere cyber café. Rather than that they are conceptualized as places where citizens can “continue their formal education, acquire new knowledge and develop skills that will translate into a better life for them” (Tecnologico de Monterrey, 2010). They also offer classes on use of digital technologies and vital tutoring services in local languages beyond Spanish.

Official government language paints a very rosy picture, yet there is a debate among scholars, as studies investigating the impact of CCAs on direct poverty alleviation have displayed mixed results. To interpret their interview data from users of CCAs Huerta and Sandoval-Almazan (2007) employed a digital literacy framework and found that CCA users are usually digitally illiterate in three skills: 'branching ability' (i.e. ability to navigate through a nonlinear environment to find the desired information); 'reproduction ability' (i.e. ability to analyze and synthesize the information retrieved); and 'information ability' (i.e. ability to assess the quality of information). Furthermore they found that a lack of knowledge of the English language, the predominant

language of the Internet, limited CCA users' in their ability to search for information on the Internet, thus widening the linguistic digital divide.

Despite these criticisms, there is no doubt that CCAs have helped thousands of Mexicans utilize the Internet, and some centers have reported successful educational training in how to use the technology (at least at a functional level). As more and more information becomes available online in local languages, this may slowly become less of a problem. In 2009, 13,450 citizens participated in tutor supervised CCA programs of digital alphabetization and basic adult education courses on issues such as health, family planning, and small-scale entrepreneurship (Tecnologico de Monterrey, 2009). CCAs and CCDs thus constitute an essential part of a proactive dual policy strategy to “reduce the digital divide among adults, while also offering advanced tools, training and entrepreneurial support to younger generations who are already wired” (Federal Government of Mexico, 2012). Overall, I concur with an important academic study on the impact of the e-Mexico on users at telecenters by Mariscal, Gil-Garcia, and Aldama-Nalda (2011), they state:

The results of our study indicate that this program [e-Mexico] has a positive, albeit limited, impact. Mostly, benefits reach young students by supporting their schoolwork and offering recreational activities. The fundamental weaknesses of the program reside in its limited scope, its lack of training, and the very low quality of broadband that is offered. (p.1)

This study is the largest rigorous analysis, independent from the government, on e-Mexico's impact on users to date. Their recommendation above for increasing its scope is exactly what Mexico Online attempts to implement. Clearly, the CCAs and CCDs of e-Mexico were beginning steps, and now that the 2013 amendment to the constitution has to be taken into account the government has been reporting progress in getting more citizens online via various new initiatives.

For instance, in replacing e-Mexico, Mexico Online has drastically increased the scope of government efforts to provide access. The program states on its website their goal is:

To ensure access to Internet service to more people, the Mexico Online project promotes the deployment of telecommunications networks that provide broadband connectivity in more than 36,000 sites and public spaces such as schools, health centers, community centers, town halls, libraries and parks (p. 1).

36,000 sites is an extensive network in a country of Mexico's size; this is illustrated on their website that includes a [map of Mexico](#) with all the locations of access points and almost the whole country is covered in access hotspots. Mexico Online points to two types of technologies they use to provide access to remote locals: satellite technology, which is "used to bring the Internet to rural areas where there is no access to other telecommunications networks. Sites and public spaces connected with this technology are mainly in communities of between 500 and 2,500 people, with levels of **high or very high marginalization** and **inaccessible** locations" (Mexico Online 2014, p.1, bold text in original). The second approach they use to provide access is terrestrial networks, which use:

SCT deployed by telecom operators to provide access to Internet infrastructure. Sites and public spaces connected through these networks are generally located in **urban localities**. Part of the project terrestrial networks are **high-capacity** and connecting sites with **large data transfer requirements**. Through these networks, universities and research centers in the country, participating in major scientific and technological projects of global scope. (p.1, bold text in original)

The program has been effective in providing various types of access points across Mexico. The following table from Mexico Online's website displays data from across Mexico for the type of network access and whether it is located in a community center, educational setting, government building or in a health center:

**Table 4.2**

Type of network	Community	Educational	Government	Health	Total
Satellite	3,601	15,511	53	5,177	24,342
Terrestrial	1,633	10,560	639	317	13,149
Great band widths	57	674	119	287	1,137
Total	4,117	25,863	840	5,755	38,628

Source: Coordination for Information Society and Knowledge (CSIC), December 2013.

Mexico is not alone in its employment of telecenters to provide access to marginalized populations. However, it is difficult to make comparisons across the developing world with regard to telecenter programs because they differ so widely in their technical infrastructure capabilities and in their approaches to digital education/tutoring. Furthermore, there are no rigorous cross-national surveys on the impact of telecenters on users economic or political participation. That being said, Mariscal, Gil-Garcia, and Aldama-Nalda (2011) provide some insight into successful programs in a few Latin American countries and how they can differ from one another:

One of the most successful experiences with centers in Latin America took place in Chile, which managed to connect some of the most isolated regions in the country through its Network of National Info-centers. Financed by a fund governed by a central authority, these telecommunication centers are operated by several organizations that range from regional or local public entities to private companies and nongovernmental organizations. Chilean centers are open to the general public, and they provide computer services with Internet connection, as well as training in the skills required to use these technologies. Another noteworthy experience is Colombia's COMPARTEL, which began in 1999 and provides public telephony to almost the entire country. In 2000, a social Internet program was launched under the same policy, with 905 digital centers installed in municipalities throughout the country. In 2005, COMPARTEL widened the scope of these programs through specific strategies, such as Comunidad Señal de Cultura y Diversidad (Community

Signal of Culture and Diversity), which seeks to promote and recover cultural and traditional values, as well as Colombian ethnic minority languages, through the use of technology. (p.3)

Mariscal, Gil-Garcia, and Aldama-Nalda (2011) argue further on in their article that Mexico's Internet access plans still have a ways to go to connect all citizens who want access. Compared to Chile and Colombia's program Mexico still has a lot of room for improvement its Internet program to expand access to more of its citizens.

This national bird's eye view presented in this section does not fully explain what access for the poorest is really like. Nor does it empirically test if these government programs have improved the ability of the poor to employ the Internet to move out of poverty. The next section attempts to address these holes by looking for patterns, outliers, and instances of my theoretical propositions at work in data from across the Mexican states. Investigating the sub-national units help explore public expenditure and access to ICTs at greater depth. It especially exposes pockets of poverty, ICT usage rates, and the economic differences between the north and south of the country.

### **4.3 Structural Evidence: Mexican States.**

If my theoretical framework holds any water—Internet and mobile phone penetration will display positive influence on poverty by interacting with governance—then evidence for this should be present at the state level in Mexico. National level statistics have well-known limitations, often due to often a small sample size, lack of quality uniform data gathering in developing countries, and diversity across large geographic states, thus looking into data at the state level allows more nuanced analysis. In fact, the results differ as my data analysis below from the Mexican states indicates that my theoretical framework strongly holds as compared to the weaker result of national level data. Thus, there is a puzzle as the national level data for Mexico displayed a less than direct relationship between ICTs and poverty, however the findings from the states indicate a strong relationship. In fact, data displays that Mexican states are almost exclusively *typical case*

studies, following Seawright and Gerring (2008).<sup>74</sup> If data indicates that the Mexican states are typical cases, than my theoretical framework predicts that there should be rather uniform results across the 31 Mexican states. The following section evaluates data from 31 Mexican states to determine if my theoretical framework and its associated hypotheses are true.

My primary data at the state level comes from CONEVAL (National Council for the Evaluation of Social Development Policy). In 2010, CONEVAL, the primary agency which studies poverty in Mexico, released—for the first time—municipal poverty estimates across Mexican states and municipalities that include the social and economic dimensions as defined by Mexican law: income, schooling, access to health services, access to social security, housing quality and space, basic services available to housing, access to food, and level of social cohesion (CONEVAL, 2010a). According to CONEVAL (2010a) the official methodology for poverty measurement is multidimensional in nature. They measure poverty employing two basic concepts: income and social deprivation. Social deprivation includes six dimensions. Each dimension is defined as the deprivation of a social right. The threshold dividing deprivation from fulfillment is derived from each specialized body of Mexican law. CONEVAL makes use of the information collected by the National Institute of Statistics and Geography (INEGI). According to their methodology for poverty measurement, the population living in poverty is defined by CONEVAL (2010a) as that exhibiting at least one social deprivation and an income below the 'well being' threshold. The degree of Social Backwardness is simply the amount of poverty and is a proxy for the *lack* of governmental services that states have compared to the leading states in Mexico. Thus, I use it below as a proxy for government effectiveness at the state level. The Social Lag Index (not graphed, but in the table below) is a measure that adds a single index variables of education, access to health services, basic services in housing quality and the space in it, and household assets (see

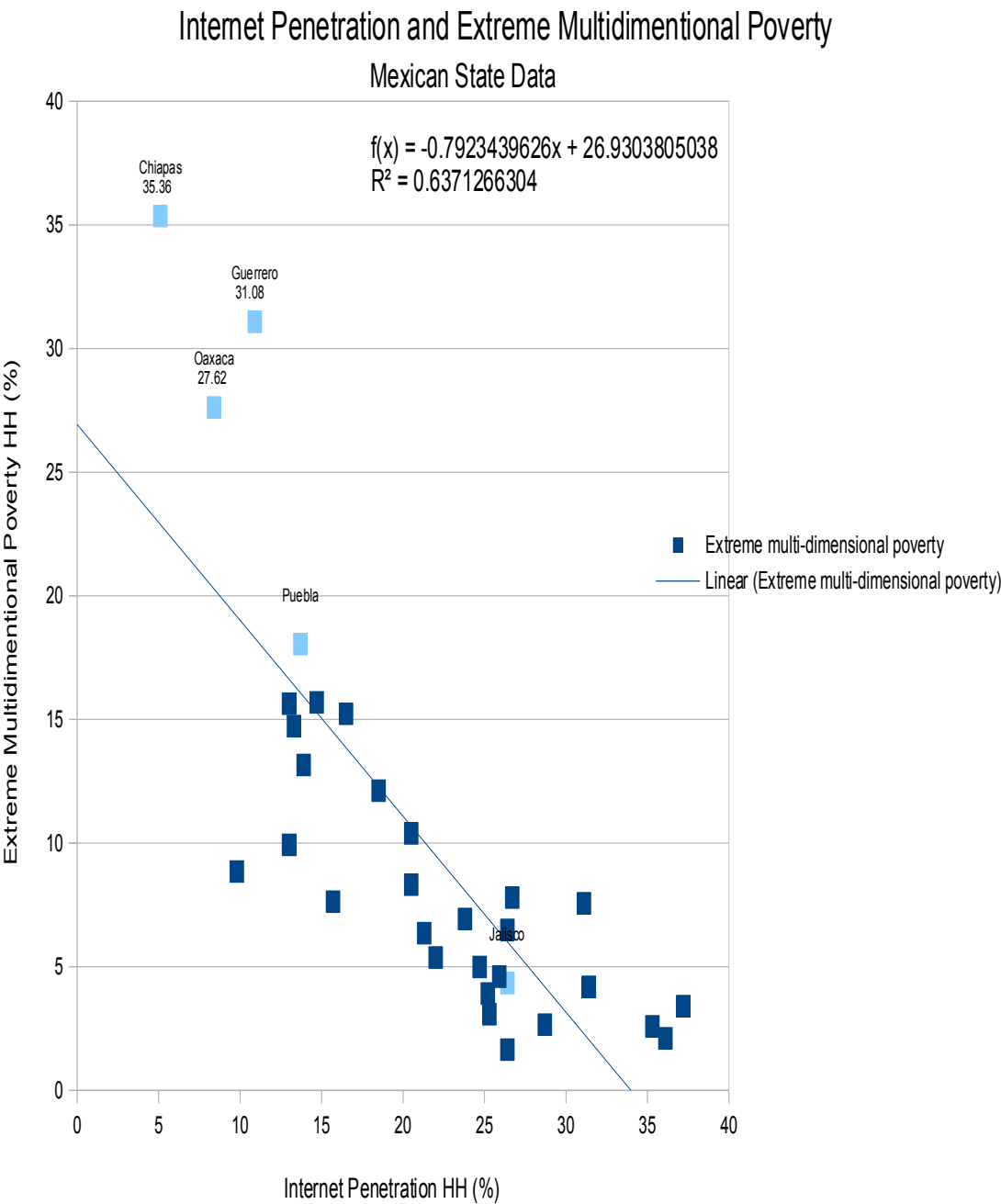
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<sup>74</sup> To reiterate, following Seawright & Gerring (2008): “The *typical case* study focuses on a case that exemplifies a stable, cross-case relationship. By construction, the typical case may also be considered a *representative* case, according to the terms of whatever cross-case model is employed...Because the typical case is well explained by an existing model, the puzzle of interest to the researcher lies *within* that case. Specifically, the researcher wants to find a typical case of some phenomenon so that he or she can better explore the causal mechanisms at work in a general, cross-case relationship” (p. 299, italics in original).



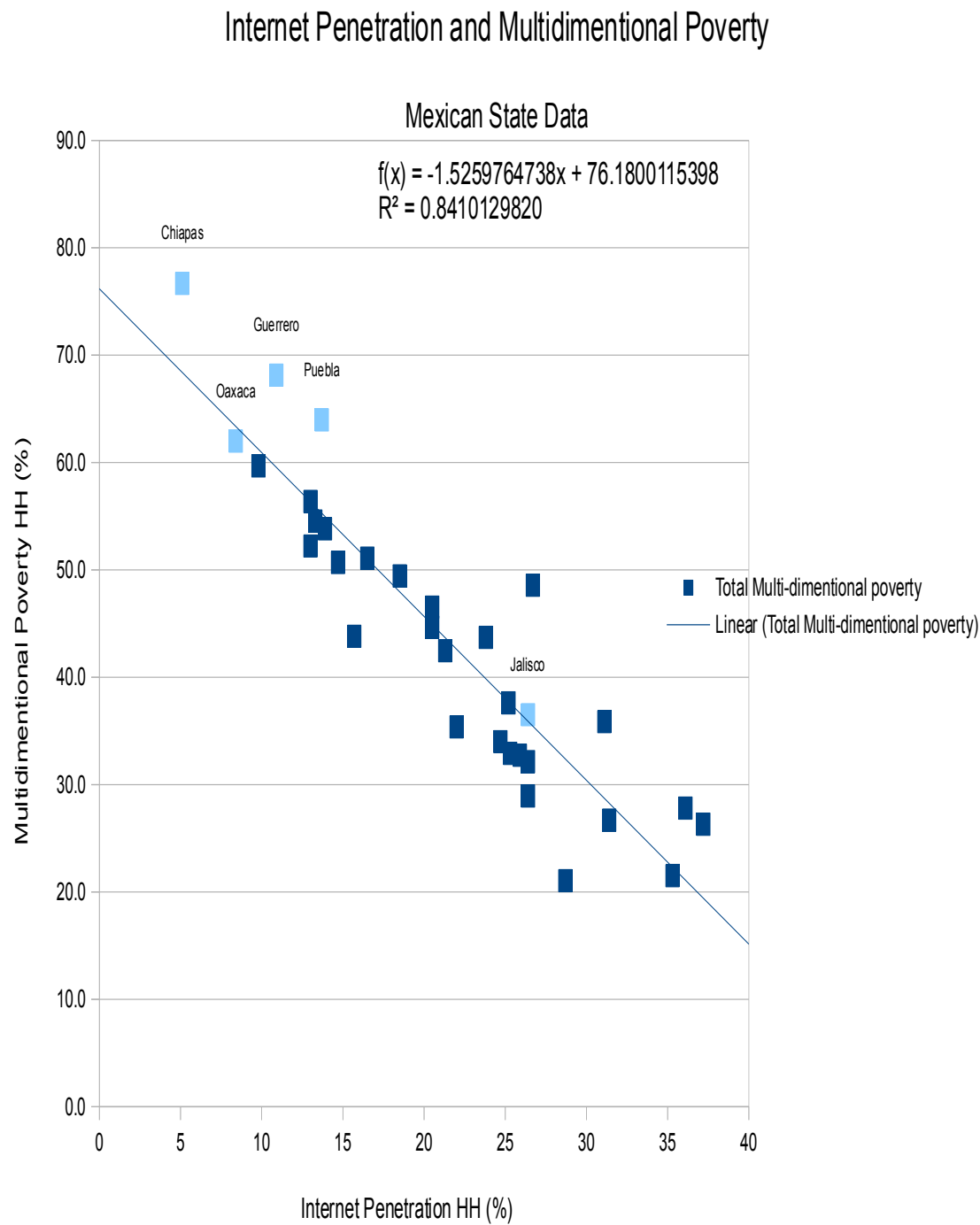
CONEVAL, 2010b). Data below is from 31 states and one federal district. The data on extreme, multi-dimensional poverty index, and the Social Backwardness Index is from CONEVAL (2010a) and the Internet data comes from INEGI (2010):

Figure 4.1



Sources: CONEVAL (2010a); INEGI (2010).

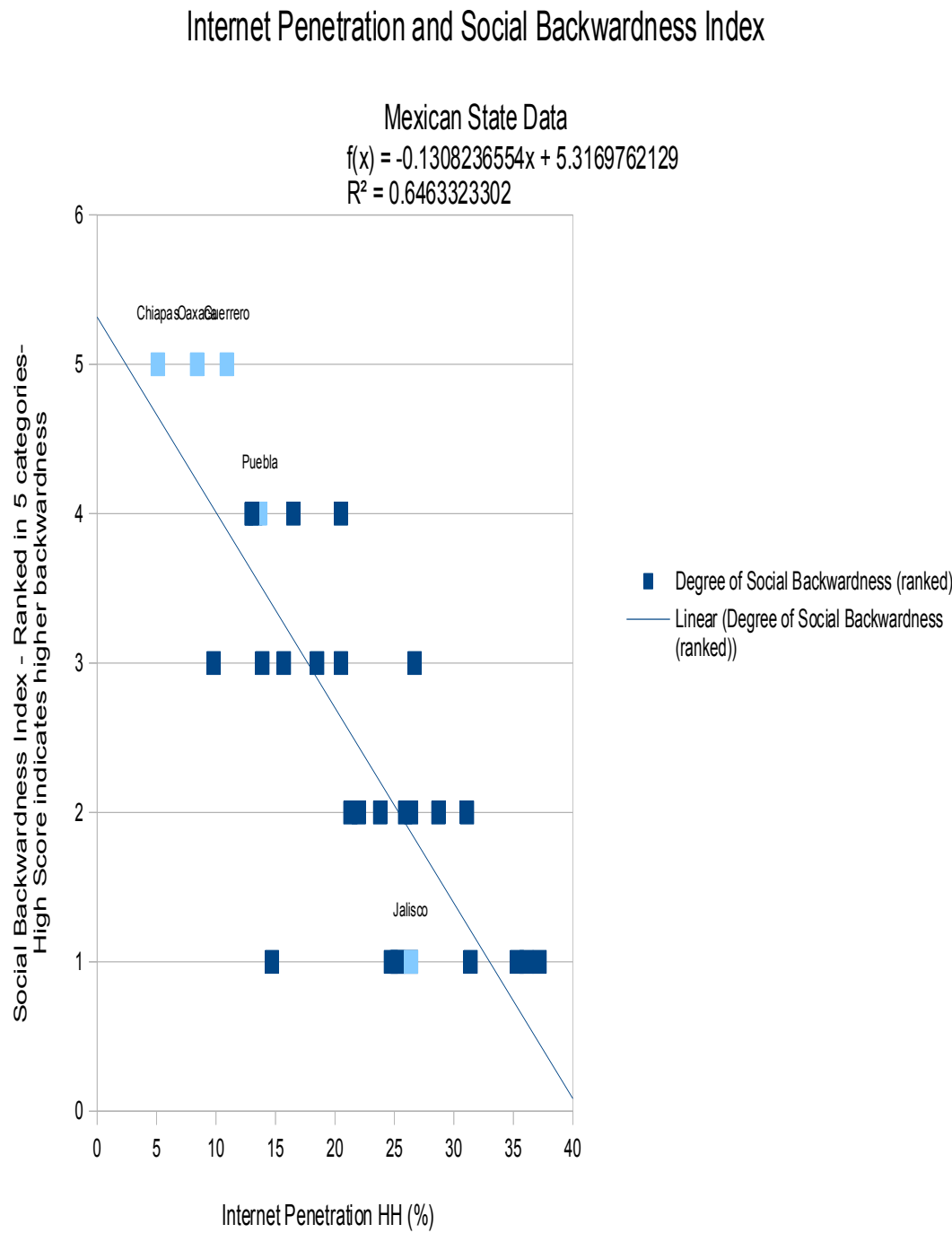
Figure 4.2



Sources: CONEVAL (2010a); INEGI (2010).

These two graphs on poverty and Internet will be discussed below, but I want to introduce one more graph before investigating this data. The following graph charts data from CONEVAL's Social Backwardness Index. In 2010, CONEVAL released for the first time municipal poverty estimates that take into account the social and economic rights set out in the Mexican Constitution including: (1) the right to work as well as access to (2) food, (3) adequate housing, (4) education, (5) social services and (6) health services. The CONEVAL Social Backwardness Index builds on these six dimensions, with each dimension being defined as the deprivation of a social right. Thus, it enables a multidimensional poverty measurement and also makes for a good proxy of government effectiveness. The following graph plots CONEVAL 2010 backwardness levels of the 31 federal states and the Federal District against 2010 Internet penetration rates provided by INEGI:

Figure 4.3



Sources: CONEVAL (2010a); INEGI (2010)

Similar to the national level data from Latin America, income level certainly plays an important role in determining ICT penetration levels. No matter how this data is presented, parsed or split, the role of income in determining Internet penetration rates is strong (and this was true with all ICTs—except with TV, which has a much higher, rather uniform, penetration rate across the country). The states with the highest income had the highest levels of Internet penetration and *vice versa*. Not surprisingly, states with the highest levels of poverty also had the lowest levels of Internet penetration. This held for mobile phones as well. TV and radio were tested, but did not display as strong a relationship, as both of these ICTs have very higher penetrations rates. They usually do not require a monthly fee and thus can saturate the market even among poorer populations.

The poorest states, no matter how they were measured, also had the lowest levels of effective government services. In fact, Oaxaca, Guerrero and Chiapas, the three states with the highest levels of poverty, also rank 1, 2 and 3 respectively, in terms of the Social Backwardness (and in Rank of Social Lag) all have *by far* the lowest levels of Internet penetration. They also rank the lowest in other ICTs. These states are labeled and shaded in light blue in the charts above.<sup>75</sup> Higher rankings on social backwardness are not good for states, for instance a number 5 ranking is the worst rank a state can have. Looking at the data for these three states seem to confirm the notion that ICT penetration levels are highly associated with income and more effective government services. Furthermore, in quantitative analysis the regressions are all above 0.64 in their R-squares, which indicates that the relationships are strong (with all coefficient signs pointing in the correct direction). When other variables were introduced for control, the relationship between Internet, effective governance, and poverty remained strong. Although it should be noted that Internet and mobile phones, had an impact on my variables of note, TV and

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<sup>75</sup> These states also have the highest percentage of indigenous population. Approximately 15% of Mexico's population is made up of indigenous people (Jung, 2008). According to INEGI data from 2005 Chiapas, Oaxaca, and Guerrero also have among the highest concentration of indigenous population with 26%, 35%, and 14% respectively, compared to the national level percentage of indigenous population of 7%.

radio did not, and mobile phones did not have as strong a relationship as Internet did. This was likely due to much higher penetration rates of mobile phones in Mexico, perhaps saturating the market, and thus the variance in the data, with some states ranking above 100% because some citizens have more than one mobile phone. Large-n analysis at the state level is not the “be all end all” approach for investigating the impact of mobile phones or TV on poverty because of this problem of diminishing returns in the data. Internet remains an interesting case, yet more specific analysis of individual states is needed to confirm causation. There also remains the problem of omitted variable bias and long-term trends in poverty unrelated to ICTs.

The large-n analysis on Mexican states leaves us with a place to focus analysis on, and more specifically, towards *what* has caused these disparities between states. Before investigating the North-South divide in Mexico and a comparison between urban areas I want to briefly mention where Mexico ranks in a few other national level statistics aimed at poverty. In 2008 Mexico spent 11% of GDP on social spending which is low compared to the OECD average of 22% (OECD, 2011); also low compared to the Latin American average for that time period of 18% (ECLAC, 2010, p-132). However, despite these rankings the Mexican government undertakes notable efforts to reduce poverty and social inequality. For instance, according to the government pro-poor effort Index developed by Kimenyi (2007) the country ranks second in Latin America with a score of 0.05, ranked 70<sup>th</sup> in the world following Uruguay which is regional leader in pro-poor government efforts with an Index level of 0.15 or ranked 37<sup>th</sup>. As mentioned above, the fact that extreme poverty held relatively steady can be attributed to targeted national level social protection programs such as the *Oportunidades* conditional cash transfer initiative as almost 60% of rural families receive welfare payments from the *Oportunidades* program. However, poverty reduction programs are often deficient in terms of their targeting. According to the OECD, the poorest 20% of the population receive only 10% of poverty alleviation funds, but as mentioned above, for Hamilton (2009) Mexican families, who have to travel to collect their *Oportunidades* payments, spend up to 8.3% of their benefits in transaction costs such as, transportation and food.

### Mexico's Digital North-South Divide

Data from state level poverty rates graphed above revealed a pronounced socio-economic North-South divide that goes hand-in-hand with a digital divide between the North and South. According to the National Council for the Evaluation of Social Development Policy (CONEVAL), in 2011 the average percentage of people living in poverty in the southern states of Yucatan, Campeche, Tabasco, Veracruz, Guerrero, Chiapas, and Oaxaca was 61% compared to 46.2% nationwide. CONEVAL data also displayed that ethnicity is a strong determinant of poverty in Mexico. In the ten municipalities that show the lowest percentage of persons living in poverty, the indigenous population accounts for less than ten percent of the total. Meanwhile, in the ten municipalities with the highest percentage of persons living in extreme poverty, 70% or more of the population is indigenous (CONEVAL, 2010a).

Before proceeding I just want to briefly note the difficulty with defining who indigenous peoples are and how I will be using the word indigenous. According to the United Nations Department of Economic and Social Affairs, (2009a), *State of the World's Indigenous Peoples*:

The concept of indigenous peoples emerged from the colonial experience, whereby the aboriginal peoples of a given land were marginalized after being invaded by colonial powers, whose peoples are now dominant over the earlier occupants. These earlier definitions of indigenousness make sense when looking at the Americas, Russia, the Arctic and many parts of the Pacific. However, this definition makes less sense in most parts of Asia and Africa, where the colonial powers did not displace whole populations of peoples and replace them with settlers of European descent. (p. 6)

Thus, there is no universal definition of indigenous people.<sup>76</sup> However, for practical purposes, the UN and this author, needs a statement to clarify how the term is being applied. I follow the UN's Secretariat of the Permanent Forum on Indigenous Issues (UN, 2009a) who claim that the “commonly accepted understanding of the term” indigenous is that provided by a José R. Martínez Cobo study on the Problem of Discrimination against Indigenous Populations (UN 2009a, p. 6-7). Martínez Cobo “offers a working definition of 'indigenous communities, peoples and nations.' In

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<sup>76</sup> In fact, the UN (2009a) states that: “in the case of the concept of 'indigenous peoples', the prevailing view today is that no formal universal definition of the term is necessary, given that a single definition will inevitably be either over or under inclusive, making sense in some societies but not in others” (p. 6).



doing so, he expressed a number of basic ideas forming the intellectual framework for this effort, including the right of indigenous peoples themselves to define what and who indigenous peoples are. The working definition reads as follows” (UN, 2009a):

Indigenous communities, peoples and nations are those which, having a historical continuity with pre-invasion and pre-colonial societies that developed on their territories, consider themselves distinct from other sectors of the societies now prevailing on those territories, or parts of them. They form at present non-dominant sectors of society and are determined to preserve, develop and transmit to future generations their ancestral territories, and their ethnic identity, as the basis of their continued existence as peoples, in accordance with their own cultural patterns, social institutions and legal system. (UN 2009a, p. 4)

This 'working definition' offered by Martínez Cobo allows for more clarity on how the term indigenous is employed in this dissertation.<sup>77</sup>

Turning towards at data for the states with the highest percentages of indigenous people, Chiapas, Guerrero, and Oaxaca, seem to confirm and highlight the claim that ICT penetration levels are highly associated with income and good governance.<sup>78</sup> Underdeveloped telecommunications infrastructures remain significant barriers to Internet usage for millions of Mexicans primarily in rural areas. In 2010, the Mexican National Institute of Statistics and Geography (INEGI) conducted a household survey on the availability and use of information technology. According to this survey, 6.99 million households had access to the Internet,

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<sup>77</sup> While difficult to synthesize the massive amount of information regarding the diversity of indigenous peoples around the world, some common characteristics emerge. The UN's Secretariat of the Permanent Forum on Indigenous Issues (UN 2009a) highlight some of the challenges many indigenous groups face: “The situation of indigenous peoples in many parts of the world continues to be critical: indigenous peoples face systemic discrimination and exclusion from political and economic power; they continue to be over-represented among the poorest, the illiterate, the destitute; they are displaced by wars and environmental disasters; the weapon of rape and sexual humiliation is also turned against indigenous women for the ethnic cleansing and demoralization of indigenous communities; indigenous peoples are dispossessed of their ancestral lands and deprived of their resources for survival, both physical and cultural; they are even robbed of their very right to life. In more modern versions of market exploitation, indigenous peoples see their traditional knowledge and cultural expressions marketed and patented without their consent or participation. Of the some 7,000 languages today, it is estimated that more than 4,000 are spoken by indigenous peoples. Language specialists predict that up to 90 per cent of the world's languages are likely to become extinct or threatened with extinction by the end of the century” (p. 1).

<sup>78</sup> Investigating more conventional measures of poverty confirms the well being findings. CONEVAL (2010a) notes that the municipalities with the largest percentage of persons living in poverty in 2010 were: San Juan Tepeuxila, Oaxaca (97.4); Aldama, Chiapas (97.3); San Juan Cancuc, Chiapas (97.3); Mixtla de Altamirano, Veracruz (97.0); Chalhuitán, Chiapas (96.8); Santiago Textitlán, Oaxaca (96.6); San Andrés Duraznal, Chiapas (96.5); Santiago el Pinar, Chiapas (96.5); Sitalá, Chiapas (96.5), and San Simón Zahuatlán, Oaxaca (96.4). Of the above, in eight of the municipalities 70 percent or more of the population speaks an indigenous language (i.e. for CONEVAL (2010a) they are classified as indigenous municipalities). In San Juan Tepeuxila the percentage of persons speaking an indigenous language is 57 percent, and in Santiago Textitlán it is 14 percent (CONEVAL, 2010a).

representing 23.26% of households in the country. However, the survey also revealed that Internet access varies considerably across the country's regions, with the highest concentration of users in the country's industrialized Northern states. By 2012 this percentage climbed to over 36%, and 43% in 2014.

For instance, in the Federal District and the northern federal states of Baja California Norte, Baja California Sur, Nuevo León, Sonora, and Tamaulipas 3.7 out of 10 households on average have access to the Internet. By contrast, in the central and southern states of Veracruz, Michoacán, Hidalgo, Guerrero, Tlaxcala, Oaxaca, an average of 1.2 households out of 10 is connected to the Web. Notably household Internet access is lowest in Guerrero (11.8%), Chiapas (10.4%) and Oaxaca (7.9%), as mentioned above, these are the states with the highest concentration of indigenous population:

**Table 4.3: Internet Access in Mexican Federal States, Percent of Households (2010 – 2011)**

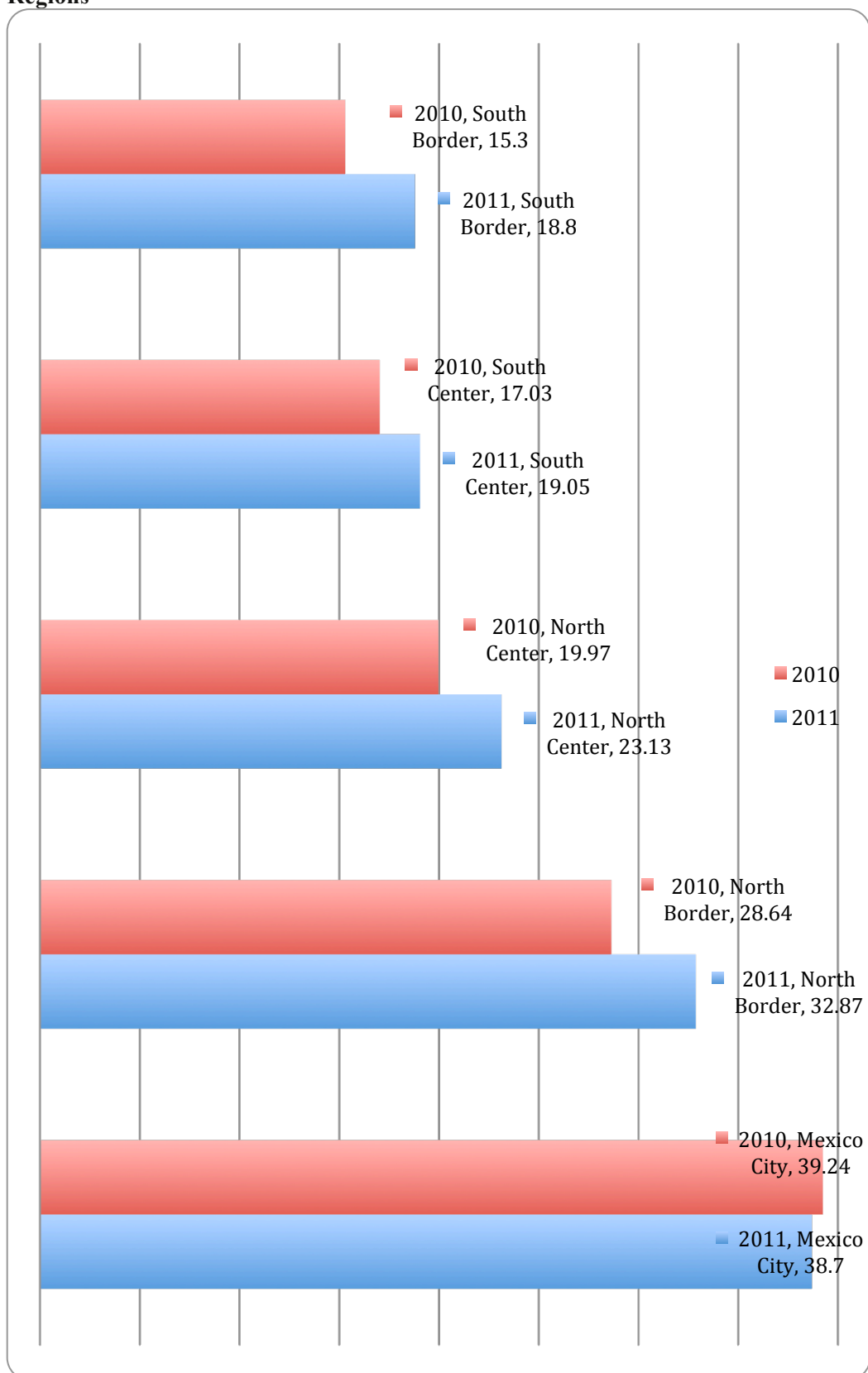
<b>Federal Entity</b>	<b>2010</b>	<b>2011</b>
<b>United States of Mexico</b>	<b>21.3</b>	<b>23.3</b>
Aguascalientes	22.8	28.8
Baja California	35.4	38.1
Baja California Sur	33.2	40.7
Campeche	18.6	22.2
Coahuila de Zaragoza	23.1	24.9
Colima	24.5	28.9
Chiapas	7.2	10.4
Chihuahua	24.6	26.5
Distrito Federal	39.2	38.7
Durango	17.1	24.3
Guanajuato	15.9	16.4
Guerrero	10.8	11.8
Hidalgo	11.5	13.4
Jalisco	27.0	28.9
México	22.0	21.7
Michoacán de Ocampo	13.2	14.4
Morelos	23.3	27.1
Nayarit	19.2	21.9
Nuevo León	31.8	34.7
Oaxaca	7.8	7.9

Puebla	14.6	16.2
Querétaro	24.5	26.4
Quintana Roo	24.0	35.9
San Luis Potosí	16.4	20.4
Sinaloa	23.6	25.6
Sonora	29.0	33.3
Tabasco	12.3	16.4
Tamaulipas	23.5	31.9
Tlaxcala	12.0	11.7
Veracruz de Ignacio de la Llave	14.5	14.8
Yucatán	18.3	23.3
Zacatecas	13.2	15.5

Source: INEGI (2012)

As is apparent in the table above, between 2010 and 2011 there is not any trend indicating a closing of the digital gap between Northern and Southern regions of the country; employing data from the past decade showed this to be the case as well. In fact on average, Internet access increased most in the Northern border states (4.23%) and least in the Southern center states (2.02%) from 2010-2011. Remarkably, in the capital city (Distrito Federal), household access fell slightly by 0.54%. This may be due to the failure of the capital's infrastructure development to keep pace with the steady inflow of rural-to-urban migrants. The digital North-South divide is even more obvious when looking at the following figure:

**Figure 4.4: Percentage of Households with Internet Connection across the Mexican Regions**



Calculated based on data by INEGI. Regions are defined as follows: *North Border*: Baja California N., Baja California S., Nuevo Leon, Sonora, Chihuahua, Coahuila, Tamaulipas. *North Center*: Queretaro, Aguascalientes, Jalisco, Guanajuato, Durango, San Luis Potosi, Sinaloa, Zacatecas, Nayarit. *South Center*: Mexico, Colima, Morelos, Puebla, Michoacán, Hidalgo, Tlaxcala. *South Border*: Quintana Roo, Yucatan, Campeche, Tabasco, Veracruz, Guerrero, Chiapas, Oaxaca.

A deeper investigation of the specifics of infrastructure is worth pursuing to address reasons behind the variation seen in Figures above. The continued widespread reliance on dial-up access in areas without broadband service, especially in areas with large low-income populations, presents a significant barrier to the widespread diffusion of the Internet. Cost also curtails the ability of the poor to harness the power of the Internet and prevents them from creating much content. A major problem is lack of telephones. In 2000, the Northern border states had more than twice as many phones per capita than the states near the Southern border (Curry and Kenney 2006). A decade later, in 2011, the disparities had not changed much. While fixed-line teledensity stood at 18.2 % across Mexico, and thus well above the average of 11.6% in developing countries (ITU, 2012), there were huge disparities between Northern and Southern regions, and rural and urban areas, ranging from 41% fixed line teledensity in the Federal District, to 5% in the southern border state of Chiapas.

However, the physical infrastructure is only part of the story; monthly access cost is another. Turning back to the Internet, variation in access between high income and low-income regions appears to *not* be a problem of lacking physical infrastructure but more of a result of high local telephone rates incurred by Internet users. Older telephone lines are still the primary way people are connecting to the Internet in Mexico rather than broadband; however rates for both remain high. This notion is confirmed by results from INEGI's 2011 survey on availability and use of ICT. According to the survey, 52.2% of the households that had a personal computer but were not connected to the Internet. This indicated that the lack of economic resources as the reason for not being connected (my survey discussed in the following sections of this chapter confirmed INEGI's results).

The diffusion of mobile telephones and localized wireless access (Wi-Fi) is apparently doing little to remedy this situation. Many low-income households in Mexico prefer to substitute a fixed line subscription for a mobile subscription with a prepaid tariff that allows them to save on their monthly telecommunication expenses (Ortero, 2012). Starting from 2004, localized wireless access (Wi Fi) began to be deployed throughout Mexico, with Wi Fi hotspots located mostly in cafes and hotels in more affluent areas. However, this private led rollout has done little to increase the poor people's access to the Internet. Even among those citizens who can afford a mobile Internet device, less than two-thirds use it to go online outside their homes either because they do not have a credit card or because they cannot afford a data plan to use Wi-Fi hotspots to access the Internet (European Travel Commission, 2013). Most private access points do not offer free access.

Before analyzing the state level data (particularly states of Jalisco, and Oaxaca), it should be noted that data at the municipality level confirms the results of the state data. In a thorough analysis of cities and municipalities, CONEVAL (2010a) produced data on conventional measures of poverty across Mexico. Of the 11 municipalities with the largest percentage of people living in poverty in 2010, 8 of them had over 70% of the population spoke indigenous languages. Municipalities with the lowest percentage of the population in poverty, less than 10% of the population classified themselves as indigenous (ibid). Data employing extreme poverty displayed similar results, as extreme poverty among indigenous municipalities was above 16%, and in 169 of them, it was above 50% (ibid). These are also the least connected to ICT networks of any municipalities in Mexico. The CONEVAL (2010a) 'well being' data, produced similar results as the findings on poverty. Before addressing more of the impact on of ICTs on the indigenous in greater depth, the following section turns to analyze urban areas in Mexico, in particular, the cities of Guadalajara and Puebla.

#### **4.4 Urban Analysis: Guadalajara, Puebla, and ‘Technological Bubbles.’**

There are a few intriguing surprises exposed by analysis of the comparable state data above. The state of Jalisco, containing the sprawling metropolis of Guadalajara, has significantly higher levels of Internet penetration than its income and poverty levels would suggest (it is shaded light blue in the figures above). Jalisco ranks near the bottom of Mexican states in regard to its Social Backwardness and social lag. Is Jalisco's very low degree of Social Backwardness affected by higher levels of ICT? Multiple types of analysis are done below in the case studies of Mexican cities to show that in this classic ‘chicken or egg problem’ causality moves *from* increased Internet due to better governance, to better poverty outcomes. Data indicates that this relationship is *not* as strong the other way around. My argument rests on temporal sequencing, employing appropriate controls in statistical analysis, structural data analysis, and in the following chapter, asking Mexicans from all walks of life their opinions/behavior relating to the variables of interest.

Investigating data above displays that states with the highest Internet penetration all rank ‘very low’ in degree of Social Backwardness, indicating a positive impact that Internet penetration might have on these communities. Jalisco presents an intriguing case because it has higher ICT, especially Internet, than its income suggests due to the remnants of the global high tech industry across the state. Guadalajara compared to other large Mexican cities, including Puebla and Monterrey, scores much better on governance rankings (Social Backwardness) and in the multidimensional poverty indexes. Puebla is now the fourth largest city in Mexico, yet has lower ICT penetration than tech savvy Guadalajara. It does not score as well on governance or poverty as Guadalajara. Also, my survey of ICT use of over 50 respondents in 2012 found higher usage of ICT in Guadalajara than Puebla (fully explained in the following chapter). In fact, I posed the central questions of my survey to respondents in each city: Did you use ICT to advocate for better governance? Did you use ICT to advocate for more government response to the issue of poverty? I also asked if the respondents thought this was an effective way to pressure the government?

Finally, I asked if ICT helped in improving your personal economic situation? Did you use ICTs for economic purposes? There were clear differences in the responses between the two cities, with those in Guadalajara, through employing ICTs, increasing their engagement in political activism and economic opportunities. Guadalajarans were also more optimistic about their political agency using ICTs.

Theoretically, my proposed concept of technology 'bubbles' shed some light on the governance/ICT/Poverty relationship. Nestled in the middle of the sprawling Jalisco state is a technological 'bubble' of a city: Guadalajara. Formerly a sleepy city, today it offers a glimpse into a sprawling developing world metropolis of over 6.5 million people. It is a diverse city with many ethnic, social, and economic groups, varying types of employment, and a technological legacy provided by the global IT industry. For instance, Gallagher & Zarsky (2007) note that a successful incentive program for the IT sector was implemented by the Mexican government to promote domestic manufacturing firms and domestic markets was dismantled following the signing of the NAFTA agreement. The 'Global flagships' of the IT industry—including Hewlett-Packard and IBM—flocked to Guadalajara and established manufacturing operations. According to Gallagher & Zarsky (2007), by the mid 1990s, these 'Global flagships' began to outsource manufacturing operations as “less than 5 percent of inputs were sourced locally. Far from generating broad-based growth, Mexico's 'Silicon Valley' had been transformed by 2000 into a foreign enclave, and only a few of the original Mexican firms were still in business” (p. 7). Their study shows, through a targeted analysis of the IT sector, that FDI creates 'foreign enclaves' from which there is not much spillover to domestic firms or even to broad based economic growth.

Despite this lack of economic spillover, what I'm truly interested in is whether or not the poor benefitted from higher rates of ICT spillover—or the 'technological bubble'—which can be attributed to government support for the global IT firms and public access to the Internet in Guadalajara. Thus, Guadalajara is an intriguing case due to higher rates of ICT penetration than its per capita income dictates. This helps get around the endogeneity problem and the omitted variable



bias problem of per capita income that many ICT studies suffer from. Data displays that Jalisco state is doing better at containing and reducing poverty than its income should dictate, not making the top ten of municipalities in the absolute amount of people in poverty despite being the second largest city in Mexico—behind only Mexico City—which is in a class of its own with a burgeoning population of over 22 million people and difficult to make municipal comparisons with any other city in Mexico. Like many areas across the developing world, and throughout Latin America, there are technology bubbles where ICT penetration levels approach developed world standards. Thus, if this analysis proves convincing it could be replicated wherever technology bubbles exist. I find that the presence of high ICT penetration leftovers from FDI investment in IT has *contributed* to strengthening governance and outcomes for the poor than Guadalajara's income should dictate. While certainly not the only factor at play, my argument is that ICT has been a strong contributing factor to generating better governance in Jalisco state. Guadalajara has been able to keep down crime and corruption better than many other cities in Mexico comparable in size (e.g. Monterrey, Puebla). ICT has helped in this, yet I would be remiss to fail to mention that other factors certainly contribute to crime reduction besides ICT penetration.

#### **Detailed Structural Data Analysis: Guadalajara and Puebla.**

The following tables compare Guadalajara to the other four largest urban areas in the country. The data is for the whole state, not simply the urban area. It also includes Mexico City as a point of data comparison, but this comparison will not be explored in depth because Mexico City is a 'one of a kind' city. With over 22 million people, a heavy police presence, extensive development of industry, and a well-known problem with corruption, Mexico City simply does not easily compare to other Mexican cities. Also as deemed the capital city this adds many perks (e.g. embassies located nearby), and difficulties (e.g. political protests and upheaval) that are not issues in the other cities.

The following tables compare data of five of the largest cities in Mexico. The primary comparison is between Guadalajara and Puebla (shaded below):

**Table 4.4**

	Percent of HH with Internet	Percent of HH with telephone service	Extreme Multidimensional poverty (% of population)	Moderate Multidimensional poverty (% of population)	Total Multidimensional Poverty (% of population)
Distrito Federal (Mexico City)	36.1	71.5	2.1	25.7	27.8
Jalisco (Guadalajara)	26.4	76.1	4.3	32.2	36.5
Puebla (Puebla)	13.7	53.4	18.1	45.9	64.0
Nuevo León (Monterrey)	35.3	76.8	2.6	18.9	21.5
México (Toluca)	23.8	70.3	6.9	36.8	43.7

All data from 2010. HH=households.

Sources: CONEVAL (2010b) for Poverty Measures. CONEVAL is an agency enjoying technical and management autonomy that regulates and coordinates the evaluation of national social data.

National Institute of Statistics and Geography (INEGI). INEGI (2010) for Internet Measures. Módulo sobre Disponibilidad y Uso de las Tecnologías de la Información en los Hogares, 2010.

**Table 4.5**

	Percent of HH With Internet	Percent of HH With Telephone Service	Educational Backwardness	% Lacking Access to Health Services	% Lacking Access to Social Security	% Lacking Basic services in Housing	Degree of Social Lag + Rank of 32 States (higher is better=less lag).
Distrito Federal (Mexico City)	36.1	71.5	10.6	40.1	52.8	3.8	Very Low  Rank: 31 of 32  -1.28325
Jalisco (Guadalajara)	26.4	76.1	21.2	37.2	57.6	9.5	Very Low  Rank: 25 of 32  -0.65730
Puebla (Puebla)	13.7	53.4	25.3	57.5	77.4	32.7	High  Rank: 5 of 32  1.06747
Nuevo León (Monterrey)	35.3	76.8	14.9	28.3	43.9	8.3	Very Low  Rank: 32 of 32 (best score)  -1.36996
México (Toluca)	23.8	70.3	18.6	45.0	68.0	16.0	Low  Rank: 19 of 32  -0.36513

All data from 2010. HH=households. Sources: CONEVAL (2010b) for Poverty Measures. CONEVAL is an agency enjoying technical and management autonomy, that regulates and coordinates the evaluation of national social data. National Institute of Statistics and Geography (INEGI). INEGI (2010) for Internet Measures. Módulo sobre Disponibilidad y Uso de las Tecnologías de la Información en los Hogares, 2010.

Notes: The Social Lag Index (IRS) is a measure that adds a single index variable of education, access to health services, basic services in housing quality and space in it, and household assets. That is, provides a summary of four social needs of the poverty measure CONEVAL: lack of education, access to health services, access to basic services in housing, and the quality and housing space.

The comparison between these Guadalajara and Puebla allows for important leverage for my analysis because they differ substantially in technology penetration rates and also in various measures of governance and poverty. Guadalajara has the second highest rate of landline phone penetration at 76.1% (Monterrey was top at 76.8%) and the third highest rate of Internet penetration at 26.4% (only Monterrey and the D.F. were higher). However, Guadalajara has 13% higher Internet penetration than Puebla and 23% higher phone penetration. These are significant differences. It should be noted that these disparities are not the case in television penetration, as all the urban areas listed had over 90% penetration rates. The comparative leverage in the data is with Internet and mobile phone penetration rates rather than TV.

