SOCIAL CAPITAL AND INCOME INEQUALITY IN SELECTED LATIN AMERICAN COUNTRIES

By

Andya Nugraha Pakpahan

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Agricultural, Food and Resource Economics – Master of Science

2020

ABSTRACT

SOCIAL CAPITAL AND INCOME INEQUALITY IN SELECTED LATIN AMERICAN COUNTRIES

By

Andya Nugraha Pakpahan

Social capital can be defined as a person or group's sympathy, empathy, or sense of obligation for another person or group. Using several indirect social capital measures, social capital has been shown to be related to the level of income and income inequality in the United States. However, research examining social capital and its relationship to household income distribution in Latin America is lacking. This study tested the hypothesis that social capital indicators are correlated with income inequality in the selected Latin American countries. Estimated results using regression analysis show that some social capital indicators such as population of urban single parent household, and years of schooling are correlated with income inequality. Years of schooling completed by urban female population has strong negative correlation with income inequality while the population of urban single female parent is positively correlated with income inequality.

However, the estimation results from different models are inconsistent from one another. Future research should consider additional specification of the models. More insights on how social capital are associated with income inequality in Latin America could be potentially gained by using models with additional variables and country data.

ACKNOWLEDGEMENTS

I thank my thesis advisor Dr. Lindon Robison, who agreed to supervise this work during his final year in the department of Agricultural Food and Resource Economics. I pursued several detours before arriving at this point and without his support I would not have finished this thesis.

Next, I thank Dr. Scott Swinton for his willingness to extend a helping hand to me when I was struggling to get back in school. He also helped immensely when he reminded me to focus when I got distracted with another research topic.

I also thank Dr. Adesoji Adelaja and Dr. Valentina Bali for being members of my guidance committee and being willing to spend time reading and providing helpful feedback that improved this thesis.

Finally, I thank my friends and family for all of the support and nudges that helped me get out of my rut. Also, I send a shoutout to the MSU salsa club where I enjoyed dancing and meeting some of the most beautiful and supportive people in my life.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER 1. INTRODUCTION

Background

Social capital is an increasingly popular topic among a wide range of academics from different schools of thought, including economics, political science, health, and sociology (Kawachi, 1997; Puga & Soto, 2018). Social capital has been defined differently depending on the focus of those defining it. Social capital is viewed by some as a vague concept, partly because so many social scientists and disciplines have made their own claims on what it is and have defined it to fit their ownneeds. As a result, Williams (2006) claimed that "social capital" itself is a contentious and slippery term. In this study, I will use the frequently cited social capital definition of Robison, Siles, and Schmid (2002): social capital is a person or group's sympathy, empathy, or sense of obligation for another person or group. Support for this definition is Adam Smith's (1759) explanation of a similar concept where he argued that however selfish a person is, the fortune and happiness of others are still necessary to him, even if the person does not gain anything except for pleasure.

In this thesis, I intend to examine if social capital associated with different household types is related to income inequality in Latin America. I also intend to compare income inequality and social capital results for Latin America with the results obtained by Robison et al. (2011) for social capital and the distribution of income in the U.S. The overall goal is to increase our understanding of the connections between income inequality and social capital.

One frequently cited source defines social capital as a person or group's sympathy, empathy or sense of obligation for another person or group (Robison et al., 2002). Putnam (2000) claimed that social changes such as less volunteering, less engagements in politics, declining

education standards, and increasing crime rates were associated with a decline in social capital—a decline in the quality of our relationships.

Other studies have found that increasing social capital in the U.S. tends to increase the average household income and decrease income inequality (Robison & Siles, 1999; Robison et al., 2011). These results suggest that social capital can be used as an additional resource for reducing income inequality that can supplement other approaches –like increasing minimum wage and transfer payments to name a few (Borghans et al., 2005; Yang, 2015).

A common income inequality measure is the Gini coefficient (Wilkinson & Pickett, 2009), which is an index that ranges from 0 to 100 that describes the relative income differences between members of a population. One advantage of the Gini coefficient is that it provides a standard measure for comparison across countries. When a country has a Gini coefficient of 100, it means that all of the income in the country is concentrated inonly one person. Alternatively, if the Gini coefficient is 0, income is equally divided in the country. The Gini coefficient can be calculated as the area between the Lorenz curve and the 45-degree line divided by the total area under the 45-degree line. A Lorenz curve is a graphical plot of the cumulative distribution of income within a population. To illustrate, in Figure 1.1, the Gini coefficient is the area A/(A+B).

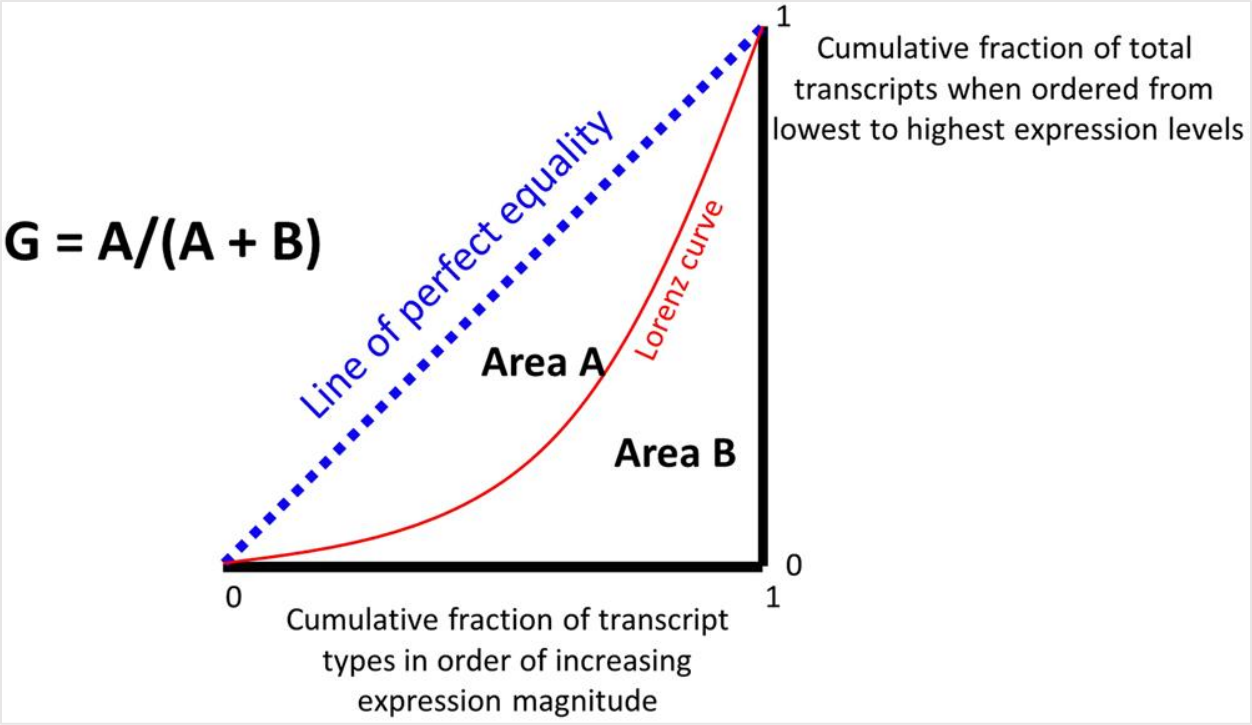

Figure 1.1 Graphical Indicator for Gini Coefficient Calculation. (Source: Wright Muelas et al., 2019)

The World Bank (2016) reported income inequality measured by Gini coefficients increased by about 15 points globally between the 1980s and the early 1990s but has declined slightly since then. To illustrate, Gini coefficient for Latin American countries are represented in Figure 1.2. Each green dot represents one country's Gini coefficient for each observed year between 1980 and 2020.