The differences extend into outcomes in services and poverty as well. I've argued above that an important control variable is education. Besides the all-important income variable, education is typically a runner up in determining ICT adoption and extent of usage. The tables above display that education outcomes are similar in Guadalajara and Puebla (only a 4 point difference). There are larger differences between Monterrey, D.F. and Guadalajara (over 7 point differences). Thus, the differences in other types of services between Guadalajara and Puebla cannot be explained by differences in the education system. Nor can the impact of ICT on poverty be explained only by education. The other services differ substantially between Puebla and the other metropolitan areas. However, before discussing them, I wanted to make it clear that education is *not* the dominant variable at play. It also helps distinguish Guadalajara from Monterrey. Monterrey could have been chosen as a comparable city, but the fact of the matter is that it has a much better education system than Guadalajara, and scores closer to D.F. on other services. Thus, comparing Guadalajara and Puebla controls for population, education, violence (less drug fueled violence in both these cities than Monterrey or the border cities of Tijuana and

Juarez), and income (although Guadalajara does have slightly higher income). Making comparisons to the other metropolitan areas would not have allowed for the ability to control effectively as these factors highly influence ICT penetration and poverty.

Looking at the other services, great disparities are apparent between Puebla and Guadalajara, and the other large metropolitan areas. Puebla has 20% more people lacking access to healthcare than Guadalajara (37.2% to 57.5%), 20% more lacking access to social security (57.6% to 77.4%), and a serious housing problem as 32.7% lack access to quality housing, while that number is only 9% in Guadalajara (and that is lower than in the other metropolitan areas—except Toluca). These lower rankings for Puebla are reflected in the Social Lag compiled by CONEVAL as it ranks only 5<sup>th</sup> of the 31 states (and one federal district).

Turning to poverty a similar story emerges. Puebla has dramatically higher poverty rates than the other compared states by a substantial margin. The difference in poverty outcomes is what initially attracted my attention to Guadalajara and Puebla as case studies. What helps explain these outcomes when education, income, population, drug war violence are controlled for? That is where analysis of ICT contributes. However, first the numerical differences in poverty rates need to be examined. Guadalajara is first, and Puebla second (percentage of the population):

**Table 4.6**

Extreme Multidimensional Poverty:	Guadalajara (4.3%)	Puebla (18.1%)
Moderate Multidimensional poverty:	Guadalajara (32.2%)	Puebla (45.9%)
Total Multidimensional Poverty:	Guadalajara (36.5%)	Puebla (64%)

These are significant differences, especially highlighted by the total difference of 28% between the two states. When compared to the other states with large urban metropolises Puebla has

significantly more poverty. Guadalajara has lower rates than we would expect—lower than Toluca, but not as low as the richer cities D.F. or Monterrey.

**Programs in Guadalajara to Increase Access, and to Enhance Government Accountability.**

Guadalajara is leaps and bounds above Puebla in regards to government, business, and NGOs implementation of ICTs. Some of the programs directly target the poor population to improve access; other programs provide more indirect benefits through business development in the IT sector. In regards to the latter, the city has plants or offices of over 100 software companies and manufacturers, including world-renowned firms such as Foxconn, Intel, Jabil, Oracle, SCI Systems, and Tata (Pretz, 2014). Furthermore, the city is dotted with more than 20 corporate campuses, and has a bright future for business as it has a very young talent pool; the average age is 24 (Pretz, 2014). Furthermore, Guadalajara has a strong higher education system with more than 20 universities offer engineering and IT courses (Pretz, 2014). There are no cross-city analyses on the exact number of IT firms, or NGOs per capita for these Mexican cities, but the total amount for both is higher in Guadalajara than Puebla.

A sign of how helpful the government has been towards business development of the IT sector is illustrated in the recent choice of Guadalajara to be the first pilot city for an innovative project, the Smart City Initiative, to be implemented by the internationally known Institute of Electrical and Electronics Engineers (IEEE). They chose Guadalajara to be the pilot because of the already government established CCD, or [Ciudad Creativa Digital](#) in the heart of downtown. The IEEE is an “association dedicated to advancing innovation and technological excellence for the benefit of humanity, is the world’s largest technical professional society. IEEE, pronounced ‘Eye-triple-E’, stands for the Institute of Electrical and Electronics Engineers. The association is chartered under this name and it is the full legal name” (IEEE website, 2014). In its Smart City Initiative IEEE has the International Telecommunications Union as an external partner and because of its CCD master plan Guadalajara was chosen as the pilot for the IEEE Smart Cities Initiative. Pretz (2014) quotes from IEEE for why they chose Guadalajara:

‘We selected Guadalajara as our first city because it has a well-defined plan in the CCD and welcomed support from IEEE’, says IEEE Senior Member Roberto Saracco, chair of IEEE’s Future Directions Committee, which oversees the initiative. ‘IEEE has established cooperation with the International Telecommunication Union and other organizations, recognizing the need for a multidisciplinary and multiperspective approach’, Saracco says. ‘We are going to provide CCD with support in introducing new technologies and, more important, team it up with professors and students at local universities.’ (p.1)

Mexico’s government selected Guadalajara as the site for the [Ciudad Creativa Digital](#) because of strong Jalisco state government support for IT projects and firms. For Pretz (2014), the CCD is expected to advance the country’s leadership position in media by using technology to create a socially integrated urban environment that can attract those working in advertising, gaming, movies, television, and related fields. Housing, recreational areas, educational and cultural institutions, retail stores, restaurants, and hotels are part of the project (p.3). In fact, to be considered a Smart City a:

municipality must do such things as retrofit buildings to make them more energy efficient; update aging power grids, public transportation systems, and roads; integrate related but separate government services and departments; and use social media to communicate with residents. Guadalajara plans to use information and communication technologies to improve its infrastructure and develop more efficient ways to provide services to its citizens and businesses. (Pretz, 2014, p.1)

A visual representation helps in illustrating what the plan for the CCD at the heart of the Smart City plan looks like:



*An artistic rendering of the site. The CCD's Digital Hub will surround Parque Morelos, a park located in the city's historic downtown area.*

Image: Carlo Ratti Associati & team for Guadalajara CCD A.C.

Source: Pretz (2014)

Clearly, in Guadalajara there is an interaction effect between government support for business development in the IT sector and better outcomes in ensuring access for as much of the population as possible. The city benefits when more of its citizens are educated, and pursuing IT sector jobs, and through initiatives such as the CCD Guadalajara the city is at the forefront of high tech developing world urban areas. Although there is limited data on the topic, as a side bit of anecdotal evidence, during my research trip to Guadalajara I spotted many more points of public Internet access, ranging from libraries to community centers, than in Puebla.



An intriguing benefit, and central to the claims in this dissertation, is that the increased government fostered Internet access in Guadalajara for the population has resulted in better governance and pro-poor development outcomes, such as e-governance, increased transparency due to online advocacy, and online support for programs that improve the lives of the poor. A primary example of the latter at play is the IJAS—Institute of Social Services for Jalisco State, which is a government program, fully embracing the Internet to improve its mission of general welfare advancement for local citizens. In fact, it is the government agency focused on social work in the state and it has been employing the Internet effectively to make its vision for more citizen engagement with the program. Its vision states that the IJAS goal is to: “Generate and promote citizen participation organized for social development” (IJAS website, 2014). Their agency transparency has increased since they upgraded their website, moving from a bureaucratic nightmare of an agency in the 1990s, to a more streamlined service model by 2014. Improvement in the IJAS has benefitted the poor as many use the services offered through their office, and now, strong functioning website.

There are also a multitude of examples of NGOs fully employing the Internet in Guadalajara focusing directly on the various issues facing the poor. For instance, [ITI Guadalajara](#), is a new organization that sheds light on social inequality in compelling ways using Internet technology. In an article about ITI Guadalajara, *inspired.news* (2014) provide a snapshot of ITI Guadalajara’s bringing together of art, technology, street people, and social inequality:

Technology and personal expression has led to real changes through awareness and action. However, within our creative communities these inequalities still exist...In Guadalajara, the second largest city in Mexico, the first phase of Project ITI took shape. Lévesque and Blain-Sabourin, joined by friends, spent long hours walking the streets in search of volunteers and participants. The result was 21 Polaroid-format portraits, all of which feature unique stanzas written by a local poet. On the back of every Polaroid, a map of the city indicates the subject’s location...After the photos were printed and distributed to their subjects, members of the community came together for a day of art and dialogue. During the event the citizens were invited to exchange what they wished for a portrait photo, such as clothes, food, money, book, advice or a smile, in essence purchasing the photo from the underprivileged photo subject. (p.1)

The ‘subjects’ described in the quote above are people living on the streets of Guadalajara, likely of the poorest class in the whole city. One of the founders, Lévesque mentioned in the quote, states:

“Our goal is not to save the world, but to get in touch with others and use art to bring people together” (inspired.news, 2014, p.1). For an example of their work and illustrating what they stand for, ITI Guadalajara put on an event in the streets of Guadalajara where they stated:

We are inspired by the street and all its imperfections. We would like to explore the poetry that comes from the village streets by focusing on the personal interchange we are all capable of having with street people. This in the hope of making us all more humane towards those who are not as fortunate as others... **The idea:** to soften the social inequalities which exist by creating dialogue or contact between people of different backgrounds. **The exchange:** during this contact the citizens will be invited to exchange what they wish for a portrait photo (for example, clothes, food, money, book, advice, a smile). (ITI Guadalajara website, 2014)

Their advocacy is unique in that it connects real world exchanges between NGO member artists and the street people of Guadalajara with powerful online photojournalism. Combining the reach of the Internet and strengths of photojournalism provides a unique space between art, awareness and support for poverty alleviation.

More traditional approaches using the Internet and social media to garner support for political causes, better governance, and poverty alleviation abound in Guadalajara. An example of a NGO using Twitter effectively is IMDEC Mexican Institute for Community Development. IMDEC was founded in Guadalajara, in 1963, whose primary objective is to “provide for the framework of the Education and Popular Communication to the defense of the territory and the commons, the reestablishment of democracy and full respect for human rights in their entirety” (IMDEC website, 2014). IMDEC is very active on social media with popular accounts and many followers on Twitter, Facebook, and YouTube. There are links to join their social media accounts throughout their main webpage—an effective approach for strong social media integration into their main website. One of their primary goals is to provide education for all; with a focus on the emancipatory process education can provide the poor. IMDEC (2013) states that their objective for education is:

- 1) To contribute to the strengthening of collective identities and socio-political empowerment of individuals to favor the emancipatory processes in working organizations participating in educational programs...through actions of media education, organizational support and participation network, from a national and Latin American vision. Subject of our action: The offer is aimed at educational organizations, groups and movements who are working and / or accompanying processes in territorial defense or on Economic, Social, Cultural and Environmental Rights (ESCR). (p.1)

Beyond their website stating their objectives for education and economic, social, cultural, and environmental rights, IMDEC's active Twitter account [#IMDEC AC](#) is where they have been consistently updating various news stories on issues of poverty, education, and human rights (usually in the Guadalajara area). In fact, highlighting the importance and power of social media, their Twitter and Facebook accounts are the good place for anyone interested in IMDEC to receive up to date and more extensive information about the causes they support than anything their website provides.

Another more academic example of employment of the Internet improving local poverty alleviation is the work done by the office of social services in one of the oldest universities in all of North America, Universidad de Guadalajara (established in 1791). The office "works to promote and strengthen academic outreach activities, support to indigenous communities, programs of service in higher education, and projects of innovation and technology transfer" (Universidad de Guadalajara, website 2014). Higher education may not be traditionally centered on poverty alleviation, but the university's support of indigenous communities and of technology transfer has gone a long way in helping to allow for more inclusion of marginalized groups into traditional Mexican society. Although my focus has been on poverty alleviation, improving access to university resources also helps in social mobility for the poor. How much this is helping remains a topic for future research in the Guadalajara area.

All of the evidence I gathered in my structural analysis, interviews, surveys, elite interviews, online and on the street provide evidence that Guadalajara had better government programs for increasing Internet access, and thus more demands from people using the Internet, for better governance and poverty alleviation programs. Results from my survey will be dissected in

the following chapter, but some of the photos I took during my research trip display—perhaps more illustratively than words can—the high level of political engagement I saw in Guadalajara. The Internet was vital to organizing the protest where the following photos were taken; the protest was on July 22<sup>nd</sup>, 2012, primarily organized by Yo Soy #132 rallying against the recent election of President Peña Nieto and the lack of mainstream media coverage for other Presidential candidates:



*Yo Soy #132 Guadalajara protest, July 20<sup>th</sup> 2012. Photographer Jack J. Barry*

The banner stated: “America Europe Asia Africa. Please we need help. We are fighting against systemic corruption. Anti-PRI, HSBC, etc. Help on this fight.” This banner was one of only a few solely in English, and especially highlights the theme of garnering international attention to the protests. This want of international attention was a prevalent theme reiterated by all protestors I talked to at event. Mexicans wanted the world to know of the alleged vote buying and corruption.





*Yo Soy #132 Guadalajara protest, July 20<sup>th</sup> 2012. Photographer Jack J. Barry*

This over the head mask of a TV points to control of the mainstream TV channels in Mexico by PRI backed groups. On the side of this TV mask, hidden from view in this photo, read: “Y todos juntos somos mas de 100,000. Mexico ha despertado” Translated: “And together we are more than 100,000. Mexico has awakened.” This photo I found to be particularly endearing because it focused directly on the TV networks not caring about the protests (it was also unclear how the protestor could see out of his TV mask).





*Yo Soy #132 Guadalajara protest, July 20<sup>th</sup> 2012. Photographer Jack J. Barry.*

These signs read: “Las televisoras se han covertido en autoritarias al imponer president. Alto a la cultura policica de corrupcion e imposicion.” Translated: “Broadcasters have been converted back into authoritarian to impose their president. Stop policica culture of corruption and taxation.” I was particularly intrigued by this older couple who’s signs spoke of frustration with the media broadcasters lack of fair attention to other political parties in the lead up to the election. Thus, the media slipping back into lock step with the PRI and this could lead to authoritarian, corrupt one party rule again, that older Mexicans remember all too well.

All of these photos of the protest would not mean much as far as the Internet is concerned except that the protestor organizers did a strong job promoting their cause on social media, and in signing up people at the event up for their listserv. The following photo is of the protest organizers



taking down information via a laptop computer for people who wanted to follow the movement online.



*Yo Soy #132 Guadalajara protest July 20<sup>th</sup> 2012. Photographer Jack J. Barry.*

Stickers read: “Peña Nieto. Yo vi pruebas del fraude.” Translated: “Peña Nieto. I saw evidence of fraud.”

There is no data on the percent of people in Guadalajara who protested, although estimates from the protestors put the number at 50,000 for the first protests after the election and 7,000 for the July 20<sup>th</sup> protest. Nor can we say with certainty if there were equally strong protests in less ICT fueled environments. Thus, I cannot make a causality claim regarding the extent, or effect of the protests on entrenched poverty. Time and more data might allow a convincing causality analysis in future research, however it is worth further investigating the Yo Soy #132 movement as a demand from the populace for better governance in a high tech environment (at least by developing world standards).

Scholars of Mexican politics did not predict the rapid ascent of the Yo Soy #132 movement, which was started by middle to upper class university students, fueled by social media, and supported by poor people across Mexico (including those in the photos above). Given all the similarities to the Arab Spring, the Yo Soy #132 movement is Mexico’s Jasmine Swan, at least to date.<sup>79</sup> For instance, the local chapter of Yo Soy #132 initiated many protests, some marching across the whole city, and provided active Twitter updates, via [#Yosoy132GDL](#) to followers

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<sup>79</sup> The origins of the Yo Soy #132 movement can be pinpointed to May 11<sup>th</sup>, 2012, when PRI Presidential Candidate Peña Nieto visited the Ibero-American University in Mexico City to give a talk and engage in discussion with students about his political platform. The Ibero-American University has a student body with mainly middle to upper class backgrounds, thus it was a surprising place for the start of such a populist oriented movement with heavy support from the poor across Mexico, yet at the end of Peña Nieto’s talk he was asked challenging questions by students about the 2006 civil unrest that took place in San Salvador Atenco while he was governor of the State of Mexico (where Peña Nieto to try and squelch the protests brought in the state police to the State of Mexico and subsequently two protestors died and many were injured). Peña Nieto supporters cheered at his response to the tough questions about his decisions, but he was booed and met with pre-made signs with negative slogans about his policies by students who did not appreciate his responses. This led to an impromptu protest during the planned discussion portion of the talk. Many students at the event recorded Peña Nieto’s response, and the resulting protest, via their phones and posted videos of it on social media. Mainstream Mexican television stations picked up the story but wrongly reported that the protest was caused by outsiders and was *not* composed of students at the university. Thus, in response to the mainstream media’s reporting 131 students from the university who supported the protest published a YouTube video identifying themselves as students, with an effective visual focused approach with individual students showing of their university issued ID cards on the video. The [video](#)<sup>79</sup> went viral immediately and sparked protest across universities and colleges in Mexico. Many Mexicans supported the student protestors, and displayed their support, by stating, primarily on Twitter, that they ‘were’ the hypothetical 132<sup>nd</sup> student. In fact, this is where the term Yo Soy #132 (*I Am #132*) came from. The name proved to be an effective recruitment tool as standing with the 131 in their protest provided a way to show support for those who stood up to the seemingly inevitable power grab of the PRI and the mainstream media’s ratifying of it. The movement proved an outlet for many as long held anger and frustration at the PRI had boiled under the surface across Mexico for years.



interested in their platform. Since 2012, the Guadalajara chapter of Yo Soy #132 is still very active and has been pushing for media reform, less mainstream media consolidation, better governance, and local ways to improve the economic lives of the poor.

Student activism has a long, and often troubled, history in Mexico yet Mexican political pundits did not give very much credence to the ability of Yo Soy #132 to keep up any kind of momentum following the July 1<sup>st</sup> 2012 election. However, the movement did not die, and actually evolved to stand for much more sophisticated demands even after the election victory of Peña Nieto.<sup>80</sup> In fact, after the election, the Yo Soy #132 movement morphed, and consolidated its focus on the issues of free speech and freedom of information, with particular venomous attacks levied against the mainstream media in Mexico.<sup>81</sup> The movement has been accused by the PRI that it has not lived up to these ideals, instead supporting the candidacy of ALMO—thus, not being non-partisan at all, instead playing party politics and making class based demands. It also should be noted that Yo Soy #132 put a lot of emphasis on discussion, and citizen level democratic processes, similar ideas upheld, at least in their ideal form, by Occupy Wall Street and some Arab Spring protest organizations.<sup>82</sup>

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<sup>80</sup> Fausset (2012) notes: “In this country where student activists have a legendary — and tragic — past, they wanted the protest to be a reminder that its youth were still on the case, even if the election was over. In Mexico, few narratives are more powerful: The 1910 revolution was sparked by concern over a rigged vote. This year, however, voter irregularities are not likely to prevent the election results from being ratified” (p.1). The protest Fausset refers to was in Mexico City in front of the headquarters of Televisa, Mexico's most powerful TV broadcaster; it took place a month after the election was over.

<sup>81</sup> It is worth looking at what the movement actual proclaims about what they stand for (the following translated text is taken from the Yo Soy #132 International website accessed in June 2014): “**What is YoSoy132?** The Movement YoSoy132 emerges from the widespread discontent, originated as response to the unfair social, political and economic conditions experienced in Mexico. We are a nonpartisan movement, that means we are unrelated to any partisan position or political party. This movement is a plural group that is democratic, independent, inclusive, with anti-neoliberal stance, peaceful, organized by students and is, in general, composed and executed by citizens. Therefore, we express no special support to specific candidates or political parties, for we respect the diversity of opinions expressed by the members of this movement. We believe that information enables citizens to discuss with arguments about the problems in their government, with politicians, with dominant economic sectors and within society itself” (Yo Soy #132 Website, 2014).

<sup>82</sup> The emphasis on citizen led democratic process is even more apparent in the following excerpt from the Yo Soy #132 website: “**What does YoSoy132 propose?** YoSoy132 takes the rights to the access of information and freedom of speech as their fundamental demands. The movement leads its efforts towards the democratization of the media in order to ensure transparent information, plural and minimum standards of objectivity to promote awareness and critical thinking. Our movement emerged during 2012 electoral process in Mexico. We stand for the free, aware and well-informed vote; and we protest against the imposition of a presidential candidate that is supported by the media corporations, protecting the interests of the wealthy circles in the economic power. We seek to give actual effect to the fundamental principles of democracy, demonstrating our strong and absolute solidarity with all those, whose voices have been silenced, and with the causes of social movements in support of justice. YoSoy132 integrates to its fight, the ideas

Although it is too early to determine if the movement will radically change poverty, either in Guadalajara or the country, my conception of the Jasmine Swan phenomenon elucidated in Chapter 2 is worth briefly revising by employing the Yo Soy #132 movement as a case study. As I stated above, in developing countries Jasmine Swans are more likely to occur when the following five factors are present: (1) *technological penetration at threshold levels* (over 20% of population with access). This percentage is clearly satisfied in Mexico as Internet penetration is above 25% and mobile phone penetration is even higher. (2) *Authoritarian government repression*. This is not really the case in Mexico since the fall of one-party rule by the PRI. As discussed above, Mexico is transitioning into a stable, and more competitive democratic system. Despite this slow transition, there are many citizens in Mexico that do not see their particular group or economic class being represented. In fact, the rise, and populist political support for the Yo Soy #132 movement was a direct response to the lack of representation. The recent comeback to political power in 2012 of the PRI of ‘perfect dictatorship’ fame also helped to spark fears of a comeback of one-party rule. Thus, authoritarian government repression is *kind of* satisfied in the Mexican case, but not the extreme form of authoritarian governments seen in countries where mass protests have taken place.

There are three more factors associated with my Jasmine Swan to be evaluated through the lens of Yo Soy #132: (3) *Weak economies, with a high proportion of the population mired in poverty*. Moving out of the Great Recession of 2007-08 Mexico’s growth picked up, but not all sectors and classes benefitted, plus as can be seen in the following estimates from the World Bank (2014) last year experienced a decline in growth. For instance, World Bank (2014) estimates of economic growth for the post-recession years find that: “Economic growth in 2013 fell to 1.1 percent, compared to the strong recovery experienced between 2010 and 2012 (annual average

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of the various committees that make up the movement with the important purpose to constitute permanent working forums to generate proposals on topics such as: education, human rights, social violence, law enforcement, public health, environmental issues, media freedom, respect for indigenous people, gender equality, labour justice, among many others.” (Yo Soy #132 Website, 2014)

growth of 4.3 percent)” (p.1). Also, as seen above in the structural analysis, the poor represent a large portion of the population, estimated to be around 70%, and they have not benefitted as much from growth as the middle and upper classes. The Mexican economy, as was shown above, contains pockets of extreme poverty, especially in indigenous regions. Overall, a weak economy for the poor was a contributing factor for the rise, and popular support for the Yo Soy #132 movement. (4) *Cultural inflexibility and lack of respect/dignity given to minority groups (including the poor)*. This is certainly true in Mexico regarding the experience of the indigenous population. There are countless examples of various rebellions by indigenous groups across the country, ranging from the violent Zapatista uprising in 1994 to more peaceful, but no less strident, teacher strikes and protests in Oaxaca in the 2000s. Yo Soy #132 did include a wide political frame allowing some to express their grievances around cultural issues, but it would be difficult to argue that it was the central factor in the rise of the movement. Although, the lack of respect, and factually wrong analysis by mainstream media, toward the university students at Ibero-American University protest actually sparking Yo Soy #132 give evidence of this factor being present in Mexico. Finally, the last factor for Jasmine Swan development is (5) the *lessening of citizens’ fear of repression, either by the government or other armed groups*. This is a hard factor to empirically evaluate. In some ways the fear of repression has been lessened in Mexico over the last decade as free speech has been championed, freedom of association, and political participation, has improved by some measures. That being said, violence from the drug war, whether it be from government-sponsored groups, or from militias fighting back against the cartels has made evaluation of this unclear. For many the fear of repression has actually increased due to the drug war. It remains difficult to determine if lessening of fear of repression was an important factor in the development of the Yo Soy #132 movement.<sup>83</sup>

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<sup>83</sup> Something to watch for in the future is that the Yo Soy #132 state that the human right to access of information and to freedom of speech are their ‘fundamental demands.’ This focus makes their movement especially interesting for the study of activism focused on ICTs. Some media pundits, they were even hailed as heralding in a ‘Mexican Spring’, especially when their protests blossomed across the country in the lead-up to the 2012 election, yet the movement has since lost some of its momentum—at least in terms of inspiring large protests. However, Yo Soy #132’s evolving focus on human

Overall, there is evidence that the Yo Soy #132 was a Jasmine Swan event in Mexico in 2012 as we saw that three of these factors are easily satisfied, and the two others displayed some evidence in the affirmative. Before preceding it should be mentioned again, that these factors for Jasmine Swans are not hard and fast rules, yet most of the factors were satisfied in pre-2011 Arab Spring countries, as well as in pre-2012 election Mexico. That being said, the Jasmine Swan certainly needs a trigger. This can be from an unexpected place, which was certainly true in the case of Yo Soy #132 (i.e. university students at a middle to upper class university). Triggering events usually come from the general populace for a whole host of reasons and are not fully predictable, a point shared by both Black Swan and Jasmine models.

My survey and interview results also display that the Yo Soy #132 movement was important to Mexicans from many walks of life. From urban Guadalajara, to indigenous regions of Oaxaca, and in all areas where I conducted interviews, people would frequently mention the movement by name. A survey respondent in Puebla mentioned that Yo Soy #132 did help put pressure on the local governor of Puebla for reforms, not just the national government. When asked about the ability of the Internet to put pressure on government for reform Yo Soy#132 came up more frequently than any other movement. Some respondents claimed that the Internet helped to “open the presidential debate”; and the “Yo Soy #132 movement” as government officials did “Not want to attend meetings with university students because of the pointed negativity towards them on social networks.” More details on these questions will be provided in the survey results in Chapter 5.

Given all the similarities to the Arab Spring, the Yo Soy #132 movement is Mexico’s Jasmine Swan to date. For now, I want to leave the reader with my conclusion that while my structural model works at the margin, consideration of Jasmine Swans should *not* be an

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rights, particularly the right to information and freedom of speech, means that the movement may be the first of its kind in the developing world, a strong, popular ICT driven movement focused on freedom of speech and information with particular targeting of mainstream media bias in politics. The Yo Soy #132 could be a harbinger of future movements in the developing world focused on issues of freedom of speech, the right to information, with a virulent anti-mainstream media message.

afterthought in the wired world. When the right structural conditions are present, chances increase for a Jasmine Swan to emerge from an unexpected place: such as among university students with middle to upper class backgrounds.

Overall, given the quantitative constraints, the multitude of examples above displayed Guadalajara's increased level of Internet access, due primarily from government investment in IT, has led to stronger government services, transparency, and better social services for the poor. Certainly, the Internet is not the only factor at play, but the quantitative results above did indicate strong differences between Guadalajara and Puebla in terms of poverty, and I believe that when all the other factors controlled for, the evidence above displayed that the Internet is playing an important role that can no longer be ignored by scholars of poverty and governance. Also, clearly the interaction works both ways as the presence of good governance in Guadalajara allowed NGO and global IT firms with programs employing the Internet to reduce poverty to thrive. There certainly is a symbiotic relationship between good governance, Internet, and better outcomes for the poor—my main argument here was that the government is the lynchpin to making the relationship stronger. It often takes the government to be the first mover—as investment in IT is less likely in an unregulated market. The following section builds on this by exploring if the same Internet-governance interactive phenomenon is taking place in rural Mexico.

#### **4.5 Rural Analysis: Oaxaca, Indigenous Peoples, and 'Technological Black Holes.'**

Analysis of the Mexican case only investigating its dynamic cities would be misleading as the country has always had a vibrant, politically important, rural sector. Despite having some of the largest cities in the world in terms of population, Mexico has a substantial amount of its population residing in rural locales; in fact, it is estimated that 22% of the population still resides in rural areas (World Bank, 2012). To fully capture the essence of Mexico, its grand rural cultural tradition cannot be ignored, nor can the politics stemming from it. Many political uprisings in Mexico's history have sprung from rural roots. For example, La Campesinas revolutionaries battling the U.S.

in the north, eventual first President of indigenous decent Benito Juárez rising up from rural Oaxaca in the mid-1900s, or Vicente Fox's ranching past, people with rural backgrounds have played important roles throughout modern Mexican history.

What then is different about ICTs impact on poverty in the rural areas than in urban? First it needs to be discussed how barriers to ICT access in the rural areas differ—as the impact is similar, but achieving access is more difficult. Some of the disparity can be explained by a lack of income, and lack of technological infrastructure, yet as the evidence above from dialup Internet connections indicates that infrastructure issues are not the primary determinants of usage of ICT in the poorest states. Besides income, cultural considerations also play a role in explaining variance in access. Language plays an important, but an often forgotten, role in hindering access for minority language speakers.

Worldwide, more than anything else, language and cultural barriers limit communication over the Internet (Curry & Kenny, 2006). We see this in Mexico, as shown in the sections above, states with higher indigenous populations had lower Internet penetration and higher levels of poverty. This is in line with findings of previous studies that show language playing an important role effecting usage of ICTs in many different contexts in developing countries (Feldman, 2004; Jain, 2002; King, 2003; Martindale, 2002). For instance, Kenny (2006) points out: “there is a significant language skills gap, with perhaps one-half of the populations of the LDCs not speaking an official language of their own countries—let alone English, the predominant language of the Internet” (ibid, p. 77). More specifically, a blog by Scannell (2011) that tracks indigenous languages on the Web, estimates that out of the 6,000+ languages that exist in the offline world, only about 1,500 are present in some form in the online world.

This situation is reflected by Mexico in that most of the 68 indigenous languages spoken in the country currently—fall 2014—lack much of a digital existence. To investigate this, I conducted a brief monitoring survey to determine the presence of indigenous Mexican languages on the web. My survey's methodology followed the approach used by Kenny (2006a) to search for

presence of the Igbo language on the web. I searched the Internet for sites in indigenous Mexican languages for 2 hours, which is about the time a poor person uses the Internet over the course of a month in Mexico. My survey revealed that the extent of their availability varied by language, yet overall their presence was very limited.

An illustrative example is the case of the Tu'un sávi language of the Mixtec people living primarily in Oaxaca that has over 400,000 speakers total in southern Mexico. However, there are only a handful of websites using this language, most of which simply stated the existence of the Mixtec community and their language, hardly very useful information for members of the Mixtec minority. Scannell's blog documents only three blogs that use the Tu'un sávi language. Out of these three, only one actually is based on the Tu'un sávi language: The blog *Vientos de la Palabra de la Lluvia*<sup>84</sup> explores the culture, language, and nature of the Mixtec region. However, as of May 2013, this blog contained only 8 posts. The second blog, *San Juan Mixtepec* (2014), reports on the cultural life of a Mixtec community in Juxtlahuaca, Oaxaca. Its 694 post, however, are almost exclusively written in Spanish. The third blog entitled *NiiNaYinetMa. Revista Plurilingüe* had gone inactive in May 2013. Thus, in the case of the Tu'un sávi language, the Internet is rather devoid of content useful to any of its speakers living in poverty. The importance of language on the web highlights the difficulties faced by indigenous populations across Mexico in their usage of ICTs. These issues faced by the Mixtec in effective utilization of the web are very similar to those faced by the Mixe—which is the primary indigenous group that I connected with in Oaxaca (explained in the following Chapter).

Clearly, due to access and usage, rural states in Mexico with larger indigenous populations face higher hurdles in harnessing the power of ICTs to lift their populations out of poverty. Rather than try and address many of the rural areas at a broad, cursory level, I will limit

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<sup>84</sup> Tu'un sávi roughly translates to "House of the Language of the Rain" in English. The page name can thus be translated to Winds in the House of the Rain. House of the Language of the Rain (see *Vientos de la Palabra de la Lluvia*, 2014). <http://tutulikudavi.blogspot.com/>

my focus to Oaxaca known for its cultural diversity, indigenous peoples, beautiful countryside, and unfortunately its poverty. My focus is limited by data constraints as well—there is a lack of reliable data on poverty, social services, and ICT usage rates at the village level in Mexico. Thus, this section cannot duplicate the comparative analysis done on the urban areas. Instead a more structural analysis will investigate hurdles faced by the poor, and often indigenous, in Oaxaca to access the Internet and smartphones. Chapter 5 does make direct comparisons between villages in Oaxaca using my unique data collected in villages.

In Oaxaca, 29.5% of the population is considered to live in conditions of high marginalization/poverty and 46.5% in very high marginalization/poverty. 21.5% of the Oaxacan population is illiterate, and the gender gap is strong, as 26.7% of Oaxacan women are considered illiterate, compared to 15.5% of men. In 2004, Oaxaca was in first place in the country for mortality rates—5.2 per 1,000 people (SIPAZ, 2011b). The economic situation of pregnant women is not very good, reflected by a high infant mortality rate, which in 2003 were 9.7 for every 1,000 live births according to INEGI (2010). The high incidence of poverty, and indigenous population, makes Oaxaca a good state to study in greater depth to get a fuller understanding of whether or not the introduction of ICTs, via governmental programs, is lifting people out of poverty.

Oaxaca is the most culturally diverse state in all of Mexico (Burton, 2008) and about one million inhabitants of Oaxaca, 35% of the state's total population, speak one or more indigenous language. The largest indigenous linguistic groups in Oaxaca are: 350,000 Zapotec, 230,000 Mixtec, 165,000 Mazatec, 100,000 Chinantec, 100,000 Mixe, and 40,000 Chatino (these statistics should be considered estimates) (Geomexico 2012). Burton (2008) notes: "Most of Mexico's indigenous population lives in small, isolated rural localities with under 500 inhabitants. These communities are very disadvantaged compared with other Mexican communities. About one-third of the nation's 2,442 municipalities are indigenous. However, almost half of all the municipalities defined by the National Statistics Institute (INEGI) as 'highly marginalized' are indigenous, as are a whopping 82% of the 'very highly marginalized' municipalities" (2008). Furthermore in Mexico:



The incidence of extreme poverty is much higher in indigenous municipalities than in non-indigenous municipalities. For example, in 2002, the rate was 4.5 times higher. Indigenous villages are among the nation's poorest rural communities. Indigenous language speakers trail behind other Mexicans in virtually every socioeconomic indicator. About 33% are illiterate, compared to the national rate of only 9.5%. Most leave school prematurely to help their families earn a living. (Burton, 2008)

However, analyzing the indigenous only in economic terms, or as simply 'living in poverty,' which over 85% of the indigenous in Mexico are classified, misses other positive connotations associated with indigenous life. This is especially true in Oaxaca. Burton (2008) claims: "Despite their extreme poverty, indigenous communities have managed to remain remarkably stable while collectively pursuing their relatively well organized survival strategies. Their belief systems and rich knowledge of nature remain largely intact. Over 90% of indigenous peoples own their homes and farm plots." Plus, not only does Oaxaca have more indigenous people, it also has a much greater linguistic diversity than nearby Chiapas or any other state in Mexico. One of the reasons for Oaxaca having retained such an extraordinary diversity of Indian groups is the state's rugged terrain, which has isolated numerous indigenous groups, cutting them off from mainstream Mexican society for generations (Burton, 2008).

The existence of 'Technological Black Holes' exposed in Oaxaca is particularly apparent among indigenous peoples. I argue that three structural factors in Mexico play a vital role in shaping indigenous access/usage of ICT for economic and political purposes: Poverty, education, and language. The first and most important structural factor for my research is the unfortunate difficulties the indigenous face economically.<sup>85</sup> This is not only the case in Oaxaca, as according to Joji Carino (UN 2009b), chapter on 'Poverty and Well-Being': "Indigenous peoples continue to be over-represented among the poor, the illiterate, and the unemployed. Indigenous peoples number

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<sup>85</sup> According to the UN (2009a): Although global statistics on the situation of indigenous peoples are not readily available, it is clear that indigenous peoples suffer disproportionately from poverty, marginalization, lack of adequate housing and income inequality. Traditional modes of livelihood, such as fishing, hunting and gathering, livestock cultivation or small scale agriculture are under a great amount of stress from phenomena such as neo-liberalism and commodification, privatization, climate change and conflict. (p. 7)

about 370 million. While they constitute approximately 5 per cent of the world's population, indigenous peoples make up 15 per cent of the world's poor (IFAD, 2007). They also make up about one-third of the world's 900 million extremely poor rural people (ibid)" (2009b, p. 21).<sup>86 87</sup>

The proportion of indigenous peoples in Latin America living in poverty did not improve in most countries from the early 1990s to the early 2000s (UN, 2009b).<sup>88</sup> This situation is reflected in data from Mexico and Oaxaca. The indigenous in Mexico are more likely to be living in poverty and many of them in the poorest states in Mexico: Chiapas, Oaxaca, and Guerrero. For instance, according to World Bank data:

In rural areas of Mexico, 61 per cent of people were living beneath the national rural poverty line in 2010, according to World Bank data. Given that the country's rural population was estimated at about 25 million, more than 15 million people in those areas were living in poverty... Rural poverty in Mexico is concentrated in areas with large indigenous populations, notably in the southern states. According to a Konrad-Adenauer-Stiftung report, 75 per cent of indigenous people in the country were living below the poverty line and 39 per cent were in extreme poverty in 2009. In Oaxaca, Chiapas and Guerrero States, extreme poverty affects more than half of the population. (IFAD, 2012, p. 1-2)

Even when indigenous people have access to secondary or higher education they are frequently unable to move out of poverty from education directly.<sup>89</sup> They often live in very remote rural areas without much in the way of resources (UN, 2009c). Their politically marginalized

<sup>86</sup> Or put another way, of the 370 million indigenous in the world today, about 300 million of them are extremely poor rural people—almost the entire population of the United States in 2010.

<sup>87</sup> Compounding this grueling poverty is the fact that "Indigenous peoples also suffer from discrimination in terms of employment and income. According to the ILO, indigenous workers in Latin America make on average about half of what non-indigenous workers earn. Approximately 25-50 per cent of this income gap is 'due to discrimination and non-observable characteristics, such as quality of schooling' (ILO, 2007)" (2009b, p. 22).

<sup>88</sup> For instance, a World Bank study on indigenous peoples and poverty in Latin America concluded that 'poverty among Latin America's indigenous population is pervasive and severe' (Hall and Patrinos 2005). This study, which documented the socio-economic situation of around 34 million indigenous people in the region, representing 8 per cent of the region's total population, showed that the poverty map in almost all the countries coincides with indigenous peoples' territories. A similar study in the region by the Inter-American Development Bank observed that being poor and being indigenous were synonymous. Its report on Mexico concluded that indigenous peoples live in 'alarming conditions of extreme poverty and marginality...Virtually all of the indigenous people living in municipalities with 90 per cent or more indigenous people are catalogued as extremely poor' (ECLAC, 2007). The difference between the indigenous and non-indigenous is often striking, where, for example in Paraguay, poverty is 7.9 times higher among indigenous peoples, compared to the rest of the population. In Panama, poverty rates are 5.9 times higher, in Mexico 3.3 times higher, and in Guatemala, indigenous peoples' poverty rates are 2.8 times higher than the rest of the population (ECLAC, 2007). (p. 27)

<sup>89</sup> According to Joji Carino (UN, 2009b) UN's *State of the World's Indigenous Peoples*: "Even when they [indigenous] have access to secondary or higher education, they are frequently unable to convert that to significantly greater earnings or to reduce the poverty gap with the non-indigenous population. This finding holds for countries where indigenous peoples are a small fraction of the overall population, such as Mexico (Hall and Patrinos, 2006) and Chile (Ramírez, 2006) as well as in countries where a large portion of the population is indigenous, such as in Bolivia (Feiring and MRG Partners, 2003)" (2009b, p. 27-28).

status certainly does not help in gaining access to education and also often associated ICT resources.<sup>90</sup> They are often at odds with the national government, which tends to be unwilling to sink money into indigenous education. Historically, this has been a problem in Mexico as well (Jung, 2008) as curriculum/educational programs typically do not take indigenous concerns into consideration, which can be a problem.<sup>91</sup> It is typical that “educational programs fail to offer indigenous peoples the possibility of participating in decision-making, the design of curricula, the selection of teachers and teaching methods and the definition of standards” (King & Schielmann, 2004, p. 19). Thus, the result is an all too predictable education gap: “indigenous students have lower enrollment rates, higher dropout rates and poorer educational outcomes than non-indigenous people in the same countries” (UN, 2009c, p. 130).

Lack of literacy is also a problem for the indigenous community. This is especially important for their ability to use the Internet effectively. This problem is related to the indigenous speaking a minority language, yet also to education. According to the UN (2009c) “illiteracy, which is prevalent in indigenous communities is a direct result of educational exclusion in the form of poor access, low funding, culturally and linguistically inadequate education and ill-equipped instructors” (p. 132). For example, in Ecuador, the illiteracy rate of indigenous peoples was 28 percent in 2001, compared to the national rate of 13 percent while in Venezuela, the indigenous illiteracy rate (32 percent) is five times higher than the non-indigenous illiteracy rate (6.4 percent) (UNESCO, 2008, p. 96, cited in UN, 2009c, p. 132). In Mexico, very similar percentages as it is reported that 27% of indigenous children between 6 and 14 are illiterate compared to a national average of 12% (INEGI, 2004). There are many causes for the low literacy

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<sup>90</sup> In his chapter on 'education' in the UN's *State of the World's Indigenous Peoples* (2009a) Duane Champagne illustrates the stark contrast in access to education between indigenous and non-indigenous. At all levels, and in all regions of the world, indigenous peoples tend to have lower levels of literacy, enjoy fewer years of schooling and are more likely to drop out of school. Education is seldom provided to indigenous children in their native languages and it is frequently offered in a context that is culturally inappropriate and has few facilities or resources. Far too often, the indigenous that do get an education are forced to assimilate within the dominant culture, unable to find jobs in their communities (UN, 2009a, p. 8).

<sup>91</sup> According to the UN: “Too often, education systems and curricula do not respect indigenous peoples’ diverse cultures. There are too few teachers who speak their languages and their schools often lack basic materials. Educational materials that provide accurate and fair information on indigenous peoples and their ways of life are particularly rare” (UN 2009c, p. 130).

rates among the indigenous.<sup>92</sup> Compounding the problem of literacy is that many indigenous languages are oral or barely in print at all.<sup>93</sup>

Finally, indigenous groups almost always speak a minority language<sup>94</sup> in their country. Sadly, indigenous languages are threatened by extinction around the world.<sup>95</sup> Many potentially useful websites for the poor are not translated into minority languages, yet over half of the world's poor—defined as those living under \$2 per day—speak a minority language, languages that are conspicuously absent from the Internet. Language is very important to the culture of indigenous peoples and this was the case with the indigenous groups in Oaxaca: Mixe, Mixtec, and Zapotec.<sup>96</sup> Digital answers to the language problem have been proposed, but obstacles remain. Data from Scannell's Indigenous blog mentioned above displayed that many of these languages do not even exist in the online world. It is also obvious that the technical knowhow needed to use the Internet/computers is higher than mobile phones. The complexity of the Internet's text-based medium is especially compounded when no online translators exist in most indigenous languages. Something most users of Google translate simply do not have think about.

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<sup>92</sup> Just to take one example, there are consistently high dropout rates at all levels of schooling. High dropout rates also have multiple causes: "Parents cannot afford the out-of-pocket costs related to keeping their children in schools, especially in rural areas where children customarily participate in traditional agricultural activities and are valuable contributors to the household economy; they face numerous obstacles (language problems, discrimination, etc.) or, in the case of girls, because they have to help their mothers with domestic chores, take care of siblings or contribute to their families' income, or because they get married" (UN 2009c, p. 134).

<sup>93</sup> It is estimated that there are between 6,000 and 7,000 oral languages in the world today (2013). Most of these languages are spoken by very few people, while a handful of them are spoken by an overwhelming majority of the world. "About 97 per cent of the world's population speaks 4 per cent of its languages, while only 3 per cent speaks 96 per cent of them (Skutnabb Kangas, 2000; UNESCO, 2003)" (UN 2009d, p. 57).

<sup>94</sup> A language is considered to be 'minority' if it is not the dominant language of the country.

<sup>95</sup> For instance, according to the UN: "...it has been estimated that roughly 90 per cent of all existing languages may become extinct within the next 100 years (Brody, 2000). The extinction of a language is a great loss for humanity; it constitutes the invaluable loss of traditional knowledge and cultural diversity. But for the indigenous peoples themselves, the loss is even greater, especially since many of the indigenous languages exist only orally and cannot, therefore, be retrieved once they are no longer spoken. The loss of a language is thus "a cause of intense grief and disorientation to hundreds of thousands of indigenous men and women who struggle to be themselves without the words to say what that means" (Brody, 2000, p.5). Language, furthermore, is not only a communication tool, it is often linked to the land or region traditionally occupied by indigenous peoples; it is an essential component of one's collective and individual identity and therefore provides a sense of belonging and community. When the language dies, that sense of community is damaged." (UN 2009a, p. 58)

<sup>96</sup> Naomi Kipuri in her chapter on 'Culture' in the *State of the World's Indigenous Peoples* argues: "Maintaining distinct languages, at least in part, has also been seen as an essential part of being indigenous (ILO, 1989). Language is a system of symbols, or words arranged to convey meaning, and enables people to communicate either verbally or in writing. Language is an important component of one's identity. It is fundamental to understanding values, beliefs, ideology and other intangible aspects of culture. It enables people to communicate as specific peoples and determines participation, access to knowledge, leadership and depth of understanding (UNESCO, 2008)." (2009d, p. 57)

However, simply putting as much information about indigenous culture online comes with its own problems that needs to be contended with and there are arguments that new technologies are just neo-colonial tools.<sup>97</sup> In fact, the ownership of websites is a particularly thorny problem.

For Dyson (2011):

It is difficult to say exactly how many websites are under Indigenous control...The dominance of the English language on websites offering Indigenous information and views (Niezen 2005) might suggest that many are, indeed, in the charge of outsiders, particularly where the website originates in a non-English-speaking country. However, if we consider that the majority of Indigenous people establishing websites would be 'a formally educated...elite with the linguistic and technological skills to use the Internet as a tool of global networking, lobbying, and self-expression' (Niezen 2005: 534), and furthermore that many Indigenous people were discouraged from passing on their own language to their children through assimilatory practices, then we cannot take language as a firm indicator of authorship. Many English-language websites would be by Indigenous people, or at least involve collaborative efforts. One thing that is clear is that Indigenous people from certain English-speaking countries—particularly the US, Canada, Australia, and Aotearoa (New Zealand)—have been more active in establishing websites than, for example, their Spanish-speaking counterparts. Part of this is no doubt a matter of economic differences, but it is also due to the fact that in those countries Indigenous groups received a great deal of technical support from collaborators based in universities, which was rare in Latin America (Becker & Delgado-P. 1998). (p. 254)

Extensive quantitative data remains elusive about the number of indigenous owned websites worldwide, or in Latin America (in any region for that matter), and in Mexico (Scannel's indigenous blogs database is likely the best current source of data out there). In my study of indigenous blogs in Mexico, as mentioned above, I only found a handful of blogs writing in Mixe, Mixtec, or Zapotec. The difficulty of access and usage is the most obvious challenges to Indigenous participation on the Internet for many ICT scholars such as Dyson (2011); Daly (2007); and Warschauer (2003). Dyson notes that geographical remoteness compounds the difficulties Indigenous face in getting online. This is especially apparent in Mexico compared to

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<sup>97</sup> Furthermore, there are some deeper concerns about language worth discussing. According to Laurel Dyson (2011): "There have concerns expressed by some authors over whether the Internet will act as a tool of further colonization and continue the process of Western enculturation of Indigenous people begun in the colonial era...Indigenous spokespeople have voiced dismay over the power of misrepresentation offered by the Internet (Iseke-Barnes and Danard, 2007) and the misappropriation of Indigenous knowledge and culture (Radoll, 2004). There have been questions raised regarding the ownership of many websites which purport to offer an Indigenous worldview and the likely audience for Indigenous websites when most Indigenous people remain unconnected to the Internet. Any consideration of the Indigenous presence on the Internet must be evaluated in the light of concerns such as these, given the entitlement of all peoples to maintain their cultural identity as part of their universal human rights." (p. 252)

smaller developed countries.<sup>98</sup> Language differences again crop up, as ICT suppliers often do not speak the local indigenous languages to help in training locals on usage and maintenance of technologies, sometimes put in place by INGOs without much thought to local sustainability.

Other studies, besides work by Dyson (2005; 2011), have pointed to the important role that low literacy plays in effecting Internet access (see Warschauer, 2003; UN, 2009c). For Osborn (2006) low literacy rates, especially in the dominant computer language (English) certainly does not make it any easier for Indigenous people get online. The multiplicity of Indigenous languages and complexities in handling their scripts offer major challenges (Osborn, 2006). Dyson reminds us that the devil is in the details for Internet use as “Indigenous people require localized versions of browsers and search engines with displays written in their own language as well as orthographical support to type the letters and accents necessary for communication. For those who cannot read text—or cannot read well—multimedia support is necessary by way of graphical interfaces and audio files” (2011, p. 256). Certainly this is difficult to find such specialization in place across the 68 indigenous languages in Mexico.