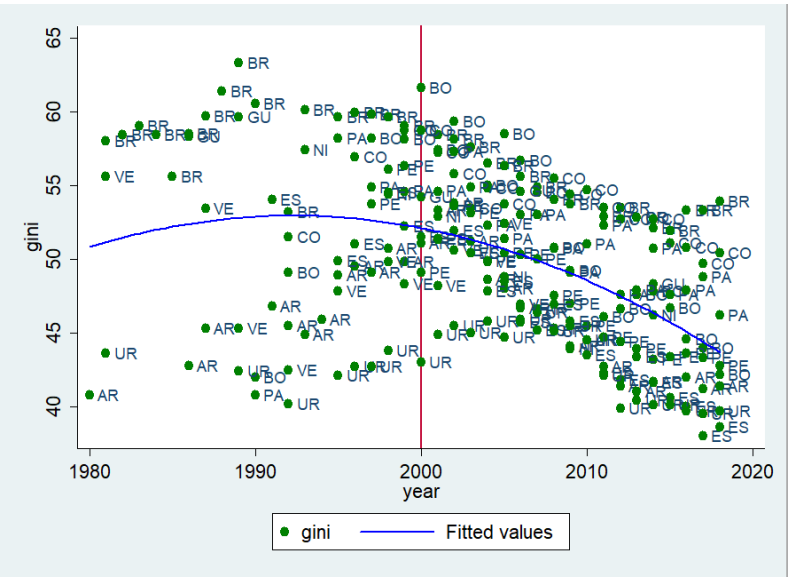

Figure 1.2 Latin America Gini coefficient 1980 – 2018 (Data from Cepalstat)

The blue curved line in Figure 1.2 is the quadratic prediction plot for Gini coefficient values from 1980 to 2018 for Latin American countries with available data. The red vertical line shows the mark for year 2000 as the middle point between 1980 and 2020. Like the World Bank's global findings, the trend for Gini coefficient in the Latin American countries has followed global pattern which on average has been going down since around 1990. The abbreviation for the countries above is shown in Table 1.1.

Table 1.1 Country Abbreviation

Country	*Abbreviation*	*Country*	*Abbreviation*
Argentina	AR	Honduras	HO
Bolivia	BO	Haiti	HA
Brazil	BR	Mexico	ME
Chile	CH	Nicaragua	NI
Colombia	CO	Panama	PM
Costa Rica	CR	Peru	PE
Cuba	CB	Paraguay	PA
Dominican Republic	DR	El Salvador	ES
Ecuador	EC	Uruguay	UR
Guatemala	GU	Venezuela, RB	VE

According to Saracosstti (2007), even with decreasing Gini coefficients, Latin American countries which are mostly classified as middle-income countries, tend to have higher than expected poverty rates. This, at least in some part, can be linked to high inequalities in income generating assets as well as in human and social capital.

A United Nations (UN) report (2015) argued that between the year 1995 and 2012, in some selected Latin American countries such as Brazil, Chile and Venezuela, the differences between overall female and male poverty rates remained at similarly low levels. However, when looking at specific types of households, the difference in poverty rate for single female and single male parent households fluctuates over time.

Additionally, the earlier referred to UN report found that in both developed and developing countries, 3 out of 4 single parent households are single mothers with children. The report also found that households headed by single mothers have higher poverty rates than households headed by single males and significantly higher poverty rates than households headed by two parents. The UN poverty findings in Latin America and the Caribbean are shown in Figure 1.3. The red dots represent the poverty rate for poor single female parent household compared to poor single male parent household in Latin America since 2006-2012. A red dot above the dotted line shows that

for that country's observed data, the female headed household poverty rate was higher than male headed household.

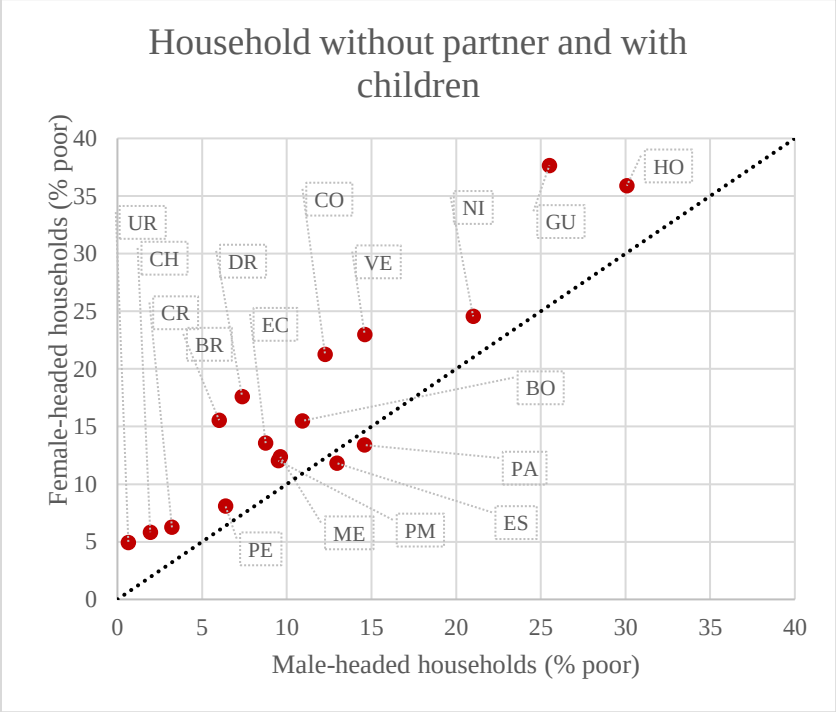

Figure 1.3 Poverty rate by sex of household, 17 Latin America and the Caribbean Countries, 2006-2012 (Source: The World's Women 2015, United Nations p.182)

Figure 1.4 below provides another graphical representation of the average household poverty in Latin America where each colored line represents poverty rates for different types of households. By looking at the poverty rates by household types we observe that the on average, in Latin America households headed by single females followed by household headed by single males have the highest poverty rates.

A caveat to the results in Figure 1.4 is that the collection of data for households of two parents with children in Latin America by Cepalstat – the generally accepted source of statistical information for Latin America and the Caribbean countries – was an accumulation of both married couples and couples in union. Cepalstat defined couples in union as those consensually united in

the form of cohabiting outside of marriage. In these cases, male partners may be absent from a household but still contribute to household expenditures although residing in a different household (Esteve et. al., 2012). This approach may have caused an inflated number of two parent with child households which may be more accurately represented as a single female parent household. To account for this, I decided to calculate a projected measure for two parent with children households by using the ratio of mothers in marriage against mothers in union, seen in Figure 1.4 as the green line for projected two parent with child households.