Another challenge is that language differences and cultural-traditions have led to problems with appropriation of Indigenous knowledge and copyright laws. The Internet has proven to be a particular challenge to Indigenous people looking to put traditional knowledge or culture online. This challenge arises from difficulties with appropriation and the Indigenous losing potential income from not adding copyright to their work. For Dyson (2011):

There is a widespread perception by many web users that the Internet is the way of the free and there is a lack of understanding that material is covered by copyright laws. Indigenous people risk losing income from illegal downloads and risk misappropriation of cultural artifacts by their incorporation into the works or products of others without permission (Radoll, 2004). Protection by existing copyright is itself problematical, as it is usually based on notions of individual authorship and economic rights, whereas Indigenous cultural ownership is more diffuse and communally based, with rights centered on ideas of

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<sup>98</sup> For Laurel Dyson: “An exacerbating factor is the remoteness of many Indigenous communities...[where] costs escalate: Internet connections via satellite are more expensive than standard telephone-line or cable connections in the cities, and maintenance and repair services are likewise more costly and prone to long delays because people have to be brought in from outside since there is a lack of trained indigenous ICT technicians to provide maintenance locally (Dyson, 2005). In addition, supporting infrastructure, such as electricity, is often absent or intermittent. (Dyson 2011, p. 256)

spiritual obligations and custodianship. Further, Indigenous people have concerns over who has the right to knowledge: they do not wish unauthorized members of even their own community, let alone outsiders, to gain access to knowledge that is seen as sacred or secret, viewable only by the initiated or by people of a certain gender (Dyson & Underwood, 2006). (p. 257)

While these kinds of challenges in the online world seem difficult to overcome there are glimmers of hope. Some aspects of the technology have led to potential 'leapfrogging development' outcomes. Others have led to cost saving across remote geographic locations (such as Oaxaca). Examples of this include wireless and satellite networks (see Cullen, 2005; Smith, 2009). In helping to reduce cost, Dyson (2011) points to cost sharing at the community level: "access models which share costs across the community, thus improving affordability" (p. 257). Examples include telecenters, libraries, and Internet access in public schools (see Smith, 2009). In fact, "Indigenous communities in many parts of the world have found that the way to improve Internet access and skills via computer labs in schools and libraries as well as community technology centers (also referred to as community multimedia centers or telecenters) owned by the whole community (Daly, 2007; Hughes 2004; Meer, 2003)" (Dyson, 2011, p. 257). Although there is no data on telecenter usage in Oaxaca that is comparable to other regions, as mentioned previously, the state has a high number of government sponsored CCAs and CCDs. The next chapter will directly test if villages with CCA telecenters have better outcomes for poverty than those without.

Furthermore, the impact of Web 2.0 is just beginning to be felt and experienced by indigenous cultures. For example, Nathan (2000) argues that the catalyst for Indigenous engagement with the Internet is with the inherent nature of the medium, as the challenge it poses to standard ideas of literacy, its interconnectivity, and the fact that it is still 'soft' and can be molded by those who engage with it. For Dyson (2011), "The 'breakout of the visual' on the Internet through graphic interfaces, photographs, animation, and video (Bolter, 2001, p. 72) has a particular appeal to the visual strengths of Indigenous users, most of whom come from cultures with strong artistic traditions. In addition, the sound files which have become increasingly

available, such as online music, language recording, and podcasts, speak to the oral cultures of Indigenous people” (p. 258-59).<sup>99</sup> Furthermore, despite obstacles, indigenous peoples, despite popular belief, are actually ‘active political actors.’ Ethnicity and race play an important role in helping to mobilize them.<sup>100</sup> Increasingly indigenous peoples are beginning to be seen as active political actors in Latin America and Mexico.<sup>101</sup> Of course, all of this does not mean that the challenges have been overcome, but it does seem to indicate that if indigenous people want to shape their use of the Internet to reflect their cultures, rather than be assimilated, the medium does appear to be more flexible than top down ICTs such as TV, and radio.

In conclusion, this section on rural areas of Mexico made it clear that there are more hurdles for the poor in minority language speaking areas to overcoming in using ICT effectively to move out of poverty. However, it also displayed that there are opportunities presented by ICTs, more market access, price information, and better access to government services at less cost that help the poor in rural locales. Those in rural areas faced challenges caused by poverty, education

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<sup>99</sup> Dyson (2011) goes on to state more positives of the medium: “In contrast with the concerns of the technological determinists, Indigenous people are using the Internet as a tool to revitalize and rebuild their cultures. It must be said that all authentic Indigenous websites are reaffirmations of Indigenous identity and assertions of the right of Indigenous people to survive. Ironically, the greatest tool of globalization is helping small communities to reinforce their culture and sense of connection to place. Landzelius (2006) distinguishes two different orientations of online Indigenous identity: those aimed at ‘inreach’ (building community and creating a virtual space for shared meanings within an Indigenous people) and those aimed at outreach (connecting with people on the outside).” (p. 259)

<sup>100</sup> For Van Cott (2010): “Until the late 1990s, few political scientists perceived the significance of indigenous political mobilization in Latin America, notwithstanding the formation of indigenous social movements in the 1970s and 1980s and their policy achievements in the early 1990s. This neglect was due to the widespread but erroneous assumptions that indigenous citizens were not politically active, that they did not organize autonomously from the left or clientelist political parties, or that they were politically indistinct from the peasantry and popular classes. Latin America-based political scientists resisted the notion that ethnicity or race could have political significance in the late twentieth century owing to prevailing myths of racial harmony and mestizaje (the cultural and biological mixing of indigenous and European peoples)” (2010, p. 386).

<sup>101</sup> Van Cott (2010) notes that a lot of credit can be given to Deborah J. Yashar who states: brought the study of indigenous politics in Latin America to the attention of mainstream political scientists. In her comparative studies of Bolivia, Ecuador, Guatemala, Mexico, and Peru, Yashar (1998, 1999) situated an argument about the emergence of indigenous political mobilization within the macropolitical concerns of comparative politics: democratization, corporatism, state formation and restructuring, and citizenship. She legitimated the topic of indigenous politics in the face of persistent skepticism about the political relevance of ethnic identity in the region, inspired a new generation of scholars to study indigenous politics, and brought indigenous movements to the attention of ethnic-politics scholars of other regions. As indigenous social movements became effective political actors in the early 2000s, political science scholarship on the topic exploded. Brysk (2000) explained how national indigenous-rights movements combined resources and launched a transnational campaign to codify and protect indigenous rights in international law. Whereas comparativists have produced most of the scholarship on indigenous peoples, Brysk’s work stands out as an international relations perspective informed by extensive comparative field research. Brysk (2000, p. 29–30) showed how ideas and identities can be projected across borders so as to change ways of thinking, international norms, and national-level politics. Others sought to explain the wave of “multicultural constitutionalism” that swept the region after 1991 (e.g. Andolina 2003, Assies *et al.*, 2001, Sieder 2002, Van Cott 2000). (p. 387)



and language. Data on poverty alleviation and ICT usage at government sponsored telecenters in rural Oaxaca was not available during the writing of this dissertation. Therefore, my research trip to the region attempted to produce such data and the results are presented in the following chapter.

## 4.6 Conclusions.

This structural analysis found that despite being a typical developing country in generally adhering to neoliberal capitalism, and democratization, Mexico remains an outlier with its relatively strong HDI ranking, high income, low ICT penetration rates, and higher than average governance/pro-poor effort scores. The country thus constitutes a *deviant case*, the study of which may reveal a potent new variable: Internet. The evidence above indicates that in spite of Mexico's long history of paternalism and lack of governmental transparency, the government has actually made substantial efforts to use the Internet to increase communication with the public and encourage citizen participation. It was evident that the e-Government strategies of e-Mexico, and now Mexico Online, is where the Mexican government is making strides to increase access for marginalized citizens and improvements in governmental transparency.

Also on prominent display in this Chapter was data from the Mexican states indicating that my theoretical framework strongly holds. In fact, data displays that Mexican states are almost exclusively *typical case* studies, following Seawright and Gerring (2008) as it did not matter how the data was presented the role of income in determining Internet penetration rates was strong. The states with the highest income had the highest levels of Internet penetration and *vice versa*. Therefore, the comparison between Guadalajara and Puebla allowed for important leverage for my theoretical framework because they differ substantially in technology penetration rates and also in measures of governance and poverty, yet remain constant in income and education. Of major Mexican cities Guadalajara has the second highest rate of landline phone penetration at 76.1% and the third highest rate of Internet penetration at 26.4%, and compared to Puebla, Guadalajara has 13% more Internet penetration and 23% higher phone penetration. The differences extended into

outcomes in services and poverty. I've argued that an important control variable is education, and my tables above displayed that education outcomes are similar in Guadalajara and Puebla (only a 4 point difference). Thus, the variance in other types of services between Guadalajara and Puebla cannot be explained by differences in the education system. One last summary conclusion for the urban analysis was strong evidence that the more available Internet access, the more effective pressure social networks, and NGOs brought against governments. Success stories ranged from anti-corruption measures to improved social services as seen in Guadalajara. Certainly, Internet was not the only factor at play, but the quantitative results above did indicate strong differences between Guadalajara and Puebla in terms of poverty, and I believe that when all the other factors controlled for, the evidence above displayed that the Internet is playing an important role that can no longer be ignored by scholars of poverty and governance.

This structural chapter also investigated the rise of Mexico's Jasmine Swan the Yo Soy #132 movement in response to lack of representation in the political system, corruption, and with an alleged biased media system providing a perfect scapegoat. Economic factors played a role in the movement's success as the poor who represent a large portion of Mexico's population, solidly got behind the movement. They have been upset at not benefitting as much from economic growth in the 2000s, especially compared to the middle and upper classes. As large protests from Yo Soy #132 appear to be on the wane by 2014, the movement has reoriented itself around issues of free speech, freedom of information, and bias in the media. Throughout their existence they have maintained a strong social media and web based presence. It remains to be seen if this movement, or a similar one, will flair up in Mexico soon. The structural conditions are present for it, but where another spark may come from, or when, is difficult to predict. However, the fact that the movement sprung up so quickly certainly was fueled by the Internet as the viral videos of student protests after Peña Nieto's speech at the University solely created the spark for political mobilization.

Turning to the rural analysis, existence of 'Technological Black Holes' was exposed in

Oaxaca and among Indigenous Peoples. Three structural factors found to be hurdles for indigenous Internet usage were: poverty; education; and language. Data clearly displayed that Oaxaca had high rates of poverty as 29.5% of the population is considered to live in conditions of high marginalization and 46.5% in very high marginalization/poverty. Education attainment was weak in Oaxaca as 21.5% of the population is illiterate, and the gender gap is strong, as 26.7% of Oaxacan women are considered illiterate, compared to 15.5% of men. In 2004, Oaxaca was in first place in the country for mortality rates, with 5.2 per 1,000 people (SIPAZ, 2011b).

More in depth analysis is conducted in the following chapter using in-depth survey/interview research in indigenous villages in Oaxaca. Unfortunately, currently there is not much structural data available for small indigenous villages in Mexico, or in villages across the developing world, thus limiting easy quantitative analysis and comparisons. My research trip to Oaxaca, creating data at the village level, picks up where this rural analysis stops. By investigating the results from my trip to rural Oaxacan villages, some with government sponsored Internet centers, CCAs, and those without, I hope will elucidate the influence of ICT in rural Mexico at a greater level of specificity than this chapter, and the current literature on the topic make available.

## **Chapter 5: Case Study of Mexico – Urban and Rural Survey Analysis**

### **5.1 Comparative Model, Survey, and Interviews Explained.**

The bird's eye view of the Mexican state data discussed in Chapter 4 was a useful place to begin careful case study analysis. However, to truly make my argument convincing, targeted local level data on how ICTs are impacting the poor would be helpful. Unfortunately, this data is rare to non-existent in many developing countries (see Kenny, 2006a). There are no cross-national studies in the developing world—at least to this author's knowledge—that asks the poor questions about how ICTs may be impacting their political participation, access to government services and only a few country case studies asking about economic opportunities. Government access questions are key, there are some studies asking ICT and economic opportunity questions of the poor in case study analysis (see Smith, 2009), yet they are few and far between, are not cross-national, and were not conducted in Mexico.

To address the lack of data in survey analysis I produced *new* survey data in my four cases in urban and rural Mexico (cases explained in Chapter 4). I asked the same questions in the two large urban cities, Guadalajara, and Puebla and also in two small indigenous villages in rural Oaxaca. Across these cases I conducted original research that attempted to fill the holes in the scholarship on non-elites and ICTs. My survey asked the poor, working class, middle class, and also some elites, questions about their use of ICT for political and economic purposes. Secondly, I also conducted more informal interviews with the poor and working classes, asking them more open-ended questions about their use of ICT for political and economic purposes. I also carried out a limited number of elite interviews of people who were working for NGOs that focused on poverty alleviation. The following explains the comparative model I follow to explore this data:

### Case Study Comparative Model

Case One-Urban High Tech: high ICT penetration rates → governance → poverty reduced?

City: Guadalajara (Mexico's so-called 'Silicone Valley').

Case Two-Urban Lower Tech: low ICT penetration rates → governance → poverty reduced?

City: Puebla (Similar sized urban area to Guadalajara except in ICT penetration).

Case Three-Rural High Tech Village: high ICT penetration rates → governance → poverty reduced?

Rural Village: Tlahuitoltepec, ICT penetration increased due to government provision (e.g. a town with a Community Learning Center-CCA).

Case Four-Rural Low Tech Village: low ICT penetration rates → governance → poverty reduced?

Rural Village: San Juan Flores, similar to rural high tech village in every extent possible, except in ICT technology penetration (e.g. village does not have a CCA).

\*The interaction effect between ICT and governance is also tested in these locales.\*

**Survey analysis:** My survey asked direct questions relating to whether or not people, the poor in particular, are employing technology in their engagement with politics and governance, or in their economic endeavors. If they answered yes, then other questions followed up on how? Included in the survey are questions that evaluate respondent's behavior rather than only their views and opinions. Here are a few examples of my questions: Did you attend a protest or sign a petition in the last year? Do you use technology for economic purposes? How often do you have access to the Internet? Has the Internet helped to put effective pressure on the government for

reform? Can you think of any local examples where this has happened? Have you used the Internet to access governmental services? To my knowledge no significant surveys exist in Latin America asking these types of direct questions related to ICT use and political behavior, especially interaction with the government and access to governmental services. In fact, my research indicates that there are *no* studies that ask the poor a battery of questions about how they are utilizing ICT for political purposes in Latin America. The details for how I conducted the survey, found respondents, and complied with the Internal Review Board for Research Compliance at the University of Connecticut is explained further below.

**Elite and Non-elite Interviews:** I also conducted some elite interviews with NGO staff working with the poor. I asked direct questions with open-ended answers. Here are a few examples: Did the governance improve in the region? If so, why? Did technology help or hinder that process? Do the poor benefit economically from technology? If so, how? If not, why? I will report the results of the elite interviews throughout my analysis below where merited. Overall, I conducted more non-elite interviews of the middle class, working poor, and poor, than of elites, thus the vast majority of my reported results will be of non-elites.

Why study non-elites? There is a small academic literature that does a nice job of exposing the importance of conducting interviews with the poor in developing countries. Powers (2001) has done some of the best work in Latin America on this, and according to her, there is a lack of focus from research in developing countries with regards to the quantity and quality of interviews with the powerless. I follow the approach taken by Powers (2001), staking a claim for the importance of interviewing non-elites to get a sense of what they think, believe, and what they care about. Assumptions about non-elites need to be tested, and not assumed; one way of testing assumptions is by asking non-elites direct questions. In the course of her 1990s fieldwork in Argentina Powers let the questions she asked evolve in her interviewing of non-elites

regarding their views on politics, wealth, and grassroots mobilization. She claimed that her flexibility allowed her to more accurately assess their views.

Many studies in the literatures on democratization and good governance focus on elites and their competition for political power (i.e. Bellin, 2000). However, Powers (2001) builds a compelling case for why researchers interested in political phenomena should also study non-elites. The first reason she posits, following O'Donnell (1998), is that political and electoral rights are inherent in democratic processes, which are founded on the notion of “equality of citizenship” (Powers, 2001, p.5). Therefore it is clear that weak citizens still have a claim to equality in citizenship (e.g. one person one vote), and this has importance in evaluating the 'quality of democracy' (see O'Donnell, 2004). Powers notes that “if political science is to provide a complete account of public life, it should 'bother to consider' the impact that political competitions and policy decisions have on the governed” (p. 5). She points out that largely missing from political science scholarship on developing countries is “research on how people who are not in positions of power perceive and evaluate the effects of policies and political practices” (p. 5).

The second reason Powers (2001) argues for the utility of interviewing non-elites—in line with the pioneering work of James C. Scott's *Weapons of the Weak* (1985)—is that those who are excluded from the institutions of power in society are nonetheless still important to political life at the regime, local government, or community levels (2001, p. 5). Non-elites may not be able to bring down the regime very often (recent developments seen in the Arab Spring may be challenging this), but they create many indirect effects, for instance influencing political life through being consumers, and their plight often catches the attention of religious authorities, journalists and NGOs. Finally, they are also part of the public support that elites rely on for policies and they can be important voting blocs in Latin America (p. 5).

The third reason Powers (2001) posits for the importance of interviewing non-elites is that listening to those without power can provide insight into understanding and evaluating the conditions in which they live. Such an understanding is the basis for future economic development (p. 5). This is evident in the attention given to 'people oriented' development strategies at UNDP, World Bank—particularly their multi-volume *Voices of the Poor* and in the work of other international development agencies. This approach is also gaining credibility through academic work, such as Nussbaum (1997) and Sen's (1999) 'capabilities approach' to development and the 'Human Rights Approach to Development' (Goodhart, 2013).

Finally, the fourth reason posited by Powers (2001) is that through the political clout of grassroots mobilization, non-elite's power can be stronger than what it might appear to be in a democratic, or semi-democratic state. For instance, in countries where voting is mandatory, and turnout is high, such as Argentina, the lower classes have proportionally more political clout than exists in many established democracies, such as the U.S. (See Leighley & Nagler, 2013). Thus, Latin American politicians must seek their support actively (Powers, 2001, p. 6). Following Powers, I also believe that more interviewing of non-elites is needed and lacking in the vast majority of academic ICT studies. This is where my survey comes in.

## **5.2 My Approach to Studying Non-elites.**

In the summer of 2012, I traveled across Southern Mexico and interviewed over 100 citizens in the cities of Guadalajara, Puebla, and in two rural indigenous towns in Oaxaca to get a sense of how Mexicans, especially the poor and indigenous, were actually employing ICT for economic and political purposes. My fieldwork was funded by the Tinker Foundation graduate student research grant.<sup>102</sup> My surveys, interviews, and questions did not evolve very much during my

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<sup>102</sup> I was lucky to stay with kind Mexican families in Guadalajara and in Puebla, where I was able to observe these families in their day-to-day lives, their engagement with ICTs, and had many discussions about Mexican politics with them, an intimate experience from which I remain eternally grateful.



trip, certainly not to the extent that Powers' (2001) did.<sup>103</sup> The surveys cannot be considered completely scientific by rigorous statistical standards, as they currently do not have the required number of respondents to employ regression analysis with, yet to my knowledge, the surveys are the first asking ICT/political engagement questions in Mexico and, likely the first of their kind with indigenous respondents in Oaxaca. Respondents were as randomly selected as possible with the goal to produce a representative sample of the population (including members of all classes). My surveys asked 57 different questions, and took respondents an average of 20 minutes to complete.

In Guadalajara, I interviewed 25 citizens. Guadalajara is a thriving metropolis with universities and a large technology sector as described in Chapter 4. The main area of the city where most of my respondents resided was the neighborhood of Tlaquepaque, a vibrant area of the city, featuring a large marketplace and the Guadalajara Language Center. In Puebla, most of my respondents lived in the greater downtown area. Yet I also made sure to interview people from the outskirts of both cities, including a working class family living at the edge of the city with the primary income earner was employed as a day laborer in Puebla, and a taxi driver in Guadalajara who also lived outside the downtown area.

In Oaxaca, I administered my survey to 35 indigenous people, which was completed with the help of a translator, as I was not fluent in the local Mixe indigenous language. The survey was conducted in two rural villages composed of the indigenous group called the Mixe people who live primarily in the state of Oaxaca. One of the villages, San Maria Tlahuitoltepec had an estimated 4,000 residents—yet had 5 Internet cafes and one CCA, Centros Comunitarios de Aprendizaje (Community Learning Centers). The other village, San Juan Flores had about 2,000 residents—but no Internet line, thus no Internet cafes or CCAs. The villages had comparable income per capita (this is important because not controlling for income causes

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<sup>103</sup> This was because I did not have many questions that failed to provide valuable information (with the exception of one, which I stopped asking midway through my trip). In other aspects, my observations of interviewing the powerless are very similar to those of Powers described above.

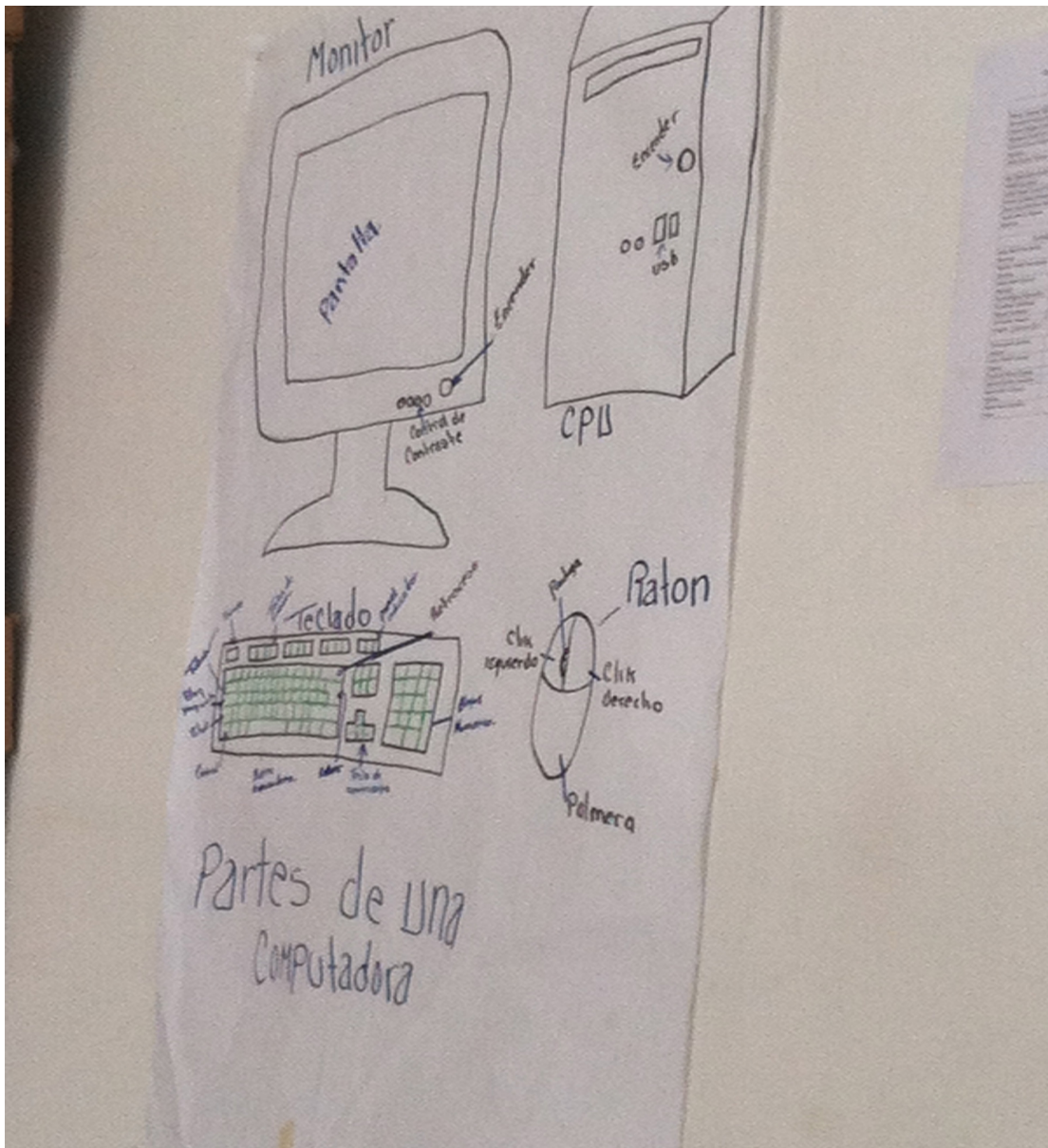
extensive endogeneity issues for my theoretical framework). These villages were geographically close together (approximately 3 miles), but were in a region three hours away from the centrally located Oaxaca City via winding roads, most not paved.<sup>104</sup> In other words, they were in a very remote geographic locales. In fact, the second more remote town, Flores is even more remote that cannot be located on Google maps, at least in 2014.

In Tlahuitoltepec the Internet line, at least in the summer of 2012, was fast enough to stream video (although it was not as fast as in urban Mexico, or other parts of Oaxaca). Also, important to the popularity of the Internet in Tlahuitoltepec, was the fact that a CCA was created by the government in the center of town, along with five Internet cafes spread out across the little village. To reiterate some of the info above on CCAs, following Huerta and Sandoval-Almazan (2007), my research plan analyzes a high tech town case that has a telecenter that are called Centros Comunitarios de Aprendizaje “CCA is one of the strategies of the Mexican government, which provides universal access and promotes education among marginalized populations in Mexico” (Red Educativa para el Desarrollo Social Sostenible, 2006).

Thus, Tlahuitoltepec can be considered a ‘high tech indigenous village,’ especially compared to the surrounding villages. In fact, in contrast to many small villages in rural Mexico it has a much higher access to technology for the populace (besides Internet, mobile phone reception was strong in the village—particularly in contrast to the villages in the valley where reception was limited). Of course, the populace had to want to use the Internet. The CCA is important because it allowed the populace to use the Internet, a printer, and to get educational help for using the technology for free from the staff. The staff offered classes on how to use the Internet, as well as how to use a computer. The following is a photo of a poster on the wall of the CCA in Tlahuitoltepec explaining how to use various aspects of a computer in Spanish:

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<sup>104</sup> The roads were so curvy that foreigners and Mexicans not used to the area were advised to take anti-seasickness pills to avoid getting sick. I did as advised and was glad I took the pills, as I shared the front seat of a small taxi traversing roads so curvy that my stomach felt like it was on a roller-coaster.



Source: CCA in Tlahuitoltepec, Oaxaca, Mexico. Photo on the wall of instructions on how to use a computer (Spanish). Photographer—Jack J. Barry (August 2012).

According to Huerta and Sandoval-Almazan (2007), CCAs are structured similarly to other types of telecenters in Latin America (Proenza *et al.*, 2001):

That is, a telecenter has a set of computers with Internet access. Access to these services can be either free or low cost (Red Educativa para el Desarrollo Social Sostenible). CCAs are similar to cybercafes because they provide Internet access. However, CCAs provide access to online courses and telecenter operators act as tutors. A private Mexican university provides the software platform, teaching material, and certification for online courses (Red de Centros Comunitarios de Aprendizaje, 2007). The university also provides technical support and training for telecenter operators. (p. 219)

Analyzing a town with a CCA allows for an examination of the crucial impact of intermediaries to help people, some of whom are digitally illiterate, in using the Internet. This stands in sharp contrast to employing ICT broadly and blindly through the market mechanism. It is known that poor people rely on personal networks as their primary source of information and are reluctant to trust other sources of information (Pigato, 2001). However, it has been well documented that having an intermediary person (operator) to help people, often the poor in public telecenters, use the Internet drastically improves the user's ability to employ it effectively regardless of whether or not they are in one's personal network.

The CCA in Tlahuitoltepec was certainly being used in this way as intermediaries were on site at all hours of operation to help users. It was a well-used facility, on the days I was there in mid-summer 2012 it was a lively, and welcoming place, plus the administrators reported that many people consistently used the facility throughout the day/evening. The administrators reported that there were a large number of school age children who used the facility in the afterschool hours as well (over 30 children most days). Primarily women used it during the middle of the day, more men at night. Monitoring of individuals' usage was not allowed at the CCA. I asked the staff of the CCA what the individuals needed the most help with and reported it was in applying for jobs and looking for work, especially when jobs were posted only in Spanish. Education was the other primary thing they needed help with, either for themselves or for members of their family, especially for the women who used the CCA.

Overall, in the rural areas my survey attempted to analyze any differences between the two villages to explore if there is significant variation in political involvement/participation, governance effectiveness—or perceptions of it, and finally whether or not respondents were using ICTs to enhance their economic opportunities. As mentioned above, the respondents were chosen to achieve as representative a sample of the population as possible. Respondents who expressed no interest in completing the survey were not forced/coerced or paid to participate, in

fact, no monetary incentives were given for completing the survey at all.<sup>105</sup> I also conducted elite interviews in Guadalajara, Puebla, Mexico City, and Miahuatlán de Porfirio Díaz, which is a larger town further south in the state of Oaxaca. Miahuatlán de Porfirio Díaz is a mixed indigenous and Mestizo population with about 32,000 residents.

### **5.3 Description of Areas Studied.**

The general data, or reported below as the ‘total survey’ is data derived from all the surveys I completed in the summer of 2012. This includes data from Guadalajara, Puebla, Oaxaca City, and two rural indigenous villages in Oaxaca state. There were a total of 90 respondents in these locales who agreed to be interviewed on the record. The respondents were given the option of not answering any question they did not want to and some respondents did skip some questions, thus the total response count for those questions was lower. The survey was administered in written form, with any questions addressed verbally by the survey administrator (this author, except in indigenous villages where questions were addressed via the translator). The results in the urban sample include all surveys from Guadalajara, Puebla, and Oaxaca City (less were collected from Oaxaca City compared to Guadalajara and Puebla and will not be described separately). In fact, it is a much smaller city, it is estimated that 500,000 people live in the city. Approximately one third of the population of the state of Oaxaca are indigenous. About half do not speak any Spanish. Thus, comparing Oaxaca City to the other cities proves problematic and is not attempted here.

The results in the rural sample are from the two villages that were located in the eastern portion of the state of Oaxaca. The villages were high up in the mountains, in beautiful terrain, with extensive views facing a large valley to the west. The villages were both Mixe indigenous villages. The Mixe are estimated to have the most monolinguals of any indigenous group in

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<sup>105</sup> The rules and regulations for research involving human subjects were followed as specified in the criteria from the Institutional Review Board (IRB) at the University of Connecticut.

Mexico.<sup>106</sup> The high tech one is San Maria Tlahuitoltepec (4,000 estimated residents) and the low tech village is San Juan Flores (2,000 estimated residents).<sup>107</sup> A note on the names used below is needed, as Tlahuitoltepec is considered the overall region, but the low tech town was actually located in a village called San Juan Flores (it will also be reported as the low tech village—as it did not have Internet access at all).

In total, there was 35 respondents from the rural areas. The urban/rural distinction can also be thought of as essentially being between non-indigenous (typically Mestizo) and indigenous in my survey. *All* the rural respondents were indigenous (of Mixe heritage and living an indigenous way of life). Thus, besides the distinction between urban and rural Mexicans, these surveys also differ between non-indigenous and indigenous groups. The demographic data was generally representative (e.g. 50% female, 40% married), yet over 61% of the respondents in the indigenous sample classified themselves as lower class, in contrast to 71% of the non-indigenous sample classified themselves as middle class. This could be due to relative wealth perceptions of the differing locations, yet in general it can be assumed that the indigenous population in the rural sample was much poorer.

#### **5.4 Survey Results: Technology Usage.**

This first section of results investigates ICT usage across the different regions in my survey. It explores the amount of time respondents reported using the Internet, where they receive access, what is the main barrier to access if they did not use it, and whether or not they use social media, and if so to what extent. The following sections will turn towards the primary questions of this dissertation; are the poor using ICTs for economic purposes and/or political purposes. The following chart is of data from a question asking respondents how much time they spend using the Internet? It is an important question because I use it to determine whether people are heavy,

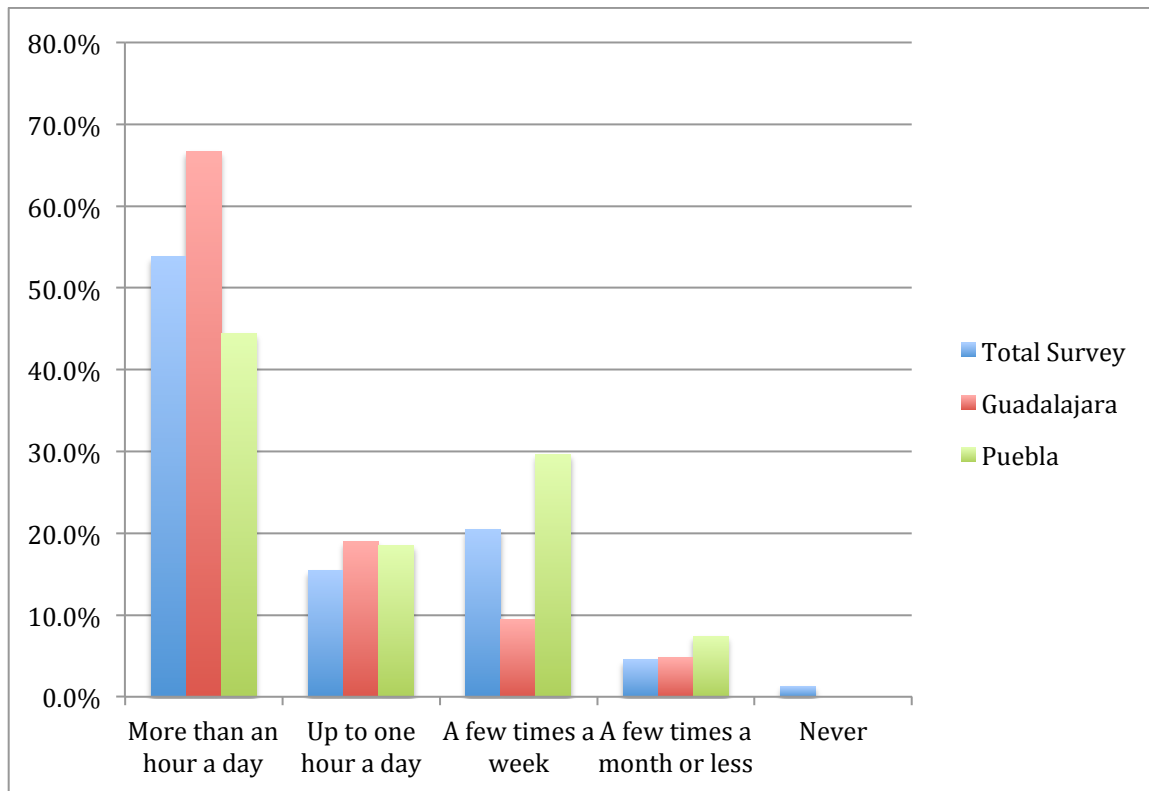
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<sup>106</sup> Monolinguals are defined here as speaking only one language fluently.

<sup>107</sup> It also must be noted that due to data constraints in low tech San Juan Flores I cannot report as many comparisons as the other groups. This is especially the case with Internet based questions as there was only a minimal amount of users from Flores that used the Internet at all.

medium, or low Internet users, at least in the terms of time they spend on it, I compare the results in cross-tab analysis with economic and political questions further on. Here are the results:

Chart 5.4A: How much time do you personally spend using the Internet?

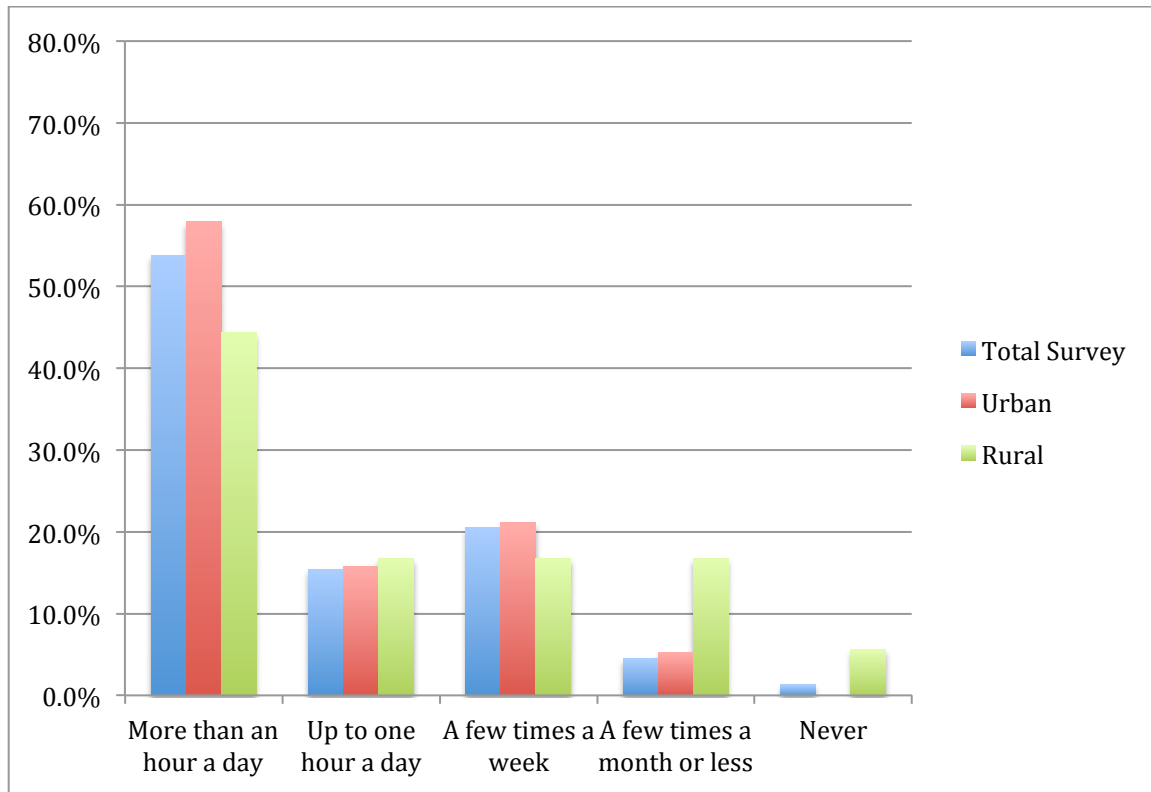


Notes—Answered question: 78 total, 21 in Guadalajara, 27 in Puebla. Any remaining percentage was “Don’t know” or “Don’t want to answer this question.” The total survey also included respondents from the rural areas about 15 respondents from Oaxaca City.

We can see clearly that Internet usage was higher in Guadalajara, compared to the total survey, and to Puebla, and as will be clear from data below this was the case in the rural areas as well. Guadalajara also had significantly more heavy users, with 66% reported using the Internet for over one hour per day. This finding is not surprising as penetration rates for Internet is higher in Guadalajara than for Puebla. Two other questions in the survey are worth mentioning regarding Internet usage. One asked if respondents had Internet in their home and it turned out that there was no difference between the cities. The other asked if respondents used the Internet at work.

Puebla actually had higher usage with about 80% of Pueblans using the Internet at work, while only 45% of Guadalajarans reported using the Internet at work. When asked a question about where respondents were able to get online, the two cities produced almost identical results. Respondents in both cities were equally likely to use the Internet at a relative's home, friend's home, government offices, WIFI hotspots, and during travel (hotels, airport, office). Also, only 15% of both cities respondents went online via a smartphone. Computers and tablets were the dominant way to get online with over 80% of respondents from each city reporting using a computer to do that. Overall, it is safe to say that there were very limited differences between the two cities in where people get access to the Internet. That was not the case in the rural villages, where access issues, and lack of education were more prevalent problems. The following is a chart of the 'How much time' question above split between the urban and rural samples:

**Chart 5.4B: How much time do you personally spend using the Internet?  
Urban and Rural.**





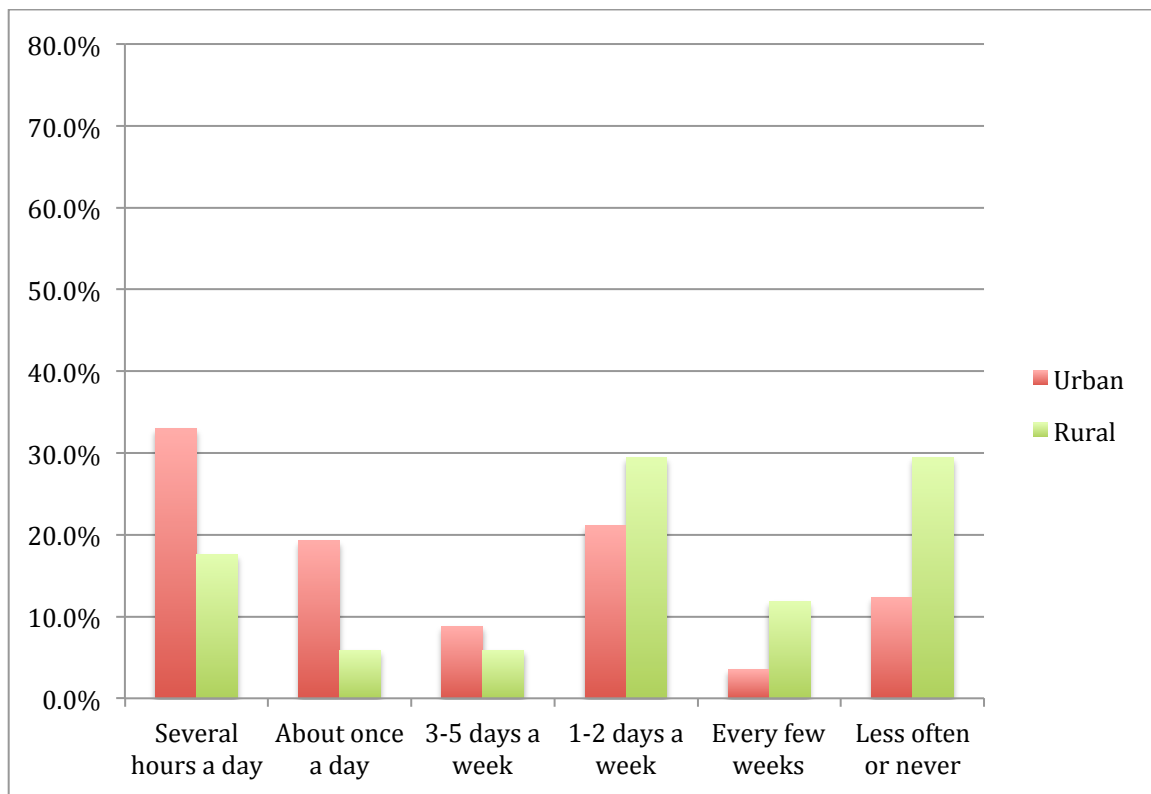
Notes—Answered question: 78 total, 57 in urban, 18 in rural (11 skipped can be considered “never” answers). Any remaining percentage was “Don’t know” or “Don’t want to answer this question.” The total survey also included respondents from the rural areas about 15 respondents from Oaxaca City.

The 13.5% difference between the amounts of heavy users reported is not exactly surprising.

What is not expected is that there are so many heavy users among the indigenous (all from the high tech village). Mobile phone usage was similar and broke down rather evenly across income class as, not surprisingly, the poor classes usually did not own their own phone. Also, as far as devices were concerned, only 5% of the indigenous group got online using a smartphone, while 15% of urbanites did. On the ‘How much time’ question there was not enough respondents from low tech Flores to compare it to high tech Tlahuitoltepec, thus that data will not be reported here. In fact, for many of the questions in the survey that required Internet access to answer there were not enough respondents from low tech Flores (not exactly surprising). However, we can still make comparisons on their political and economic activity.

Turning to data on Internet usage in the home we can see substantial differences between urban and rural data:

Chart 5.4C: About how often do you use the Internet or email from home?



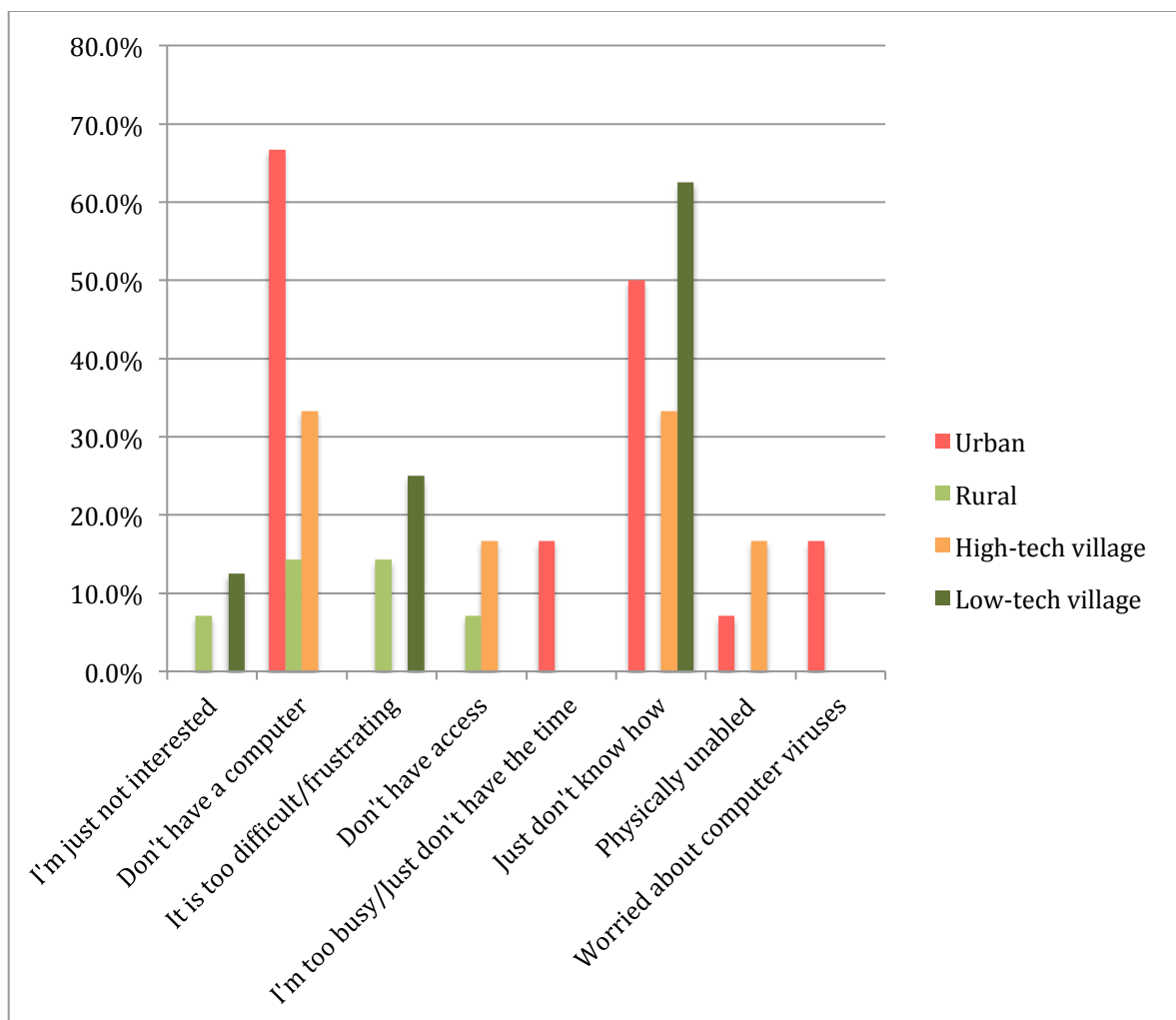
Notes—Answered question: 57 in urban, 17 in rural (12 skipped can be considered “never” answers). Any remaining percentage was “Don’t know” or “Don’t want to answer this question.”

From this data we can make a few important observations. Over half of respondents, regardless of the location, were getting their Internet from a place other than their home. This is not surprising given the high cost of access in the home. It is also clear that those in the rural areas do not have, or cannot afford, Internet in their home. More than double the amount in the rural areas where people simply did not use the Internet in their home (29.4% to 12.3%). Also, people in the urban areas were more likely to use the Internet at home, 33.3%, compared to 17.6% in rural areas. Unfortunately, there were not enough respondents to compare the high tech and low tech villages. However, it was clear that access and use of the Internet differed substantially between the high and low tech village with 25% reporting using the Internet from their home

‘several times a day’ from the high tech village but 0% from the low tech village. At each level of usage the low tech village had reported lower levels.

To get more specific information on why some Mexicans did not use the Internet the following question asked directly why. An interesting finding was the very different answers respondents gave between the urban and rural samples:

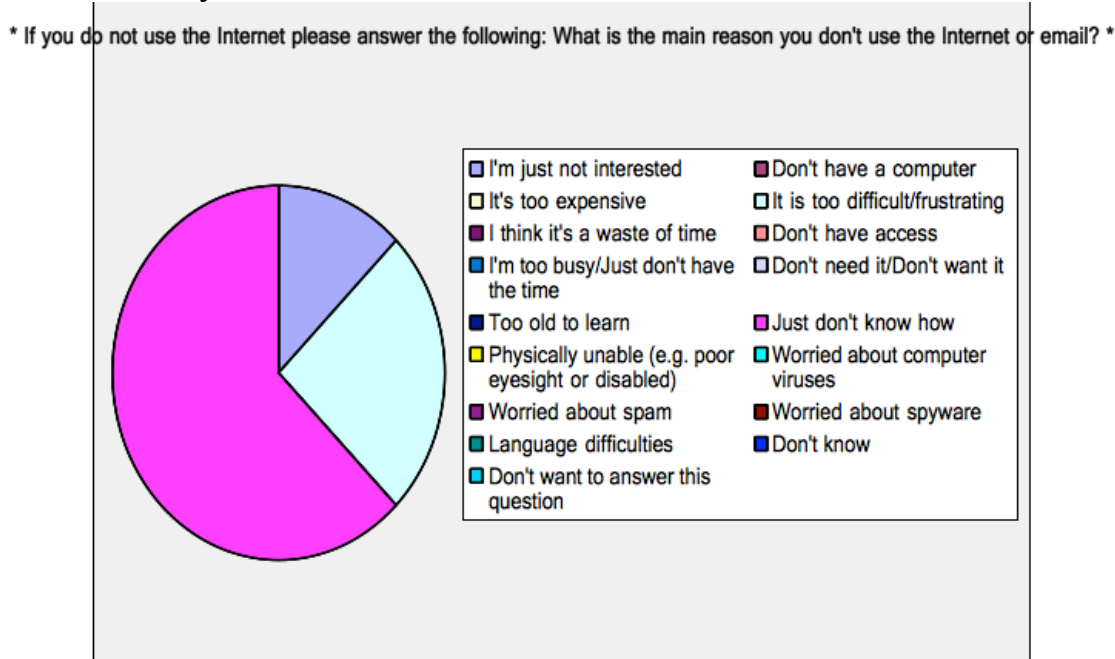
Chart 5.4D: If you do NOT use the Internet what is the main reason you do not?