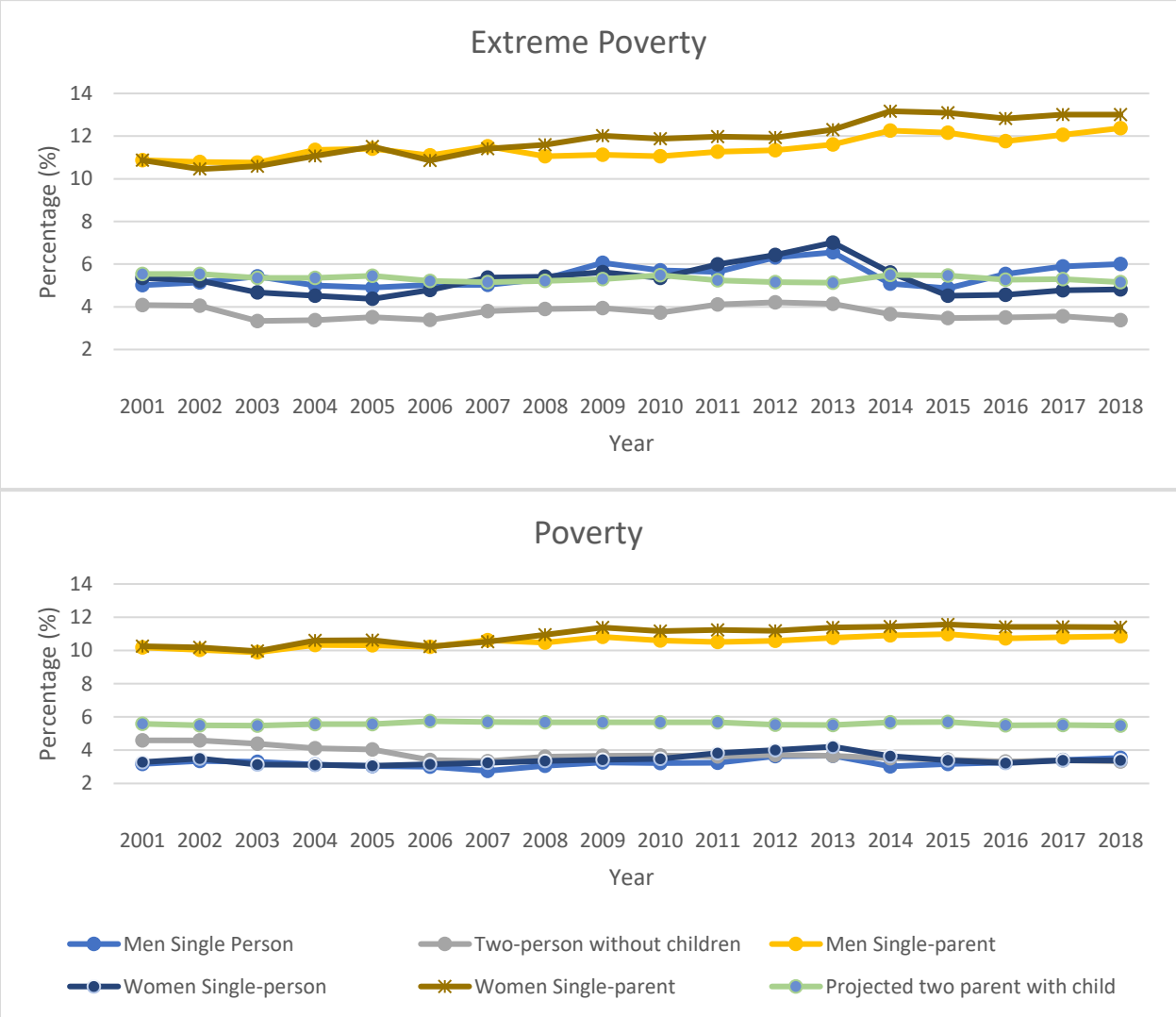

Figure 1.4 Average population percentage under extreme poverty and poverty in Latin America by household type 2001 – 2018 (Data from Cepalstat)

Looking at the difference of poverty and extreme poverty between single parent and single person household (without children), it seems that children may influence poverty. This may simply be because that the extra burden of having a child in the household is the additional element that pushes single parents to have higher risk of being in poverty.

One explanation for the difference in poverty rates between single and two parent households is the difference in the size of their social capital networks. It is assumed that two parent headed households have larger social capital networks compared to households headed by a single parent. This difference in network size may influence information sharing about employment and other opportunities (Robison et a., 2011).

These inferences raise the question: do changes in social capital influence income distribution in Latin America? There is little available research that addresses the question. On the other hand, there has been some research that examines poverty broadly and how poverty is related to people's health (Kawachi et al., 1997) in Latin America. In comparison, there are numerous research articles on social capital and its impacts on income in other regions of the world, including the U.S, Asia, and Europe. These will be discussed in later chapters.

Study Purpose and Objectives

Robison and Siles (1999) and Robison et. al (2011) studied social capital and income distributions in the U.S. using U.S. Census data for different years. By using social capital indicator variables including family integrity, educational achievement, litigation, and labor force participation, they found that social capital influences the distribution of household income in the U.S.

The purpose of this study is to examine the connection between social capital and income inequality in Latin American countries. The objective is to test the null hypothesis that social capital measured by social capital indicator variables such as household types, infant mortality, years of schooling, and economic participation rates will be uncorrelated with income inequality in Latin American countries.

Scope and Methods

This thesis uses data compiled from sources including Cepalstat, and the World Bank database. The World Bank database compiles international data sets generated by national statistical systems with the focus on the Millennium Development Goals –which includes lowering global poverty, improving overall health, ensuring environmental sustainability, and developing global partnership for development. From these data sources I construct panel data for Latin American countries including Argentina, Bolivia, Brazil, Colombia, Mexico, Peru, Paraguay, El Salvador, and Uruguay. Other countries in Latin America are not included in this study because of the availability or quality of data. The database used includes 106 observations from 2000 to 2018. The regression models in this study employ pooled ordinary least squares (OLS), Fixed Effect (FE), Random Effect (RE), and First Difference (FD).

Organization of the Study

The remainder of this study is organized as follows. Chapter 2 reviews the literature related to this study. Chapter 3 develops a conceptual and theoretical framework and describes the data and variables and how they will be used in this study. Chapter 4 presents a summary of the statistical model's results. Chapter 5 analyzes and discusses the results of the statistical analysis. Chapter 6 concludes and summarizes the main findings of this study and suggests areas for further research.

CHAPTER 2. LITERATURE REVIEW

Social Capital, Neoclassical Economics and Game Theory

Neoclassical economic theory assumes that individual agents in an economy will allocate their resources to achieve their own greatest satisfaction. The underlying assumption is that agents have all the necessary information about the consequences of their choices and that their well-being is independent of other agents.

Game theory allows for agents' actions to be dependent on the choices of other agents. The Prisoner's Dilemma (PD) is a well-known example of game theory. The PD game assumes that agents act selfishly even though they were told that their actions will affect other people. Imagine there are two prisoners facing several possible jail terms. The length of jail terms they will serve solely depends on whether both stay quiet (1 year for each); both betray each other (2 years for each); or one betrays the other (the betrayer is free, the betrayed stays in jail for 3 years). Neoclassical economic theory and modern game theory will predict that both prisoners will betray each other due to their selfish nature and wanted to optimize their personal jail time (0 years). If the prisoners considered the actual optimal total jail time for both of them, the best option would be to keep quiet and spend 2 years total in jail or 1 year for each prisoner.