Notes—Answered question: 6 in urban, 14 in rural, 6 in high tech village, 8 in low tech village. Any remaining percentage was “Don’t know” or “Don’t want to answer this question.”

This is an important question that directly asks respondents—particularly the poor who cannot easily afford access—about specific barriers they face in getting access. An intriguing result from this question is that about 50% of indigenous respondents simply did not know how to use the Internet (or likely a computer). This stands in sharp contrast to the urban sample in which 66% said that the reason they do not use the Internet is because they 'Don't have a computer.' This disparity could be mainly due to educational and language differences of the indigenous. The question above is especially unique in the scholarship because many studies on indigenous Internet usage do not interview those who are not online—thus their samples are often biased, as they are composed of only indigenous people who are already online. A primary reason for this is because surveys are often exclusively online and the researchers do not always travel to where indigenous people live to interview them. Another way of putting the data from the low tech village into context is to view the data in pie chart form:

Chart 5.4E: Low tech Village—If you do not use the Internet what is the main reason you do not?



Obviously, the 'Just don't know how' answer was the majority in the low tech village (62.5%).

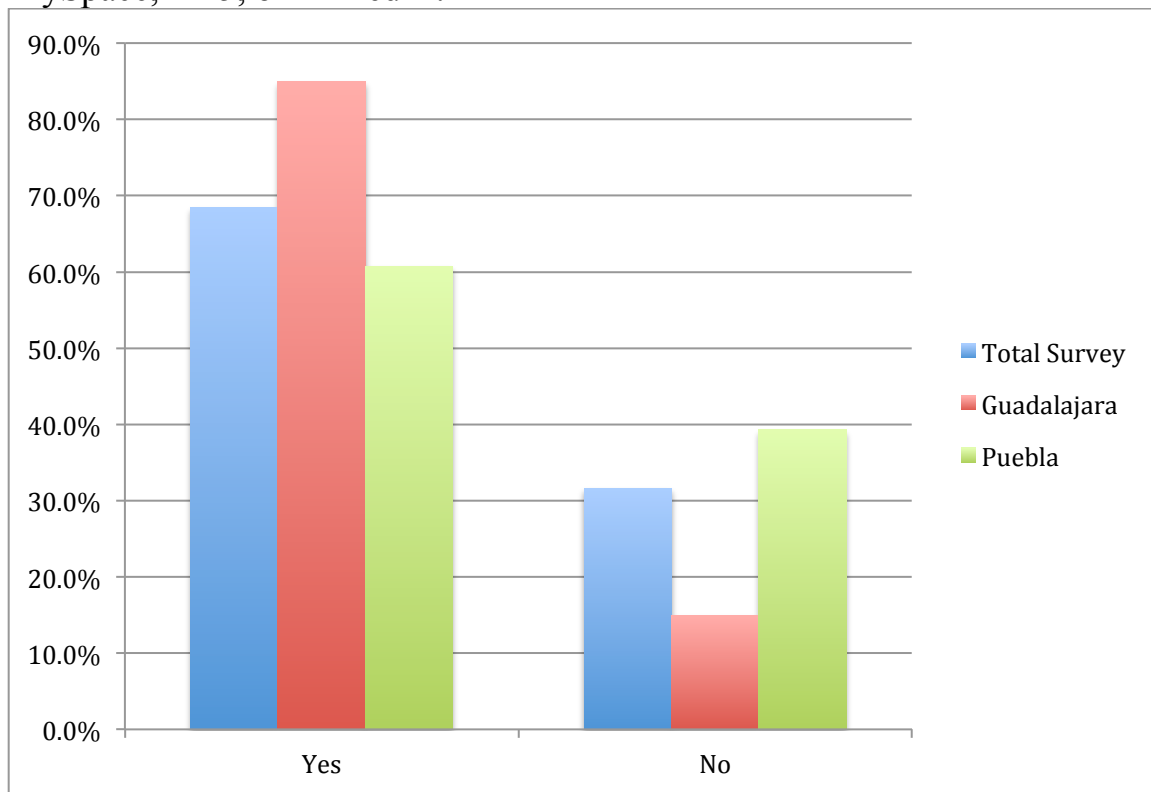
The difference between the two villages could be due to the training provided for free at the

CCA in high tech Tlahuitoltepec. It is also interesting that those in the high tech village wanted to use technology more, but simply did not have access/resources to do so. In fact, 50% said this was because they did not use the Internet ('Don't have a computer,' 'Don't have access'), yet in low tech Flores no respondents said those reasons, although due to the lack of a data line into town they clearly did not have access. Instead, they pointed to 'It is too difficult/frustrating' and 'I'm just not interested.' This is a logical, and not a very surprising finding. Those in the high tech village were much more likely to see their friends/neighbors/relatives using technology by going to Internet cafes, or the CCA, than the low tech village, which did not have any of those options locally.

### **5.5 Social Networking.**

Social media has been proven to be an important development since coming into mainstream usage in the early 2000s. The following question asked respondents if they had ever created a social networking profile. It turned out that Guadalajara had significantly more respondents create their own profile on social networking sites:

Chart 5.5A: Have you ever created a social media profile such as Facebook, MySpace, Hi-5, or LinkedIn?



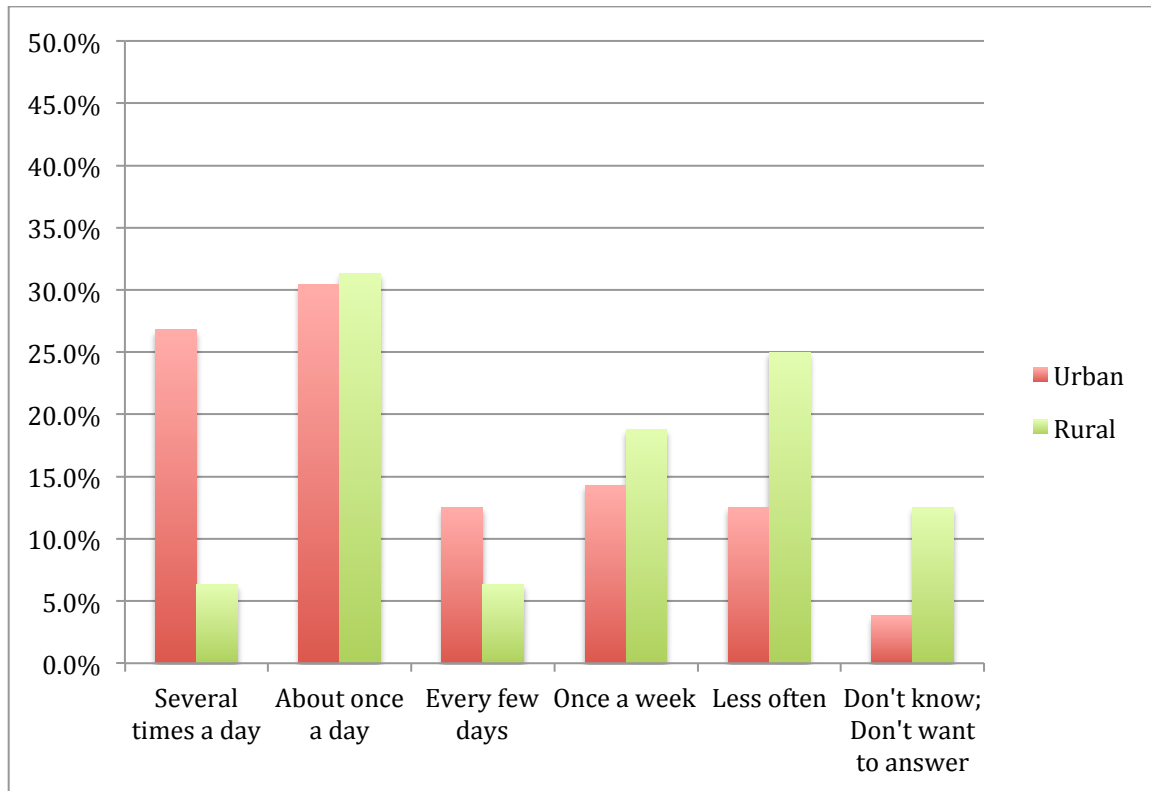
Notes—Answered question: 76 total, 28 in Guadalajara, 28 in Puebla. All respondents answered this question. The total survey also included respondents from the rural areas about 15 respondents from Oaxaca City. Hi-5 is a popular social networking site in Mexico.

These are rather large differences, 25% between Guadalajara and Puebla in regards to those joining online social media networks. Some of this can be explained due to the 13% difference in Internet penetration between the states. Puebla's prevalence of those joining online social networks reflects the national average and is almost exactly the same as the average of the total survey. My survey also asked questions related to how often respondents checked social media, yet no substantial difference was apparent between the cities and will not be reported.

Interestingly, both the urban and the rural samples were the same in their results on joining a social network (not reported in graph form here because the breakdown was too similar). About 70% of respondents had joined a social media network in both the indigenous and non-indigenous sample. However, for reported usage per day of social networks was higher

for non-indigenous—not exactly surprising considering the difference in Internet usage overall—this is displayed in chart 5.5B below:

**Chart 5.5B: How often do you visit the social networking site you use most often?**



Notes—Answered question: 55 in urban, 16 in rural (12 skipped can be considered “never” answers). Any remaining percentage was “Don’t know” or “Don’t want to answer this question.”

Urbanites reported that they used online social networks ‘Several times a day’ at four times higher than the rural sample. Almost double the amount of rural respondents said that they used their social network less than once a week. Clearly, despite the same amount of respondents from both groups creating a social network, urbanites were more likely to heavily use their online social network. There was not enough data to report on joining of social networks between the two village samples as many in the low tech village did not use the Internet at all. Of those using the Internet in the low tech village 100% actually reported joining a social

network, however, that was only among those who had Internet access in the low tech village (5 respondents). The vast majority did not join a social network because they did not go online *at all*. The high rate of positive responses to social networks is not very surprising considering that those who have Internet access are joining social networks in droves (Facebook's 1.23 billion plus users and counting would be an example of this trend—as the number of Facebook users is not too far behind the 2.8 billion number of Internet users worldwide—in 2013). It is interesting that even in a community where not many of the community members are online, many members still join social networks. However, overall my sample is too small for social networks between the villages to draw meaningful results. The following questions begin to move away from access to ICTs/social media and focus on their impact on various aspects of social capital, governance, and poverty.

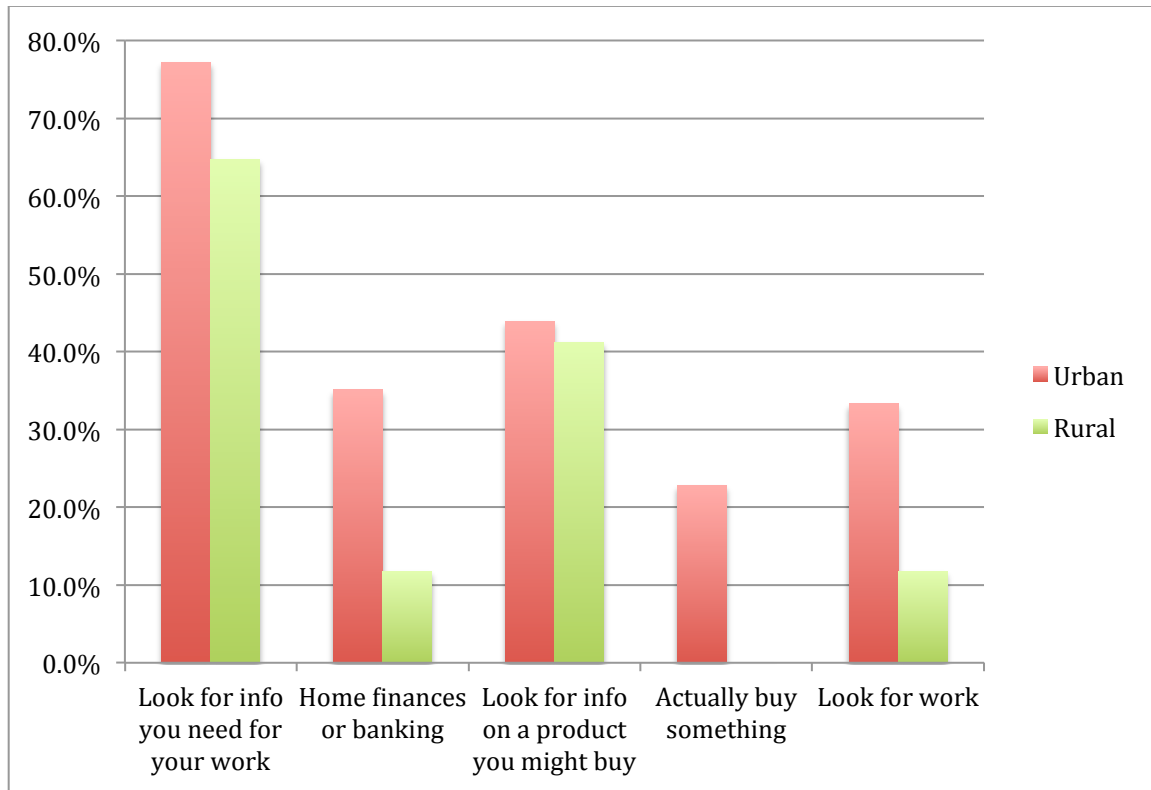
### **5.6 Economic Opportunities and ICTs.**

Overall, in my survey of non-elites, I found that people with more access to the Internet had more economic opportunities to try to enhance their economic status and/or move out of poverty. This proved to be the case across the survey. Respondents reported that the Internet increased their economic opportunities, especially in looking for work, and this result did not differ much by region, except by a small margin, as those in Guadalajara reported that the Internet provided them with more economic opportunities than Puebla. This result was confirmed in my elite interviews as NGO staff working with the poor reported that the poor used the web to look for work, and in doing their work. For example, an elite interview with an NGO worker reported that helping the poor look for work online was one of the most important ways that his NGO helped the poor.

Below are the differences in the use of the Internet for economic opportunities. Chart 5.6A displays the urban and rural sample reporting on economic opportunities:



Chart 5.6A: In the past 12 months have you used the Internet to do any of the following things? Please mark all that apply.



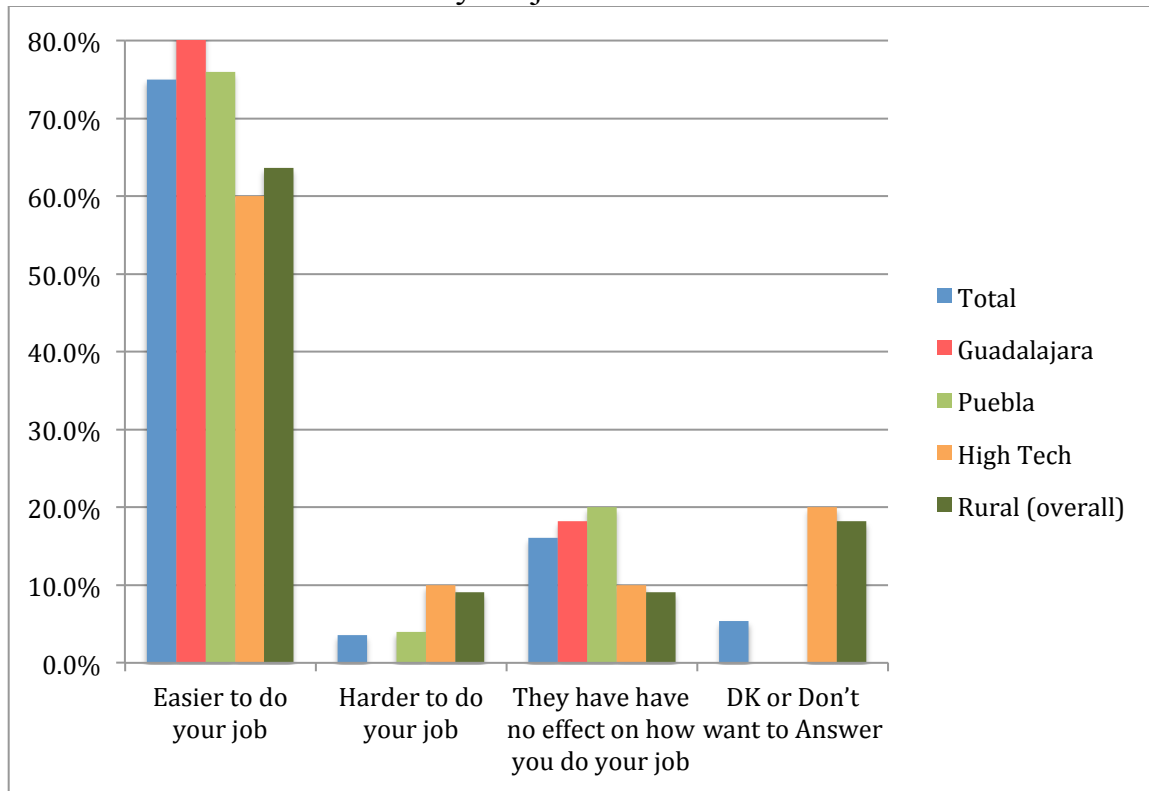
Notes—Answered question: 57 in urban, 17 in rural (12 skipped can be considered “never” answers). Any remaining percentage was “Don’t know” or “Don’t want to answer this question.”

There are a few important differences between the groups as seen in this chart. Those in the urban group investigated home finances at 35% compared to only 11.8% from the rural group. Also 22.8% percent of the urban group reported that they ‘Actually buy something’ online, but 0% from the rural group did. What might be most important finding, especially for my argument in the final chapter of this dissertation, is 33.3% of urbanites ‘Looked for work’ on the Internet compared to only 11.8% of the rural group. Also note the high ratio for both groups on looking for information needed for their current work—in fact, it is the highest activity by far in both groups. It is hard to know the exact breakdown of WHY respondents were using the Internet in

their workplaces. It might be due to respondents using the Internet at their office jobs or farmers looking up market and price information in the rural areas. Unfortunately, there was not enough data to compare the two villages in any meaningful way on this question as the low tech village did not have enough Internet users reporting using the Internet at all for these economic activities. Although it can be readily assumed that those without access did *none* of these things via the web, thus they would appear to have much less economic opportunities. My survey also asked if respondents used mobile phones for these purposes and the answer was emphatically ‘No’ which is not surprising, as smartphones did not have much penetration during my survey in 2012 and the populace did not use them much for commerce. Paying for goods/services via smartphone in 2012 simply did not have the trust of the populace in Mexico either directly or through credit/bank cards. Furthermore, rural respondents simply could not afford data plans to get online via smartphones at this point in time.

Do ICTs help people in their work? The following chart explores whether or not electronic devices made work easier or more difficult for Mexicans. Many of the rural respondents were small-scale farmers and crafts sellers rather than those doing more traditional office work:

Chart 5.6B: If you have a job and use electronic devices there have they made it easier or harder to do your job?



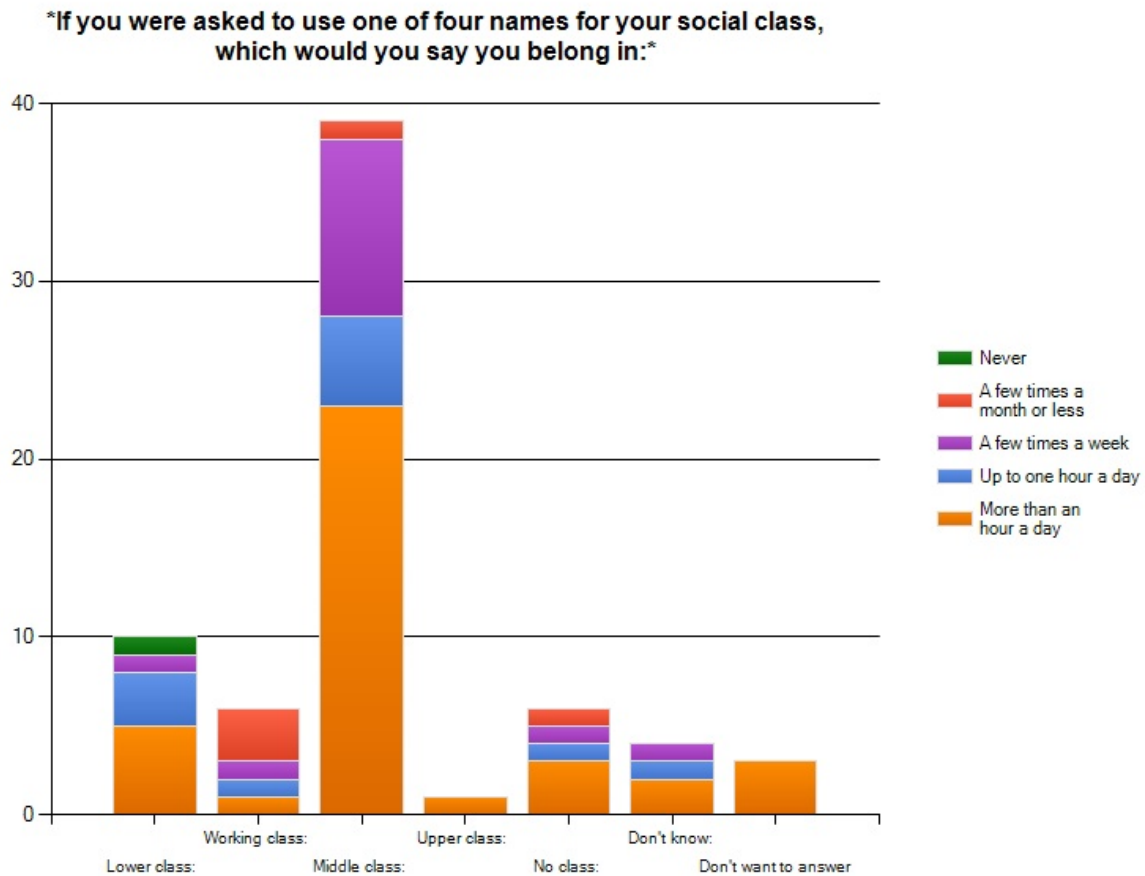
Notes—Answered question: 56 in total survey, 11 in Guadalajara, 25 in Puebla, 10 in high tech, 11 in rural total. There was no enough data from the low tech village—as those with jobs probably all did not have access to technology in their jobs.

Here we can see that a large majority of respondents found ICTs to be helpful for their work. The urban samples were slightly more enthusiastic about the usefulness of technology in their work, but it is really impressive that 63.3% of rural respondents also thought ICTs made their work easier. Under 10% of any sample reported that ICTs make work harder—certainly an encouraging result for the poor, working, and middle classes in their use of ICTs in their work.

The following cross-tab chart displays data between reported social class and amount of Internet usage. It was obvious across the survey that the percentage of those who had more

access tended to be from the middle and upper classes. Not surprisingly, those who reported difficulty in obtaining access were lower class:

Chart 5.6C: Economic Class and Amount of Internet Usage.

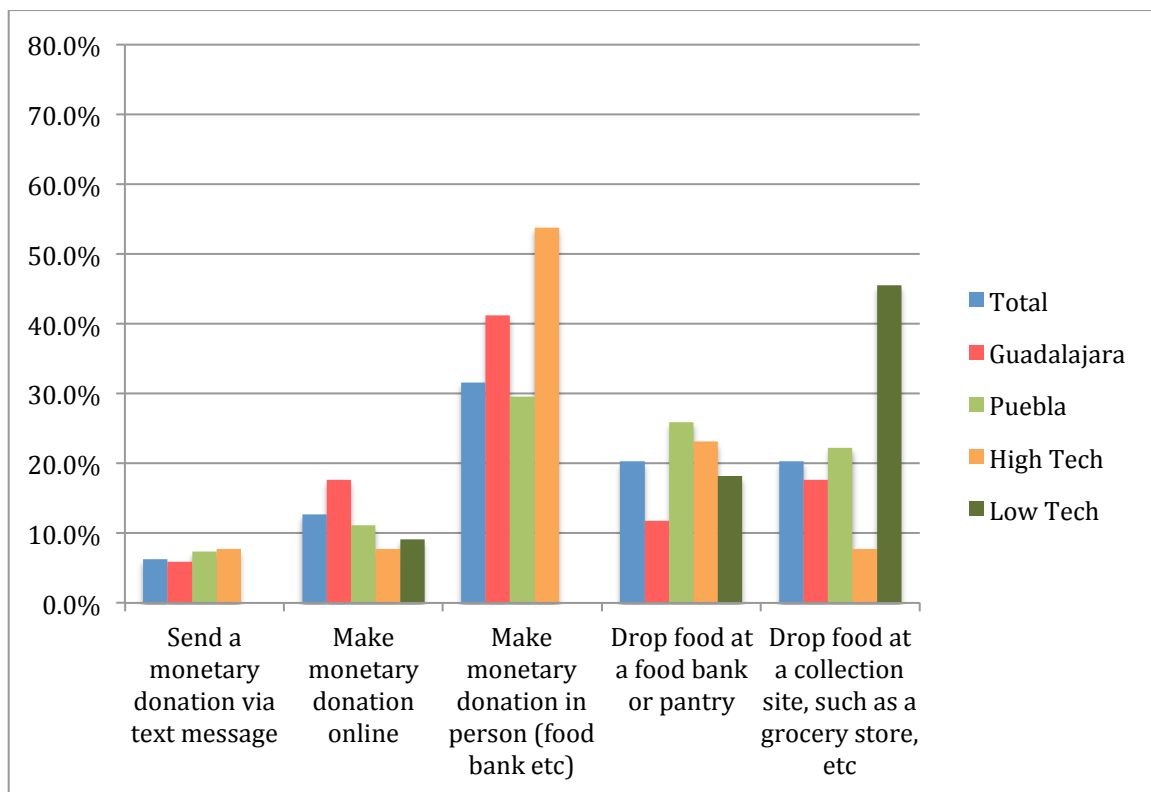


Here we can see that most respondents reported that they were in the 'middle class' although many from the rural villages reported income levels well below what would be considered middle class for the country, even though in their community they consider themselves middle class. We can also see that those reporting they 'never' use the Internet were all from the lowest class, and the highest percentage of those who only use the Internet a 'few times a month or less' were from the working class. My data on the same question but with income rather than reported class displayed the same upward trend of more income equaling more access (redundant chart not reported). Also, when I ran limited regressions, controlling for income, the respondents who

used the Internet more reported looking for work more (although the regressions were limited by lack of data and will not be reported).

Another way I attacked the question of whether or not respondents thought the Internet could be a tool to help the poor was to ask them a general question about helping the poor. A specific question I asked was ‘What is the easiest way for you to help someone who is hungry?’ Thus, my goal with this question was to see if any of the respondents would chose online donation or text message donation as compared to tradition forms of helping the poor (e.g. donation of food in person, drop food at a collection site, etc.). Here are the results:

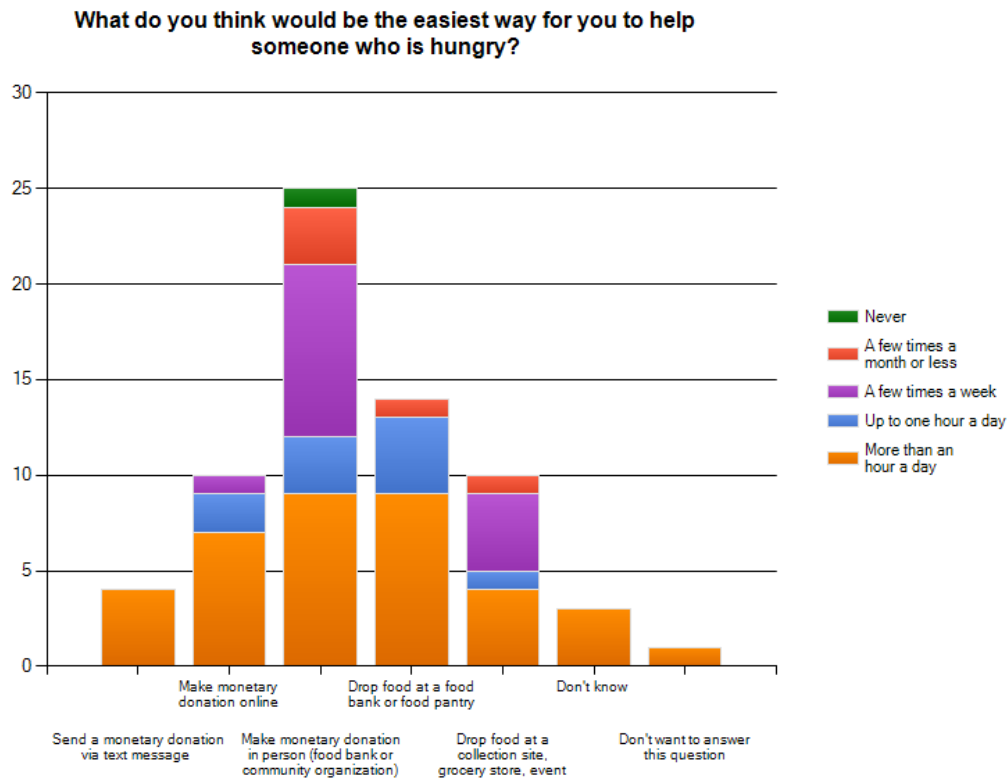
Chart 5.6D: What is the easiest way for you to help someone who is hungry?



Notes—Answered question: 78 in total survey, 17 in Guadalajara, 27 in Puebla, 13 in high tech, 11 in low tech. Any remaining percentage was “Don’t know” or “Don’t want to answer this question.”

With some of the options including donating money by text (mobile phone) or an online donation, it was not surprisingly that those who used the technologies *more* were also more likely to say they were the easiest way to give. Although we can see that no group reported this at over 20%, Guadalajara was highest at 17.6% reporting that donating online was the easiest way to give. It is actually surprising how many chose this option at all and this displays that using the Internet and mobile phones are becoming more viable for donating money, at least to some Mexicans. It is interesting that no one from the low tech village answered “Make monetary donation in person” while 53.8% of those in the high tech village chose that option. Further reflecting both disparities in income and digital divide is the very low levels choosing to donate via text message (7.7% and 0% high and low tech villages respectively). Those in the low tech village were much more likely, 45.5% to 7.7%, to “Drop food at a collection site, grocery store, event.” This is probably due to less income and more local subsistence farming. Below is a chart of the cross-tab results with Internet usage and this donation question:

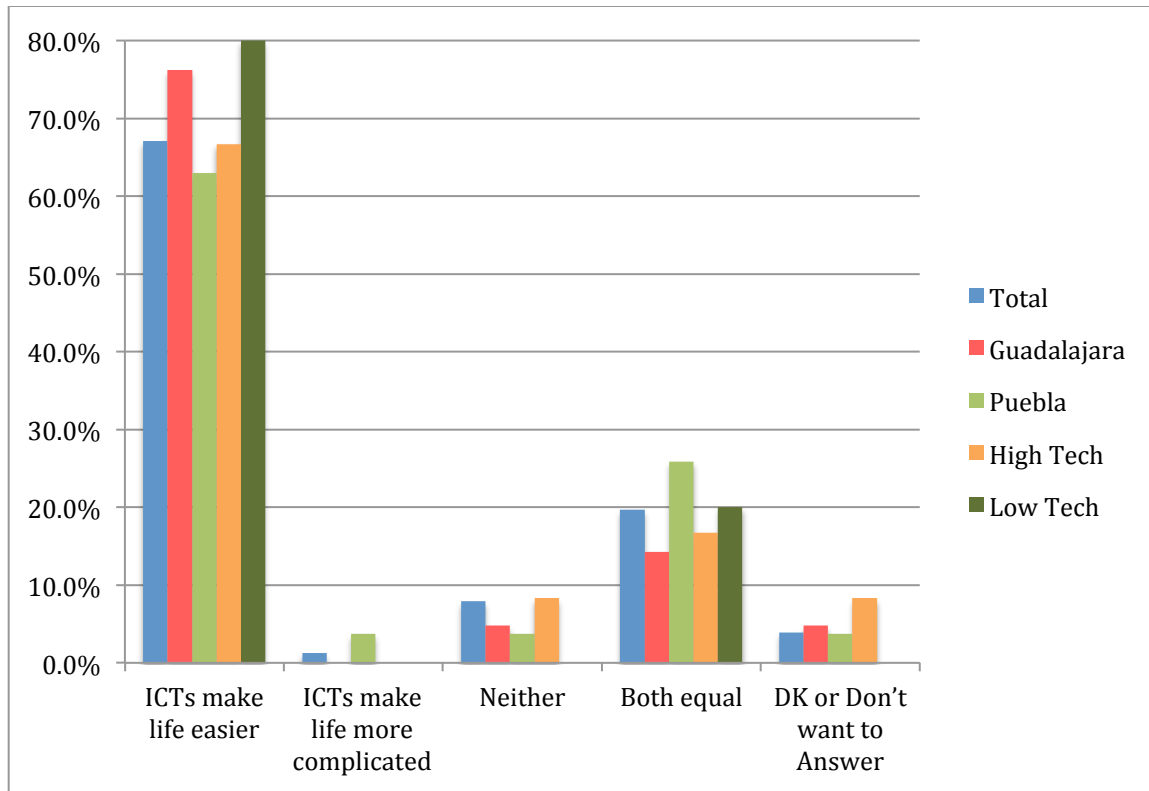
Chart 5.6E: Crosstab-What is the easiest way for you to help someone who is hungry? With Internet usage.



Not surprisingly the more a respondent used the Internet the more they tended to see it as the easiest way to give. It is also interesting to consider that a significant amount of respondents in Mexico chose Internet or text as the easiest way to give despite the technical challenges, this could signal that they might see it as a less corrupt way to give monetary support to the poor—or it could just be easier than giving cash, hard to say exactly, but for now intriguing to consider.

I asked another question probing the utility of the Internet to the lives of the poor. The question asks if new ICT technologies are making life easier or more complicated. The respondents across all regions reported that ICTs are making their lives easier by overwhelming margins:

Chart 5.6F: Do new ICT technologies make life easier or more difficult?



Notes: Answered question; 76 in total survey, 21 in Guadalajara, 27 in Puebla, 12 in high tech, 5 in low tech.

This is rather surprising, and provides empirical evidence against a popular notion that people in rural areas in developing countries, especially indigenous areas—do not have much interest, use for, or even have positive views of new ICTs. The evidence above actually confirms the opposite notion. In fact, all of the questions I asked related to social uses of ICT display that the rural sample was much more enthusiastic about the benefits of technology use than even the urbanites.

Overall from this section it is pretty clear that respondents with more income have better access to the Internet. Also, Internet access helped respondents search for work, do their work, bank, and allow for easier online giving. It was surprising, at least to this researcher, that such high percentages (well over 60%) of respondents reported ICTs were useful in many ways

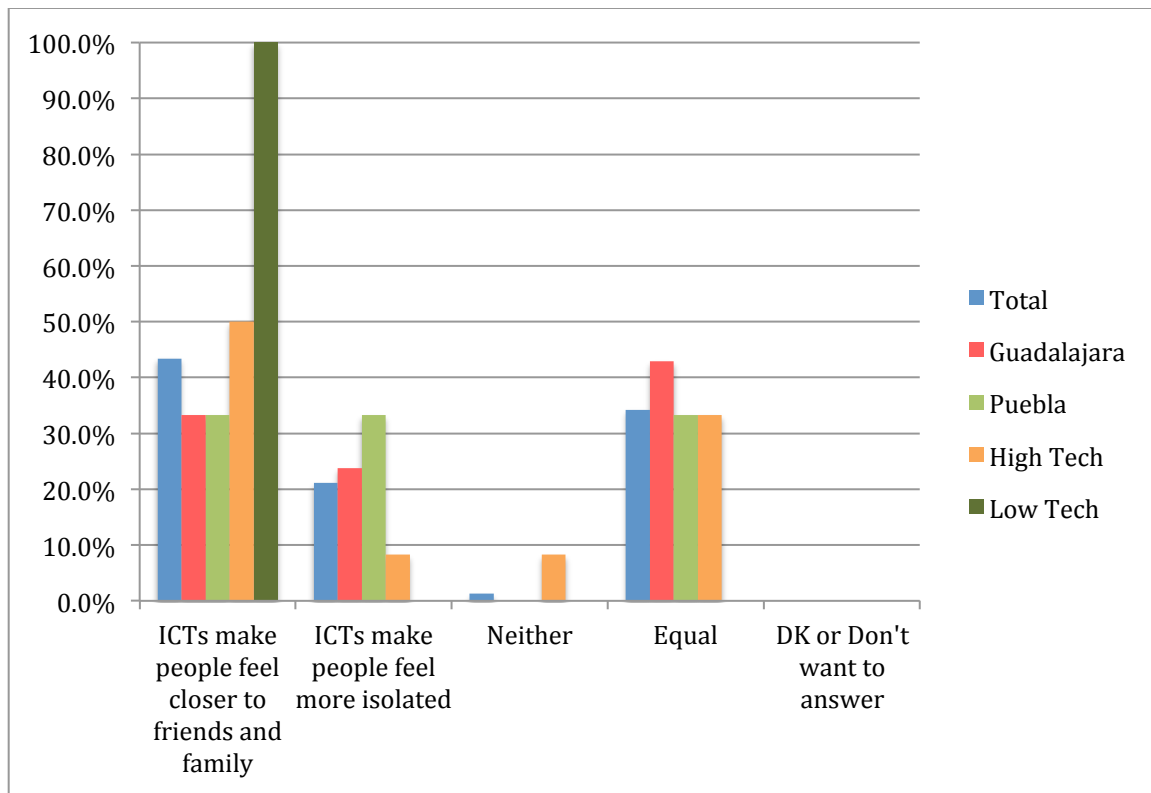


to their lives and work. Especially surprising was the indigenous also reporting at such high percentages how useful ICTs were. Unfortunately, there is no longitudinal data on whether respondents moved out of poverty after receiving Internet access—follow up questionnaires to the same respondents a few years down the road could help fill this gap, but for now I must be content with noting that the opportunities to combat poverty through enhanced economic participation are improved when respondents have Internet access. The following section addresses the impact of ICTs on various social dimensions of society, such as whether or not respondents thought ICTs make them closer to friends and family.

### **5.7 Do ICTs Impact Many Aspects of Social Life?**

My survey also asked questions that addressed various ways that new technology is impacting people's lives. The first question of this type directly asked about ICT and bonding social capital probing if people felt more connected to family/friends through new technologies or more isolated or both?

Chart 5.7A: Do ICTs make people feel closer to their friends/family?



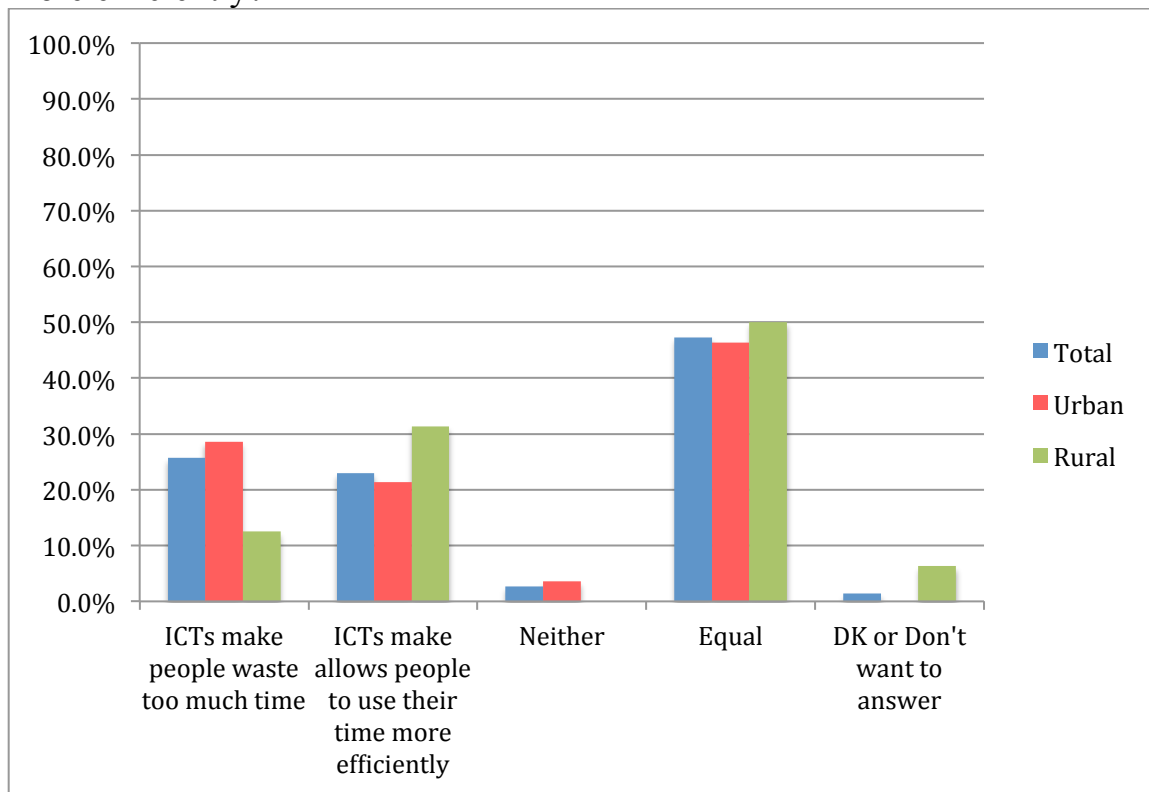
Notes—Answered question: 76 in total survey, 21 in Guadalajara, 27 in Puebla, 12 in high tech, 5 in low tech. Any remaining percentage was “Don’t know”; “Don’t want to answer this question”; or skipped the question.

It is surprising the extent of the difference here between urban and rural areas. When the data from the table above were combined 36.8% reported ‘closer’ together in the urban survey and 64.7% in the rural. Perhaps this disparity was due to those in the rural areas not having as much exposure to ICTs, and their shortcomings. Or perhaps mobile phones and the Internet are truly allowing people in remote geographical locals to be closer to each other? It is too early to speculate fully from the limited sample I interviewed, but this finding would be intriguing for me to explore in future research. It is also surprising that ALL of the respondents in low tech Flores chose: ‘ICTs make people closer to their friends and family.’ Although the low number of

respondents needs to be taken with a grain of salt before any broad generalizations can be made. Furthermore, as shown in the comparison between the combined urban and rural responses, the rural indigenous sample was more likely to view the positive impact of technology as a way to communicate with friends and family. Here the power of mobile phones, with their limited language barriers compared to the Internet, helps the indigenous communicate more than they otherwise could—especially in the rugged terrain of rural, mountainous Oaxaca. What I explicitly mean by “limited language barriers” is that talking over phone lines is easier to navigate than a text based Internet with limited indigenous language content, plus literacy is not needed to use mobile phones.

Another question investigating if ICTs are impacting social interactions is a broader question that asked if new ICTs are making people waste too much of their time. This question helps us probe whether or not people see online communication as useful or takes away from other uses of time. Here are the results:

Chart 5.7B: Do ICTs make people waste too much time or use their time more efficiently?



Notes—Answered question: 74 in total survey, 56 in urban, 16 in rural. Any remaining percentage was “Don’t know”; “Don’t want to answer this question”; or skipped the question.

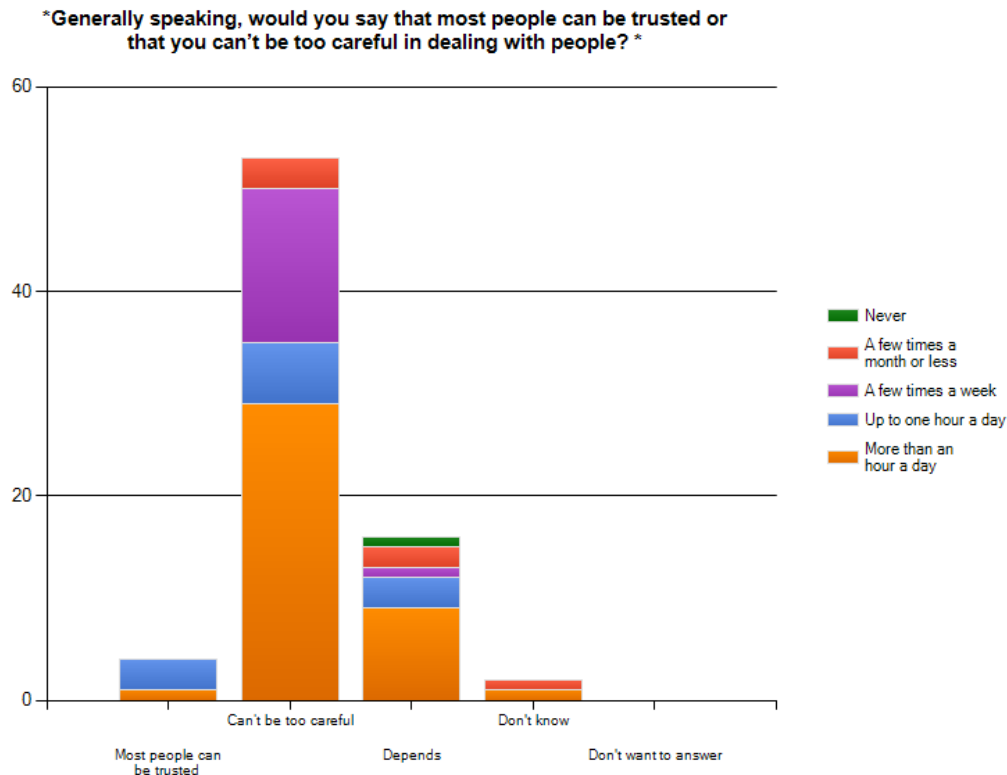
A bit of a mixed bag in these results, for instance there was no appreciative difference in the results to this question between the two cities or the villages (not reported). However, there were some notable differences between the urban and rural samples worth reporting. Again, it is rather surprising that the rural respondents were more enthusiastic about new technologies; again it could be from lack of exposure to them. The urbanites were about 16% more likely to report ‘ICTs waste too much time.’ Almost 50% in all groups thought that ICTs allow for both more efficiency and wasting of time equally.

## 5.8 Do ICTs Impact Social Capital, Political Mobilization, and Joining Groups?

The following section looks at the impact that ICTs may be having on social capital, political mobilization and joining groups in my survey. This is important because it begins to approach the other side of my interaction effect: the impact of ICTs on governance. If ICT penetration has an impact on governance investigation of the potential causal mechanisms is needed. Social capital, and political mobilization in groups are potential mechanisms worth exploring.

The following question asked respondents about a central tenant of social capital: trust. In fact, one of the most popular ways to measure social capital in academic studies is asking respondents how much they have ‘trust in other people’ (Putnam, 2000). Overall, Mexicans were not very trustful of other people, or their government. The question, following the exact wording of the format of General Social Survey questions from the U.S., asked: ‘Generally speaking, would you say that most people can be trusted or that you can’t be too careful dealing with people?’ Respondents in Guadalajara were more trusting of others than the total survey respondents and much more than respondents from Puebla. 82% of Pueblans stated that in dealing with people that one ‘Can’t be too careful’ compared to only 50% of Guadalajarans. This disparity is unlikely due simply to more connectivity between people from increased Internet usage in Guadalajara, but it might play a role. As stated above, Mexicans in general were not very trusting of other people, this was born out in both the urban and rural groups—both had over 70% choosing ‘You can’t be too careful’ in regards to other people. The rural group was slightly more pessimistic as zero respondents said ‘Most people can be trusted,’ but not enough of a difference existed between the groups to report the tables here (there was also little difference between the two rural villages). The following chart is the results of a cross-tab of the data for the extent of Internet usage vs. trust across the whole survey:

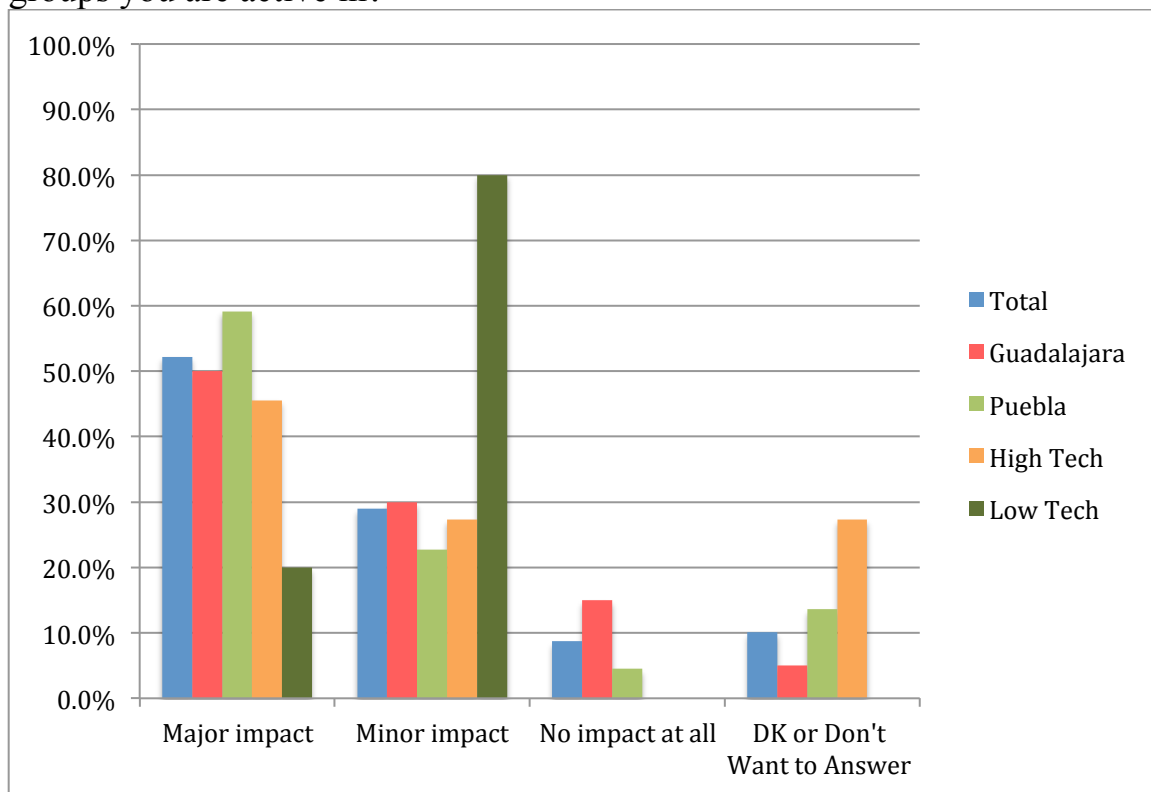
Chart 5.8A: Crosstab-Social trust, Internet usage.