Of course, the problem, with both neoclassical economics and game theory is that agents are humans. Agents are social beings and sometimes they do care how their actions will affect others. Loyalty and cooperation do exist between economic agents. Sometimes people act selfishly and other times they act as if they care about how their choices will affect others, even when there is no commodity reward for doing so.

Several game theory studies have demonstrated cooperation even in complex networks. Konno (2011) studied Prisoner's Dilemma and added three network classes in the model. The

finding from the study is that the closer the mean degree of nearest neighbors, the higher the network will favor cooperation. Iyer and Killingback (2016) found that network with higher assortativity – a preference for network nodes to attach themselves to other similar network – results in higher levels of cooperation. This makes it appear that real-world social networks do possess an important structure property that promotes cooperation from social dilemmas.

Social Capital Definition

While the influence of relationships has been largely ignored in neoclassical economics the recognized "father of economics" Adam Smith, acknowledged the importance of interdependent well-being when he wrote the *Theory of Moral Sentiments* (1790 reprinted in 2006). His first chapter on sympathy described how important relationships influenced people's decision-making processes. He wrote: "How selfish soever man may be supposed, there are evidently some principles in his nature, which interest him in the fortune of others, and render their happiness necessary to him, though he derives nothing from it except the pleasure of seeing it."

Increasingly, economists have been concerned with what economic theory predicts and how people actually behave. Behavioral and socio-economists have called attention to behaviors that persistently violate neoclassical theory predictions: the results are simply not consistent with the theory that economic agents selfishly pursue their individual needs. Works such as *Predictably Irrational* (Ariely, 2010) and *Misbehaving* (Thaler, 2015) have highlighted these behaviors that appear to be inconsistent with neoclassical economic theory predictions.

Socio-economists propose that one reason why agents often "misbehave" or appear to act "irrationally" is that they are responding to exchange of relational goods not considered in usual economic analysis. Robison and Oliver (2019) proposed that relational goods satisfy socio-

emotional needs while commodities satisfy mostly physical needs and that agents allocate resources to maximize the collective contributions of both types of goods. By allowing agents to seek to maximize their satisfaction from combinations of commodities and relational goods, it is possible to explain much of what otherwise appears to be irrational choices (Robison & Oliver, 2019).

Social capital theory claims that social capital produces relational goods that when included with commodities in exchanges influences the terms and level of exchange and the selection of trading partners.

Social Capital and Income Distribution

Robison, Siles, and Jin (2011) studied social capital and income distributions in the U.S. They first developed a mathematical model that connected social capital and income distributions. Then they tried to test their theoretical model using econometric methods such as fixed effect, random effect, and first difference to address criticisms regarding unobservable heterogeneity and simultaneity between income and social capital indicator variables that could happen from using pooled OLS estimations. This research concluded that increases in social capital improve the likelihood of trades, which increases the average income and reduces income differences. This result further supports the proposition that social capital measured by social capital indicator variables has an important influence on the distribution of household income.

This was found to be the case in the U.S., where single female parent households had lower social capital and lower household income according to Robison et. al. (2011). Their findings showed that single mothers earn roughly a third of the income that two-parent households earn. A report done by the UN (2015) also claimed that in 17 out of 27 developed countries in which data

was available, the poverty rates for children in single mother households were three times higher than in a two-parent family households. McLanahan and Booth (1989) noted that families headed by single women are at a significant disadvantage given the persistent gender gap in wages, a common situation where on average, males in a similar job position will have higher wage compared to females in the same position. Supporting this, Blau and Kahn (1996) showed that inequalities in wage leads to an unequal distribution of income.

Ahmad and Sadaqat (2016), Narayan and Pritchett (1999) researched the link between social capital, household welfare and poverty in Pakistan and rural Tanzania respectively. Using membership into local groups as a measure of social capital and household expenditure as a measure of household income level, their research indicated that social capital has a positive impact on the household welfare. Households with high amounts of social capital at their disposal were less likely to be poor. Additionally, Narayan and Pritchett (1999) found that higher social capital is associated with higher school quality and increases community road-building activities. They also found that villages with higher social capital have greater likelihood to use fertilizer, agrochemical inputs, or improved seeds, all of which have the potential of increasing household income and lowers income inequality in the village.

Other research on social capital and poverty reduction have come to a rather interesting finding regarding household head and poverty. Tenzin, et. al. (2015) did a study on social capital and poverty reduction in Eastern Bhutan. The poverty variable used in the study was the log of household expenditure variable and the variable for social capital was the participation rate in community groups. This study showed that social capital positively contributes to poverty reduction and that there are more female-headed households that belong in the higher income

quintile. The reasoning of this may lie in the property inheritance practices where the daughters usually inherit ancestral properties (Pain & Pema, 2004).

Using a similar approach for social capital and household expenditure variables, research done by Hassan and Birungi (2011) in Uganda found that the age of the household head affects level of poverty. They found that the older the household head is, the less likely it is to be under poverty, because older aged households heads have had more time to own and accumulate more productive assets. They also found that that households led by men perform better compared to female-headed households in terms of being above the poverty line. Although this paper did not specify what type of household those men and females belongs to (i.e. single parent or two-person household), the concept of how the accumulation of social capital affects household's performance in economic activities has some similarities to an earlier paper done by Robison and Siles (1999).

Guagnano, et. al. (2015) looked at how social capital affects European households' ability to make ends meet. Their micro level finding was that social capital reduces poverty level by increasing interpersonal trust, which leads to reduced economic transaction costs and fewer constraints to gain labor and credit market access. At macro level, social capital increases the level of social engagement, civic responsibility, and the honesty of public administrators. The study uses subjective poverty measured by dividing the ability to make ends meet into six categories: with great difficulty, with difficulty, with some difficulty, fairly easily; easily; and very easily. The social capital indicator ranges from the local social behavior, such as litigations; social relationships, such as access to communication devices and activities with family; and territorial context, such as overcrowded households and problems with their physical homes. Their study showed that household and community social capital has a positive relationship with households' ability to make ends meet.

Other studies have focused on how social capital improves the likelihood of increasing income. Zhang et al. (2018) studied the connection between social capital embedded in social networks in China and how this influences opportunities to improve occupational status that could ultimately lead to a better income. They found that increases in social capital resulted in better and higher economic returns. Zhang et al. continued to argue that there is a diminishing return to social capital and income. This means that individuals within a higher quintile – or those with higher social status and higher pay – are more likely to have higher social capital. On the other hand, those within a lower quintile – with lower social status and lower income – end up with inadequate amount of social capital and fewer opportunities for advancement. Due to this reasoning, it is also possible that disparities in social capital may lead to an increase of income inequality. Since those at higher quintile tend to have richer social capital and higher access to opportunities for promotion and pay increase compared to those at the lower quintile with fewer opportunities for advancement. Using longitudinal data from a nationally representative dataset, Zhang, Anderson, and Zhan (2011) mentioned that at the individual level, many studies have found that social capital contributes to improved job search and career development outcomes. All in which could help in increasing average income and reduce income inequality.