The few answering ‘Most people can be trusted’ were all heavy users of the Internet, none of them were light users. Yet the chart above also displays that many who did use the Internet for over an hour per day also said that one ‘Can’t be too careful’ in trusting people. Thus, the Internet is no panacea for mitigating the extensive social trust problems in Mexico, but it might help, as heavy users were, without exception, the most trusting individuals who took the survey.

The survey also asked a battery of questions about respondent’s involvement with political groups, interaction with the government—both in protesting its actions and using government services. Respondents were asked a political organization via the Internet question: ‘Overall, would you say the Internet has a major impact, a minor impact, or no impact at all on your ability to organize activities for the social, civic, professional, religious or spiritual groups you are active in?’ Respondents in the total survey expressed positive views towards the ability of the Internet to improve organization:

Chart 5.8B: Would you say the Internet has had an impact on your ability to organize activities for social, civic, professional, religious, or spiritual groups you are active in?



Notes—Answered question: 69 in total survey, 20 in Guadalajara, 22 in Puebla, 11 in high tech, 5 in low tech. Any remaining percentage was “Don’t know”; “Don’t want to answer this question”; or skipped the question.

The responses between the cities did not differ very much from the total survey; both had percentages over 50% reporting a ‘major impact’ of the Internet. Puebla actually had a higher percent responding ‘major impact’ 59.1% compared to 50% for Guadalajara. Not too surprisingly, it appears that there was more confidence in the Internet having a ‘major impact’ on group organization among the urban, non-indigenous group (56% compared to 37% for indigenous). This indicates that the indigenous were not as convinced of the impact on group organization of the Internet. Interestingly, on a related question, both groups scored the same when asked if it was easier to connect with people who share similar political views via the

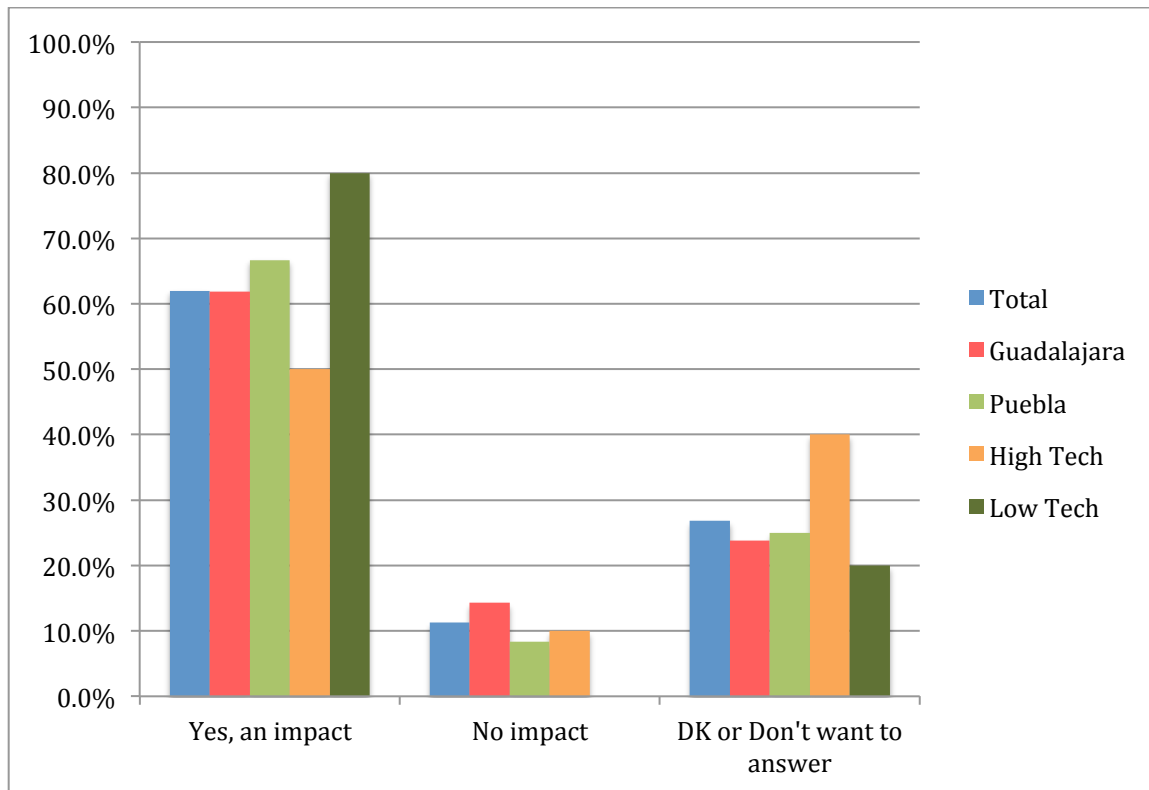
Internet. They also both answered identically to a question asking if the Internet made it easier to join groups (with both groups overwhelming saying that they thought it did).

Another related question asked: ‘Overall, would you say the Internet makes it possible for you to be active in a greater number of groups than you otherwise would be able to?’

Respondents were very enthusiastic about the ability of the Internet to make it possible. In the total survey over 60% of respondents answered in the affirmative with only 10% answering that there was no impact (the rest chose ‘Don’t know’). These percentages remained the same across the urban samples, with Guadalajara and Puebla having almost identical response rates:



Chart 5.8C: Overall, would you say the Internet makes it possible for you to be active in a greater number of groups than you otherwise would be able to?

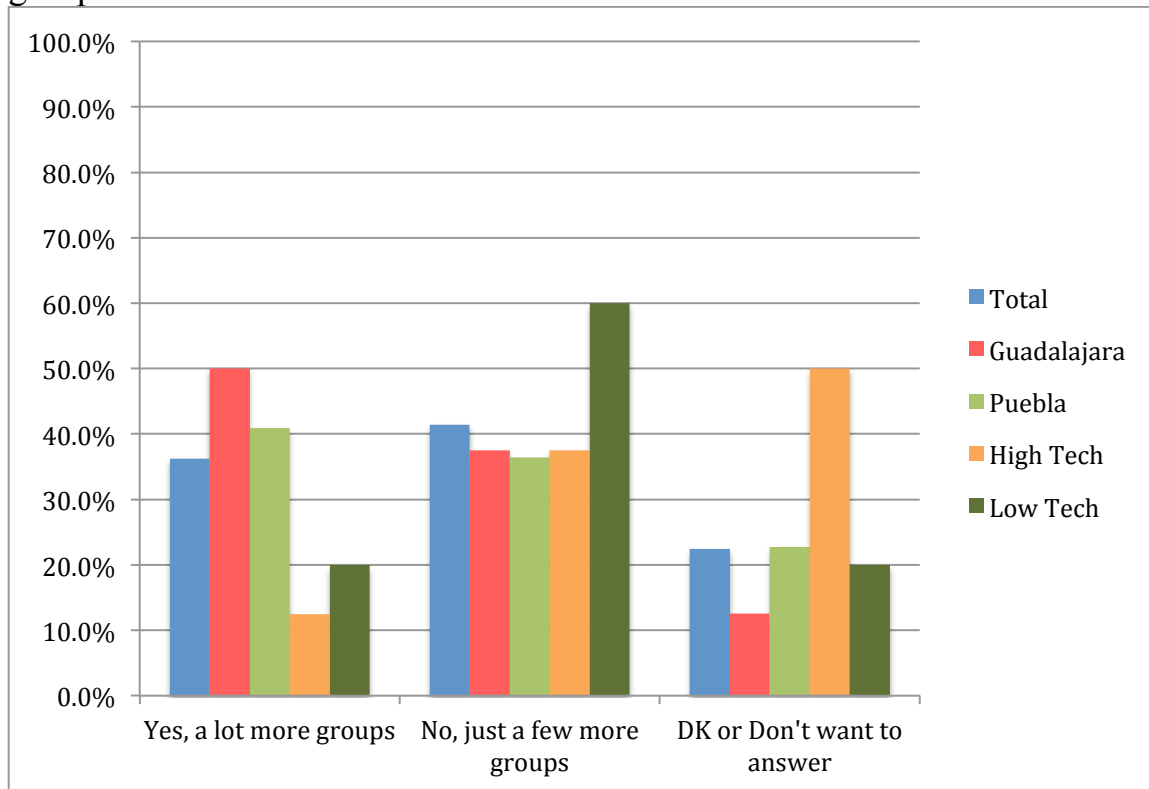


Notes—Answered question: 71 in total survey, 21 in Guadalajara, 24 in Puebla, 10 in high tech, 5 in low tech. Any remaining percentage was “Don’t know”; “Don’t want to answer this question”; or skipped the question.

Again, rather surprising that the low tech village had the highest faith in the value of the Internet, it could certainly be the low response rate pulling that score up, but the fact remains that the rural indigenous group scores high on the value they place on the Internet towards joining groups. Given the level of exposure to the Web it is not really surprising that most (80%) of the Internet users in low tech Flores would say that the Internet had ‘minor impact’ on ability to organize groups—compared to only 27.3% saying it had a ‘minor impact’ in high tech Tlahuitoltepec. The connective power of the Internet is only present locally when a critical mass, or threshold amount of people are using it regularly. When asked a follow-up question, posed only to those that answered yes to the question in the chart above: ‘Does the Internet make it

possible for you to be active in a lot more groups, or just a few more groups?’ respondents from Guadalajara chose ‘yes, a lot more groups’ at a 50% rate while only 40.9% of Pueblans chose yes:

Chart 5.8D: If yes (from question in Chart 5.8C), does the Internet make it possible for you to be active in a lot more groups or just a few more groups?



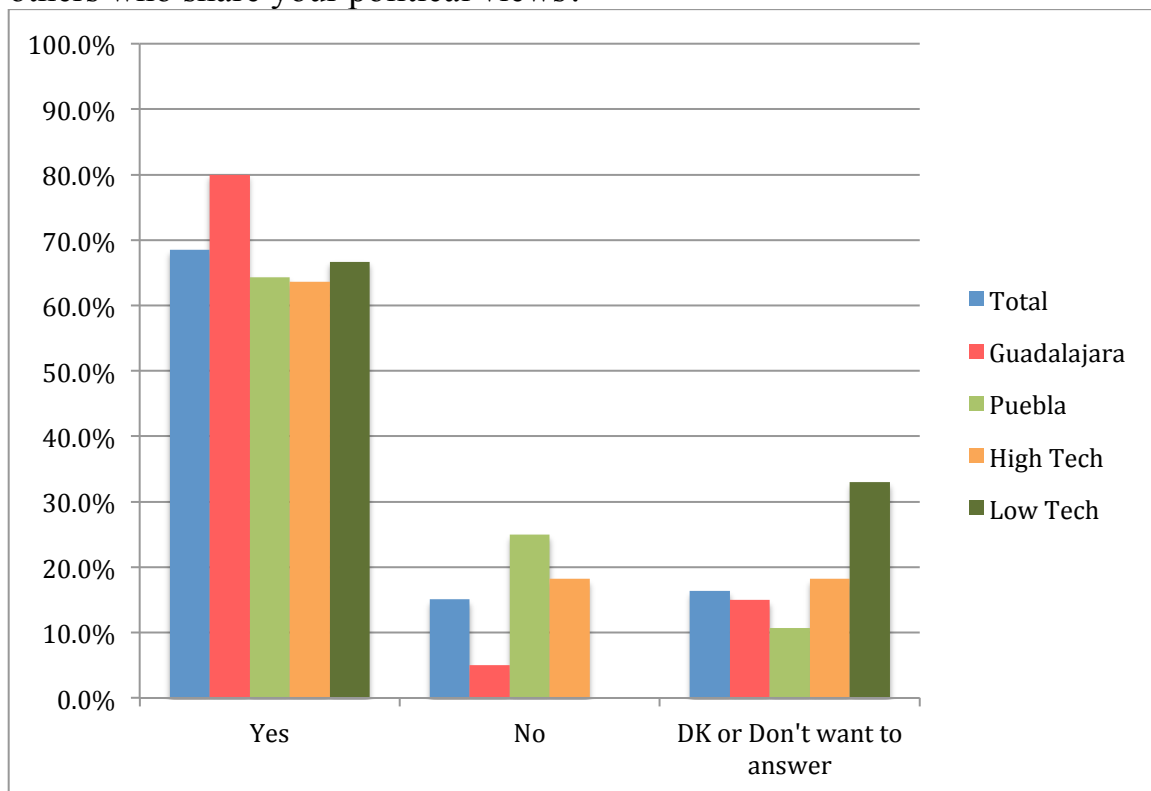
Notes—Answered question: 58 in total survey, 16 in Guadalajara, 22 in Puebla, 8 in high tech, 5 in low tech. Any remaining percentage was “Don’t know”; “Don’t want to answer this question”; or skipped the question.

We can also see that the number choosing ‘No, just a few more groups’ was highest in low tech Flores. It appears that those in the indigenous regions are enthusiastic about the ability of the Internet to help them participate in more groups, just not a lot more.

Finally, a few more questions were asked that was related to political mobilization and ICTs. I asked a write in question about whether friendships were strong that were formed online. When asked if friendships formed on the Internet were strong only 14% of the urban group

reported that they were, and 20% said sometimes. The rural group was actually more enthusiastic with 25% saying that friendships could be strong online, with 6% saying sometimes. The question on forming friendships online revealed a stark difference between the low tech and high tech villages. When asked: ‘Do you consider friendships formed on the Internet to be strong friendships?’ 10 respondents (of 11) from the high tech village said ‘no’ and the remaining respondent said “On occasion.” However, in the low tech village four of five respondents said, “Yes.” A second related question asked: ‘Would you say the Internet makes it easier to connect with others who share your political views, or that the Internet has no impact on how you connect with others who share your political views?’ This question exposed differences between the two cities:

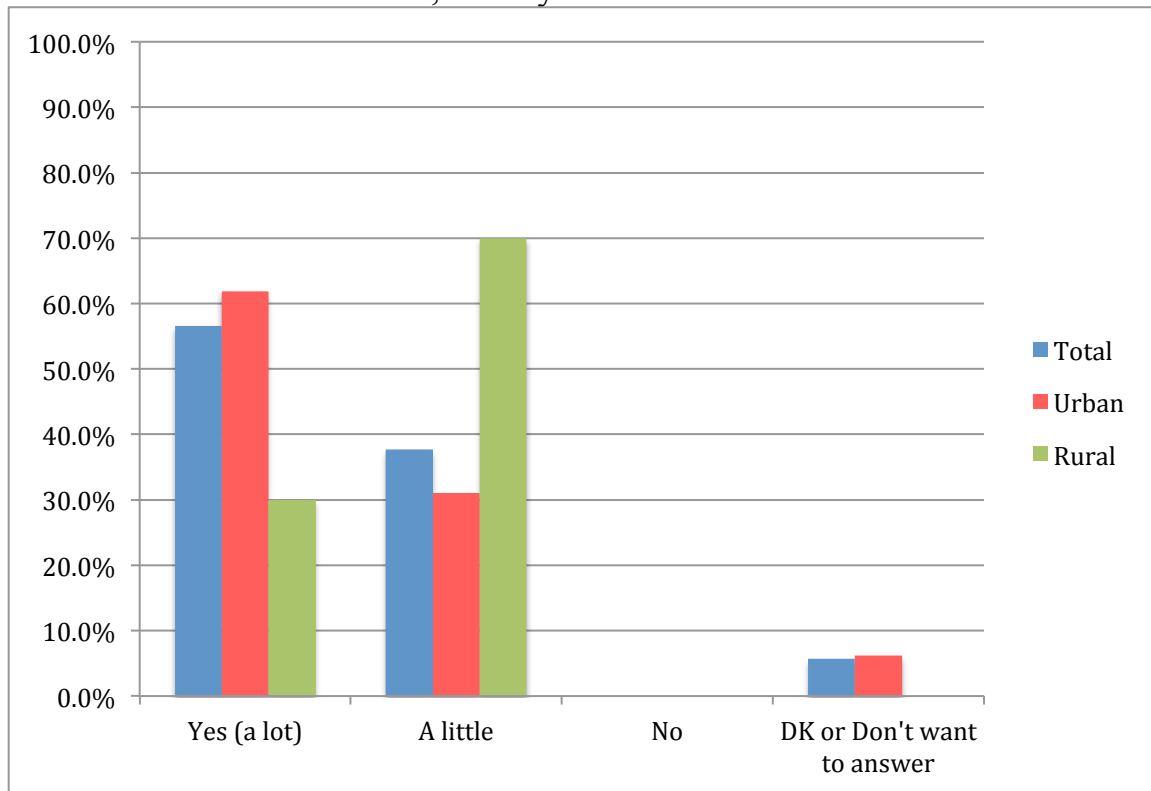
**Chart 5.8E: Would you say the Internet makes it easier to connect with others who share your political views?**



Notes—Answered question: 73 in total survey, 20 in Guadalajara, 28 in Puebla, 11 in high tech, 3 in low tech. Any remaining percentage was “Don’t know”; “Don’t want to answer this question”; or skipped the question.

It is surprising that *only* 1 respondent, or 5% of the survey respondents, from Guadalajara said that the Internet did NOT make it easier to connect with others who share your political views. Also, 80% of respondents chose yes from Guadalajara, but only 64.3% from Puebla did so. This divergence of views could be from less usage. A similar pattern was found between the urban and rural samples, and in low and high tech village. There is only a 6% difference between those who choose ‘Yes’ in the two groups. A follow-up question exposes larger gaps between the urban and rural samples:

Chart 5.8F: If you answered yes to the question above, would you say the Internet makes it a lot easier, or only a little easier?



Notes—Answered question: 37 in total survey, 42 in urban, 10 in rural. Any remaining percentage was “Don’t know”; “Don’t want to answer this question”; or skipped the question.

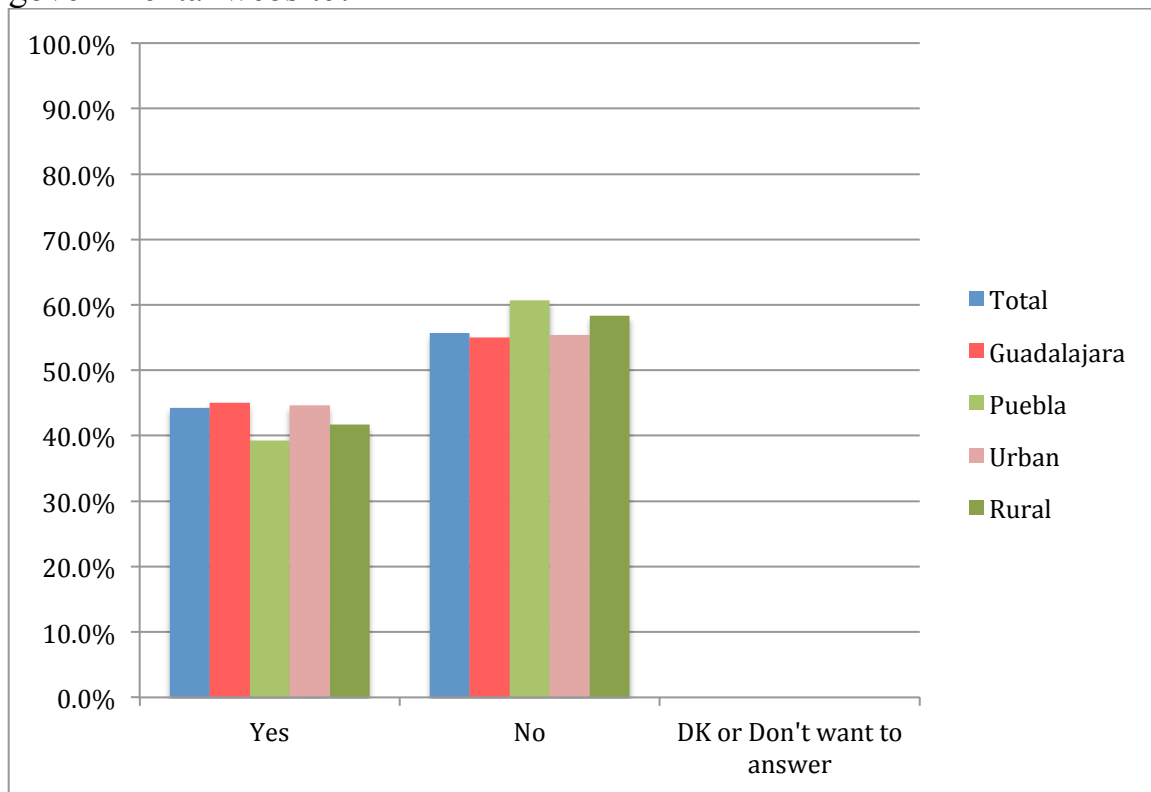
Not exactly surprising, but those in the urban areas thought the Internet makes it ‘a lot’ easier to connect with others who share their political views, while the rural sample was almost two times

as likely to chose only ‘a little.’ For the urban sample we see an over 30% difference in those choosing ‘a lot’ easier. All respondents were reporting that it was a net positive. This finding confirms that all respondents thought the Internet is a powerful ICT for connecting like-minded people and groups.

### **5.9 Internet and Governance—Using the Internet to Obtain Governmental Services.**

An important question testing my interaction effect asked respondents if they ever visited government websites. One of the first steps for governments to have effective e-Governance programs is to have a large extent of the population using their websites; a second step is a large percent of the poor using government websites for social, governmental, and economic services. The data for step number one exposed that where people had more access to the Internet they were more likely to visit a local, state or federal government website. Not exactly surprising. This can be seen in the difference between Guadalajara, Puebla and the urban vs. rural samples:

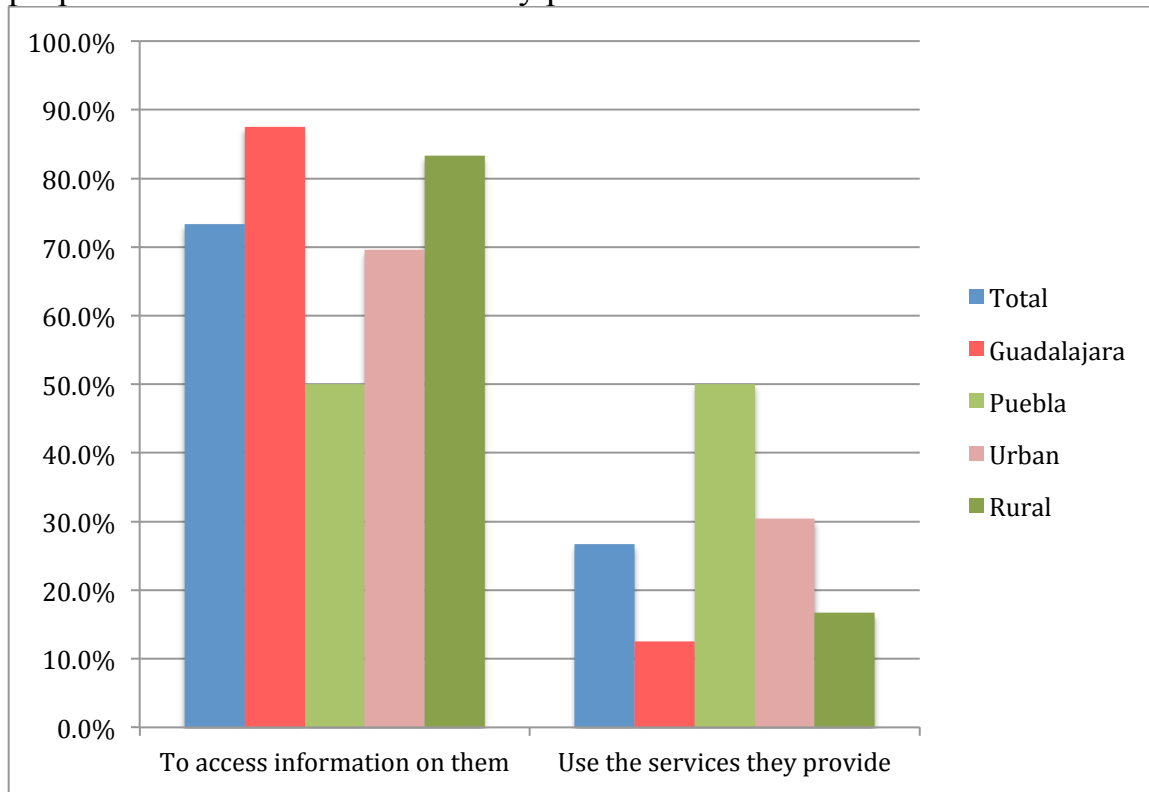
Chart 5.9A: Do you ever use the Internet to visit a local, state, or federal governmental website?



Notes—Answered question: 70 in total survey, 20 in Guadalajara, 28 in Puebla, 56 in urban, 12 in rural. Any remaining percentage was “Don’t know”; “Don’t want to answer this question”; or skipped the question.

When asked this question both the urban and rural groups had almost identical responses with about 44% saying yes and 55% saying no. We can see that 6.7% less respondents from Puebla reported visiting government websites compared to Guadalajara, but in general the results were pretty similar across all groups. There was not enough data to report from low tech Flores as only a few people reported using government websites at all. The following question probes the ‘step two’ for an effective e-Governance program mentioned above—are people using government websites for services and information gathering purposes?

Chart 5.9B: If yes, do you use government websites for informational purposes or to use the services they provide?



Notes—Answered question: 30 in total survey, 8 in Guadalajara, 10 in Puebla, 23 in urban, 6 in rural. Any remaining percentage was “Don’t know”; “Don’t want to answer this question”; or skipped the question. Also, ‘other, please specify’ was an option choice—but answers varied with no pattern and will not be reported here.

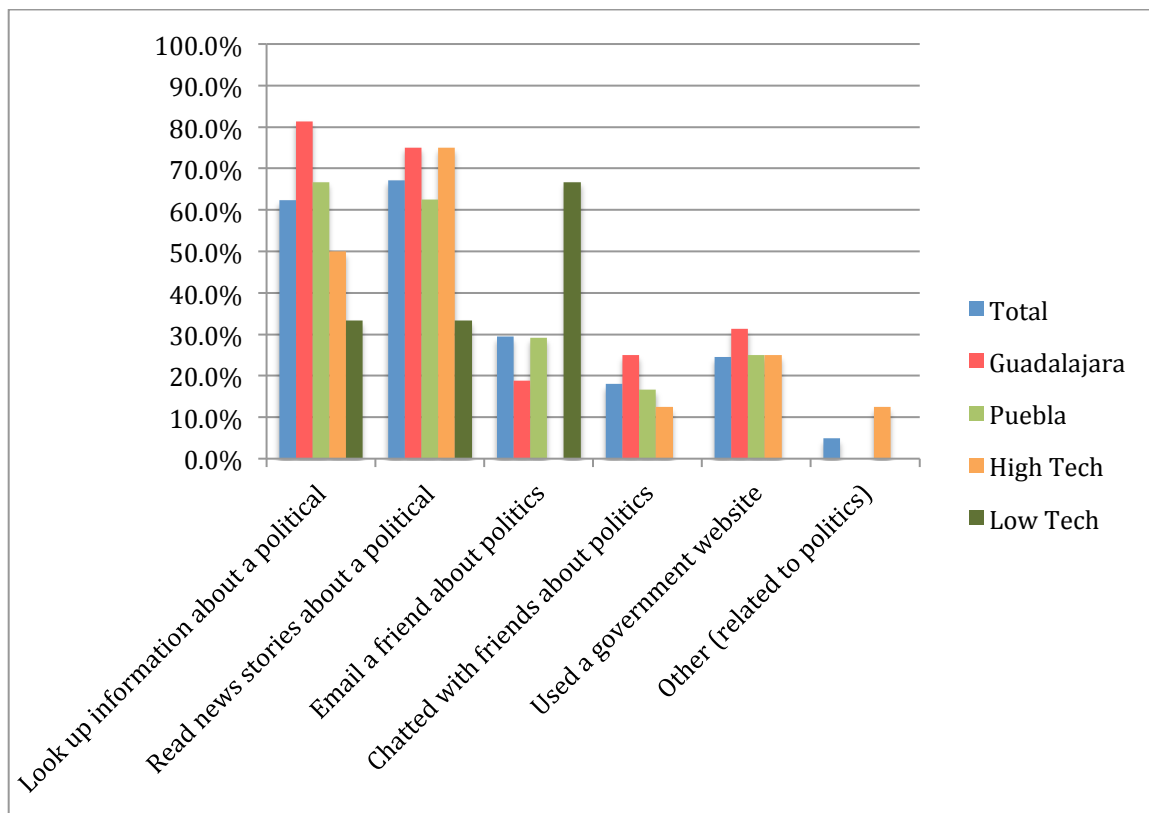
Here we can see that there is not much of a pattern in usage of government websites on these categories. It is clear that substantial majorities are using the sites more often to gather information than to use the services provide; this being said, there still were large percentages of users using the sites for services. There was no data from low tech Flores on the government website questions thus the results for the villages will not be reported, however high tech Tlahuitoltepec had a similar percentage of respondents to Guadalajara using government services on their websites—once again displaying the utility of the Internet even in rural areas.

### **5.10 Using the Internet and Mobile Phones for Political Purposes.**

Besides being involved in various social groups, community groups, religious groups, it is important for my purposes to determine the extent respondents used the Internet for joining political groups and for enhancing their political participation. In fact, for my interaction effect to work, the Internet must be a useful tool for the population to make demands for better governance. The following question asked respondents to mark *all* the ways that they used the Internet for political purposes:



Chart 5.10A: Have you ever used the Internet for the following political purposes?



Notes—Answered question: 61 in total survey, 16 in Guadalajara, 24 in Puebla, 8 in high tech, 3 in low tech. Any remaining percentage was “Don’t know”; “Don’t want to answer this question”; or skipped the question. The first two questions ended with political ‘candidate’ in the original wording.

Puebla’s results was almost identical to the total survey results, yet Guadalajara’s respondents were about 15% more likely to look up information about political candidates and 13% more likely to read news stories about political candidates. Surprisingly, Pueblans were about 11% more likely to email a friend about politics but 9% less likely to chat online with friends about politics. A similar type of result was seen in other mobilization questions as—in except for a few cases—Guadalajara scored higher in using the Internet to obtain, share info, coordinate activities, and communicate with one another about politics or joining social groups.

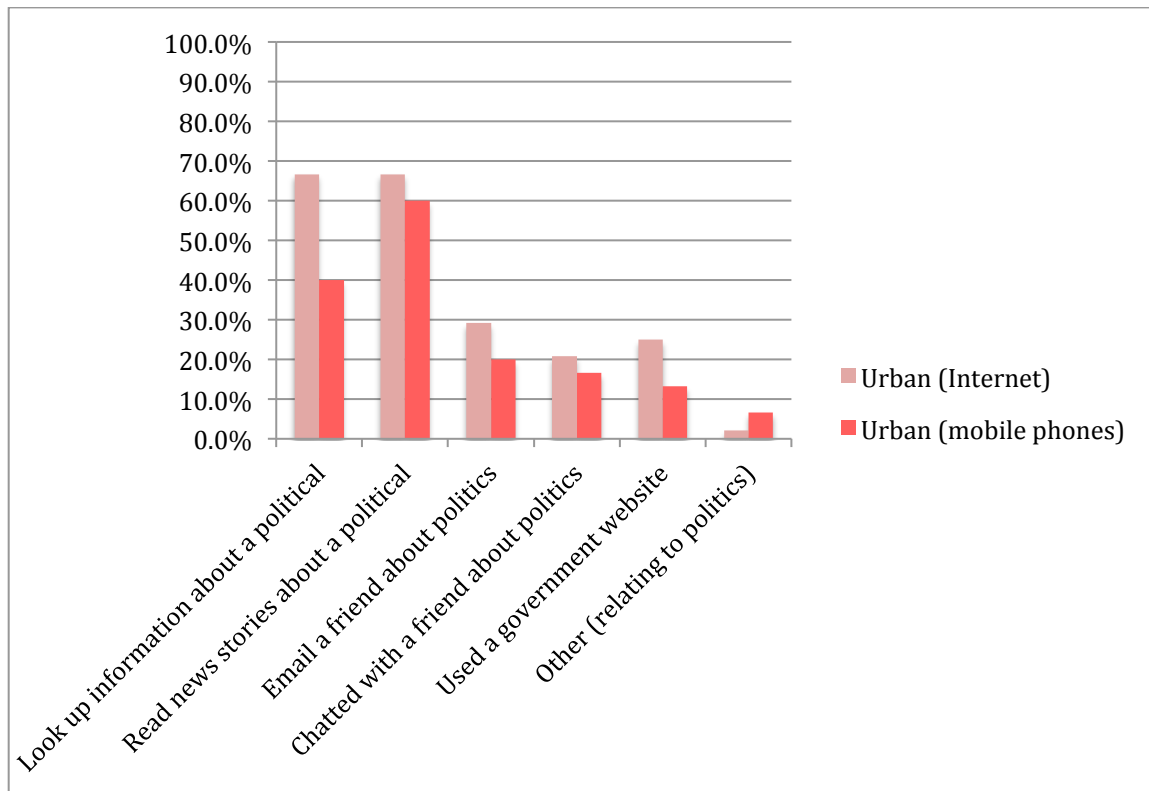
Respondents were also asked the same question except for mobile phones. The results were similar across the cities, but the differed drastically in the rural areas—as almost all respondents

in the rural areas could not afford Internet on their phones (if they owned a mobile phone at all) and thus do not use them for these types of political activities.

Clearly, those in the rural areas were a lot less likely to use the Internet for these political purposes. However, they still used it extensively. Compared to the urban sample, the rural respondents were 21.2% less likely to look up information about a political candidate; 11% less likely to email a friend about politics; and a little bit less likely to use the Internet for the other questions. Looking at the data from the villages there are some interesting distinctions between the villages, basically reflecting the prevalent theme above—the more access, the more use of the Internet for political purposes. It is also surprising that no one from the high tech village used email to discuss politics with a friend while 66.7% of those using the Internet (still a low number) did in the low tech village (although a very low response rate for Internet users). Otherwise, those in the high tech village score higher on all measures of using the Internet for political purposes.

As I have previously mentioned, many of these questions were asked substituting the Internet with mobile phones—I only am reporting the surprising results because often mobile phones tended to have a lot less impact than the Internet. The question reported in the paragraph above but substituting Internet for mobile phones is worth looking at. The results exposed the lack of people using smartphones with Internet capability in the rural areas:

Chart 5.10B: Have you ever used mobile phones for the following political purposes? (only urban sample had data as the rural sample had no respondents say yes).



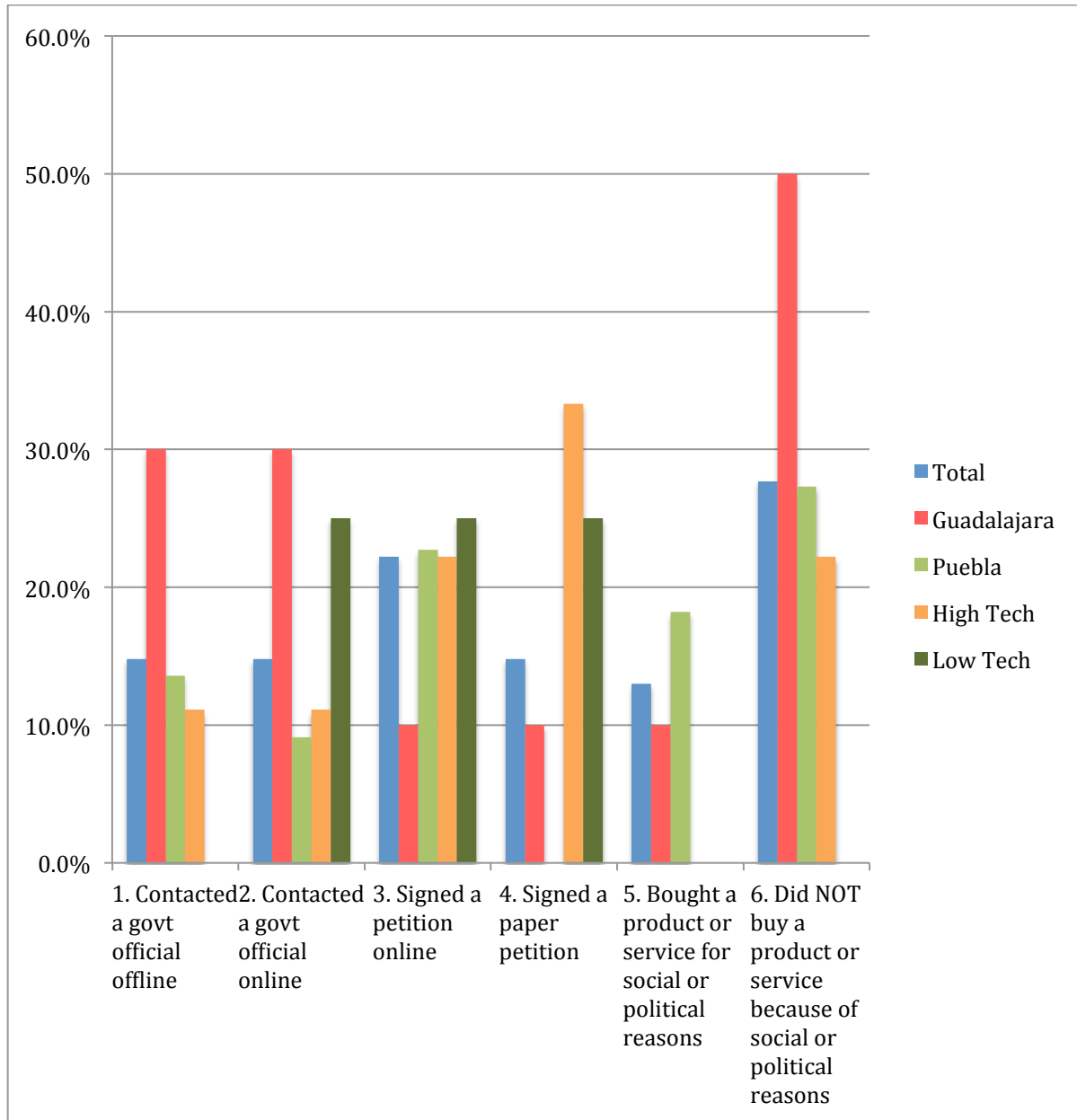
Notes—Answered question: 48 in urban sample Internet; 30 in urban sample mobile phones. Any remaining percentage was “Don’t know”; “Don’t want to answer this question”; or skipped the question. Also, ‘other, please specify’ was an option choice—but answers varied with no pattern and will not be reported here. The first two questions ended with political ‘candidate’ in the original wording.

There is NO data to chart for the rural group and mobile phones because there was a 0% response rate across all the questions (for mobile phones, not Internet). Another indication that the digital divide is vast for Internet access on mobile phones between the urban and rural areas in Mexico (at least in 2012). This is mainly an income difference, but also infrastructure. Above we can see that Internet scores higher in every category and vastly higher in looking up information about a political candidate.

The following question further probes political engagement by asking respondents directly about their political participation (online and off). The goal of the question was to

capture people's political behavior using measures of political participation (regardless of whether or not they were Internet users):

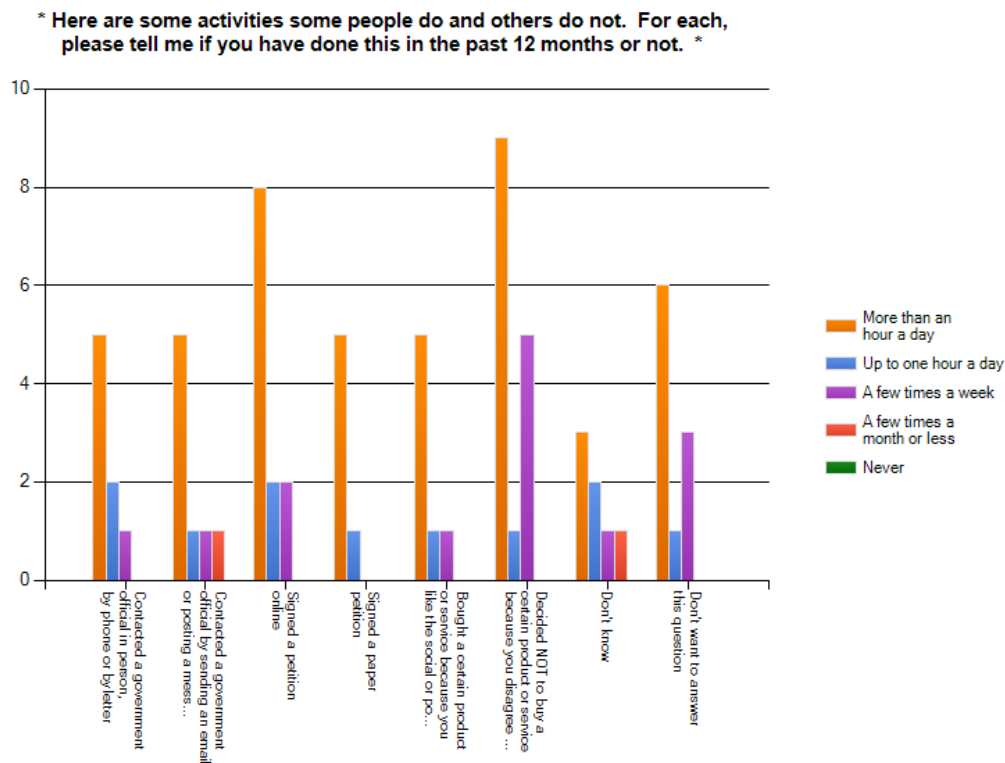
**Chart 5.10C: Political activities—have you done these activities in the past 12 months?**



Notes—Answered question: 54 in total survey, 10 in Guadalajara, 22 in Puebla, 8 in high tech, 3 in low tech. Any remaining percentage was “Don’t know”; “Don’t want to answer this question”; or skipped the question. Full text of questions: 1. Contacted a government official in person by phone or by letter; 2. Contacted a government official through the Internet; 3. Signed a petition online; 4. Signed a paper petition; 5. Bought a product or service because you like the social or political values of the company; 6. Decided NOT to buy a product or service because you disagree with the social or political values of the company.

Interestingly, Guadalajara was over 15% higher than the total survey and over 20% higher than Puebla for contacting a government official through email or posting a message on their website or social networking page. Guadalajara also scored higher for contacting a government official by phone or letter. The numbers on petitions were a wash, as were the questions asking about buying ethically. The findings from Guadalajara are important for my argument because it appears that respondents were more likely to employ online tools for political purposes if they had more access to the Internet. This connection was true across the survey as the following cross-tab Chart exposes—those who used the Internet more were much more likely to engage in all of the following political activities:

Chart 5.10D: Cross-tab—Political activities—have you done these activities in the past 12 months?



Besides respondents being more engaged in political activities at higher levels of Internet usage, it is worth noting that those choosing that they 'Never' used the Internet also did *not* engage in 'Any' of these activities. This is not a good omen for those trying to claim that the digital divide

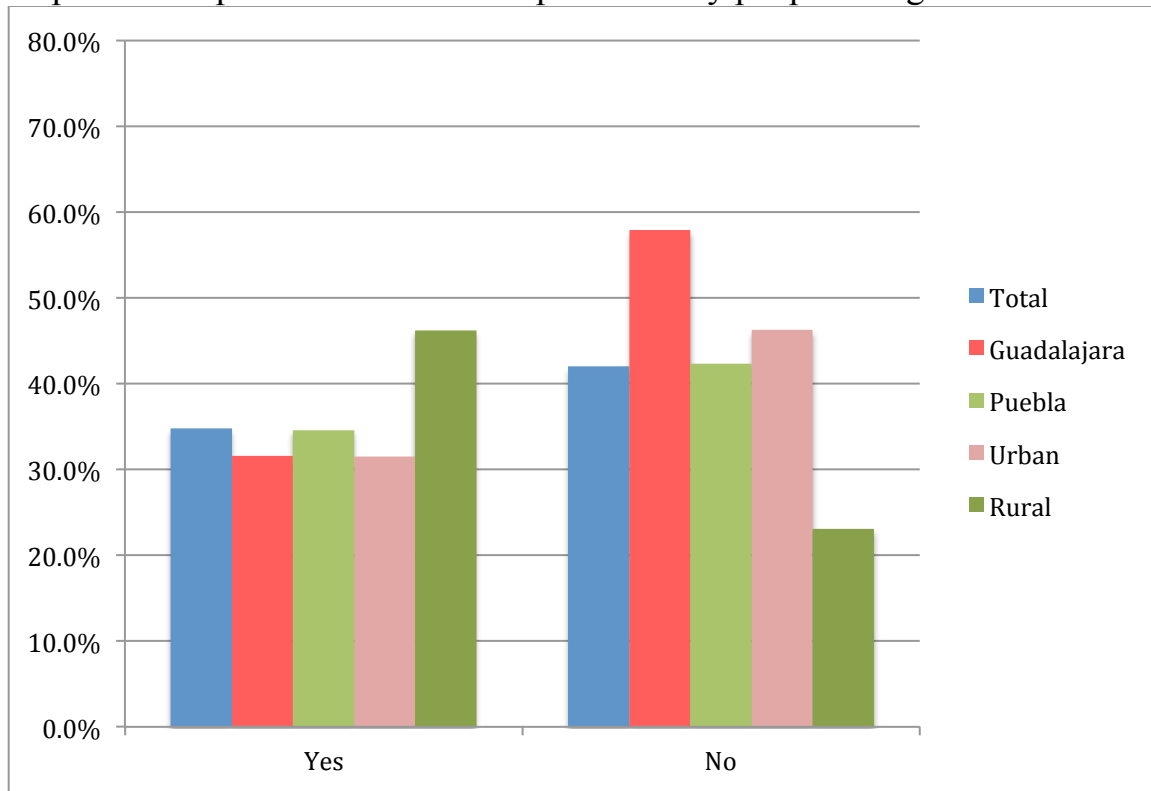
does not have any impact on political participation; as seen above, it clearly does. There are some surprising results in comparing the urban and rural areas. Despite having much lower exposure to the Internet rural respondents were more likely to have contacted a government official via the Internet 15.4% to 12.5%, also to sign a petition, both online and offline. Not surprisingly, the urbanites, generally richer, were more likely to buy or not buy a product for social or political reasons.

Turning towards a fill in the blank type question, respondents were asked directly about whether or not new technologies encourage political participation in society. The answers were overwhelmingly ‘yes,’ but the cities differed in their response level. The question explicitly stated: ‘Do you think new technologies can be used to encourage political participation in society, or not?’ 94.4% of the respondents from Guadalajara answered ‘yes,’ while only 75% of respondents from Puebla did. Each city had one respondent who said ‘maybe,’ and Guadalajara had none who said ‘no.’ A few example individual responses are worth stating here: “Yes, there is easier access to information which has encouraged participation”; “Yes, but it takes society participation [to increase political participation]”; “Absolutely, people organize better.” Some responses were negative as well: “Definitely not, the government does not encourage the flow of information on the Internet.”

### **5.11 Are Government Officials Responsive When Pressured by People Using the Internet?**

The following questions asked directly about a central claim of the interaction effect proposed by this dissertation. They asked, in various ways, whether or not the respondent thought that the Internet was increasingly being used to pressure the government, and if so, was it actually effective? There were a few follow-ups, and open-ended questions related to this important topic to this dissertation. The first question directly asked if the Internet actually causes officials to be more responsive to political demands by the populace?

Chart 5.11A: Do you think that government officials become more responsive to political issues when pressured by people using the Internet?



Notes—Answered question: 69 in total survey, 19 in Guadalajara, 26 in Puebla, 54 in urban, 13 in rural. Any remaining percentage was “Don’t know”; “Don’t want to answer this question”; or skipped the question. Also, ‘other, please specify’ was an option choice—but answers varied with no pattern and will not be reported here.