Overall, social capital has been shown to be a valuable resource that can improve overall welfare and alter income distribution. A social capital-rich region is more likely to have lower poverty and lower income inequality by providing the networks of social connection and information needed to improve one's welfare. Robison et al. (2011) argued that as social capital increases, the disparity of income decreases. Robison and Siles (1999) have found evidence that relationships alter the term of trade and that average income increases as membership in social capital rich groups increases. Usually the "term of trade" refers to the activity of export and import

between trading countries. What the term of trade refers to here is the trading agreements between economic agents (individuals or institutions) that can could include money, goods, information, favors, etc. These changes in the term of trade, which are correlated with social capital changes, shows how lower income inequality can be achieved through increases in social capital.

Gini Coefficient as a Measure of Income Inequality

Many of the studies outlined in the previous section used survey data on household income or household expenditure as an estimation of the household's income level. However, in this study, I will be using Gini coefficients as a measure of income inequality as it has been acknowledged as the most widely accepted measure of national-level income inequality.

Several studies in the past have used Gini coefficient as the measurements of income inequality. Ichida et al. (2009) and Inaba et al. (2015) looked at how social capital and income inequality affects self-rated health in Japan. Even though these studies were not using Gini coefficient as the dependent variable, the Gini coefficient was used as the independent variable that signifies income inequality.

Mehic (2017) used Gini coefficient as the dependent variable associated with income inequality in a study to seek the relationship between income inequality and economic growth. The dependent variable for the study was Gini coefficient for 30 countries from 1985 – 2013. The independent variables included government-expenditure-to-GDP ratio, trade-to-GDP ratio, domestic credit-to-private sector GDP ratio, agricultural and industrial employment share, country population, and country government. The findings of this study show that countries with low agricultural employment have lower inequalities and vice versa. Additionally, countries with high government expenditures have lower level of inequality.

Another study that used Gini coefficient as a measure of income inequality was done by Brueckner and Lederman (2017). In their paper, they estimated the relationship between income inequality and GDP per capita. The dependent variable used to indicate income inequality was the Gini coefficient. Other independent variables include real GDP per capita, investment, share of population ages 15 and above with secondary education or tertiary education, and average years of schooling. Their findings were that the relationships between inequality and human capital is dependent to the countries' initial income. Countries with high initial income have a negative relationship for inequality and average human capital, while countries with low initial income have positive relationship.

Social Capital Measurement

Measuring the stock of social capital accumulated by an individual or institution is a difficult task. One of the reasons why is because social capital does not have a common denominator that can be used to quantify its stock (Atria, 2004). Additionally, Grootaert et. al (2004) argued that there is no easy way to measure social capital: "The tools needed to measure social capital at the level of households or individuals are very different from those needed to measure at the country level." These observations highlight the difficulty of determining a universally accepted measure of social capital.

Some researchers have tried to measure social capital by using indirect measures. This method includes using goods and services that are believed to be produced by social capital as a proxy for social capital (Robison & Flora 2003). Another way of measuring social capital proposed by Robison and Ritchie (2010) is to group it into discrete categories, such as bonding, linking, and bridging social capital. Bonding social capital is the social capital typically formed with similar

people, bridging social capital is the social capital typically formed between social groups and linking social capital is typically formed as networks between institutions. According to Zhang et al. (2011) bridging social capital has a small but significant impact on an agent's future economy while bonding social capital does not show such effects. This finding seems to be in line with others that have shown that bridging social capital has substantial impacts on economic well-being (Putnam et al., 1993; Narayan & Prichett, 1999). These indirect methods of measuring social capital have been very useful in helping us understanding how social capital is embedded in a multitude of sectors.

Earlier works on social capital and distribution of household income have statistically proven how single parent-households lower the overall average income and how these can be caused by the lack of social capital. Robison and Siles (1999) and Robison et al. (2011) argued that single parent households, typically headed by females, are low in social capital because they lack the resources embedded in two-parent households and their expanded networks. The argument Robison et al. presented is that since social capital is an accumulation of capital, being in a single parent household denies them access to a partner's social capital. In the case of single female parent household, the need to care for the child will likely restrict the mother's ability to spend time to grow her social capital. Due to the lack of accumulation of social capital from being single plus the extra commitment of having a child, single female parents have a higher likelihood to be in a worse financial situation compared to single male parent household.

Outside of household type, there are several other documented studies that have demonstrated how other measurable variables can be used as indicators of social capital. Infant mortality has been found to be negatively related to mean income (Robison et al., 2011). Lower infant mortality has been confirmed to be linked with higher social capital within the community

(Yang et al., 2009). Rosling et al. (2019) argued how infant mortality could be used as an indicator of a country's lack of infrastructure for health and an indication of where extreme poverty still lingers.

Years completed in schooling has been found to be one of the most important predictors of trust – a well-accepted resource of social capital (Oreopoulos & Salvanes, 2011). Years of schooling has been proven to have substantial financial return on high school in 1915 in the state of Iowa, around 12% for each year completed (Goldin & Katz, 1999). Gradstein and Justman (2000) added that public education increases growth by not only building human capital, but also by increasing social cohesion. Whereby, transmission of knowledge and skills increases human capital, and instilling common cultural norms and ethical values helps to form social capital networks. This in turn lowers economic transaction cost and reduces social tensions between different population group.

The influence of networks formed from schooling is often hard to observe. However, school has always been considered as an important aspect in developing human capital in both developed and developing countries. Attending school not only gives students academic knowledge, but it also gives them life experiences and social networks that can be beneficial for their future. Oreopoulos and Salvanes (2011) argues that schooling generates many non-financial benefits. For instance, schooling leads to better decision-making skills that will lead to better health, happier marriages, and more successful children. Schooling also helps to form the habit of long-term thinking and patience, leading to lower teen fertility and criminal activity.

Schooling has the possibility of increasing the stock of one's social capital. By attending school, students are exposed to a multitude of social capital networks. Networks between students and their peers, students with teachers, students with alumni, and even with other student's parents

can be formed. Schooling and education have been proven to have a positive influence on increasing one's income (Robison et al., 2011). A report on poverty and shared prosperity by World Bank (2016) also reiterates this sentiment with the finding that although rich households are more likely to send their children to preschool, when children of poor households do attend preschool they enjoy bigger benefits, such as staying in school longer, compared to children who did not attend preschool at all, regardless of household type.

Another way social capital has been indirectly measured was by using the variable participation rate of economic activities. This variable can be considered as a reflection of social capital accumulation in the network of relationships. Granovetter (1974) confirms that most employment opportunities are obtained through informal contacts. Robison and Siles (1999) argued that social capital enhances labor networks to operate efficiently and that high social capital will exist with high levels of labor force participation.

Brook (2005) argued that social capital in recent years has been recognized as having a role in influencing people to participate and progress within the labor market. People with high social capital are more likely to have full time employment. Social capital can influence and assist unemployed people to find a job by improving networks that may provide knowledge of available opportunities for potential employees and for employers. For those who are already employed, social capital could also bring influence for them to change jobs or progress within the workplace.

Puga and Soto (2018) found that for most women in Chile, social capital is not a meaningful predictor of economic participation. They suggest that many women lack the necessary bridging social capital that often provides employment opportunities. Another explanation is that even if they have the necessary bridging social capital, they might lack the complementary capital including time to take advantage of it.

In summary, those who are unemployed are less likely to have ties to those who are employed. If the differences between social capital accumulation are too big, different groups of individuals will likely receive different benefits from social capital, similar to the argument made by Zhang et al. (2018).

The approach in measuring social capital through other measurable variables such household types, years completed in schooling, infant mortality, and economic participation rate, has been shown to be beneficial in the studies related with social capital. Using this as a basis, I will be using similar variables.

CHAPTER 3. METHODOLOGY

Conceptual Framework

To explain how social capital may influence income inequality, assume a situation where members of a network enjoy perfect social capital *K* such that agent *i* receives the same satisfaction from his or her own resources than he or she receives from the object of his or her social capital *j*. With 1 as the maximum value, the condition of perfect social capital can be described mathematically as $K_{ii} = K_{jj} = K_{ij} = K_{ji} = 1$. Where K_{ii} is the social capital of one's self towards his or her own self, K_{jj} is the social capital of another person to themselves, K_{ij} is the social capital from one's self toward other people, and K_{ji} is the social capital from other people towards one's self. Assuming agents *i* and *j* possessed nearly identical utility functions, then agents *i* and *j* would maximize their satisfaction by distributing their income equally between themselves. The details of this inference have been worked out in Robison et al. (2011). If members of the social capital network shared less than perfect social capital or had no relationship at all, the model would imply that agent *i* would prefer a dollar increase in own income to a dollar increase in other agent's *j* income. Then differences in opportunities, skills, endowments, etc. would produce differences in income and produce income inequality (Robison et al., 2011).

Now assume that agents are members of social capital rich networks. The larger network one has, the more opportunities for specialization and trade – keys to productivity and income. If we look at a household's social capital network, we infer from our model that a single parent's network is smaller than a two-parent household's network and possess less social capital determined resources. As a result, we might expect that single parents households would earn less

than two parent household and these differences produce a disparity of income. Hence, factors that limit the size of one's network *i* will also influence income inequality (Robison et al. 2011).

Theoretical Framework

Robison and Siles (1999) and Robison et. al (2011) studied social capital and income distribution in the U.S. By using social capital variables that measure family integrity, educational achievement, litigation, and labor force participation, they found that social capital influences the distribution of household income in the U.S. They associated family integrity with several social capital variables that includes percentage of households headed by single female parent, birth rates of single teens, educational attainment, crime, and infant mortality rates.

Educational attainment variables include high school graduation rates and percentages of teen not in school. Crime variables include litigation rate and violent death rates for teens. Labor force participation variable includes labor force participation rates and childhood poverty rates. The measures used for income were mean household income and standard deviations of income. One important their finding was that an increase in the percentage of households headed by single parents causes a significant decrease in average household income. Their data sources for most of the variables used in their study were from published secondary sources and U.S. Census records.

My study examining Latin America is influenced by the previous U.S. study. (Robison et al., 2011). The main difference, however, is that I will be using the Gini coefficient as a measure of income inequality rather than the variance of income (Mehic, 2017; Brueckner & Lederman, 2017). For the indicators of social capital, I will use the following variables: (a) percent urban households led by a single parent , (b) infant mortality rate (Yang et al., 2009; Rosling, 2019), (c) years of schooling completed by the economically active urban population (Oreopoulos &

Salvanes, 2011 ; Narayan & Pritchett, 1999), and (d) participation in economic activities (Granovetter, 1974; Robison & Siles, 1999; Brook, 2005; Puga & Soto, 2018). I will also include other variables which signify economic condition such as: unemployment rate (Jäntti, 1994; Mocan, 1999), log of total population (Thitithep & Kanyarat, 2016), and population living with under $1.90 (Naschold, 2002).

Empirical Models

To test the relationship between social capital and the Gini coefficient, the following reduced form equation will be used.

$$G_{it} = \lambda_i + \beta Sc_{it} + \gamma X_{it} + \varepsilon_{it}$$

Where G_{it} is the Gini coefficient in country i for year t; Sc_{it} is a vector of social capital indicator variables; X_{it} is a vector of economic performances variable that are expected to influence the Gini coefficient, β and γ are vector parameters to be estimated, and ε_{it} is the independent and identically distributed error term. The term λ is included to capture the time invariant country specific unobserved fixed effects, such as endowment of natural resources.

The explanatory variables used in the model are divided into social capital variables which include variables that are assumed to be proxies for accumulation of social capital. The other group for explanatory variables is the economic condition variables which include variables that are known to be drivers of economic performances in a country.

Social capital variables used in the model are then grouped into three different categories. These categories are family integrity which includes percent of single parent household, and infant mortality; educational achievement that include the variable years of schooling completed; and

economic participation that include the variable participation rate of population in economic activity.

- Family integrity is a measure of negative social capital which includes variables representing single parent household and infant mortality. As discussed earlier, it is assumed that single parent households typically have smaller social capital networks than two parent households. Higher levels of infant mortality are also associated with lower levels of social capital due to how it is typically linked to poverty and areas with low access to health institution and clean water.
- Higher levels of educational achievement are assumed to be positively related to social capital. Not only providing technical skills that increases human capital, time spent in school can also provide a place to develop one's social capital network that can provide later benefits including opportunities for future employment.
- Economic participation is assumed to increase one's social capital, suggesting opportunities for building social capital as well as reflecting a positive stock of social capital. This variable is not 1 - unemployment rate because it includes people who are currently employed or are actively seeking work.

The economic condition variables used in the regression models are unemployment rate, log of total population, and population living with under $1.90. These economic condition variables are expected to have positive relationship with income inequality.

Empirical methods for the regression will include OLS, fixed effect (FE), random effect (RE) and first difference (FD) model. The reasoning for these additional models is because for panel data estimations, OLS may not be an appropriate model due to possible unobserved heterogeneity bias.

Pooled OLS Model

The pooled OLS model specifies constant intercept and slopes regardless of group and time period, the usual assumptions for cross-sectional analysis is:

$$y_{it} = \alpha + sc_{it}\beta + \boldsymbol{x}'_{it}\gamma + \varepsilon_{it}$$

Where: α is the intercept

y_{it} is the dependent variable of Gini coefficient

sc_{it} is the independent variable of social capital

$\boldsymbol{x}'_{it}$ is the independent variable of economic performance

β, γ is the estimated statistical coefficient for the independent variables

ε_{it} is the error term

Fixed Effect Model (FE)

The FE model examines individual differences in intercepts and assumes that individual country has the same slopes and constant variance across individual. The individual country effect u_i is allowed to be correlated with other regressors, since the individual country effect is time invariant. (Park, 2011).

The standard equation for FE can be seen below:

$$y_{it} = (\alpha + u_i) + sc_{it}\beta + \boldsymbol{x}'_{it}\gamma + \varepsilon_{it}$$

FE models are designed to study the causes of changes within an entity such as person, firms, countries (Torres-Reyna, 2007).