Chapter 4 of this dissertation on the history of Mexico clearly displayed that Mexicans have had a cynical view of their government. It is not shocking that not many see officials being more responsive due to pressure from the Internet or anything else for that matter. It is rather surprising that the rural respondents had such a positive view of the impact of the Internet for pressuring government officials, even more positive than the urban sample.

Overall, this is a vital topic for my interaction effect. I wanted to make sure I asked it a few ways to try to capture the nuance of the various forms that pressure on the government from the Internet can take. I asked a fill in the blank follow-up question because I wanted to probe if

there were instances where this happened at the local level that the respondent knew about. The follow-up question asked ‘If yes, can you think of any examples locally when government officials were pressured by Internet?’ When asked this follow-up Guadalarans responded, ‘yes’ at three times the rate that Pueblans said ‘yes.’ The respondents in Guadalajara who said yes had varying answers that indicate that this was not a rare phenomenon in Guadalajara. One pointed to the recent presidential election, another mentioned the Yo Soy #132 movement; another referenced the success of Twitter. Two others gave interesting local examples: (1) Officials not wanting to attend meetings with university students because of criticism from social networks; (2) Removal of the leadership of the Institute of Jalisco infant adoptions. A respondent gave an intriguing answer saying that pressure via the Internet has been increasingly employed, but stated that government officials “Don’t care. They have a lot of power.” Therefore the use of the Internet to pressure government officials in Guadalajara was prevalent among the respondents. This could also explain why more chose ‘no’ in the survey question above. They at least had tried it compared to Puebla. Surprisingly, when asked another follow-up question regarding whether or not the same was true regarding mobile phones—zero respondents from Guadalajara said yes. This indicates that mobile phones, particularly the non-smartphones that the vast majority of the population own, may not have the ‘naming and shaming’ or other types of pressuring capabilities that the Internet allows (websites, petitions, data, opinion pieces, video sharing, etc.). The Internet still seems to be the catalyst for creating the conditions to demand informed change from the government in Mexico rather than mobile phones. This is not to say that mobile phones are not extremely valuable for political mobilization and video recording in public, but it seems to be the case in Mexico, which is absent Arab Spring type protests on the streets, the Internet is the main driver for political reform and protest.

Looking at Puebla the results from this fill in the blank question are similar, just less prevalent. In fact, three times *less* respondents could name any instances when the Internet was used to pressure the government. The few that did pointed to national student protests of Yo Soy



#132. One respondent did mention that Yo Soy #132 did help put pressure on the local governor of Puebla for reforms. Another respondent said the Internet had no effect because “politics are too anarchic anyway,” the rest simply said “no.” Interestingly, when asked the follow-up regarding mobile phones three respondents from Puebla said that they did have an impact, unfortunately none of them mentioned how or to what extent. Overall, one cannot say that the respondents from Puebla were very enthusiastic about the Internet being used effectively to pressure the government, a government they consider to be very corrupt.

Turning towards the rural cases some interesting results emerge. Surprisingly, as seen in Chart 5.11A above the indigenous had more faith, 46.2% to 31%, in the ability of the Internet to be an effective medium for putting pressure on government officials. This is rather hopeful for the future of indigenous political usage of the Internet. This question was a follow-up where people were asked if they knew of any instances where this happened locally. Both groups provided positive examples of this at work; but many did not give any. Here are some of the responses from the urban group: Internet helped to “open the presidential debate”; the “Yo Soy 132# movement and also exposed the workings of the state governor’s policies”; government officials “Not wanting to attend meetings with university students because of the pointed negativity towards them on social networks.” Some pointed to Twitter as well; a respondent from Oaxaca City said “Recently the mayor had to pay more attention to a matter for which there was pressure provided from the Web.”

The individual answers from rural respondents displayed many of the same types of claims seen in the urban responses. For instance, one pointed towards the “Selection of candidates for government” as an example of effective pressure from the Internet. An interesting point was made by a respondent who said that the Internet helped in raising “the right to demand better services from the Federal Commission of Electricity in Southern Mexico.” Of course, there was still a significant amount of rural respondents that said ‘no’ the Internet did not help pressure the government. When the same question was posed with mobile phones instead of the

Internet, no rural respondents could provide a local example. More urbanites did say yes, but a minority. Some mentioned Twitter. However, most of the urbanites could not give a local example.

The enthusiasm for the power of the Internet in the low tech village is rather surprising. Again, the absolute number of respondents was low, and it could be because of less exposure to technology, but it does appear that those in the low tech village think the Internet can make government officials more responsive. When asked if they could give examples of when this happened locally there were a scattering of examples given by respondents from both villages (reported above).

Overall, regarding political behavior, the two villages have similar scores and the charts will not be reported here. The results are basically the same as the results in the rural chart above. The only major difference was that those in the low tech village were more unlikely to boycott buying certain products (0%) or to buy products/food for ethical reasons (0%) than those in the high tech village (still under 20%). This is probably fully explained by poverty as the low tech village had a higher incidence of poverty than the high tech village as mentioned above.

When asked a similar question with an open-ended response the results were very positive towards the impact of technology. The question was: Do you think that technology (Internet and mobile phones) has helped or hindered governmental efforts to reduce corruption, increase efficiency, and increase transparency? Almost all the respondents said yes (except one 'no' and two 'don't knows'). Both villages had almost identical responses. One telling response was from a respondent in the high tech village replied: "Helps when the people know how to use technology." Similarly, when asked 'Do you think new technologies can be used to encourage participation in society, or not?' both villages responded *yes* overwhelmingly. One from the high tech village mentioned an important caveat: "yes, but only when people can economically afford the cost of access."

When asked open-ended questions about whether or not there had actually been any

change in corruption across Mexico, respondents did not think so, which reflected the same sentiment captured in the multiple choice question above. The open-ended question asked: What about governmental efforts to reduce corruption, increase government efficiency, and increase transparency in Mexico in general? All respondents from both villages did not think the government had done this very well. Some said it had actually got worse. There was one interesting answer from a respondent in the high tech village said: “I do not think corruption and transparency has improved, even if you created the IFAI.” The IFAI (Industrial Fabric Association International) is a non-profit that specializes in keeping an eye on labor practices and other problems in the fabric industry (see IFAI, 2014, <http://www.ifai.com/>). Also, when asked a similar question on whether corruption has improved over the last five years almost all respondents who answered from both villages said that it had actually gotten worse. Some answered that they could not follow what the government was doing because they did not know Spanish. This indicates that it is much harder for the indigenous who do not know Spanish to be aware of the political issues of the country, and with their ability to effect change over governmental policy.

### **5.12 Reducing Corruption, Increasing Efficiency and Transparency.**

Another related and important question was a fill in the blank type question that asked ‘Overall, do you think governmental efforts to reduce corruption, increase government efficiency, and increase transparency has improved in your local community in the last five years?’ This is also important for the study of the impact of the Internet on good governance as these areas had much lower Internet penetration five years ago. For instance in Mexico overall, the percentage of the population with Internet access has soared from under 20% to over 36% during these five years (2007-2012). Percentagewise it rose even more in the rural areas—although they were starting with well under 5% of the population with access.

It turns out that there was a pretty big difference in responses between Guadalajara and Puebla, with 47.6% of respondents in Guadalajara saying that the government efforts had improved in their community, but only 25% of respondents in Puebla said so for their community. An example of a positive answer from a Pueblan respondent stated: “Yes, the government has implemented, but few people know and use.” Another from Puebla simply stated: “There is no transparency.”

Further reflecting this divide between the cities was the follow-up question stating: ‘What about governmental efforts to reduce corruption, increase government efficiency, and increase transparency in Mexico in general?’ For this question 53.3% respondents from Guadalajara answered that the national government was making positive steps to do these things, while only 21.1% of respondents from Puebla said this was the case. A quote from Puebla reflects what was discussed regarding the political realities of party politics in Mexico: “There has not been sufficient reform since Mexico's political structure lends itself to conflicts of interest between political parties.” Some answered varied: “They have made more effort but still there is corruption.” Others were more to the point: “I think that the strategies used are inadequate.” Two respondents from Guadalajara pointed to increased police presence as an improvement. Another respondent was partisan in stating about the government’s effort for curbing corruption: “They don't look to try unless AMLO” (i.e. AMLO—Manuel Obrador). My favorite ironic response in this section was: “Only fools believe in transparency.”

A follow up related question lies at the heart of what I am trying to figure out, particular what the poor think about it. I was especially curious to see how respondents from all walks of life would answer this question: ‘Do you think that technology (Internet and mobile phones) have helped or hindered governmental efforts to reduce corruption, increase government efficiency, and increase transparency?’ The following percentages are based on respondents saying that technology helped to improve the categories in the question above. For Guadalajara 64.7% of respondents said that technology did help and only 17.6% said it did not help (the rest

said technology helped and hindered equally or said that they were not sure). These scores for Guadalajara were higher than Puebla where only 48.1% said that technology helped. Also the percentage that said NO was much higher in Puebla as 48.1%.

The question was also posed as an open-ended question where respondents could express their thoughts freely on the impact of technology. Respondents varied widely on which factors they thought new technologies were improving. It is interesting to note that respondents from Guadalajara mentioned mostly different ways that technology was helping, however Pueblans were more skeptical even mentioning how technology was *not* helping transparency (no one from Guadalajara mentioned this). The following are some of the responses from Guadalajara: “In Mexico actually no, but new technologies do help people to find a place where they can really find an opinion about the true history” (whatever that means?); “Yes, it helps the economy”; “In a way yes, but the government does nothing that would help the citizens”; and finally “They have served to demonstrate that enough is being done.” The following responses are from Puebla: new technologies “Aided”; “Helped, although much remains to be done in terms of transparency”; “Improved efficiency of taxes and general procedures. But not transparency or corruption”; Finally, I will end this section with a response that was indicative of the varied responses received ‘Do you think that technology have helped or hindered governmental efforts to reduce corruption, increase government efficiency, and increase transparency?’ “Yes in part, but only for corruption.”

### **5.13 Conclusions.**

Overall, there are important takeaways from data produced by my survey and interviews. In fact, there are seven primary contentions I believe my survey data and interviews provide support for. Before elucidating these seven claims on the impact of ICTs, I want to note one finding that emerged for why respondents “did not” use the Internet at all that exposed large differences between the high tech and low tech villages. The “Just don’t know how” answer was the clear

majority in the low tech village 62.5%, compared to only 33% in the high tech. The difference between the two villages is in part due to the training provided for free at the CCA in the high tech village. It is also interesting that those in the high tech village wanted to use technology more, but simply did not have access/resources to do so. In fact, 50% said that was that they did not use the Internet (Don't have a computer, Don't have access), yet in low tech Flores *no one* chose those answers. Instead, they pointed to "It is too difficult/frustrating", and "I'm just not interested." This is an intriguing result but not that surprising. Those in the high tech village were much more likely to see their friends/neighbors/relatives using technology by going to Internet cafes, or the CCA, than the low tech village. Clearly, there was substantial differences between Internet access, usage, and for reasons for why respondents reported that they 'did not' use the Internet. What follows are my seven primary contentions.

**1. People with more access to the Internet tended to be better informed about politics.**

Mexican citizens who had Internet access tended to be better informed about politics. This was the case across the total survey. However, there were some differences between the regions that help us more effectively control for income and other factors. For instance, Guadalajarans were about 15% more likely to look up information about political candidates and 13% more likely to read news stories about political candidates. In comparisons to the rural areas there are some surprising results. Despite having much lower exposure to the Internet, rural respondents were more likely to have contacted a government official via the Internet (15.4% to 12.5%), and also to sign a petition, both online and offline. Not surprisingly, the urbanites, generally richer, were more likely to buy a product depending on social or political social considerations. In general, those in the rural areas were a lot less likely to use the Internet for political purposes. However, in general the indigenous/rural sample still used it extensively compared to what is generally thought regarding the rural population.

## **2. Respondents with more access to the Internet tended to participate more in politics.**

Across the survey this was a strong finding. For instance Guadalajara scored higher in using the Internet to obtain, share info, coordinate activities, and communicate about politics or use it to join social/political groups. One example of this was in joining social/political groups, as respondents were very enthusiastic about the ability of the Internet to help them be active in a greater number of groups. Over 60% of respondents answered in the affirmative and only 10% said there was *no* impact. These percentages remained consistent across the whole survey. Another example was a follow-up question: ‘Does the Internet make it possible for you to be active in a lot more groups, or just a few more groups?’ respondents from Guadalajara chose ‘yes, a lot more groups’ at a 50% rate compared to 40.9% of Pueblans.

## **3. Respondents thought the Internet was effective in providing pressure for government reforms.**

A question asked directly about a central claim of the interaction effect of this dissertation was whether or not respondents believe that the Internet was increasingly being used to pressure the government, and if so was it effective? Most respondents across the survey thought this was the case. The Internet seemed to be the catalyst for creating the conditions to demand change from the government. For instance, more than a few respondents noted that the Yo Soy #132 movement helped put heavy pressure on the local government for reforms. Another similar question lies at the heart of what I was trying to figure out about the reality on the ground in Mexico: ‘Do you think that technology (Internet and mobile phones) have helped or hindered governmental efforts to reduce corruption, increase government efficiency, and increase transparency?’ The following percentages were from respondents saying that technology helped to improve at least one of the categories above: for Guadalajara 64.7% of respondents said that technology *did* help; and only 17.6% said it *did not*. This was much higher than less Internet savvy Puebla where only 48.1% said that technology helped. Surprisingly, the indigenous had more faith, 46.2% to 31%, in the ability of the Internet to be an effective medium for putting

pressure on government officials. This is rather hopeful for the future of indigenous political usage of the Internet. I will close this section with an illustrative example from one of my interviews with an Oaxacan Mixe man. He was from the low tech village in Oaxaca and replied when asked about whether he could 'think of any examples locally when government officials were pressured by Internet' responded that "the Internet was used to demand the right to electricity from the Federal Commission of Electricity in Southern Mexico." This is illustrative because despite the structural factors regarding access, mobilization was achieved, and employing Internet pressure at the local level. Low tech Flores was an over 3-mile walk to another village with an Internet connection. If this indigenous man specifically could mention this effective form of pressure using the Internet, then ICTs seem to be helping to fuel engagement with politics and mobilization for the extremely rural poor.

#### **4. Respondents with more access to the Internet claimed that they had enhanced economic opportunities.**

This was true across the whole survey. It did not differ much by region, except by a small margin, as those in Guadalajara said more often that the Internet provided them with more economic opportunities. It is clear that most of the usage was similar across the groups, but it is worth noting some of the differences in the use of the Internet for economic opportunities. Those in the urban group investigated home finances at 35% compared to only 11.8% from the rural group. Also 22.8% percent of the urban group had actually bought something online, but none from the rural group. However, what might be most important, especially for my argument in the final chapter of this dissertation regarding the right to work, is that while 33.3% of urbanites 'Looked for a new job or explore career opportunities' only 11.8% of the rural group did so. Also, not surprising where people had more access to the Internet they were more likely to visit a local, state or federal government website. Both the urban and rural samples had similar percentages in who visited government websites (about 40%). However, the non-indigenous used the government websites twice as much to utilize the services provided there then the



indigenous did. The indigenous reported using the government websites mainly for informational purposes rather than accessing services on them.

**5. Where the government provided access, and education for digital literacy, users tended to be more informed, more politically active, and used Internet for economic purposes.**

Evidence of this was apparent in the rural region from the differences between high tech Tlahuitoltepec (with the CCA) and low tech Flores. Also, this disparity came out in the description of usage above, where many in the rural areas—mainly Flores with no CCA—reporting that they did not know how to use a computer or the Internet, some found it too frustrating. Regarding access for the urban areas those in Guadalajara were more likely to get it from public spaces (e.g. libraries, schools), and Guadalajarans tended to be more politically active as the survey showed. Also, in Guadalajara a decent amount of people I talked to were trying to get jobs in the tech industry, which is primarily located on the outskirts of the city. This was not the case in Puebla.

**6. Surprisingly, those with less access in the rural areas were more enthusiastic in claiming that the Internet was very helpful to their social and interpersonal lives.**

The urban areas proved to have little difference between them in responses to questions asking about ICTs and their social lives. One of the questions asked if people felt more connected to family/friends through new technologies, more isolated, or both. The cities each had majorities of respondents that said that new technologies brought them closer, yet there was no substantial variance between the cities. Surprisingly, the rural areas were much more enthusiastic towards technology bringing people closer. Interestingly, when asked if new technologies make people closer to their friends or relatives, 64% of the indigenous sample said yes compared to only 36% of non-indigenous. On a related question, 5% more indigenous agreed with the statement that new technologies 'make life easier,' a rather surprising result. Also in low tech Flores people were surprisingly even more enthusiastic about the power, and utility of the Internet in daily life. Higher percentages thought technology 'Made life easier' and 'New technologies allows people to use their time more efficiently' than in high tech Tlahuitoltepec.

**7. The indigenous expressed and displayed a high level of interest and use of the Internet.**

This claim may be rather surprising, and it flies in the face of a popular notion that people in rural areas—especially indigenous regions—do not have much interest, use for, or even have positive views of technology. The evidence from my survey actually displays the opposite. They were much more enthusiastic about the benefits of technology use than even the urbanites. Also, surprisingly the indigenous had more faith, 46.2% to 31%, in the ability of the Internet to be an effective medium for putting pressure on government officials. This is rather hopeful for the future of indigenous political usage of the Internet. However, there are reasons to be concerned about this finding. In low tech Flores, with much less Internet usage, more respondents claimed to *not* have much trouble finding accurate information online—this is potentially upsetting. It implies that those with limited exposure to the vast, varied, and oft-contradictory information on the Web, easily trust the accuracy of information they find online more than groups with higher levels of exposure. Increased usage and access that people get over time, as evidence from studies in developed countries indicates, shows they are more wary of the accuracy of some information on the Web.

Furthermore, the results on political behavior of the indigenous confirm Van Cott's (2010) assertion that the indigenous are politically active. In fact, they score higher than their non-indigenous counterparts on many of the political participation activities asked in the survey. They do not score high on the questions that can be explained by income, not exactly surprising given their low income. Interestingly, the indigenous claimed to contact a government official using the Internet more than the non-indigenous sample.

The indigenous certainly face larger hurdles to jump for gaining quality access to the Internet because of income, education, language, and lack of infrastructure where they tend to live. However, if these hurdles can be overcome then the evidence in this Chapter displayed clearly that the indigenous employ the Internet for political purposes, including engaging with social movements, and government officials/services. While Mosco's (2005) claim of a 'digital

sublime' certainly is not seen in rural regions of Mexico, yet the indigenous seem as likely as other groups to engage with the political mobilization/pressure tool of the Internet. The Internet as a tool provides powerless people around the world more ability to enhance their political mobilization. For example, for indigenous social movements to mobilize effectively, Internet access, education (literacy), language, more inclusive political frames, and a 'spark' must come all come together. This is certainly hard to predict, and in no way does this dissertation attempt to put forth a theoretical model to predict the *beginnings* of social movements or high levels of political participation. Multiple constraints make these things difficult to predict, and good luck to any scholar trying to predict 'revolutionary' type 'sparks.' Although it is certainly apparent that ICTs provide useful mobilization tools once a 'spark' is lit.

For now, I will conclude this chapter with the takeaway that it is clear that Mexicans utilize the Internet from all classes, cultures, and to a surprising extent in indigenous regions—especially in regions where the government has helped provide access via CCAs. The working class is also using it effectively—the survey results displayed that many in this category, particularly in Guadalajara were employing the Internet for political participation and in finding work. That does not mean that the work of policy experts and government officials is done. Instead effective policies need to be enacted to encourage effective use of the Internet for political and economic purposes by the powerless. The best way to accomplish this, I argue, is the approach put forth in the final chapter.

## **Chapter 6: Policy Prescriptions, and a Human Rights Approach.**

### **6.1 Introduction.**

Hopefully, by this point the reader is well aware that previous empirical studies suggest the impact of Internet is 'Janus faced'<sup>108</sup> in some cases creating new opportunities for the poor, while in others exacerbating challenges. More specifically, it has been argued here that growing literature on the digital divide purports a lack of access to opportunities for the poor caused by less access to information, leading to social, political, and economic exclusion. As seen above 'the missing link' that the literature ignores, is the impact of governance. In particular, the interaction effect between Internet and governance can determine the impact of ICT on the poor. Thus far I have refrained from providing extensive comments on policy or strongly worded recommendations for activists and policy makers who want to overcome the difficulties faced by the poor in their interaction with ICTs. This final chapter provides policy makers a framework outlining how public goods, and human rights can play important roles.

The first section of this chapter examines policies that governments can follow to ensure that their poorest citizens receive minimum, but effective access to the Web. My argument is that of all policy options, providing the Internet as a public good is the most efficient, fair, and practical. Of course, specific policy prescriptions will vary greatly across the developing world, as local context remains key for applying Internet access as public good. However, there are some commonalities that practitioners should keep in mind. The policy section details what these commonalities are.

The second section addresses the most appropriate form of activism/legalism to spur governments to provide access to the poor across the developing world. I argue that looking at the problem of Internet access through a human rights lens is particularly effective. In fact, a human rights framework would be particularly useful for 'respecting, protecting, and fulfilling,'

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<sup>108</sup> Here this term is used as being concerned with two contrasts. The term originated with the ancient Roman God of beginnings and transitions. Janus is often depicted with two faces, one looking towards the future and one looking back at the past.

international and national laws that promote access. It also will be a new approach for galvanizing activists into ‘naming and shaming’ governments and ISPs into providing a ‘minimal floor’ of access to the poorest.

A new approach is needed as current public policies have led to substantial difficulties/challenges facing the poor due to the digital divide. At this point there is no UN recognized human right to access to the Internet, therefore a first step for this section will be to conceptualize Internet access as an “instrumental human right.” My argument will proceed in three parts: (1) conceptualize Internet access as an instrumental human right; (2) show this new ‘right’ can be claimed through the courts—and display that it already has in some countries; (3) activists can use the techniques of ‘naming and shaming’ of governments to make them uphold the “Right to Internet Access.” Furthermore, the dominant human rights measurement approach of ‘respect, protect, and fulfill’ could be utilized to make sure that states uphold their end of the bargain. When they do not, activists, NGOs, and international organizations can use this human rights framework as a way to demand change. History illustrates how human rights have been effectively employed to demand change and effective policy for a host of related rights such as healthcare, housing, information, social security, work, and a host of other rights—none exactly like the Internet, but then again, nothing has been.

## **6.2 Governmental Policy Prescription: Internet Access as a Public Good.**

This first section attempts to address policies that governments can follow if they want to ensure that their poorest citizens receive effective access to the Web. The analysis will include evidence from my Mexican case presented in Chapters 4, and 5, but will also look into policy enacted from around the developing world. As mentioned extensively in the previous chapters, with no government incentives, it is unlikely that the market will provide access to all at a cost everyone can afford. If access to the Internet is deemed a vital lifeline or human right, then clearly denying access is a market failure. Neoclassical economics has extensively argued that in cases of market failure,

governments are usually the most effective actor to ensure that ‘everyone in society’ is provided with access to the good in question. Although not currently recognized in many states and local municipalities, my research indicates that Internet is the latest ‘good’ to need protection from market failure and be provided as a public good for those who cannot afford access.

Public goods are certainly *not* a novel approach for governmental approaches to address the problem of market failure. A public good attempts to ‘fix’ market failure in various ways depending on the problem, be they from infrastructure realities, pollution, or a lack of market regulation. Examples of public goods include public water supply, roads, electric supply, parks, etc. What about the Internet? What would it look like as public good? Is it even a wise move to consider it one?

In many countries the infrastructure pipeline that the Internet comes in on (e.g. cable lines, satellite, phone lines) is often already provided as a full public good, club good or by a monopolized private company, usually heavily regulated. The latter approach is typically managed through competitive contracts. More accurately, club goods are the most appropriate way to understand how Internet access has been provisioned in economic terms around the world (see Singh, 1999). Club goods tend to be provided by natural monopolies (i.e. one regulated firm). Natural monopolies exist in industries where it is most efficient (i.e. lowest long run average cost) for provision of the good to be from one regional firm. Club goods tend to exhibit low *excludability* but low *rivalry* in consumption more so than pure public goods. If a good is purely ‘rival’ than one’s consumption of it prevents someone else from using it. Thus, due to the low rivalry in consumption, club goods have essentially no marginal cost and are often provided by one firm (e.g. natural monopoly) (Beggs, 2014; Singh, 1999). However, in contrast to public goods, club good are excludable. In the case of the Internet, all it takes is password protection to make it excludable.<sup>109</sup> Also, people must have

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<sup>109</sup> Many goods that have been deemed a public good are non-excludable. The non-excludability of these goods often leads to a collective action problem to build/provide them. Therefore, because of their non-excludable nature they tend to be provided as public goods. An example of a public good that is difficult to exclude people from using is a lighthouse—not exactly possible to stop boats from benefitting from seeing the light on the high seas. Another example closer in essence to Internet access as a public good are public roads. It would be close to impossible to stop people from using public roads and unfeasible to build many private roads. Thus governments have built the infrastructure needed for public roads to

access to a device—computer, tablet, and/or smartphone—which are inherently private goods.

Therefore, for effective provisioning of Internet access as a public good, access to these private good devices must also be available to the poor. This does not mean the government must be required to provide everyone a private device to get online; instead private devices can be shared at a public library, school, NGO, or community center.

In many instances, it makes sense for private Internet access in the home to be provided as a club good. This is especially the case if the goal is to reduce infrastructure congestion (multiple data lines produces more environmental cost—enough to be deemed a natural monopoly in many countries). However, providing Internet to all requires more of a public good model. Internet access can be provided as a public good if communities are willing to invest in it, yet communities must take measures to ensure that it is not excludable.

A few examples of what this might look like may help. One is a community center/library that has free computers with Internet access that can be used by anyone in the community. Another is free broadband public wireless service—particularly in public spaces in the village, town, or city. An innovative approach is M.S. Swaminathan Foundation's village knowledge centers, or kiosks, provide a potential avenue to emulate for effective Internet access provisioning for the poor (for more detail on this project see Smith, 2009). The reader is also familiar with the CCA examples discussed at length in Chapters 4 and 5. This leads to the obvious question: what version of a public good would be most effective for providing Internet access? Because technological development occurs so quickly, at this point in time there are simply no one-size fits all answers. Also, adding to the complexity is that there are vastly different needs for small and large communities in the multi-cultural, multi-lingual developing world (similar problems are faced in rural and urban areas of developed countries as well). The following section outlines considerations to help us explore how Internet access can be provided as a public good.

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minimize waste. Although not a perfect analogy, the waste angle of public roads is similar in that building multiple cable lines that provide Internet access is wasteful and points it toward the direction of a public good.

A public goods argument for Internet would certainly have to be based around two different provisions: (1) the pipeline (e.g. cables, network devices, satellites); and (2) Internet device (e.g. computers, tablets). Investments in both of these provisions should be made where the market fails to provide minimal access to them for the population. In particular, it is vital that investments be made when private companies *do not* provide affordable and available Internet access points for the poor. Of course, the details of these provisions need to be tailored to fit the specific needs of the community they are serving (i.e. some communities will have the first provision supplied, but not the second or *visa versa*). They need not always be provided by a public utility either. Private entities, with competitive monopoly rights, are also an option (although a functioning state government to enforce regulation is required).<sup>110</sup> This option would essentially be building on the argument for Internet being deemed a natural monopoly.

The ultimate goal of the public good option would not be complete equality in access, but rather providing those who have *no* access with a minimum threshold of access (I also refer to this as a “minimum floor” of access above). In other words, not making Internet access easily excludable, in general, people are excluded by (1) personal cost of access with no public option, and (2) government taking away access by law. A public good provisioning would ensure the former is not violated. The latter could be best addressed by a human rights approach to access—following a ruling by France’s Constitutional Court declaring access a “fundamental human right” (this will be further addressed in the following section of this chapter on human rights).

Finally, another Internet myth is that supplying access as a public good would be extremely costly. However, cost is not a problem, as research indicates that provisioning of Internet access as a public good would be similar in cost to many infrastructure projects, and even less than others, such as improving roads (The World Economic Forum, 2010). Investment by the state in infrastructure is

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<sup>110</sup> An example of the latter option would be landline phone companies in the U.S. in the period from 1970-2000s. Another example, this one from the developing world, is Malaysia, where the government used economic resources from the public sector to heavily invest in providing Internet to their citizens in an effort to spur business development across the nation.



central to furthering development (ibid), and investment in Internet infrastructure is likely to be of increasing importance in modern network societies.

It is beyond the scope of this dissertation to analyze what the best policy choices for provide Internet as a public good across all the vastly different communities in the developing world. Detailed local case study research is needed for every country. In fact, being ‘adaptable’ to local conditions is a needed approach for policy makers to effectively provide the Internet as a public good. Some policies for public good provisioning that could be of immediate help might be CCAs, villages’ kiosks or micro-lending approaches. For devices in the home, these types of policies could provide access for those who cannot afford it, especially where the Internet is currently provided as a club good. Another possibility is using resources that are already locally available. Many communities have public centers of various kinds, therefore expanding the availability of Internet access at these centers—and eventually in schools and shelters—might produce immediate benefits in beginning to level the digital playing field that the poor face in their everyday needs for access.

The public good argument above purposely does not address a single course of action for implementation. Nor does it suggest strategies, incentives, or specific policy prescriptions to get governments to comply. What then are activists, academics, and policy makers who care about this issue to do? What would actually convince governments that their poorest populations deserve access? What might sway local government to invest in Internet lines and locally tailored public access? This brings us to human rights as a policy-framing platform and as a tool for activism. I believe that the most convincing way to make the case for access as a public good is to frame the argument around human rights.

### **6.3 Don’t be Evil: Should Access to the Internet be Conceptualized as an Instrumental Human Right?**

As a way of introducing this section I ask the reader to engage in a brief thought exercise. Imagine there exists some exceptional ‘space’ described as the greatest library the world has ever created,

dwarfing Great Library of Alexandria or the largest modern public library—The New York Public Library. In trying to explain this ‘space’ people remark that it is also the world’s largest marketplace, with unrivaled price and product information that is easily searchable. Furthermore, it has become the central place for disseminating political information in your society, both from the government (e.g. services) as well as those making demands of it (e.g. political mobilization). In fact it has become the largest political forum in your society. People exclaim that this library/marketplace/public forum is an altogether ‘new space’ where people can be connected through new realms and avenues that have not previously existed. Altogether this ‘new space’ is even said to be beyond physical space or time. It can be static, yet also incredibly dynamic; clearly you are excited to investigate this ‘new space.’

Now imagine that you are denied access to this ‘new space.’ It may be surprising to many (although not to those that made it this far in this dissertation), that many of the world’s poor are consistently denied access to the Internet. Only 2.5 billion of the world’s 7 billion have accessed it as of summer 2014. As mentioned above, two general types of denying access take place: (1) denial by cost to the private consumer with no public option available; (2) denial by law from access. Interestingly, both of these types of ‘denial’ of access have been deemed to violate human rights in national court ruling.<sup>111</sup> However, as a poor person in the developing world, it does not really matter how you are being denied access. A lack of access hinders your ability to participate in politics, engage in debate on economic policy, and to pull yourself out of poverty.

Concluding this thought exercise, I hope that it illustrated that denying access hinders people’s ability to move out of poverty, limiting full ‘respect, protection, and fulfillment’ of their human rights. In fact, denying access is akin to denying human rights. So why not use the human rights framework as a legally based policy prescription for advancing the case of access for the poor? Recent history confirms the effectiveness of human rights, as they have been effective in throwing off the yolk of economic efficiency claims for denying the public access to many types of resources

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<sup>111</sup> National Supreme courts in Estonia and Finland (denial by cost); in France, and Costa Rica (denial by law).

(e.g. food, housing, health, and social security). Overall, history confirms that choices by politicians and societies are more often than not made to *not* provide the Internet. Why not try a new approach to combat the status quo? I will argue below that *now* is the time for a ‘Right to Internet Access’ to be championed.

At the time of this writing, fall 2014, there is no ‘Right to Internet Access.’ As will be discussed in the following sections this is already subject to change, debate, and contestation. Recently, the human rights activist approach has been effective in enshrining individual and group rights into various forms of law. If it can be shown that Internet access at a ‘minimal level’ is a human right, then the full weight of the human rights activism approach can be applied. Three characteristics associated with human rights activism help make the argument stand: (1) the ‘naming and shaming’ of violators (governments and companies); (2) legal arguments can be applied at all levels of government (international, national, state, local); (3) the ‘rights’ argument allows for strong mobilization of poor populations. In particular, this last characteristic helps lessen the stigma associated with poverty alleviation programs (e.g. a ‘right’ is often more politically, and socially acceptable than a so-called ‘handout’). While these activist approaches are worth mentioning the academic heavy lifting in following section will be in making the case that Internet access is, theoretically, a human right. If the human rights claim can be justified, the activist and legal arguments will follow.

Recently, the framework of human rights has been increasingly employed in arguments for Internet access to be formally recognized as a right. This emerging framework is almost exclusively in the domain of political rights, usually claimed under the right to information, and freedom of expression in Article 19 of the *Universal Declaration of Human Rights*, and Article 19(2) in the *International Covenant on Civil and Political Rights*. My position is access to the Internet can be effectively conceptualized as an instrumental human right. The empirical sections of this dissertation bolster this claim as the Internet is shown to be instrumental to both: economic rights (especially the right to work) and civil/political rights. The argument proceeds as follows: (1) a philosophical

grounding for a “Right to Internet Access” conceptualized as a prioritarian model of instrumental rights. (2) Employing case law, I display that a “right” to Internet access is already being implemented in legal arguments grounded in human rights in pockets of case law around the world. (3) Lastly, activists can use ‘naming and shaming’ of governments, or Internet Service Providers, to make them uphold a ‘Right to Internet Access.’

At first glance, it appears that ICTs, often steeped in dubious content, should not ever be mentioned in the same sentence as human rights. It is hard to imagine how content such as online video games like Angry Birds, or the commercial content of TV’s ‘Vast Wasteland’ at least in the words of former FCC chairman Newton Minow, should be promoted and championed by human rights scholars. Do people in areas of the world where grave abuses of human rights are commonplace, such as disappearances, torture, starvation, and abhorrent working conditions, really care about access to the Internet? It is certainly true that human rights abuses that threaten life and liberty must be dealt with before full attention can be turned towards prioritization of Internet access and there is little doubt that people should be provided with goods and services such as sustainable food sources before their Internet needs are met. While true that grave human rights abuses should not be tolerated, debate remains entrenched as to how enforcing human rights realization might be best achieved. Also, there is little consensus as to what the ‘best order’ is for rights to be realized. Furthermore, there is ongoing debate about what actually constitutes human rights. For instance, what makes them ‘human’ rights, potentially universal, as opposed to civil rights?

Before making the case for a philosophical grounding for a “Right to Internet Access” I must first lay some groundwork that the Internet is a vital information distribution system, individual publishing platform, and enhancer of human agency in political, social and economic affairs.<sup>112</sup> I will

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<sup>112</sup> In fact, the UN Special Rapporteur on the Promotion and Protection of the Right to Freedom of Opinion and Expression, Frank La Rue (UN Human Rights Council, La Rue, 2011) points out the importance of the Internet compared to other ICTs as a revolutionary technology: “Very few if any developments in information technologies have had such a revolutionary effect as the creation of the Internet. Unlike any other medium of communication, such as radio, television and printed publications based on one-way transmission of information, the Internet represents a significant leap forward as an interactive medium. Indeed, with the advent of Web 2.0 services, or intermediary platforms that facilitate participatory information sharing and collaboration in the creation of content, individuals are no longer passive recipients, but also active

argue in this section that in the modern world, post-1990s, access to the Internet is now vital for various types of human rights realization. More specifically, I stake the claim that a right to Internet access is directly instrumental to the provision of economic rights, and civil/political rights. The aim here is to build on the empirical work in this dissertation by turning to policy and conceptualizing the “Right to Internet Access” as an *instrumental human right*. To this author’s knowledge, this argument has yet to be put forth in rigorous academic scholarship.

Central to human rights is the notion that people are entitled to equity in treatment under the law, equity in access to resources (although *not* to equity in distribution of those resources), and equity in access to information. One way to uphold notions of equity, particularly regarding human rights concerns, is to ensure that no one is excluded from their ability to access rights. Those who are excluded from economic participation, political participation, and social/cultural participation are not having their human rights upheld. The following attempts to elucidate how lacking access to the Internet increases exclusion, thus limiting human rights realization.

Hopefully, the thought exercise at the start of the human rights section helped to illustrate that those without access of ‘some kind’ are excluded from vital information in various ways, too numerous to list here, that effect human rights realization. It attempted to display that policies that *do nothing* to enhance access for the poor by either governments or telecom companies is actually a way of denying the poor access to the largest, most interactive, politically important, library/communications hub in the history of the world. The empirical chapters presented extensive evidence confirming this. Recent history illustrates the effectiveness of human rights arguments, as they have helped to mitigate economic efficiency claims that deny the population access to many types of resources society have since been deemed public (e.g. transportation, healthcare, social security).

To remind us of the power and potential of the Internet we look no further than important

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publishers of information” (2011, p. 2). Also see Castells (2000) for one of the most detailed analysis of the rise of ICTs or for Castells a ‘Network Society.’

reports recently produced by the United Nations. According to the Frank La Rue, the UN Human Rights Council's Special Rapporteur on the Promotion and Protection of the Right to Freedom of Opinion and Expression, the digital divide is still prevalent, however there is little doubt that the Internet is one of the strongest instruments in the 21<sup>st</sup> century for enhancing the power of citizens, and barriers to access it faced by disadvantaged groups should be overcome as much as possible:

In contrast to 71.6 Internet users per 100 inhabitants in developed States, there are only 21.1 Internet users per 100 inhabitants in developing States. This disparity is starker in the African region, with only 9.6 users per 100 inhabitants. In addition, digital divides also exist along wealth, gender, geographical and social lines within States. Indeed, with wealth being one of the significant factors in determining who can access information communication technologies, Internet access is likely to be concentrated among socio-economic elites, particularly in countries where Internet penetration is low. In addition, people in rural areas are often confronted with obstacles to Internet access, such as lack of technological availability, slower Internet connection, and/or higher costs. Furthermore, even where Internet connection is available, disadvantaged groups, such as persons with disabilities and persons belonging to minority groups, often face barriers to accessing the Internet in a way that is meaningful, relevant and useful to them in their daily lives. (UN Human Rights Council, 2011, p. 16)

This information, and related evidence, has been discussed at length in the empirical chapters and should come as no surprise (although such claims coming from the UN is new). However, the influential UN report also highlights the power that the Internet can wield for forces advocating governmental reform:

The Special Rapporteur believes that the Internet is one of the most powerful instruments of the 21<sup>st</sup> century for increasing transparency in the conduct of the powerful, access to information, and for facilitating active citizen participation in building democratic societies. Indeed, the recent wave of demonstrations in countries across the Middle East and North African region has shown the key role that the Internet can play in mobilizing the population to call for justice, equality, accountability and better respect for human rights. (UN Human Rights Council, 2011, p. 4)

Overcoming both political and economic "choices" to *not* provide public access to the Internet typically made by governments or monopolistic ISPs is not insurmountable. However, tackling the root causes of these choices require a different mindset from academics and activists. Furthermore, the argument has to be made louder, clearer, and stronger when making claims that governments or companies are actually denying access to the poor. I argue that this vitally needed different mindset should be a human rights approach specifically following the 'respect, protect, fulfill'

recommendation by the UN Economic and Social Rights Council. The ‘respect, protect, fulfill’ recommendation is especially useful for enforcing demands that government/ISPs provide access to those that cannot afford it. I will end this section with a quote from the late Abid Hussain, former UN Special Rapporteur on the Right to Freedom of Opinion and Expression, which exposes some of the larger, more societal, difficulties that arise when information is denied:

When individuals and communities are denied information, it becomes much easier to exploit and suppress them...History has demonstrated that power lies in the hands of the informed. The uninformed, the illiterate and the uneducated—kept out of the mainstream of ideas and action—are generally regulated to the margins of society...Today, information and knowledge when disseminated have the greatest power to generate change, not simply guns and bombs. And it is here that the Internet is playing an increasingly important role as a key disseminator of information. (Hick *et. al.*, 2000, p. x)

#### **6.4 Internet Access, Exclusion, and Human Rights.**

First and foremost, if the case is to be at all persuasive that access to the Internet should be conceptualized as an instrumental human right addressing how the lack of access leads to exclusion for marginalized groups needs to be better elucidated. To do this, following the lead of Chigona *et al.*, (2009), three major dimensions of exclusion are primarily affected by a lack of Internet: (1) economic; (2) political and; (3) social participation (Selwyn, 2002; Van Winden, 2001). First, *economic exclusion*, which can essentially be equated with poverty, but also includes circumstances in which individuals are unemployed, lack the ability to bargain, or cannot accumulate funds, therefore leading to a loss of income (Chigona *et al.*, 2009). *Economic exclusion* can be influenced by a lack of Internet access in the following ways: (1) reduced access to price information in local, regional and global markets and also general information about these markets; (2) reduced ability to participate *at all* in some types of rising markets and sectors (which are of increasing importance as countries move through the development process, e.g. to service and knowledge economies); (3) rising economic inequality; (4) a privileging of more ‘wealthy’ groups over poorer; and finally (5) unemployment (see Chigona *et al.*, 2009). It is true that the third, fourth and fifth factors certainly have intermediate variables that interfere with a direct causal linkage of the lack of Internet access

leading to economic exclusion. To clarify, these factors are certainly not only caused by a lack of access to the Internet, instead the disparity of access seems to contribute to rising income inequality (as evidence from developed countries attests to—see Rodrik 1997, 2007). A disparity of access to the Internet also contributes to the privileging of more wealthy groups because they have access to technology, and better education, that is often required to secure governmental contracts and grants, or investment from international NGOs and the private sector. The relationship between a lack of access to the Internet causing economic exclusion for the third, fourth, and fifth factor faces an entrenched endogeneity problem, as the direction of causality is difficult to discern or quantify, but it is logical to assume that a lack of Internet access contributes to economic exclusion through increasing income inequality, unemployment, and general privileging of more wealthy groups. Clearly, being excluded from the economic activities listed above effects the progressive realization of economic rights.

The second dimension of exclusion, *political exclusion*, varies widely across countries depending on the structure of the government, established laws, level of democracy, and political socialization. This dimension of exclusion relates to a social group or individual citizen's ability to take part in political activities, such as voting in national or regional elections (Selwyn, 2002). It also can take the form of discrimination, in which certain individuals—often women, immigrants and religious groups—are excluded (Peace, 2001) from exercising their political and human rights (Chigona *et al.*, 2009). *Political exclusion* is influenced by a lack of Internet access in the following ways: (1) a lack of ability to curb corruption; (2) loss of ability to participate in the democratic process; (3) political information gaps; (4) privileging of more 'wealthy' groups over poorer (see Chigona *et al.*, 2009); and finally (5) direct legal exclusion. In this case the government actually denies people access by law, courts, and police surveillance. For example, the HODOPI law in France attempted to 'cut-off' users access permanently if they illegally downloaded information three times. However, France's Constitution Court struck down the HODOPI law because it violated "fundamental human rights" (more on this important ruling latter in this chapter). Again, it must be



noted that there are certainly other intermediate variables that influence these factors to varying degrees. However, a lack of access to the Internet contributes to political exclusion through all five factors. By definition, being politically excluded lessens progressive realization of political and civil rights.

The third dimension of exclusion, *social exclusion*, relates to the extent to which a group or an individual is excluded from society in general, both in terms of social interaction and participation (Peace, 2001). This dimension is also commonly referred to as “social marginalization” (Chigona *et al.*, 2009). *Social exclusion* is influenced by a lack of Internet access in the following ways: (1) lack of ability to communicate with others; (2) splintering of traditional social groups; (3) lack of ability to participate in community events; (4) unemployment (a form of economic as well as social exclusion); and (5) lessened ability to make ‘global’ online social connections. Factor one is heavily influenced by language, and factor four certainly has other intermediate variables impacting it, nevertheless all factors appear to contribute to social exclusion from a lack of access to the Internet.

The focus in this section will be primarily limited to the deleterious impact of *economic exclusion* caused by a lack of Internet access; the case law section below will further address political exclusion. The following investigates how much *economic exclusion* is actually caused by the lack of access to Internet among the poor. It is argued that access to the Internet, while not superseding the right to other important components of human rights and development (e.g. food, education, income), is instrumental to the adequate provisioning human rights. It is clear that the Internet influences all three types of exclusion listed above and this also illustrates the multifaceted, and vital importance of the Internet to development. Furthermore, providing a minimum floor of access to the Internet would increase access to both economic and political rights simultaneously. Perhaps the provisioning of universal access might be a potential mechanism for bringing economic/social rights and political/civil rights closer together? However, that is a topic for future research. The following will specifically link human rights to how access to the Internet is important for development and instrumental economic rights realization. Employing economic rights as my

primary example will help elucidate the theoretical groundwork for why access to the Internet should be conceptualized as an instrumental right.

### **6.5 Instrumental Economic Rights.**

Economic rights are, but not limited to, the right to work, free choice of employment, favorable conditions of work, protection against unemployment, equal pay for equal work, freedom to form and to join trade unions. What then are instrumental economic rights? I will employ a brief definition here: an instrumental economic right serves as a crucial means, agent or tool in realizing other economic rights. In other words, certain economic rights *cannot* be adequately provided for without instrumental rights to shape them. Instrumental rights are employed here following the theoretical edifice erected by Amartya Sen (2000). Sen uses freedom to illustrate the important links instrumental rights can make: “instrumental freedoms link with each other and with the ends of enhancement of human freedom in general” (2000, p. 10). For example, Sen claims the following freedoms are instrumental: political freedoms, economic facilities, social opportunities, transparency guarantees, and protective security. These instrumental freedoms are required for the capability to live freely, but they also serve to complement one another. Following Sen's construction of instrumental rights, I posit that Internet access should be conceptualized as an instrumental human right, because it cannot be separated from—and is instrumental to—the adequate provisioning of many basic civil and political, and economic rights in the modern world. This is especially the case for the economic right to work, which will be utilized as the primary case study throughout the argument presented below.

The right to work is codified in both the *Universal Declaration of Human Rights* and in the *International Covenant on Economic Social and Cultural Rights* (ICESCR). For instance, Article 6 of the ICESCR states:

1. The States Parties to the present Covenant recognize the right to work, which includes the right of everyone to the opportunity to gain his living by work which he freely chooses or accepts, and will take appropriate steps to safeguard this right.

2. The steps to be taken by a State Party to the present Covenant to achieve the full realization of this right shall include technical and vocational guidance and training programmes, policies and techniques to achieve steady economic, social and cultural development and full and productive employment under conditions safeguarding fundamental political and economic freedoms to the individual. (International Covenant on Economic, Social and Cultural Rights 1966)

There are no amendments to these human rights laws or any UN policy stating how the Internet may play a role in realization of the right to work. Also, nowhere in the ICESCR, or anywhere in the *International Bill of Human Rights* for that matter, is it explicitly stated that access to the Internet should be a right of any kind. Surprisingly, neither the economic rights literature, nor the ICT and development literature delve much into this. The advantage of using this as the primary case study rather than the more established connection with political and civil right of freedom of expression (see UN Special Rapporteur report by Frank La Rue—UN Human Rights Council, 2011) is four-fold. First, if the case can be made that Internet access is an instrumental economic right this will strengthen the argument that Internet access is instrumental to equal opportunity to participate in many aspects of political/social/economic life rather than only focus on freedom of expression or to information. Second, from a practical standpoint, making a clear case for Internet access being instrumental to economic rights would help mitigate the problem of the economic dimension of the digital divide. Third, rather than relying only on current case law to prove that Internet access has been ‘deemed’ a human right via civil and political rights, the theoretical argument presented here for it being conceptualized as ‘instrumental’ is clear in terms of economic rights. Finally, there is little case law, or theoretical development, of many economic rights and the role of the Internet, thus this analysis offers an innovative contribution.

## **6.6 Theoretical Development: In the Modern World, Internet Access is Instrumental to Economic Rights.**

This section strengthens the case for why Internet access should be considered an instrumental economic right, by theoretically linking the argument to propositions from prominent human right scholars, and by elucidating my primary claims. The discussion of the literature above found that a

lack of Internet access contributes to economic exclusion. Also, access to the Internet should be thought of as a ‘range of access’ as some need more education to effectively use it, or they may speak a minority language. Finally, to be clear, the theoretical argument advanced here is not positing that everyone is ‘entitled’ to a laptop with a high speed Internet connection (fast enough to handle the bandwidth required to stream video), rather the argument is that when *no access* is available, the poor are more likely to suffer in their ability to harness access to economic opportunities and the provision of human rights is likely to suffer as a consequence; minimal public access is needed.

First, a strong connection must be made between basic economic rights and Internet access. Many definitions and explanations of economic rights indicate that provision of ‘basic needs’ for survival remains at the heart of economic rights (Chapman & Russell, 2002; Hertel & Minkler, 2007; Osiatynski, 2007; 2012; Shue, 1996). There is no doubt that ‘basic’ rights are more foundational to sustaining human life than access to the Internet is. These rights usually include the right to subsistence, food, security, housing, and health. I follow the lead of Shue (1996) for defining a basic right: “everyone’s minimum reasonable demands upon the rest of humanity... The reason [they are important] is that rights are basic in the sense used here only if enjoyment of them is essential to the enjoyment of all other rights” (p. 19). Therefore for Shue (1996), the distinction for what a basic right is the difference between “having a right and actually enjoying a right” (p. 20). For instance, if someone were too malnourished to make it to the polls to vote then it would logically seem that provision of basic needs would require that they be fulfilled because without them, it would be impossible for one to possess any human right associated with political equality.<sup>113</sup> Shue further argues that security rights are basic rights, and though the same logic that applies to make security rights basic, subsistence rights (which are at the heart of economic rights) are also basic.

Currently, the right to Internet access is certainly not as ‘essential’ as basic rights in providing the necessities of human survival. My argument *does not* claim that the right to Internet

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<sup>113</sup> See Sen’s *Development as Freedom* (1999) for further explanation of this association.

access supersedes basic rights. In fact, I would never contend that resources be taken away from fulfillment of basic rights before they are devoted to providing Internet access. However, there are not strong arguments for why they cannot be pursued concurrently. Furthermore, Internet access is also vital to ‘basic rights’ because it helps allow marginalized groups to overcome social exclusion, to fully participate in economic endeavors, and to have more of a voice in the political process. Clearly, Internet access helps alleviate three major forms of exclusion (discussed above) as marginalized groups are given enhanced opportunities to participate in demanding that their basic economic rights are upheld by the state.

Although several examples of rights could be provided, I use instrumental economic rights as the primary example. I ground my argument that access to the Internet should be considered an instrumental economic right on three primary claims: **First**, Internet access is instrumental to adequate provisioning of basic economic rights. Basic economic rights rely, or will increasingly rely, on Internet to function efficiently and be available to all. For example, a basic economic right that is especially affected by a lack of Internet access is the equal opportunity for access to work. Access to work cannot be equal without access to the Internet being, at some level, equal. For example, applying for employment often takes place only online.<sup>114</sup> Should people be effectively shut out from jobs that require online applications?

There are two prongs to my argument with regards to work: supply and demand. First, the Internet influences the supply of opportunities to work for the poor, including access to information about jobs (e.g. applications, availability, and location); and secondly, the demand from the private sector for workers is affected by a lack of access to the Internet. The poor cannot participate in types of employment that require the Internet to perform functions at work. Many sectors of the economy that increasingly rely on the Internet (especially the service sector) and entry into these sectors for

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<sup>114</sup> This does not consider the possibility of a government ‘works’ program. Rather Internet is needed to link the poor with private sector employment, of which they are entitled to a fair opportunity to pursue under human rights law (*UDHR, International Covenant on Economic, Social and Cultural Rights*).

the poor will increasingly be difficult with no Internet access. Due to demand from both the private and the public sectors for efficiency, increasingly forms, applications, and even jobs themselves exist only in an online environment. If the poor do not have access to the Internet there is simply no equity in the opportunity to work.

The **second** reason that Internet access is an instrumental economic right is that it can provide more equity in access to information. This broad concept of ‘information provision’ can be broken down into three factors central to advancing equity in economic access: (A) equity in access to price information; (B) ability to participate in the global marketplace; and (C) allowing public administration provisioning of economic rights to be more competitive, comprehensive and accountable. If the poor do not have equal opportunity to access information—at least at a basic level—then their economic rights are being violated. They will also be shut out of global markets, which increasingly require the Internet to participate in. Finally, poor communities will suffer if they cannot take advantage of gains in efficiency and transparency that Internet can provide in their communities; an example is efficient and accurate keeping of local government records.<sup>115</sup>

Finally, the **third** reason that Internet access is an instrumental economic right is because it allows more equality of opportunity in the realm of ideas/debate that effect economic policy. For example, three ways Internet access influences this is in political space (i.e. creating altogether new space for debate/contestation), political participation, and reducing social exclusion. Obviously this relates to equal access to information, yet it will differ when access to the Internet is not equal, there will be portions of the poor population not able to participate as fully as they could before the advent of the Internet (e.g. now there is higher participation costs that require substantial investment—computers, Internet service, digital education, as compared to paper forms, letters, and newspapers). Furthermore, it is worth noting that the provision of Internet access is different in its impact on civil society than governing structure or voting rights (which are important in holding states accountable

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<sup>115</sup> For example, governmental use of computers in record keeping in medical clinics in developing countries have made them much more efficient and able to expand their reach (Smith, 2009).

to human rights) because it allows more domestic communication between geographically diverse actors. It also is important at the international level because of increased ability to interact with global actors. For instance, an NGO or International Organization, can more easily engage in ‘naming and shaming’ of states that are not adequately adhering to economic rights when Internet is available to the populace and government.<sup>116</sup> If access is not provided for poor groups it appears that significant stratification between economic classes in political opportunity and participation is likely to deepen and entrench itself.

### **6.7 Instrumental Rights Theory: Where Does Internet Access Fit In?**

If Internet access can theoretically be considered an instrumental human right, then I need to elucidate, with much greater specificity, how Internet access fits into instrumental theories of rights. Before explaining this, I will explore how instrumental theories differ from one another. A utilitarian perspective of instrumental theories depicts rights as instruments for achieving an optimal distribution of utility (Wenar, 2007). However, a common objection to grounding economic rights—including the right to Internet access—in such a utilitarian theory is that the resulting rights will be too ‘flimsy.’ If rights are justified only insofar as they generate good consequences, it may seem that instrumental rights theory based on utilitarianism will need to prune its rights, perhaps severely, whenever maximum utility lies elsewhere (ibid). Instrumental theories, which are not based on utilitarianism, may not have the same problems with weak rights (Scanlon, 1977). For example, a pure egalitarian theory portrays rights as instruments for achieving a more equal distribution of resources. A ‘Right to Internet Access’ need not be limited to egalitarian approaches or to utilitarian. More useful for my purposes is a prioritarian theory, which defines its optimal distribution in a manner similar to egalitarianism, except that it gives extra weight to the interests of the worst off (Wenar, 2007). Overall, I posit that the prioritarian version of instrumental theory should be pursued.

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<sup>116</sup> See the impact of the ‘boomerang effect’ as elucidated in M. Keck & K. Sikkink (1998), *Activists Beyond Borders: Transnational Advocacy Networks in International Politics*. See Shareen Hertel (2006), *Unexpected Power*, for an expansion and extension on Keck and Sikkink (1998).

Some of the other contenders for a rights based theory for Internet access need to be explored before the prioritarian option is settled on. An option is a theory that characterizes ‘optimal distribution of resources’ in other ways (Sumner, 1987, p. 171). For instance, a contractualist theory defines it as one to which no one could reasonably reject. A Rawlsian theory defines it as a fair one (i.e. the distribution that would be chosen from the perspective of an original position). However, there is *no* reason to assume that the rights grounded within non-maximizing instrumental theories, such as the prioritarian or pure Rawlsian must be weak and this holds for the right to Internet access as well.

For example, let's take Rawls's ‘justice as fairness,’ which generates a principle of justice that gives individual rights “absolute weight with respect to reasons of public good and perfectionist values” (Rawls 1971, p. 294). However, instrumental theories certainly differ over how they measure individual interests. For instance, a utilitarian's metric for interests is utility, Rawls works with a metric of primary goods, Sen with ‘capabilities’ (see Sen, 1999), Dworkin with resources (Wenar, 2007). As explained above, I claim that provision of Internet access allows for more equality in economic opportunity for the poor and it will lead to more adequate provisioning of basic rights (following Rawls, 1971; Shue, 1996). Also, by employing instrumental theory as a basis for rights I am far from alone as many contemporary rights theorists have set out systems that give a central role to instrumental rights: Dworkin, Posner, Rawls, Scanlon, and Sen (Wenar, 2007).<sup>117</sup>

Although enforcement of rights presents a thorny problem, particularly for economic rights,<sup>118</sup> contextualizing a prioritarian instrumental right for potential enforcement options, including putting pressure on government providers of the Internet is worth briefly mentioning. One of the most effective conceptual tools for ensuring that the right to Internet access is upheld is integrating the UN call for state obligation in international law to ‘respect, protect, and fulfill’ rights

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<sup>117</sup> For an example of instrumental theories at work see Sen (1999). He provides a thorough explanation of how different rights relating to freedom for the poor are conceptualized as instrumental. He also poses an intrinsic justification as well.

<sup>118</sup> See Chapman (1996) ‘A ‘Violations Approach’ for Monitoring the International Covenant on Economic, Social and Cultural Rights’; Yuval (2007); and also the work by Thomas Pogge (2001; 2008).



and applying it to Internet access. For instance, according to the UN Office of the High Commissioner of Human Rights (2013):

International human rights law lays down obligations which States are bound to respect. By becoming parties to international treaties, States assume obligations and duties under international law to respect, to protect and to fulfil human rights. The obligation to respect means that States must refrain from interfering with or curtailing the enjoyment of human rights. The obligation to protect requires States to protect individuals and groups against human rights abuses. The obligation to fulfil means that States must take positive action to facilitate the enjoyment of basic human rights.

For human rights scholar Michael Goodhart, international law has evolved from framing treaties in ‘positive’ and ‘negative’ terms to ‘generations’ of rights to a “more useful formulation that comprises the separate dimensions of respect, protection, and fulfilment, which arise from the legal obligations of states party to international human rights instruments” (Goodhart, 2009, p. 49). This useful formulation is increasingly employed in enforcing, and framing treaties on economic, social, and cultural rights.

For example, respecting rights usually entails states providing “No interference in the exercise of the right” protecting involves “Prevent violations from third parties,” and fulfillment involves “Provision of resources and the outcomes of policies” (Goodhart, 2009, p. 49). For instance, practically applying the ‘respect, protect, and fulfill’ dimension rights to economic, social and cultural rights would include the following: Respect—ethnic, gender or linguistic anti-discrimination in health, education, and welfare, and resource allocation below people’s ability would have to be upheld by the state. For protection, measures to prevent non-state actors from engaging in discriminatory behavior that limits access to services and conditions has to be enforced. Finally, for fulfillment the progressive realization of rights, investment in health, education, and welfare, and resource allocations to ability of the state actor would be expected (ibid, p. 49).<sup>119</sup>

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<sup>119</sup> Future research will want to address the most effective way to apply a prioritarian instrumental economic rights theory to these dimensions of human rights for enforceability—always a challenge for human rights scholarship and activists.

Although access to the Internet could potentially be categorized as an emergent right (perhaps future research could investigate this connection in greater depth),<sup>120</sup> my position is better centralized around the claim that access to the Internet *must* be provided as a prioritarian instrumental right. However, before moving forward some pitfalls with using instrumental theories of rights need to be discussed. Whatever metric they use, “all instrumental theorists will have to address longstanding questions about the commensurability and interpersonal comparison of interests” (Wenar, 2007). Instrumental theorists work with overall evaluations of how well off individuals would be were certain rights ascribed. They must explain how distinct categories of interests (e.g. health, income, opportunities for self-expression, social recognition) trade off against one another. They also must explain why they believe that these interests are similar enough across people that it makes sense to use the same scales of measurement for different people (Griffin, 1989). Therefore, an instrumental theorist can appeal to any number of distinct social groups, whose interests are at stake for any number of differently-situated individuals, to explain why a certain right should be held only by certain persons or only in certain circumstances (Wenar, 2007). The danger for such a theorist is that the wealth of conceptual resources at her command will permit the ascription of whatever rights she favors. The theorist begins with the rights that she wants to justify,

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<sup>120</sup> Delving deeper into where Internet access fits with rights, I would suggest that Internet access can also be thought of as an ‘emergent’ right. Hiskes’ theoretical development of emergent rights grew out of his earlier work on emergent risk. He notes, “Emergent risks...make us feel that we do not control our environment or our own lives as much as we would like to think we do” (Hiskes 1998, p. 6). These risks evolved out of the technological dynamism and change brought onto society from industrialization over the course of the 20<sup>th</sup> century. Emergent risks revolve around issues that impact society at large. Hiskes took the notion of emergent risks and claimed that emergent rights are a “special category of rights distinctive for its bearers’ connectedness to groups, future generations, even fellow living organisms sharing the same environment” (ibid, p. 12). According to Hiskes (2005) there are two conditions that a right must suffice to be considered ‘emergent’ and this makes these rights “quite different from traditional human rights” (ibid). The right to the Internet satisfies both conditions. First, Hiskes claims an emergent right arises in response to threats that are themselves emergent phenomena. Thus for Hiskes (2005) “These emergent phenomena constitute some of the ‘standard threats’ to human dignity that stand behind all lists of ‘basic’ human rights, according to Henry Shue’s formulation (Shue 1980)” (2005, p. 1351). Secondly, access to the Internet is a right that we hold only because of our relationships with others that cause ‘collective effects’ on a shared environment. That is, according to Hiskes “they are rights due us—not because of something in our individual nature—but because of the effects of our relationships with others. If those relationships did not exist, neither would the rights” (2005, p. 1351). Hiskes is primarily using his argument over emergent rights with regard to environmental rights, but the same logic applies to the Internet (especially the social relationships central to the Internet). More specifically, the Internet should be considered an example of ‘soft’ emergentism, which identifies phenomena emerging “from the interstices between individuals within the common life of modern society” (Hiskes, 1998, p. 12-13). The Internet is important to modernity and has caused various ‘effects’ on our relationship with others, thus it can be categorized as an emergent right as well as an instrumental one.

and then gives a ‘just so’ story that leads to exactly those rights (Frey, 1985; Tushnet, 1984). Moreover all instrumental justifications rely on empirical predictions concerning which ascriptions of rights would produce associated consequences. There will usually be enough slack in these empirical predictions for instrumental theorists to fudge their deviations in order to reach to their desired rights (Wenar, 2007). As I note above, I am not arguing that Internet access should be held above basic rights, but rather it is instrumental to providing them. It is prioritarian only in that providing Internet access focuses devoting resources to a distinct social group—the poor.

### 6.8 The Internet in International Human Rights Law.

Is there any empirical evidence for access to the Internet being conceptualized as a human right, of any type, in international law? What would the right look like in practice? Is there any support for such a right from International Institutions? It turns out that momentum has shifted since I began working on this research in the fall of 2009. At that time there was little traction for access to the Internet to be considered a human right, yet by 2014, at the international level there is emerging language from the UN that has sparked debate on whether or not Internet access is a human right. There is some push to reevaluate the most important international human rights treaties, laws, and general comments for the Internet era. The following text from the UN Special Rapporteur on the Promotion and Protection of the Right of Opinion and Expression, Frank La Rue (UN Human Rights Council, 2011), displays the foresight of the UDRH in addressing future technology developments. It also is noteworthy because it claims that the Internet is a catalyst for facilitating the realization of a “range of human rights,” including economic, and not only civil and political rights (bolding of text below was added for emphasis):

By explicitly providing that everyone has the right to express him or herself through any media, the Special Rapporteur underscores that article 19 of the Universal Declaration of Human Rights and the Covenant was drafted with foresight to include and to accommodate future technological developments through which individuals can exercise their right to freedom of expression. Hence, the framework of international human rights law remains relevant today and equally applicable to new communication technologies such as the Internet. 22. The right to freedom of opinion and expression is as much a fundamental right on its own accord as it is an “enabler” of other rights, **including economic**, social and

cultural rights, such as the right to education and the right to take part in cultural life and to enjoy the benefits of scientific progress and its applications, as well as civil and political rights, such as the rights to freedom of association and assembly. Thus, by acting as a catalyst for individuals to exercise their right to freedom of opinion and expression, the Internet also facilitates the realization of a range of other human rights. 23. The vast potential and benefits of the Internet are rooted in its unique characteristics, such as its speed, worldwide reach and relative anonymity. At the same time, these distinctive features of the Internet that enable individuals to disseminate information in “real time” and to mobilize people has also created fear amongst Governments and the powerful. This has led to increased restrictions on the Internet through the use of increasingly sophisticated technologies to block content, monitor and identify activists and critics, criminalization of legitimate expression, and adoption of restrictive legislation to justify such measures. In this regard, the Special Rapporteur also emphasizes that the existing international human rights standards, in particular article 19, paragraph 3, of the International Covenant on Civil and Political Rights, remain pertinent in determining the types of restrictions that are in breach of States’ obligations to guarantee the right to freedom of expression. (p. 7, bolded text added)

As can be seen from this quote in the influential report the argument is not fully developed from a theoretical standpoint around Internet access as an instrumental economic right, but La Rue’s language points in that direction. This dissertation hopes to contribute by making the case stronger, both theoretically and empirically, for the instrumental argument.

Another avenue is to revisit international human rights law signed by state parties well before the Internet was invented, yet containing statements regarding ‘media’ and rights that have resonance for the Internet age. The prime example is Article 19 in the UDHR, although written back in 1948, points to freedom of choosing the ‘any media’ one wants to impart one’s ideas and opinions. The drafters of the UDHR left open the possibility of various developments in ‘media’ to allow for freedom of expression. Here is the relevant text from Article 19 of the UDHR:

Everyone has the right to freedom of opinion and expression; this right includes freedom to hold opinions without interference and to seek, receive and impart information and ideas through any media and regardless of frontiers.

Some scholarship has pointed out that this Article lays the groundwork for a “Right to the Internet” (see La Rue, 2011; Land, 2013). However, it should be noted that the focus of the Article 19 is on freedom of speech, opinion and expression through ‘any media.’ The UN Special Human Rights Rapporteurs who promote its importance have been the Special Rapporteurs on the Promotion and Protection of the Right of Opinion and Expression, notably, Frank La Rue (Guatemala) and his

predecessors Ambeyi Ligabo (Kenya), from August 2002 to July 2008, Abid Hussain (India), from 1993 to July 2002. Currently, there has been little focus from these Special Rapporteurs on the right to food, housing, or members of the Council on Social and Economic Rights. La Rue (2011) notes that Article 19 was written to “accommodate future technological developments through which individuals can exercise their right to freedom of expression.” Obviously, the Internet is the dominant ‘future technology’ right now which individuals have been exercising their freedom of expression. The 1976 International Covenant on Civil and Political Rights (ICCPR) also expanded the ideas from the UDHR in its own Article 19. The expansion is even more conducive to the potential for future technological developments:

***Article 19 (ICCPR)***

1. Everyone shall have the right to hold opinions without interference.
2. Everyone shall have the right to freedom of expression; this right shall include freedom to seek, receive and impart information and ideas of all kinds, regardless of frontiers, either orally, in writing or in print, in the form of art, or through any other media of his choice.
3. The exercise of the rights provided for in paragraph 2 of this article carries with it special duties and responsibilities. It may therefore be subject to certain restrictions, but these shall only be such as are provided by law and are necessary:
  - (a) For respect of the rights or reputations of others; (b) For the protection of national security or of public order (ordre public), or of public health or morals.

Clearly, in Article 19 (2) the statement of ‘any other media of his choice’ allows for future technological developments, i.e. the Internet. According to Human Rights scholar Molly Land, that is what the drafters intended—thus leaving the door open for Article 19(2) to be a legal base for the “Right to the Internet.”

For Land (2013), “the text and drafting history of Article 19(2) have made three things clear: It extends protection to “media,” media includes the channel of expression, and “media” or channel must be understood in terms of the factual conditions existing at the time of interpretation” (p. 408). Thus, for these three reasons, there is a legal rights based precedent for the “Right to Internet access” to be grounded in Article 19. Land agrees that the “text and structure of the clause

also protect a right of access to technology. Article 19(2) specifies that freedom of expression include the freedom to seek, receive, and impart information “through any other media of his choice” (p. 419). Therefore, “This is an active right, one that protects the ability to engage in particular communicative activities through a medium, rather than simply protecting the expression itself. Moreover, the word ‘freedom’ can be read as extending to the remainder of the article, including media, thus implying an ability to access a medium if necessary for the fulfillment of the right” (p. 419-420). Land (2013), La Rue (2011), and the Special Rapporteur Joint Declaration (2011) all claim that states must ensure a minimum level of access to the Internet (because it is a “technology of connection”). They read Article 19(2) as ensuring minimum level of access. I fully agree with their interpretation. For instance, Land (2013) states:

Nowak argues, for example, that ‘[w]ith regard to electronic media, they [states] must above all provide for adequate public access.’<sup>125</sup> The Special Rapporteur Joint Declaration maintains that ‘[s]tates are under a positive obligation to facilitate universal access to the Internet.’<sup>126</sup><sup>121</sup> States might do this, for example, through regulatory mechanisms such as pricing regimes and universal service requirements, providing direct support for access such as through community ICT centers, promoting awareness about Internet use, and establishing special measures to ensure access for disadvantaged populations. (Land, 2013, p. 420-421)

As I’ve been arguing throughout this dissertation, besides just looking broadly at the population’s access, particular focus needs to be directed to those without the resources to afford access. Thus, I agree with Land that special measures need to be taken to ensure access for disadvantaged populations. Land states that special measures:

would mean that states should work toward the elimination of the digital divide, as it exists both between and within particular communities...A right of access would require states to invest in the infrastructure needed for connection in poor areas and to establish competition policies that lower prices. A right to access technology would also require careful scrutiny of

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<sup>121</sup> U.N. Special Rapporteur on Freedom of Opinion and Expression, OSCE Representative on Freedom of the Media, OAS Special Rapporteur on Freedom of Expression & ACHPR Special Rapporteur on Freedom of Expression and Access to Information, International Mechanisms for Promoting Freedom of Expression, Joint Declaration on Freedom of Expression and the Internet (June 1, 2011), available at <http://www.osce.org/fom/78309> [hereinafter Joint Declaration]. The declaration was signed by U.N. Special Rap- porteur Frank La Rue, OSCE Representative on Freedom of the Media Dunja Mijatovic’, OAS Special Rapporteur on Freedom of Expression Catalina Botero Marino, and ACHPR Special Rapporteur on Freedom of Expression and Access to Information Faith Pansy Tlakula.

international policies that risk exacerbating the digital divide. For example, a recent proposal for the adoption of a “sending party pays” principle for the Internet—allowing local network operators to charge termination fees much in the same way that local carriers charge for telephone calls—poses risks of increasing disparities in access between developed and developing countries.<sup>122</sup> On the one hand, it is possible that these fees will result in greater wealth transfers to developing countries, thus facilitating the growth of local infrastructure (assuming the fees would be invested in infrastructure, of course).<sup>123</sup> On the other hand, it might result in fewer carriers serving developing countries or less local storing of digital content.<sup>124</sup> (p. 421-422)

This quote illustrates what I mentioned in the policy section above, it is difficult to pinpoint the ‘exact’ policies that should be enacted worldwide. However, international human rights law provides guidance so that special measures are taken to ensure everyone has access if they desire it. An example of this would be a focus on digital literacy for populations that need it. I’ve mentioned the importance of this throughout this dissertation. Land highlights the need for digital literacy for the right to information to be fully utilized: “To ensure that the right to information is meaningful, states must strengthen the capacity of individuals to use the information effectively” (2013, 429). Also, Special Rapporteur La Rue (2011) points to digital skills in his influential report: “the importance of ensuring that individuals possess the necessary skills to make full use of the Internet, or what is often referred to as ‘digital literacy’” is key.

Before proceeding it is worth mentioning that international human rights laws do have substantial limits. The trouble with enforcing non-binding, and even binding, international law is well known (the practicalities of that difficulty will not be discussed at length here—see Goodhart 2013 for a textbook oriented discussion of this). Also another difficulty is seen in the reality of fully implementing Article 19(2), as the specifics matter greatly for what implementation may look like. Land points out that: “while Twitter is a technology of connection covered by the ‘media’ clause of Article 19(2), this does not mean that individuals can claim a right of access to Twitter per se. Article

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<sup>122</sup> This would be a change from the current approach of “settlement free peering,” which allows transmission without termination fees. The proposed revisions to the ITU Regulation would not have established technical standards for the Internet (such as those promulgated by the Internet Engineering Task Force) but would have instead created legal standards that would support and in some instances even mandate particular regulatory approaches to the Internet such as price discrimination (e.g., Center for Democracy and Technology, 2012).

<sup>123</sup> Ibid, “critiquing the argument that sending party pays will foster development” (Land, 2013, p. 421).

<sup>124</sup> In fact, there is a risk that local carriers might intentionally set fees prohibitively high in order to block foreign content (Land, 2013, p. 422).

19(2) provides a right to access technology necessary to ensure meaningful exercise of one's right to freedom of expression and information; it does not provide a right to any particular technology in that process" (p. 421-422). This is potentially troubling in that a 'Right to the Internet' still has to be 'implied' or rely fully on legal interpretation, which is true for both Article 19s in the UDHR and the ICCPR. In fact, work by Land (2013) is in the forefront in academic scholarship making this claim. There is simply not an extensive scholarly record in international human rights law on this issue—nor many court cases employing this law in national courts. The handful of laws that do exist will be discussed in the following section. Furthermore, these international laws are usually implied and interpreted through the right to freedom of expression and to political and civil rights in general. There is no direct mention of economic rights or right to work interpretation of these international laws. Thus, it is safe to say that the instrumental argument is far from codified in international human rights law.

Overall, an obvious practical consideration question arises: what might Internet access as an instrumental human right look like in international law? This is a difficult question to address because implementation would certainly differ widely between countries, infrastructure systems, social contexts, geographical restraints, and economic systems. Certainly, employing Internet access as a right effectively will depend on adequate consideration of social context, literacy, education, income, and state capacity *at a minimum*.<sup>125</sup>

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<sup>125</sup> For instance a leading ICT scholar Warschauer (2003) concludes his treatise on the digital divide by arguing that tallying up computers and Internet accounts is not enough. Instead, understanding the social context, the process of technology usage and the role of ICT in human and social development are central to understanding ICT: "We may work to distribute computer equipment, but again as one step toward a larger purpose of helping people participate fully in the informational economy and network society. That participation requires not only physical access to computers and connectivity, but also access to the requisite skills and knowledge, content and language, only then can community and social support to be able to use ICT for meaningful ends. The tasks are large, but so is the challenge: reducing marginalization, poverty, and inequality and enhancing economic and social inclusion for all" (Warschauer, 2003, p. 216).



## 6.9 Have National Courts Begun to Utilize ‘Rights Language’ in Access to the Internet Cases?

If the claims above hold any water we would expect to see some evidence of courts using ‘Rights Language’ in cases regarding the Internet, and in fact, we do. However, it should be noted that while it is true that, since the early 2000s, court cases have begun to spring up in a handful of countries, except in a few instances, effective law has yet to be applied, evident in the entrenched digital divide. Case law provides an interesting empirical vantage point in determining if ‘Rights Language’ may be effectively employed regarding access to the Internet. This is especially the case for monitoring whether or not governments are ‘respecting, protecting, and fulfilling’ the right. The following section investigates the empirical evidence in the literature and in national courts.

A number of online articles, while not peer reviewed, emphatically make the claim that the Internet is a human right using court cases as their empirical evidence. An example is an article by Kirkpatrick (2009), which is aptly titled: *Is Internet Access a Fundamental Human Right? France's High Court Says Yes*. Kirkpatrick argues “It’s tempting to consider Internet access a luxury, but consider the increased quality of life that comes with the huge jump in access to cultural and logistical information the Internet brings. We think this is an important opportunity to think about expanding our understanding of human rights...We do wonder what such a designation would mean for pricing policies and the Internet economy” (p. 1). The ‘We’ in this quote are the Editors of the website *Read, Write, Web*, where Kirkpatrick piece was originally published. Other articles published online make similar claims. Doctorow (2009) predicts, “in five years, a UN convention will enshrine network access as a human right (preemptive strike against naysayers: ‘Human rights’ aren’t only water, food and shelter, they include such ‘nonessentials’ as free speech, education, and privacy)” (2009, p. 1). This article piggybacks off a front-page article in *The Wall Street Journal* (2009) that explained how homeless people in San Francisco and New York City maintain social networking profiles and require Internet access for many tasks/opportunities to move out of homelessness—fortunately free access is often provided at some homeless shelters. The Internet is

increasingly important to the homeless in their search for information on jobs, free meals, shelter, and long or short-term housing.

However, the increasing importance of the Web for participation in contemporary life has proven a difficult challenge for many of the poor and homeless in the U.S. (and also for the poor in the developing world). As forms and applications move increasingly to an online *only* environment this can put the poor, especially the homeless, in a difficult position. In some cases even a Catch-22 position. For instance, in NYC (2009) the dire housing situation of the homeless was compounded by rules in public libraries that required a *personal address* to get a library card. Library cards are required to sign-in to use the public computers; this has in particular been a problem on NYC's crowded public library computers. To deal with this problem in access for the homeless in NYC, shelters often provide computers connected to the Internet for the clients to use at the shelter's expense. These types of non-academic, often Internet published articles, contribute to the notion that the Internet is increasingly more important to the general public (*The Wall Street Journal*, 2009).

The optimism in these types of web published, primarily journalistic articles, making the case that the Internet is a savior of civil and political rights is clearly displayed in the prediction above stating that the UN may soon make a declaration or international law relating to Internet access. In reality, Internet access *does not* appear to be high on the list of many pressing global issues facing the UN General Assembly. This might be changing if Frank La Rue has his way, but as of fall 2014 movement has been slow. To this author's knowledge there have not been any lawsuits or precedent setting court cases regarding online forms or the situation the homeless face in NYC explained above. Libraries now offer paper options for practical reasons—because many people had difficulty with the online only option—yet there are no laws or rules stopping the libraries from moving back to the online only form. This is just one small example of where a human rights approach could help mitigate these types of denial of access issues from reoccurring. Instead the right to Internet access cases focuses on larger issues such as universal access, no tolerance for 'cut

off” laws, and a household level right to a connection. These cases have mainly come from Europe, and a few from developing countries as will be explored below.

Turning to specific national level court cases, a report written for the United Nations General Assembly by the UN Human Rights Council’s Special Rapporteur on the Promotion and Protection of the Right to Freedom of Opinion and Expression (2011) compiled information on national laws focused on casting Internet access as a human right:

In some economically developed States, Internet access has been recognized as a right. For example, the parliament of Estonia passed legislation in 2000 declaring Internet access a basic human right.<sup>126</sup> The constitutional council of France effectively declared Internet access a fundamental right in 2009, and the constitutional court of Costa Rica reached a similar decision in 2010.<sup>127</sup> Going a step further, Finland passed a decree in 2009 stating that every Internet connection needs to have a speed of at least one Megabit per second (broadband level).<sup>128</sup> The Special Rapporteur also takes note that according to a “survey by the British Broadcasting Corporation in March 2010, 79% of those interviewed in 26 countries believe that Internet access is a fundamental human right.”<sup>129</sup> (2011, p. 19)

This is a comprehensive list of all “Internet access as a human right” laws that this author is aware of and each will be discussed below.

The first example the UN Special Rapporteur provides is from Estonia, a country that has achieved some of the highest rates of Internet penetration in Eastern Europe. In perhaps the first implemented national law, back in 2000, the Estonian *Riigikogu* (Parliament) enacted the new [Telecommunications Act](#), **adding Internet access to its universal service list**: “Article 5. 'The set of telecommunications services specified in subsection (1) of this section comprises: 2) Internet service which universally available to all subscribers regardless of their geographical location, at a uniform price” (Diplo, 2011). This confirmed that wireless coverage—which was mostly free of charge—was provided to as much of the population as possible. It helps explain how the project called *Tiigrihüpe* (or Tiger Leap) helped to improve the network infrastructure in the country (Diplo,

<sup>126</sup> Colin Woodard. (2003) “Estonia, where being wired is a human right,” *Christian Science Monitor*, July 1<sup>st</sup>.

<sup>127</sup> French Decision 2009-580, Act furthering the diffusion and protection of creation on the Internet.

<sup>128</sup> Finland: “732/2009, Decree of the Ministry of Transport and Communications on the minimum rate of a functional Internet access as a universal service,” (original: Liikenne- ja viestintäministeriön asetus tarkoituksenmukaisen internet-yhteyden vähimmäisnopeudesta yleispalvelussa), FINLEX, 22 October 2009. Available from: <http://www.finlex.fi/en/laki/kaannokset/2009/en20090732>.

<sup>129</sup> “Four in five regard Internet access as a fundamental right: global poll,” BBC News, 8 March 2010. Available from: [http://news.bbc.co.uk/1/shared/bsp/hi/pdfs/08\\_03\\_10\\_BBC\\_internet\\_poll.pdf](http://news.bbc.co.uk/1/shared/bsp/hi/pdfs/08_03_10_BBC_internet_poll.pdf)

2011). Another Estonian program implemented since then, EstWIN-Fiber Optical Transport Network, has a goal of enabling 98% coverage of the Estonian population with broadband speeds of 100Mbit/s by 2015. According to Internet World Stats (2013) the Internet penetration rate in Estonia now ranks 28<sup>th</sup> in the world. This is much higher than the ranking for countries at similar levels of economic development. Not exactly surprising since most countries focus less on the Internet and computers penetration in public policy than Estonia. Despite being three times more wealthy in regards to per capita income, the U.S. is actually only one place above Estonia 27<sup>th</sup> with 78.3% of the population with Internet access. This dissertation, and its related literature, has displayed that income explains about 90% of the variance in Internet penetration rates (Corrales & Westhoff, 2006). The Estonian case proves the exception to this rule—thus human rights based laws certainly can have wide-ranging, substantial impact on provisioning of access to those who could not afford it through the market.

Turning towards the French case mentioned by the Special Rapporteur above a different logic emerges from the court. The 2009 so-called ‘HADOPI law’ was initiated by, and championed, by former President Nicolas Sarkozy.<sup>130</sup> The law attempted to cut off users access to the Internet if they illegally downloaded copyrighted information three times. The case was brought to France’s highest court, the Constitutional Council, who ruled that cutting users off was unconstitutional. The ruling against the law turned into a ‘backdoor’ ruling of access to the Internet as a human right in French case law: “The Internet was an ‘essential tool for the liberty of communication and expression,’ according to the Constitutional Council” (Dailymail, 2011). The Court quoted from the founding principles of the Republic, entrenched in law after the French Revolution: “ ‘Under the Declaration of 1789, every man is presumed innocent until proven guilty’ .... ‘The internet is a fundamental human right that cannot be taken away by anything other than a court of law, only when guilt has been established there.’ Although the Constitutional Council agreed that theft of copyright

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<sup>130</sup> His pop music star wife, Carla Bruni-Sarkozy, also seemed to be behind that as she frequently has copies of her albums illegally downloaded.

material was a crime, it rendered the ‘HADOPI’ law unenforceable by saying that only a court had the authority to switch off a person's web connection” (ibid, 2011). By 2014 the Court upheld its original ruling, but did allow for the fining of individuals who download illegal content—however it did not grant the French government the ability to ‘cut off’ anybody’s access.<sup>131</sup> Although certainly different from the goals of Estonia’s human rights based ruling, where more practical or ‘positive’ forms of government action was required in ensuring access. Instead the French ruling created more ‘negative’ government duties in not allowing anybody to be denied access to the Internet. Both approaches point towards case law leaning towards enshrining access to the Internet as a human right. Another separate ruling in Costa Rica essentially followed the French court’s ruling, bringing the ‘backdoor’ approach to the developing world. The Costa Rican court ruling is similar to the French ‘no cut off’ ruling and actually quotes from the French ruling employing the Right of Man (Technollama, 2013).

Another approach has been amendments of laws, and in the case of Greece, the national Constitution, to recognized access to information, or to the information society. Some have taken this Greek Constitution ruling to mean a right to Internet access is a fundamental right (see Sinodinou, 2012). The following is the translated text from Greece’s 2001 change to their Constitution adding Article 5A which states:

All persons have the right to information, as specified by law. Restrictions to this right may be imposed by law only insofar as they are absolutely necessary and justified for reasons of national security, of combating crime or of protecting rights and interests of third parties. 2. All persons have the right to participate in the Information Society. Facilitation of access to electronically transmitted information, as well as of the production, exchange and diffusion thereof, constitutes an obligation of the State, always in observance of the guarantees of articles 9, 9A and 19. (Greek Constitution Online, 2013)

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<sup>131</sup> The UN Special Rapporteur on the Promotion and Protection of the Right to Freedom of Expression and Opinion also agrees with the ruling by the French Court: “While blocking and filtering measures deny access to certain content on the Internet, States have also taken measures to cut off access to the Internet entirely. The Special Rapporteur is deeply concerned by discussions regarding a centralized “on/off” control over Internet traffic. In addition, he is alarmed by proposals to disconnect users from Internet access if they violate intellectual property rights. This also includes legislation based on the concept of “graduated response,” which imposes a series of penalties on copyright infringers that could lead to suspension of Internet service, such as the so-called “three- strikes-law” in France and the Digital Economy Act 2010 of the United Kingdom” (UN Human Rights Council, 2011, p. 14).

The following is an interpretation of the law in 2012 according to Sinodinou: “technological interventions that result in the interruption of internet access or in the degradation of services shall, in principle, be considered as contrary to the Greek Constitution, regardless if they derive from private initiatives or are made pursuant to judicial decisions or laws. The right to participate in the information society is broad and covers also p2p networks which are considered as vital elements of the information society infrastructures, let alone that are also used for lawful purposes” (2012). Thus, degrading services or interrupting Internet service is even deemed contrary to the Greek Constitution.

Taking the rights argument one step further in the legal sphere was an October 2009 Decree in Finland which grants universal functional Internet service to all and also provides for a minimum rate of 1 Mbit/s. This Decree made Finland the first country to grant ‘universal broadband service’ to all at reasonable prices. The legally binding Decree reads as follows (unofficial translation—bold text in original):

**Decree of the Ministry of Transport and Communications on the minimum rate of a functional Internet access as a universal service (732/2009).** (FINLEX, 22 October 2009).

**Section 1**

- (1) The minimum rate of downstream traffic of a functional Internet access referred to in section 60 c(2) of the Communications Market Act (393/2003) is 1 Mbit/s.
- (2) Notwithstanding the provisions of subsection 1, it is sufficient that the average minimum rate of downstream traffic of an Internet access is 750 Kbit/s in a measuring period of 24 hours and 500 Kbit/s in any 4-hour measuring period.

**Section 2**

- (1) This Decree enters into force on 15 October 2009.
- (2) The Decree applies as of 1 July 2010 to any Internet access provided by an operator that has been designated as a universal service operator after the entry into force of this Decree.
- (3) Measures necessary for the implementation of this Decree may be undertaken before the Decree’s entry into force (Decree of the Ministry of Transport 2009).

NB: Unofficial translation; legally binding texts are those in Finnish and Swedish.

The law also states that the government must ensure that every citizen has access to 100 Mbit/s by 2015 (a rate fast enough for streaming high quality video). Finland is already in the top ten countries in the world as far as Internet penetration is concerned with over 88% of the population with access (Internet World Stats, 2013). The implementation of the law has required that Internet Service Providers must foot one third of the cost to provide lines to remote locations, while the government

provides the rest. Customers still have to pay for service, especially if they want faster speeds. However, there are tax subsidies available based on income for the start up costs for access for households.

Furthermore, the Finland case is not alone regarding broadband access. In 2009, Spain followed in Finland's footsteps by noting in Act 2/11 of March 4, Sustainable Economy, that broadband access was part of universal service, and stipulated that broadband connection at a speed of 1Mbit per second (speed same as Finland) is to be provided through any technology. The measure, in Article 52, also states that the conditions of broadband access to the public are to be established by royal decree within four months from entry into force of this Act (Diplo, 2011).

This brings us to an important constitutional law based approach to Internet access in a country the reader should be very familiar with by this point: Mexico. When I started writing on the impact of ICTs on development in 2009 there was no indication that Mexico would be at the forefront of passing rights based Internet access laws in 2013, but the country has surprised many by making great strides in terms of constitutional law. In June 2013, the Mexican Constitution was amended to include a right to the Internet, with the government compelled by law to provide access. According to *Freedom House's* 'Freedom on the Net Report' on Mexico:

legislation that began as a citizen initiative in January 2013 also resulted in the inclusion of a provision in the Mexican Constitution guaranteeing access to the internet as a civic right. Although this is a significant development, as of yet there is no secondary legislation defining exactly how the government will guarantee this right in practice. (2014, p.1)

Before displaying the exact wording in the constitution below I want to discuss how the change came to pass. As explained in Chapter 4 the high access costs for ICT access in Mexico resulted from an unregulated market structure where Carlos Slim with Telmex (fixed line telephones), plus mobile phone carriers Telcel and América Móvil were able to control a large portion of the Mexican market for telephones and eventually for Internet. By the time Peña Nieto was elected President in July 2012 the situation in the telecommunication markets in Mexico was still not regulated very well with large monopolies driving prices. Yet, in March 2013 President Peña Nieto introduced a

substantial telecommunications reform bill. Approved without delay by the House and passed 108 to 3 in the Senate in April 2013, the reform marks a notable change in the government's attitude toward the telecommunications sector (Al Jazeera, 2013; Estevez 2013). Once the reform was implemented, it will supposedly increase competition via asymmetric regulation, forced divestment of companies with a monopoly on telecommunications, and lighten restrictions on foreign investment (*The Economist*, 2013). According to *Freedom House* (2014) the reform also contains the product of Mexico's first successful citizen initiative pertaining to legislation – a provision guaranteeing all citizens' access to the Internet. *Freedom House* (2014) posits:

The provision was championed by 17 civil society organizations that joined forces in January 2013. After gathering 127,198 signatures from constituents advocating for freedom of internet access to be a constitutional right, the proposal was submitted to Congress. Freedom of access to the internet is now included in Article 6 of the Mexican constitution. (Freedom House, 2014, p.1)

Perhaps the strongest, and likely the most vocal, civil society group pushing for the constitutional reform was Yo Soy #132. *Freedom House* (2014) in their most recent report on Internet freedom point to the role that Internet-mediated political activism played. They especially highlight the impact of social media and the Yo Soy #132 movement:

in 2012 and 2013 social media subscriptions sustained their upward momentum. Internet-mediated political activism also increased and played an influential role in both the YoSoy132 protests as well as the development and subsequent success of Mexico's first successful civil action to amend the Constitution, a campaign that resulted in a state guarantee of internet access for all (p.1).

The constitutional reform from this movement was substantial. To this author's knowledge, Mexico is the first developing world nation to make a strong 'rights based' claim for Internet access. It is almost certainly the first to put government action at the center of providing access to all. For instance, Costa Rica's court in 2010 followed France's High Constitutional Council's ruling on the unconstitutionality of 'barring' someone from the Internet. Yet Costa Rica did not specify that the government would provide all citizens with access, as was the case in Mexico with its 2013 ruling.

Despite many of the implications of the reform for policy not being ironed out yet, let's take a closer look at the exact wording of Mexico's constitution and the changes made to it. The most



substantial related changes are in Articles 6 and 7. The official language in the constitution is strongly worded, proclaiming access to be a right; a right framed around the right to free speech and to information in Article 6. The following is the text from Article 6 and the decrees that were added on 11<sup>th</sup> of June 2013 that explicitly state a right to Internet access (Political Constitution of the United Mexican States, 2014):

**Article 6th.-** Free speech shall be restricted neither judicially, not administratively, but when it represents an attack to public morality, life or individual rights, as well as when it produces a criminal offense or disturbs the public order; the right to reply shall be enforce according to the law. The right to information shall be guaranteed by the State.

*(Added by decree published on 11 June, 2013)* Everyone has the right to the free access to plural and timely information, as well as searching, receiving and disseminating information and ideas of any nature through any means of expression.

The Federal state shall guarantee the access right to information and communication technologies, as well as to broadcast and telecommunication services, including wide band and internet (*sic*). For such purposes, the Federal State will provide the effective competence conditions on the provision of said services.

A. For the exercise of the right to access of information, the Federation, the States and the Federal District, within their respective jurisdiction areas, will be governed by the following principles and bases:<sup>132</sup>

B. On the broadcast and telecommunication area: I. The Federal State will guarantee the population integration into the information and knowledge society, through a universal digital inclusive policy with annual and six-year goals.

II. Telecommunications are general interest public services, therefore, the Federal State shall guarantee they are provided under conditions of competition, quality, plurality, universal coverage, interconnection, convergence, continuity, free access and free of arbitrary interference.

III. Broadcasting is a general interest public service, therefore, the Federal State shall guarantee they are provided under conditions of competition and quality and providing

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<sup>132</sup> More relevant passages from this part of the constitution, especially for transparency using electronic resources: I. All information held by any federal, state and municipality authority, entity, body, office and agency is public and shall only be reserved temporarily by public interest reasons according to the law. The highest publicity principle shall prevail on the interpretation of this right. II. The information referring to private live and personal data will be protected under the terms and with the exceptions set by law. III. Everyone, without proving any interest or justifying its use, will have free access to public information, personal data or rectification thereof. IV. Expeditious mechanisms to access of information and revision procedures shall be established. These procedures will be brought before specialized and impartial bodies, offices or agencies, and with operating, management and decision autonomy. V. Legally bound reporting parties shall keep their documents on administrative updated files. They shall publish on available electronic media the complete and updated information about their management indicators and exercise of public resources. VI. The laws will define the way in which legally bound reporting parties shall make public the information related to public resources delivered to companies or individuals (Political Constitution of the United Mexican States, 2014).

cultural benefits for all the population, preserving plurality and truthfulness of the information, as well as encouraging the national identity values, contributing to the purposes established on Article 3<sup>rd</sup> of this Constitution.

IV. Broadcasting publicity or advertising presented as journalistic or news information is forbidden; The terms ruling the content and contracting of services for communication to the public, including those related to the concessionaire liability regarding the information broadcasted on behalf of third parties, without affecting free speech and broadcast.<sup>133</sup>

It is difficult to determine what will actually be implemented by the new Citizen Council or if in reality it will be “an impartial and objective” editor of government policy (Political Constitution of the United Mexican States, 2014). Most importantly, the third paragraph above lays out how the government is responsible for the right to information and even the to “communication technologies, as well as to broadcast and telecommunication services, including wide band and internet” (Political Constitution of the United Mexican States, 2014) and it also states that the government must provide for the “provision of these services.” This is especially strong language proclaiming that the Federal government must take an active, and “competent” role in the provision of ICT services; this language is particularly explicit compared to laws in many countries. Also, notice the focus on transparency and employing electronic resources. Effective transparency, via electronic resources, requires access for the public and the constitution clearly states the provision of access falls on the federal government.

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<sup>133</sup> The following sections of this part of Article 6 dealt with a mechanism for implementing the new rules: V. The law will establish a public decentralized body with technical, operating, decision and management autonomy, which will have the purpose of providing a non-profit broadcasting service, in order to ensure access to the largest number of people on each state of the Federation, to content promoting national integration, training, culture and civic education, equality women between men and women, dissemination of impartial, objective, timely, truthful information about national and international events, and providing an area for independent production works, as well as expression of diversity ad plurality of ideas and opinions that strengthen the democratic life of society.

The public body will have a Citizen Council with the purpose of ensuring independency and an impartial and objective editorial policy. It will have nine honorary counselors who will be elected by an extensive public referendum on the vote of two thirds of the members in attendance of the House of Representatives or, at recess, of the Permanent Commission. Counselors will hold office in a staggered fashion, and the two with the greater seniority in the office will be yearly replaced, except if ratified by the Senate for a second period.

The head of the public body will be appointed, by proposal of the Federal Executive, with the vote of two thirds of the members in attendance of the House of Representatives or, on recess, of the Permanent Commission. He will hold office for five years and could be appointed for a new period only once, and only the majority of the Senate could remove him. The President of the body will annually present to the Executive and Legislative Branches of the Union an activity report. For the latter, he will appear before the House of Congress under the terms appointed by the laws (Political Constitution of the United Mexican States, 2014).

Furthermore, Article 7 was amended to include notions of media freedom stating that there is a right to disseminate opinions, information, and ideas. Article 7 states, in the exact same language, as the ICESCR the right to disseminate “on any media” cannot be taken away by the state or another entity.<sup>134</sup> Although, it certainly remains to be seen if the changes put into effect in Mexico will improve the situation regarding access. In my future research endeavors I would like to revisit my data to see if the changes in the Mexican constitution has resulted in improvements to daily Internet access across the country. At the time of this writing, the jury remains out on whether or not there will be any immediate impact from these reforms (2013 and 2014 data have not been released). I remain guardedly optimistic about the chance of Mexico improving Internet access across the country due to the groundwork laid by CCDs, CCAs, and Mexico online. Also reforms to reign in prices for Internet and phone service. In many ways, at least in price to the consumer for access, the country has been ranked low for so long the only thing it can do is to improve, especially compared its neighbors in Latin America.

A brief note is needed on the important role of dominant global actors, the United States, and the European Union in regard to laws on the right to Internet access. The European Union has instituted laws, and legal statements encouraging universal Internet service and users rights. In 2009, the EU stated (bold text in original):

Directive 2009/136/EC of the European Parliament and Council entered into force. Among other directives, the 2009 Directive amended Directive 2002/22/EC on universal service and users’ rights relating to electronic communications networks and services. The amendment replaced Article 4 of the 2002 Directive, part of which reads:

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<sup>134</sup> The following was ‘Amended by decree published on 11 June, 2013.’ **Article 7** Freedom to disseminate opinions, information and ideas on any media is inviolable. This right cannot be restricted by indirect ways or means, - as the abuse of official or particular controls, paper for newspapers, broadcasting frequencies or appliances and instruments used to disseminate information or any other media and information technology guided to prevent communication and circulation of ideas and opinions.

Neither laws, nor authorities can establish previous censorship or restrict freedom of dissemination, which has no limits but those stated in the first paragraph of Article 6 of this Constitution. Under no circumstances assets used to disseminate information, opinions and ideas shall be confiscated as an instrument of an offense. (Political Constitution of the United Mexican States, 2014).

**'Provision of access at a fixed location** and provision of telephone services

1. Member States shall ensure that **all reasonable requests for connection at a fixed location to a public communications network are met by at least one undertaking.**

2. The connection provided shall be capable of supporting voice, facsimile and data communications at data rates that are sufficient to permit functional Internet access, taking into account prevailing technologies used by the majority of subscribers and technological feasibility...'EU member states are obliged to transpose the Directive to national law by 25 May 2011. Meanwhile, on 2 March 2010, the European Commission [launched a public consultation](#) (which [ended on 7 May 2010](#) after receiving a substantial amount of [responses](#)), to analyse whether the universal service obligations should be extended to broadband access. A few days later, the European Commission launched the [Digital Agenda for Europe action plan](#), whereby one of the targets is to 'Ensure that by 2020 all Europeans can have access to much faster internet, as set out in the EU targets. (Diplo 2011)

This E.U. approach, while not enforceable binding law, does substantially differ from the direction countries such as the U.S. has taken.