Random Effects Model (RE)

Unlike FE, RE model assumes that the individual effects a_i are distributed independently of the independent variables in the model. With that said, each individual countryhas the same

slope parameter with a composite error term $\varepsilon_{it} = u_{it} + e_{it}$. The standard equation for RE can be seen below:

$$y_{it} = \alpha + sc_{it}\beta + x_{it}\gamma + (u_{it} + e_{it})$$

By using RE, the assumption is that the error terms are not correlated with the predictors. The crucial difference between fixed and random effects is whether the unobserved individual effects are correlated with the regressor in the model, not whether these effects are stochastic or not. (Greene, 2008)

First Difference Model (FD)

FD model looks at the difference between two observations at different points of time. The goal of FD is to remove unobserved bias, assuming that those biases are not related to the selected independent variables. The FD model is used in conjunction with FE to have a parallel model to help show the robustness of the FE and OLS.

From the pooled OLS model:

$$y_{it} = \alpha_i + sc_{it}\beta + \boldsymbol{x}'_{it}\gamma + \varepsilon_{it}$$

We can eliminate the cause of heterogeneity by taking first differences from the equation above.

$$\Delta y_{it} = y_{it} - y_{it-1} = (sc_{it} - sc_{it-1})\beta + (\boldsymbol{x_{it}} - \boldsymbol{x_{it-1}})'\gamma + \Delta\alpha_i + \Delta\varepsilon_{it}$$

$$= \Delta sc_{it}\beta + \Delta\boldsymbol{x}'_{it}\gamma + u_{it}$$

By computing the difference for each panel, we can run the regression using the first-differenced data, making it called the first difference equation. All time invariant variables including α_i disappear from the model. If the model has a time trend, it becomes the constant term u_{it} (Susmel, 2015).

Choice of Model Tests

This section will explain the tests done to decide which model estimation results will be used in the result section of this thesis.

Hausman Test

Hausman test is done to determine whether it is more efficient to use the RE or the FE model, testing whether there is a significant difference between the fixed and random effects estimators.

$$H = (\hat{\beta}_{RE} - \hat{\beta}_{FE})'(V(\hat{\beta}_{RE}) - V(\hat{\beta}_{FE}))(\hat{\beta}_{RE} - \hat{\beta}_{FE})$$

Where H denotes the chi-squared distribution and V denotes the variance.

By looking at the difference and the statistical significance, one can conclude which model should be used. The null hypothesis is that the unique errors are not correlated with the regressors. Therefore, if the hull hypothesis from the Hausman test is rejected, it is more appropriate to use FE as our preferred model. This test is used jointly with the expected signs of the estimations from theoretical knowledge to determine which model between FE and RE is more preferred. Lau (1986) argued that statistical tests are one basis, but a research should also be guided by theoretical consistency.

Breusch-Pagan Lagrange Multiplier (LM) Test

To decide between OLS and RE model of which model is more appropriate, the Breusch-Pagan Lagrange multiplier (LM) test is used. The null hypothesis in the LM test is that variance across countries is zero. If the null hypothesis is failed to be rejected, there is no evidence of significant differences across countries, therefore OLS is preferred to RE (Torres-Reyna, 2007).

Variance Inflation Factor (VIF)

To check for multicollinearity, the (VIF) is used. As a rule of thumb, a variable with VIF values that are greater than 10 may merit further investigation. Tolerance, defined as 1/VIF, is used by many researchers to check on the degree of collinearity. A tolerance value lower than 0.1 is comparable to a VIF of 10 (Stata manual, 2011).

Data

In this section I will describe the data used in this study. I will also explain some of the reasoning as why some dataset are chosen to be used in the model.

The panel data used in this study is an unbalanced panel and are included in the appendix. The panel data are collections of data from 9 countries over 19 years of with a total of 106 observations. Because of blank observation data on multiple observation years, without dropping countries such as Costa Rica, Dominican Republic, Honduras, Ecuador, Guatemala, Panama, Chile, Haiti, Nicaragua, and Venezuela, the number of observations within countries used in FE and RE will be very unbalanced. This disparity of observations may cause the estimation results to be inaccurate. The datasets in this thesis can be found from the World Bank Database (https://data.worldbank.org/), and Cepalstat (https://estadisticas.cepal.org/).

Gini Coefficient

Gini coefficient will be used as the dependent variable in the regression models as the measure of income inequality (Mehic, 2017; Brueckner & Lederman, 2017). The recorded data for Gini coefficient prior to year 2000 will not be included with the analysis of this study because the data recording for some other variables in Latin American countries has only started that year.

Data was accessed and downloaded through the World Bank Database at (https://data.worldbank.org/region/latin-america-and-caribbean) on September 7, 2019. This variable of Gini coefficient is used as the dependent variable as an indicator of income inequality from the selected Latin American countries.

Urban Households Headed by a Single Parent

Consider the percentage of urban households headed by a single male or female parent with one or more children. This variable distinguished by gender differences is labeled as urban single male parent and urban single female parent households with children. The method of data acquisition was done through a household survey by the Household Survey Data Bank (BADEHOG), a repository of ECLAC.

This data was downloaded through Cepalstat database located at (https://estadisticas.cepal.org/cepalstat/WEB_CEPALSTAT/buscador.asp?idioma=i&string_busqueda=) in the indicator for types of households, by sex of head of household and geographical area. Data was downloaded on June 18, 2020. The variable urban single male or female parent are used as independent variables for negative social capital indicator in the family integrity group.

Infant Mortality

Infant mortality annual rate is the number of infants dying before reaching one year of age, per 1,000 live births. Estimates for infant mortality were developed by the UN Inter-agency Group for Child Mortality Estimation at www.childmortality.org.

Data on infant mortality was accessed and downloaded through the World Bank Database at (https://data.worldbank.org/region/latin-america-and-caribbean). Data was downloaded on

September 7, 2019. This variable of infant mortality is used as an independent variable for negative social capital indicator in the family integrity group.

Years of Schooling Completed

I define years of schooling completed as the number of years of study of economically active people aged 15 and over divided by the economically active population aged 15 years and older, per hundred. This variable is separated between male and female in the models, labelled as years of schooling completed by urban males and years of schooling completed by urban females.

This data was accessed and downloaded through Cepalstat database located at (https://estadisticas.cepal.org/cepalstat/WEB_CEPALSTAT/buscador.asp?idioma=i&string_busqueda=) in the indicator for years of schooling completed by economically active population 15 years of age and over, by sex and geographical area. Data was downloaded on June 15, 2020. This variable of years of schooling completed is used as an independent variable for positive social capital indicator in the educational achievement category.

Participation Rate of Population in Economic Activity

The definition of this variable is the proportion of the population aged 15 years and over who contribute their work to the production of economic goods and services during the years 2000 to 2018. This indicator is calculated by dividing the economically active population aged 15 years and over for each age and sex group respectively by total population aged 15 years and over,for that same age and sex group. The result is multiplied by 100 to achieve a percentage.

This variable is separated between male and female in the models, labeled as urban male economic participation rates and urban female economic participation rates. The data was obtained

from BADEHOG and was accessed through Cepalstat Database located at the website, (https://estadisticas.cepal.org/cepalstat/WEB_CEPALSTAT/buscador.asp?idioma=i&string_busqueda=) in the indicator for participation rate of population in economic activity, by age group, sex and geographical area. Data was downloaded on June 16, 2020. This variable of urban male or female economic participation rate is used as an independent variable for positive social capital indicator in the economic participation category.