The U.S. has been moving away from universal access in policy or case law rulings upholding universal access. For the Internet, the U.S. has departed from previous U.S. laws that compelled telephone companies to provide all homes a landline connection. The departure relates to a Federal Communication Commission (FCC) decision to interpret the 1996 Telecommunication Act as allowing cable companies to classify their Internet services as "Information Services" rather than "Telecommunication Service" where different, more access oriented, rules apply. Also compounding the problem is that new Internet service providers were not allowed to use existing cable and phone wires to provide households users with competing service. This move was upheld in the U.S. Supreme Court case *National Cable & Telecommunications Association et al., v. Brand X Internet Services et al.*, 545 U.S. 967 (2005). Furthermore, there is no U.S. Federal government support to individuals for obtaining broadband connections in areas that do not currently have them (see the following section of the FCC's website for their minimalist answer to Americans who want broadband access in their community (Federal Communication Commissions' website, 2013).

Although a slightly different issue, there have been continuous attempts by U.S. Internet Service Providers to impose more 'monetizing' of the Internet by making consumers pay more for different websites/content. This has enshrined a new concept that is now up for debate across the U.S.: Net Neutrality. Net neutrality is the current general framework for how the Internet functions

(as of this writing in October 2014) where all content on the Internet is given the same download speed from ‘backbone’ ISPs to end-users. Recently, videos streaming content providers, such as Netflix, have tried to pay, or have been forced to pay, ISPs, such as Verizon and Comcast, for faster download speeds—or a so-called Internet ‘fast lane.’ The worry is that this will lead to companies with more money paying for a ‘fast lane’ on the Internet, potentially giving them an unfair advantages over new startups, firms or individuals who cannot pay extra and will be in the so-called ‘slow lane’ (see *Tom’s Guide & Rashid’s*, 2013, article titled ‘How Verizon’s Lawsuit Could Kill Netflix, YouTube’). At the time of this writing, the FCC is in flux regarding its ultimate rules on net neutrality in the U.S. Its new Chairman, and former cable industry lobbyist, Thomas Wheeler claims to be a strong supporter of net neutrality but his tenure has, thus far, been full of outright challenges to net neutrality. The *New York Times* (Feb 10<sup>th</sup> 2014) noted:

In the coming days, the telecommunications, media and Internet industries will be watching to see how Mr. Wheeler responds to last month’s [federal appeals court decision](#) that invalidated the rules created by the F.C.C. in 2011 to maintain an open Internet. Mr. Wheeler has said that he views the decision, which many people saw as a setback for the agency, as an opportunity. He contends he can use it to assert the commission’s broad legal authority to enforce equality and access throughout the networks on which Internet traffic travels. Stressing the depth of his conviction, Mr. Wheeler answered a reporter’s question at a recent news conference about how the F.C.C. would react by pounding the lectern, emphasizing each word: ‘We will preserve and protect the open Internet.’ (*NYT*, Feb 10<sup>th</sup> 2014)

The *New York Times* article further mentioned that the Federal appeals court case discussed above:

Verizon v. F.C.C., the United States Court of Appeals for the District of Columbia Circuit said that the commission was wrong in how it went about imposing rules on how broadband providers treat Internet traffic. However, the decision embraced a view the F.C.C. itself had previously rejected — that the agency’s charge to promote the expansion of broadband gives it sway not only over Internet service providers but also over companies that offer Internet content, like Google, Facebook or Netflix. (*NYT*, Feb 10<sup>th</sup> 2014)

The aforementioned F.C.C. report came out in mid-May, 2014 and immediately created uproar as it left open the door for allowing ISPs to charge different rates. In fact, “The [proposed net neutrality] rules, which allow broadband providers to reach deals with companies for preferred access to their customers, [were published shortly after the final vote](#). The vote passed three to two” (Circa, 2014). Although in Congressional testimony, Wheeler stated “It’s important to recognize that

there are no regulations currently in place to protect the open Internet... I want to protect and preserve the open Internet” (Circa, 2014). Furthermore, he stressed that the FCC will not permit “commercially unreasonable” agreements between broadband providers and content companies (Circa, 2014). The interpretation of ‘commercially unreasonable’ is up for debate and is not fully explained in the current FCC plan. The FCC is taking comments from the public on its proposed net neutrality rules until mid-July 2014, and will likely make a full ruling by the end of the year. In fact, the next few years should be interesting for the U.S. as the Congress will likely deal with this issue as the Telecommunications act of 1996 is in substantial need of updating and the FCC will likely not be able make all their decisions on net neutrality final without some sort of Congressional oversight. Activism around net neutrality has sprung up in the U.S., especially in early 2014 in response to the new FCC approach. The FCC solicited public comments on their proposed rule changes and were flooded with hundreds of thousands of comments—which by their high volume shut down the website accepting comments a few times. Activists are trying but it remains to be seen if they can fully rally the public, and legislatures behind their cause. The following section investigates whether or not human rights activism is a useful approach in the call for access.

### **6.10 Human Rights Activism Approach: NGOs and the Right to Internet Access.**

Human rights activism has had a long history of success in the modern era. Rights based arguments have been persuasive and influential in national and international court cases. NGOs, transnational advocacy networks, global civil society, and international institutions have employed ‘naming and shaming’ techniques to cajole, force, and demand that rights be upheld when state parties fail to meet expectations (see Goodhart, 2013; Hertel, 2006; Keck & Sikkink, 1998). All of which has proven effective for combating many types of human rights violations, ranging from child labor in developed countries, to sweatshop labor in the global south. An examples of how the global civil society of human rights activists and NGOs have played an important role through employing human rights based arguments is provided by Glasius (2013, p. 147-154) who claims that they helped shift

the established paradigm towards increased Western acceptance of economic and social rights in the 1970s. Global civil society proved to be influential lawmakers in the establishment of the International Criminal Court; and as human rights monitors in the East Timor Solidarity Movement (Glasius, 2013).

What about human rights based claims regarding access to the Internet? Some NGOs have recently sprouted up that focus exclusively on making the case that Internet access is a human rights issue. Two in particular have made strides in the last few years reaching many around the world with their message: [A Human Right](#) (2013) and [SingularityHub](#) (2013). Both of these NGOs exclusively focus on making the case for Internet access and freedom online as a human right. It is unclear how much their efforts will materialize in advancing the case for a “Right to Internet Access” to be codified in law. They currently are not producing *amicus curie* briefs, or employing extensive legal teams, instead they are engaging in public outreach.

Another NGO, [Web We Want](#) (2014) has caught the attention of the media with the development of a policy platform, focused on what a human right to the Internet would look like. In fact, this NGO is running a campaign actually calling for a new UDHR for the Internet, trying to capitalize on the 25<sup>th</sup> Anniversary of the Web on March 13, 2014. Web We Want was helped in its creation by a founding father of the Internet Tim Berners-Lee who has recently called for this new UDHR for the Internet. The NGO and campaign is organized by [World Wide Web Foundation](#) (2014) and is steered by a collaborative effort of more than a dozen NGOs from around the world who have experience campaigning for digital rights and access to information. Their mission statement reads as follows (Website accessed on the 25<sup>th</sup> Anniversary the ‘birthday’ of the Internet, March 13<sup>th</sup> 2014):

The Web enables everyone on the planet to participate in a free flow of knowledge, ideas, collaboration and creativity. It is essential to education, development, empowerment, and the protection of individual rights. It must be nurtured and protected. The Web We Want Campaign will build support for national and regional campaigns to create a world where everyone, everywhere is online and able to participate in a free flow of knowledge, ideas,

collaboration and creativity over the open Web. We've come together in support of the following principles:

- **Affordable access** to a universally available communications platform
- **The protection of personal user information** and the right to communicate in private
- **Freedom of expression** online and offline
- **Diverse, decentralized and open infrastructure**
- **Neutral networks** that don't discriminate against content or users

Not surprisingly from the evidence in the literature, there is no mention of economic rights in their policy platform. There is also NO claim of the importance of instrumentality. Instrumentality may be implied in their mission, especially for some of the political rights they list above, but the true power of the instrumental claim is left off the table. Also, they mention affordable universal access, but do not mention a 'sliding scale' of prices or for public spaces with access points and education on how to use the 'universally available communications platform.' Are they talking about only affordable access in the home? Given the potential of their high status among NGOs starting to bring the a 'Right to Internet Access' to fruition, I would like to see more of the economic argument in their mission. If these new NGOs, making rights based claims, ignore the economic realities facing the poor their golden child of 'universal freedom of expression online' will be threatened by crushing economic realities. It will be interesting to see how these NGOs develop as the Internet platform evolves, poverty remains entrenched, and international political realities creep in. The following section moves away from NGOs, instead focusing on how the business sector may be more involved in the future.

### **6.11 The Business Sector and the 'Don't Be Evil' Approach.**

Since this section addresses policy, laws, and regulations, I would be remiss if I did not briefly investigate the private business sector. Is there any potential for putting policies in place aimed at national ISPs or the global technology companies? While the focus on policy in this chapter has been targeted toward what governments and rights groups can do, perhaps another approach aimed at incentivizing local ISPs and the global technology companies for investment would be another effective approach? If history of technology change is any judge, beyond incentivizing ISPs to



provide a minimal threshold of access to the poor, I do not have much faith that companies will provide subsidized, or sliding scale pricing schemes, aimed at access to the poorest. Nor do I see their willingness to foot the bill in providing data lines, or satellite coverage to remote rural areas where the cost outweighs potential profits. I believe the public good argument stated above is most convincing. That being said, it is worth looking at avenues where the private sector could be helpful in advancing the ‘Right to Internet access.’ Of particular attention is freedom of expression, information, and commerce on the web.

Taking a look at companies through the lens of Google, the world’s largest Internet company, provides an intriguing view into how private companies might be supporters, and even champions, of Internet freedom. Molly Land (2013) states:

There are several reasons why technology companies may be willing partners in supporting freedom of expression and information online. First, despite their varied track record overall, a number of technology companies have in fact been struggling with these issues in a way that reflects a deep commitment to online freedom. For example, although it had initially acceded to Chinese law by censoring its local search engine at google.cn, Google decided in early 2010 that it was no longer willing to do this and began redirecting users to its uncensored engine at google.com.hk. Clearly, this was motivated at least in part by business interests and security concerns; it noted its decision was a response to a hacking attack originating from China that targeted the Google email accounts of Chinese human rights activists.<sup>135</sup> In part, however, Google’s decision also reflected its continued commitment to its informal company motto, “Don’t Be Evil,” which Google describes as more than “about providing our users unbiased access to information, focusing on their needs and giving them the best products and services that we can” but “also about doing the right thing more generally— following the law, acting honorably and treating each other with respect.”<sup>136</sup> Google executives have been active participants in conferences on human rights and freedom of expression online.<sup>137</sup> Google is also one of three technology companies involved in the Global Net Initiative (“GNI”), a multi-stakeholder initiative designed to provide a framework for companies resisting pressure from governments to participate in restrictions on freedom of expression and information as well as mechanisms of accountability, public engagement, and shared learning.<sup>138</sup> (452)

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<sup>135</sup> Land, 2010.

<sup>136</sup> Land, 2013, note 323-Google Code of Conduct, Google, <http://investor.google.com/corporate/code-of-conduct.html> (last visited Mar. 6, 2013).

<sup>137</sup> Fruchterman, 2011.

<sup>138</sup> About Us, Global Network Initiative, 2013.

This is not to say that all companies follow the “Don’t Be Evil” approach, and Google has a far from perfect track record. However, it is important to note that many of the global Internet companies may actually be willing to fully support a “Right to the Internet,” particularly against aggressive governments clamping down on freedom online. Business tends to incentivize global Internet companies to bring as many users as possible to their websites and a free Internet certainly enhances that possibility. This is not exactly surprising that they want freedom online. Also, as Tim Wu has said about Google, “[o]ne reason they’re good at the moment is they live and they die on trust, and as soon as you lose trust in Google, it’s over for them”<sup>139</sup> (Land, 2013, p. 454). Clearly, Google wants to maintain and grow its user base—but must keep the ‘trust’ of users in doing so. Freedom on the Internet appeals to this.

Another reason Land (2013) provides for the potential of companies to protect freedom online highlights her argument that a “Right to the Internet” can be based on Article 19:

technology companies may welcome the normative guidance Article 19 offers. Technology companies today are constantly engaged in questions about how to balance their own terms of service, local law, commercial demands, corporate culture, and at times even their own sense of morality. For example, in a dispute several years ago between Google and Turkey after Turkey blocked YouTube because of videos insulting Mustafa Kemal Atturk, Google engaged in a lengthy process of evaluation and negotiation to try to convince Turkey to restore access.<sup>140</sup> As Professor Jeffrey Rosen explains, Google’s top management identified and translated potentially offending videos and “set out to determine which ones were, in fact, illegal in Turkey; which violated YouTube’s terms of service prohibiting hate speech but allowing political speech; and which constituted expression that Google and YouTube would try to protect.”<sup>141</sup> Some within the company took an expansive view of free speech, while others were more conservative.<sup>142</sup> In the end, Google took the position that it would block the videos that violated Turkish law in Turkey but not elsewhere in the world, and it stuck to that position even after the government demanded that the videos be taken down entirely.<sup>143</sup> More recently, Google was embroiled in controversy about the video “Innocence of Muslims,” which sparked anti-American protests throughout the Middle East; Google decided to block the video in selected countries, such as Egypt and Libya, but refused to remove it altogether despite pressure from the White House to do so.<sup>144</sup> Article 19 could provide the “deciders” in these companies—those who determine what apps, videos, and

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<sup>139</sup> Rosen, 2012.

<sup>140</sup> See Rosen, 2008.

<sup>141</sup> *ibid*

<sup>142</sup> *ibid*

<sup>143</sup> *ibid*

<sup>144</sup> Shih, 2012.

posts remain up or are taken down—with useful guidance about how to navigate these complicated questions. (2013, 452-453)

The “Don’t Be Evil” approach is certainly a vague standard. However, as Land points out throughout her piece, Article 19(2) can provide a guiding structure for companies to uphold freedom on the Internet, which is central to claims for a ‘Right to Internet Access.’ If access was granted, but freedom of speech, commerce, and opinion were not upheld, it would defeat the purpose of claiming Internet access as a human right.

Overall, from my research on ISPs in developing countries I remain dubious about relying on private companies to provide access for those that cannot afford it. Under current neoliberal market structures their track record on this front is weak to non-existent. That being said, it appears that the private sector, especially the large global Internet companies, may be helpful in producing conditions that enhance Internet freedom. This is especially important for freedom of expression online, and for freedom in commerce.

## **6.12 Challenges to the ‘Right to Internet Access.’**

There are certainly challenges to my human rights claims and to those made in the dissertation. I tried to address them above as I moved through my arguments, however, there are a few challenges that especially stand out. Some scholars claim that there are more negative ramifications from Internet access than positives. They usually point to criminal activity that occurs online, with such critiques along these lines of argumentation focusing on the pornography industry—especially child pornography—anti-social behavior, falling levels of social capital, and increased use of TV or video streaming at the expense of non-digital reading or other activities deemed ‘better.’ Some of these issues will never be fully be eradicated, and it will remain the case that technology plays a role in furthering them. However, throughout human history some of these problems have been intractable for law enforcement, regulations, and court systems to fully eliminate. These problems are certainly not new in the digital age. Regulators, police, and other watchdogs should be in place to deal with them in an increasingly online world. This is especially challenging in the developing world where

the rule of law tends to be much weaker. Enforcement in developed countries, and especially in developing countries, remains a challenge for sure.<sup>145</sup> In many respects the online world simply reflects the problems in the offline world, this has been especially bourn out as the masses began using the Internet since the late 1990s. The challenge is to see where the online world is palpably different and be ready to address those differences when they come up, no doubt a challenge.

Turning towards the social element opens up some new difficulties. Chapter 2 dealt with whether the Internet was creating more or less social capital, with my argument concluding that, overall, the positives outweighed the negatives. However, when looking at the poor, more nuanced negative impacts of the Internet on social capital need to be addressed. As a medium of information exchange, some claim the Internet does appear to create ‘splintering’ of social groups and political groups (Putnam, 2000). This is not necessarily a positive development for the poor, who are already fractured into disparate groups, with often-inconsequential political power and/or clout. The Internet could make it more difficult for the poor to make ‘class’ based demands on government and upper classes. Furthermore, a lack of Internet access can lead to more exclusion of groups (see Chigona *et al.*, 2009; Sturges, 2004; Zinnbauer, 2007; for detailed studies on exclusion, social capital and the Internet). Also, skeptical views hold that new ICTs will mainly serve to perpetuate and reinforce existing inequalities in civic engagement. Individuals with greater pre-existing resources, education, and digital skills will simply adopt the Internet as another tool. In fact, the Internet can exaggerate existing inequalities in civic engagement. The argument presented here does not dispute these

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<sup>145</sup> One approach to stopping harm caused by the Internet is to follow the advice from the UN Special Rapporteur (2011): “The Special Rapporteur is cognizant of the fact that, like all technological inventions, the Internet can be misused to cause harm to others. As with offline content, when a restriction is imposed as an exceptional measure on online content, it must pass a three-part, cumulative test: (1) it must be provided by law, which is clear and accessible to everyone (principles of predictability and transparency); (2) it must pursue one of the purposes set out in article 19, paragraph 3, of the International Covenant on Civil and Political Rights, namely: (i) to protect the rights or reputations of others; (ii) to protect national security or public order, or public health or morals (principle of legitimacy); and (3) it must be proven as necessary and the least restrictive means required to achieve the purported aim (principles of necessity and proportionality). In addition, any legislation restricting the right to freedom of expression must be applied by a body which is independent of any political, commercial, or other unwarranted influences in a manner that is neither arbitrary nor discriminatory. There should also be adequate safeguards against abuse, including the possibility of challenge and remedy against its abusive application” (UN Human Rights Council, 2011, p. 19).

difficulties, especially for the poorest, but the Internet can also open new doors for political participation, especially for educated working poor and middle classes in developing countries. The rub lies in how local people and their governments employ it.

These are all certainly challenges that need to be fully considered. However, when taken as a whole, I believe that my argument in this dissertation fully exposes more positives than negatives in allowing Internet access and but it is certainly the case that the criminal aspect needs to be taken seriously and regulation should be as strong as possible to crack down on that type of behavior. There are many different ways to achieve this goal, and I do not lay any claim for what are the best policies for specific states. Although I would remind the concerned reader to not forget about the many instances around the world since the 1990s where various ICTs, including the Internet, have been introduced, and crime did not dramatically increase, nor did societies collapse. They certainly changed in some instances, but in positive ways as well.

Other arguments against my claim directly challenge the notion that there is a human right to the Internet. Some argue that it is too ‘flimsy’ to be a right, simply ‘nonsense on stilts,’ or that it will contribute to the ‘Inflation of human rights.’ The following quote from Skepys (2012), one of the most substantial academic articles arguing against Internet access as a right, states that it should not be a right because of an alleged ‘inflation of rights’:

One of the biggest complaints when it comes to human rights qualification is that there is a tendency for human rights inflation. In short, qualifying too many things as human rights contributes to a lack of force in human right claims. This paper has offered a subtle solution to this problem. We should stop calling things we value human rights and instead connect them as urgent threats to more basic human rights, those instrumentally necessary for membership in a political community...There is not a human right to the Internet, but it would seem that the denial of Internet access is an urgent threat to the human right to assemble, so the Internet demands negative duties not to be denied. This paper has presented five arguments that claim there is a human right to the Internet, and it has shown that they all fail. (p. 25)

Skepys goes on to profusely thank his mentor Vinton Cerf, the author of a *New York Times* piece that received a lot of attention—ironically on the Internet—particularly because it came from Cerf one of the ‘founding fathers’ of the Internet, and aptly titled: “The Internet is not a human right.”

Both Skepys and Cerf's contention that human rights inflation is a strong enough to not consider it a human right, yet this argument would have to refute all the evidence listed above regarding how the Internet is now instrumental to many human rights. Frankly their argument seems a bit out of touch with modernity and how the Internet has become such a vital pipeline of information and for political participation. These opponents cling to outmoded human rights conceptions ignoring the fact that the Internet is now instrumental to so many human rights. They also simply treat the Internet as a delivery service—and Cerf even compares it to a “horse.” Sure, he might be right to say there has been no “right to a horse” or a “car” but defining away the Internet as simply being a “delivery service” omits all the evidence pointing to it being a vital lifeline for communication, political engagement, economic opportunity, social inclusion, and scientific information, etc. The Internet clearly has out grown any notion of simply being a delivery service. Instead it reflects the human experience, an experience we have a right to share with our friends, neighbors, and the world. If there is a right to freedom of expression, to equality in opportunity to work, might there need to also be a right to Internet access as it is instrumental to those, and many more rights today.

Theoretically, I will provide two primary reasons that these anti-rights arguments are off base. Their claims typically posit that the Internet is merely a delivery service (see Cerf, 2012; and Skepys, 2012), or analogous to other types of particular objects such as a ‘book,’ and finally that making it a human right will lead to an ‘inflation of rights.’ (1) The first reason this argument does not hold water is that the Internet allows for *agency*. In fact, agency is fundamental to the Internet. If the Internet was merely an information delivery service how come users freely create and share political, educational, art, and philosophical content? It allows for the most unfettered, least costly, and largest publishing platform in history. The list of freedom of expression and economic participation examples is basically never ending, but for me it is clear that the centrality of *agency* for users puts the Internet in a different category than a horse, a car, a delivery service, a book, or a TV. While true that framing human rights in terms of technology has been avoided, there are some rights that explicitly imply the use of technology. Some example from the UDHR are the right to use

‘any media’ for freedom of expression, right to housing and medical care, the right to technical and professional education, and many rights imply the use technology such as the right to social security which employ it to administer benefits to recipients of the right in modern states. Furthermore, the Internet is not just any communications technology—there is little doubt that it is now the primary pipeline that communication is occurring on. I would not make the case for a ‘right’ to TV, radio or smartphones, the Internet is a unique, all encompassing ICT and it will likely be the dominant form of ICTs for decades to come.

The second reason the anti-right arguments are off base has been discussed extensively above—the Internet is truly instrumental to the realization of many human rights today. This also challenges the argument that adding a ‘Right to Internet Access’ will create an “inflation of rights” (Cerf, 2012). Would including a right to Internet access actually affect the fits and starts of human rights realization? That proposition is highly doubtful. It takes years for many rights to be realized and other rights do not affect the struggle for them—except in positive ‘cascading’ of rights at the international level. Some rights have not been realized today, while others have been political ‘winners’ and been passed by lawmakers around the world. Success in rights realization depends on many factors and inflation of rights plays a very small to non-existing role (see Sen, 1999). Cerf’s claim further implies that if the Internet is deemed a right why not make many ‘things’ rights? It is true that there are currently no strong calls/movements for a right to a book or a car, which in strange ways could also be construed to be instrumental. However, I argue that the Internet is different than these ‘things.’ It is often the ‘only’ option available in applying to jobs or stating one’s opinion in the marketplace of ideas. That is not the case for an automobile, or book, as there are other ways to achieve ones objectives instead of using an automobile or reading a particular book. One can usually find a public transportation option, or move closer to where the jobs are so that owning a car does not matter for work—this is not the case for applying for a job online. Regarding books, it is true that there is a right to information, but not to *all* information, be it private or public, or a right to *every* book. There are many ways to get access to the information in a book, reading secondary

literature, talking to people who have read it, having it copied, going to a public library that holds it, etc. Hindering, or outright banning, access to books, data, etc. is what the right to information is designed to combat, not the right to a personal private library. This is not analogous to the Internet; in fact, *nothing is* and arguments that rely on analogy as the main line of reasoning are bound to fail regarding the Internet. Furthermore, attempts to deny Internet access, by the law enforcement in the case of the HODAPI law, or thwart people's ability to access the Internet via economic constraints limits peoples access to rights—there is nothing analogous to this except *denying* of rights. It also unlikely that adding a 'Right to Internet Access' is going to change the dynamics of human rights realization; the inflation of rights might be a concern at some abstract level, but the Internet proves a unique form of media in so many ways. Simply put, the ability of the Internet to effectively employ agency puts it in a new category of ICTs and access to it should now be instrumental to the full realization of human rights.

### **6.13 Conclusion: A Human Right to Internet Access.**

Although the future is difficult to predict, the march of technology, and the changes it brings, moves forward unabated. This is especially true in the developing world where ICT penetration rates are exploding and technologies are leapfrogging each other in quests for market dominance in relatively untapped markets. If the disparity of access to the Internet is not remedied, it is likely that economic inequality will keep increasing and opportunities for economic advancement among the poor will be further limited. Where the market fails to provide access to the Internet—and when market oriented government subsidized incentives do not work in promoting private investment in the Internet—public goods provision may be the only option for governments and NGOs that are attempting to ensure access to the Internet as an instrumental human right. Of course, it should not be forgotten that successful implementation of the Internet as a public good is contingent on careful consideration of social context, literacy, income, and state capacity.



My argument, posited that access to the Internet could be conceptualized as an instrumental human right, as the Internet is now instrumental to both: (I) economic rights (especially the right to work); and (II) civil and political rights. I argued that the philosophical grounding in human rights for “access to the Internet” could be conceptualized as a prioritarian model of instrumental rights. Turning towards case law around the world, empirically displayed that “access to the Internet” is already beginning to be implemented with legal arguments grounded in human rights. The empirical section exposed that access to the Internet is beginning to enter into force in pockets of case law in a handful of countries, and the ‘Right to Internet Access’ cannot be simply characterized as ‘nonsense on stilts.’ I will close with a telling quote from Frank Le Rue, who wrote important 2011 UN report—quoted throughout this Chapter—calling for the UN General Assembly to recognize the right to Internet access:

Unlike any other medium, the Internet enables individuals to seek, receive and impart information and ideas of all kinds instantaneously and inexpensively across national borders. By vastly expanding the capacity of individuals to enjoy their right to freedom of opinion and expression, which is an “enabler” of other human rights, the Internet boosts economic, social and political development, and contributes to the progress of humankind as a whole. In this regard, the Special Rapporteur encourages other Special Procedures mandate holders to engage on the issue of the Internet with respect to their particular mandates. (Human Rights Council, 2011, p. 19)

## **6.14 Conclusion of Dissertation.**

Hopefully, by this point the reader is well aware of the complexities of the ICT/poverty relationship, but will come away from this research with a deeper understanding and some useful ideas for dealing with the relationship from a theoretical, empirical, and policy standpoint. My goal was to explore the impact of ICTs on the poor and determining effective policy to mitigate challenges they face. Although simplifying, my primary puzzle was: Why are there contradictory, inconclusive, even baffling findings in the literature of the impact of ICTs on poverty over the last 25 years? After investigating this puzzle, I remain ‘guardedly optimistic’ about the impact of ICTs. I believe they can, and already have, contributed to improving the lives of the poor, but only if their limitations are addressed; especially high cost, user education, type of language of users, and geography. In

addressing their limitations, government proved to be a forgotten, yet vital actor. In fact, analysis of government is the ‘missing link’ of the ICT literature. The lack of focus on governance is what produced such a confounding puzzle and extensive detailed analysis of the trials and tribulations of government policy helps to resolve the puzzle.

Although there were minor points made, theory elucidated, and new data provided in this dissertation, evidence supports the following ten findings: (1) The Internet and mobile phones have more potential than previous ICTs to lift the poor out of poverty, and relatedly, to allow the poor to apply more pressure on the government for reform. Regarding the latter, Internet and mobile phones increase the chances of Jasmine Swans as we saw in the rise of the Yo Soy #132 movement in Mexico in 2012 and the Arab Spring in 2011. The power of the Internet and mobile phones was exposed via literature on the history of technology change, and the minimal impact of other ICTs on my quantitative analysis and in the Mexican case study. For the first claim, the most central to my dissertation, evidence suggested that without access Mexicans *did not* have access to as many economic opportunities, thus making their climb out of poverty more difficult. This was true in case study analysis, elite interviews of NGOs workers helping the poor, and of non-elites across my urban and rural samples (claim number 7 below displays the governance is the vital driver for creating access for the poor).

(2) There is a statistically significant interaction effect between Internet and governance that is important for determining outcomes for those in poverty. When other factors are controlled for the strongest effect of this interaction is among the lowest-income countries, with evidence produced in the regression analysis in Chapter 3. It also makes sense from a theoretical perspective that low-income countries, those that are able to produce the needed infrastructure for Internet, are also able to provide necessary infrastructure to improve the lives of their poor. (3) The World Bank Governance Indicators, Freedom of Expression and Rule of Law, were statistically the strongest indicators of governance across iterations of my models. Most measures of governance in the interaction effect proved statistically significant, but the two listed above were most efficient

(displayed in Chapter 3). It is not exactly surprising that these measures are strongest; especially considering the difficulty scholars have had in modeling corruption in large-n studies. It also speaks to the importance of governance as the prime mover rather than democracy for development/ICT outcomes. (4) Structural analysis of Mexican states indicated that there are ‘bubbles’ and ‘black holes’ regarding Internet access and states with more access had better outcomes for poverty (controlling for education and income). Evidence for this was exposed in my case study analysis of Mexican cities and between the two indigenous villages. Determining causation proved to be the most difficult part of this claim, but the fact that Guadalajara and Puebla differed most substantially on Internet penetration and poverty scores, while the other factors were held constant strengthened my case. Also, my interview analysis produced more evidence of clear ‘bubbles’ and ‘black holes’ and their ramifications for the poor.

The following five findings were derived from my survey analysis: (5) In Mexico, where people had more access to the Internet, they tended to be better informed about politics, participated more in political activities, visited government websites more often and used services on government websites. This was apparent across all the samples that were studied—Guadalajara, Puebla, Oaxaca City, Urban, Rural, Tlahuitoltepec, Flores. (6) Survey respondents in Mexico reported that the Internet was effective in providing pressure on the government for reform. Again, people from all groups reported this, with the highest scores occurring in Guadalajara, and Tlahuitoltepec. (7) Where the government provided access, and education for digital literacy, users tended to be better informed, more politically active, and used the services for economic purposes. This was clear from my research on CCAs across Mexico and in Tlahuitoltepec. It was also apparent in my elite interviews with operators of the CCA in Tlahuitoltepec. (8) Conversely, when access is not subsidized, and education or language barriers are *not* accounted for, the Internet is difficult for the poor to utilize effectively. This was evident from my research on CCAs across Mexico and in Tlahuitoltepec, and was on display in places with no CCAs or government programs to enhance Internet access (including Flores and many other small towns I visited, but did not collect

respondents from or write extensively about). (9) Despite challenges, the indigenous in Mexico expressed and displayed a high level of interest and use of the Internet. This was apparent in my survey and is a rather surprising result, yet the data, and anecdotal evidence solidly confirms it.

Lastly, (10) claiming a ‘Right to Internet Access’ is the most effective way to ensure government policies will be adhered to in providing a base line level of access to the poor. Hopefully, my human rights claim did not throw the reader for a loop in that it came on strong at the end of the analysis. I did not begin my research on this topic in 2009 even thinking about the potential for access to be considered a human right. However, after seeing the positive impact of access, and the deleterious effects of not having access, I became increasingly convinced that a minimal threshold of access for the poor should be considered a human right. My argument throughout the dissertation tried to build up to this rather bold claim. If people are denied access through law (HADOPI law) or by cost (poverty), my argument demonstrated that many of their human rights are violated as well. Thus, the case for Internet access is inherently instrumental at its core. The case for these 10 claims are not airtight, but I think from available data, the complexity of the issue, and due to the extensive problem of endogeneity—this dissertation adds to the emerging literature on these emerging issues of the modern world.

I will close with some ways that future research could push forward many of the claims I made. Here are three that I consider to be the most promising: (1) first, keep interviewing the poor about this topic. Although they are seemingly powerless, the human connective aspect to the medium of the Internet, in combination with mobile computing on phones, is allowing the poor to mobilize, find other geographically isolated yet related groups, and connect across international borders in ways that increases their ability to threaten/bargain with various edifices of power. It remains to be seen how much power the poor will be able to gain through technology, in fact it might have the opposite effect in the long run, but new opportunities in a connected world are begging to be studied. Asking the poor directly about broad issues of political power and ICTs is important, but so are the more mundane ICT usage oriented questions. How often do you use the

Internet and do you use it to find work? Do you use government services on the Web? Are you able to join more social/political groups in your local area because of the Internet? These more mundane questions are particularly important to inform the development community of effective public policy on technology access issues and much more surveys and interviews need to be done on this around the world. In fact, most indigenous groups, or poor populations in the developing world, have never been asked these types of questions. It cannot be assumed social sciences know what they think, need, or want regarding Internet and mobile phones usage.

Secondly, the government/ICT interaction effect is vital to explaining poverty, but more research is needed on how to make it more effective for public policy in designing pro-poor policies. There is a significant amount of research on e-Governance, and converting government services to an online environment, but little of it is focused on making sure the programs consider the needs of the poor. For instance, before converting to an online only platform, governments need to be aware that not everyone in their polity has easy access, knows how to use it, or is fluent or literate enough to understand the online platform. Intermediaries and local operators are needed to catch these groups when they fall through the digital cracks. Finally, more research is needed on what makes the interaction effect truly pro-poor. How do governments ensure public access for those who cannot afford it at home, perhaps they do not have a home, what then? How are prices kept affordable for the working poor? How are larger issues such as net neutrality, monopolies, and public good provision vs. club good provision evaluated from a pro-poor perspective? More research is certainly needed on all of these issues and considering the current debates taking place around the world surrounding the Internet they are likely to be salient areas of research, innovation, and debate for years to come.

Finally, more research is also needed on the human rights claim, and the activism needed to support it. I believe that my approach is convincing and also lies at theoretical heart of what the Internet really entails (in that it is instrumental to human rights realization). However, I would not

claim that the technology ‘itself’ is a right—instead access to it is right, as it is currently the instrumental media medium for realization of many human rights. Despite all this more practical examples, court cases, studies, and better theoretical framing is needed. For instance, I would have liked to connect the prioritarian instrumental claim more strongly to the work of John Rawls, but I ran out of time in my research—not to mention that Rawls is not someone to be read ‘lightly.’ Also more research is needed on the economic rights front as I have had a difficult time finding any academic research making the claim that the Internet is instrumental to many economic rights—beyond my own ‘work in progress’ academic conference papers. Lastly, the human rights activism approach is just beginning to get traction in the international arena in making political claims for access. However, a lot more on the ground research is needed about the state of this movement—or lack thereof—and how it can contribute to pushing forward a ‘Right to Internet Access.’

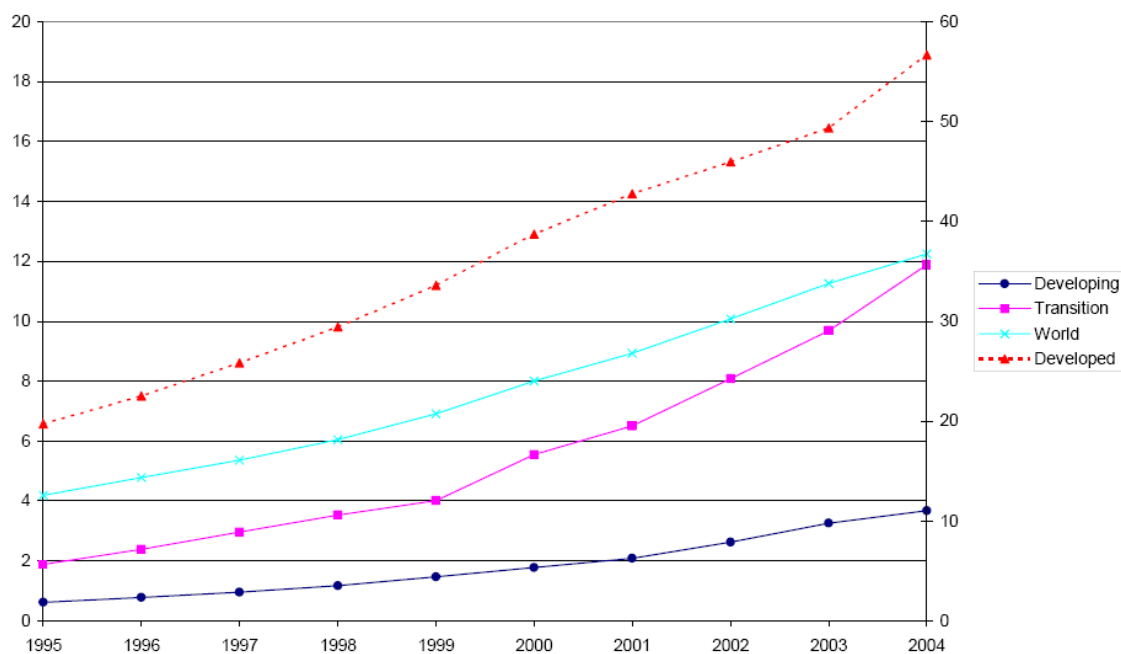
In fact, now I will finally conclude with a direct call for more activism championing universal access to the Internet. This dissertation displayed that it is vital to the everyday lives of the poor. This is evident in my surveys and from the examples of Carlos and Tonantzin I met during my research trip featured at the start of the dissertation. Also in broader trends such as the spread online of political opinion and free speech, the search for jobs, or the ability to political organize—perhaps even creating new Jasmine Swans. Furthermore, the groundwork has been laid out that access can be pro-poor if public policy is *actually* oriented to think of it in those terms. Finally, access can be conceptualized, and should be, an instrumental human right. If activists can use these types of arguments in making their demands on governments then the future of Internet access looks bright, even for the poorest in society. I will close with my favorite quote by UN Special Rapporteur Frank La Rue, which perfectly captures many of my sentiments for what a human rights approach might look like (bolded sections by this author):

Given that the Internet has become an indispensable tool for realizing a range of human rights, combating inequality, and accelerating development and human progress, ensuring universal access to the Internet should be a priority for all States. Each State should thus develop a concrete and effective policy, in consultation with individuals from all sections of society, including the private sector and relevant Government ministries, to make the Internet widely available, **accessible and affordable to all segments of population**. At the international level, the Special Rapporteur reiterates his call on States, in particular developed States, to honour their commitment, expressed inter alia in the Millennium Development Goals, to facilitate technology transfer to developing States, and to integrate effective programmes to **facilitate universal Internet access** in their development and assistance policies. (2011, p. 22)

## Appendix for Dissertation

### Appendices I

Figure 1  
Computer Penetration Rates by Country Type (ITU 1995-2004)

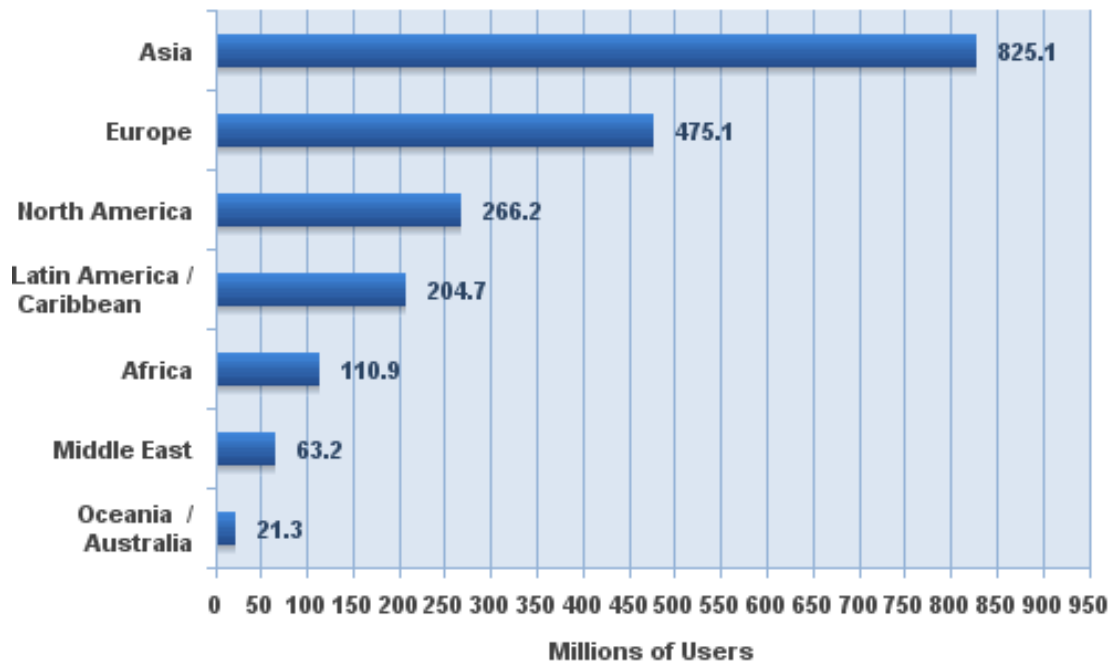


Source: ITU (2009), 1995-2004 data.

Updated data shows that since 2004 similar trends have persisted of what is displayed above. Also Internet penetration rates are usually about half of the computer penetration rate in developing countries.



## Appendix II

**Internet Users in the World  
by Geographic Regions - 2010**

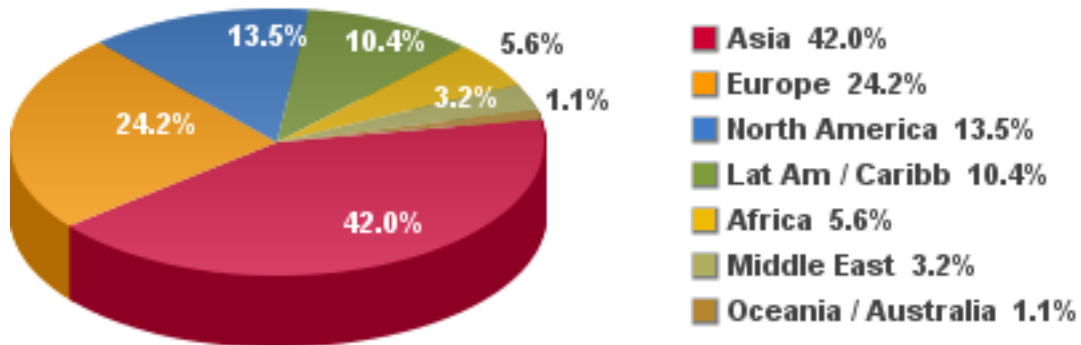
Source: Internet World Stats - [www.internetworldstats.com/stats.htm](http://www.internetworldstats.com/stats.htm)

Estimated Internet users are 1,966,514,816 on June 31, 2010

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## Appendix III

## Internet Users in the World Distribution by World Regions - 2010

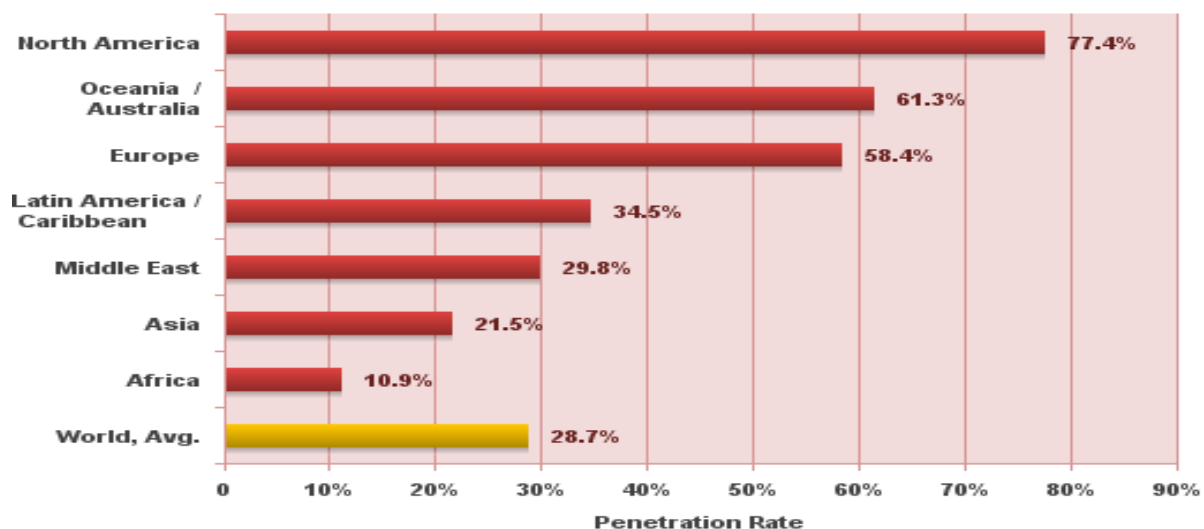


Source: Internet World Stats - [www.internetworldstats.com/stats.htm](http://www.internetworldstats.com/stats.htm)

Basis: 1,966,514,816 Internet users on June 30, 2010

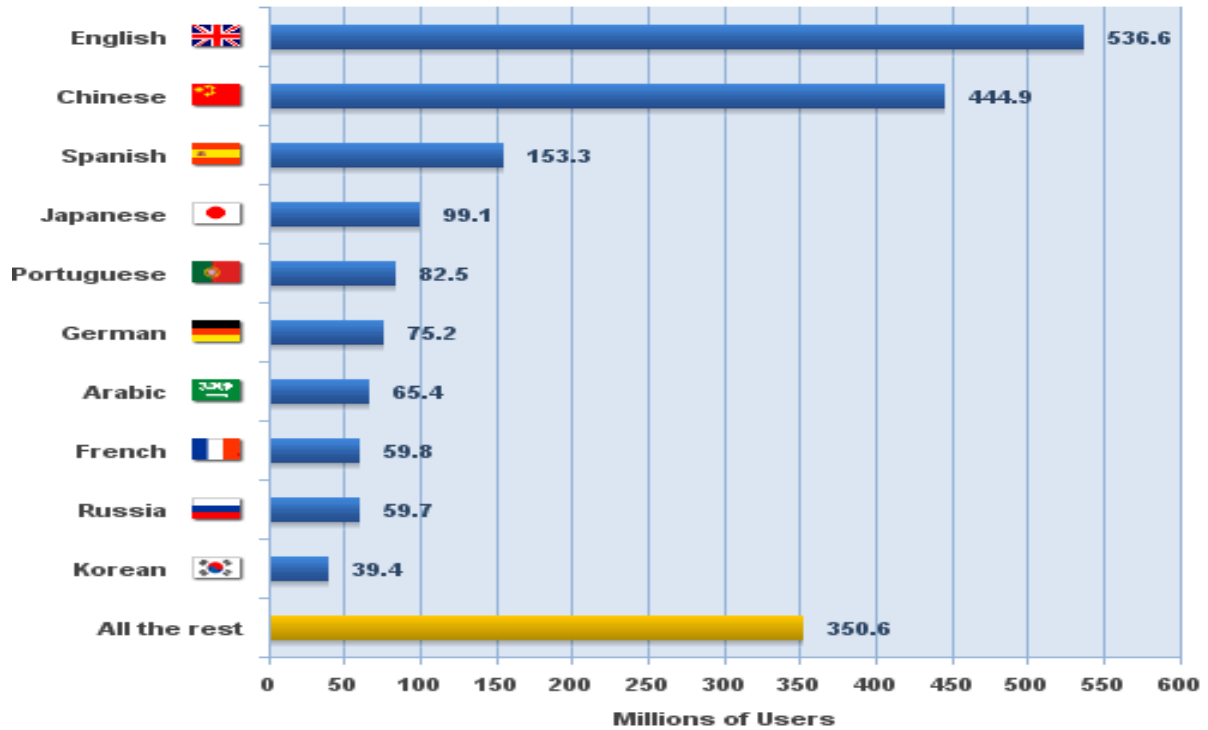
Copyright © 2010, Miniwatts Marketing Group

## Appendix IV

**World Internet Penetration Rates  
by Geographic Regions - 2010**

Source: Internet World Stats - [www.internetworldstats.com/stats.htm](http://www.internetworldstats.com/stats.htm)  
Penetration Rates are based on a world population of 6,845,609,960  
and 1,966,514,816 estimated Internet users on June 30, 2010.  
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## Appendix V

**Top Ten Languages in the Internet  
2010 - in millions of users**

Source: Internet World Stats - [www.internetworldstats.com/stats7.htm](http://www.internetworldstats.com/stats7.htm)  
Estimated Internet users are 1,966,514,816 on June 30, 2010  
Copyright © 2000 - 2010, Miniwatts Marketing Group

Appendix VI  
From Chapter 6

# LOI HADOPI



**LE GOUVERNEMENT VEUT VOUS METTRE  
SOUS ECOUTE PERMANENTE !  
L'ACCEPTEZ-VOUS ?**

“Translated—The government wants to put you under permanent surveillance, will you accept it. Ecoute = digital music player. The law was mired in controversy after the Constitutional Council declared that access to the internet was a human right. Photo by [GoodVibez](#) on [Flickr](#). <http://www.flickr.com/creativecommons/by-2.0/> Some rights reserved. The government has spent millions on the agency that patrols the system and during its implementation, it only ever fined one

individual €150, disconnecting their internet access for 15 days. In 2009, Sarkozy defended the Hadopi law, insisting that the government should protect "lawlessness" in all parts of its territory, including in the online world: "How can there be areas of lawlessness in areas of our society? How can one simultaneously claim that the economy is regulated but the internet is not so? How can we accept that the rules that apply to society as a whole are not binding on the internet?" Source: <http://www.theguardian.com/technology/2013/jul/09/france-hadopi-law-anti-piracy>

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