Unemployment Rate

The unemployment rate generally encompasses people who are unemployed as well as those who have previously been employed, and those who are seeking work for the first time. The regional total was estimated as an average using figures on the population of working age according to the projections elaborated by the Latin American and Caribbean Demographic Centre (CELADE). Data was accessed and downloaded through Cepalstat Database at (https://estadisticas.cepal.org/cepalstat/WEB_CEPALSTAT/buscador.asp?idioma=i&string_busqueda=) in the indicator for unemployment rate by sex. Data was downloaded on June 4, 2020.

This variable is used as a variable of economic performance. There has been empirical evidence that increases in unemployment have substantial effect of aggravating income inequality (Jäntti, 1994). Other research has also found that long term unemployment has significant influence on income inequality. An increase in long term unemployment is associated with income increase for the richest quintile (20%) with a decrease of income for the bottom three quintiles (Mocan, 1999).

Log of Population

Population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The population is converted into natural log for the purpose of this study. This data is estimated by the World Bank based on age/sex distributions of UN Population Division's World Population Prospects. Data was accessed and downloaded through the World Bank Database at (https://data.worldbank.org/region/latin-america-and-caribbean), data was downloaded on September 7, 2019.

This variable is used as a variable of economic performance. Thitithep and Kanyarat (2016) argued that if a country has a population of one person, income inequality measured by Gini coefficient would be zero. If the country has population larger than one, the Gini coefficient should rise, because of population heterogeneity. Their paper continued to conclude that log of population size has been statistically proven to have positive relationship with income inequality in the form of Gini coefficient.

Population Living with Under 1.9 Dollar per Day

Population living with under 1.9 dollar per day is the variable that shows the percentage of people who are living with less than $1.90 per day, the baseline for extreme poverty by World Bank. The World Bank decides that if $1.90 in the U.S. can define the cost of basic needs in some of the poorest countries of the world, then it should be able to be considered as the absolute minimum poverty threshold in all countries. This data is used to approximate the percentage of population that is under poverty and extreme poverty.

Data was accessed and downloaded through Cepalstat Database at (https://estadisticas.cepal.org/cepalstat/WEB_CEPALSTAT/buscador.asp?idioma=i&string_bus

queda=) in the indicator population living on less than 1.9, 3.2, and 5.5 dollars per day, 2011 PPP values. Data was downloaded on June 4, 2020.

This variable is used as a variable of economic condition to show the population who are living under extreme poverty. Poverty and inequality have a two-way link with one another. Small changes in distribution of income can be related to large changes in poverty (Naschold, 2002). For example, White and Anderson (2001), imagine a country where the share of national income for the poorest quintile (20%) increases from 6% to 6.25%. This change would barely affect the Gini coefficient, but it will represent a 4% increase for the poor. This shows how there is positive relationship between poverty an inequality, even if the sensitivity is different.

CHAPTER 4. ESTIMATION RESULTS

Choice of Model

To determine which model will be reported in this chapter, the Hausman test, LM test, and VIF test are used.

The Hausman test is used to determine if FE or RE is the more appropriate approach in this thesis. As shown in Table 4.1, the null hypothesis which is that the random effects model is preferred to the fixed effects regression model is rejected, and the FE is statistically supported as the more appropriate model since the unique errors are correlated with the regressors (Torres-Reyna, 2007).

Table 4.1 Hausman Test Result Between Fixed Effect and Random Effect Model

	(b)	*(B)*	*(b-B)*	*sqrt(diag(V_b-V_B))*
	FE	*RE*	*Difference*	*S.E.*
Urban Single Female Parent	0.48154	0.09734	0.384199	0.225826
Urban Single Male Parent	-0.5997	-1.3444	0.744721	.
Years of Schooling Completed by Urban Male	2.27179	-2.3549	4.626715	1.461588
Years of Schooling Completed by Urban Female	-3.3387	1.59655	-4.93521	1.203418
Unemployment Rate	0.24504	0.28778	-0.04273	0.033678
Urban Male Economic Participation Rate	0.03142	0.42548	-0.39406	0.159523
Urban Female Economic Participation Rate	-0.0717	0.136	-0.2077	0.115231
Log of Total Population	10.1755	0.96852	9.20697	8.207301
Infant Mortality Rate	0.08792	0.31613	-0.22821	0.082822
Population Living with Under $1.90	0.51017	0.34239	0.16778	0.06444

b = consistent under Ho and Ha; obtained from xtreg

B = inconsistent under Ha, efficient under Ho;obtained from xtreg

Test: Ho :difference in coefficient is not systematic

chi2(10) = (b-B)'[(V_b-V_B)^(-1)](b-B) =62.24

Prob>chi2 = 0

More test confirmed that RE model is not supported in this study. The LM test between OLS and RE as shown in table 4.2, gives the output of failing to reject the null hypothesis. This is evidence that there are no significant differences across countries and that OLS is preferred to RE.

Table 4.2 LM Test Between OLS and RE

Estimated results:

	Var	sd= SQRT(Var)
gini	21.97151	4.687378
e	1.713463	1.308993
u	0	0

Test: Var(u) = 0

chibar2(01) = 0

Prob > chibar2 = 1

The result from the VIF test can be seen in Table 4.3 below. As shown, none of the variables used has a VIF value above 10. Therefore, I assume that even though there is some multicollinearity within the variables chosen, it is still under the maximum level of acceptable level of VIF at the level of 10 (Hair et al., 1995).

Table 4.3 Variance Inflation Factor

Variable	VIF	1/VIF
Years of Schooling Completed by Urban Female	7.91	0.126436
Years of Schooling Completed by Urban Male	7.6	0.131648
Population Living with Under $1.90	5.11	0.195653
Infant Mortality Rate	3.83	0.261336
Urban Single Male Parent	2.44	0.409886
Unemployment Rate	2.36	0.422935
Urban Male Economic Participation Rate	2.22	0.451052
Urban Female Economic Participation Rate	1.87	0.535887
Log of Total Population	1.76	0.569465
Urban Single Female Parent	1.37	0.730674
Mean VIF	3.65	

The results from the choice of model tests shows that RE is clearly dominated by OLS and FE. Therefore, the reported regression results will only include OLS, FE, and FD.

Regressions Result

The regression results for Gini coefficient against social capital and economic performance variables using OLS, FE, and FD are presented in Table 4.4. Estimation results for Gini coefficient against social capital variables are not consistent across the models used and will be discussed in more detail in the discussion chapter.

Urban single female parent is statistically significant in FE and FD with a coefficient of 0.48 (FE), -0.44 (FD), and 0.01 (OLS). This suggests that result from FE for urban single female parent shows that one percent increase in urban single female parent household is related with 0.48 increase of Gini coefficient. Contradicting this, FD estimation result suggest that urban single female parent household is related with 0.44 decrease of Gini coefficient.

Urban single male household is significant only in OLS and not significant in FE and FD with a coefficient of -1.34 (OLS), -0.6 (FE), and 0.06 (FD). Estimation from OLS suggests that one percent increase in urban single male household is related with 1.34 decrease of Gini coefficient.

Infant mortality is significant in OLS and not significant in FE and FD with a coefficient of 0.32 (OLS), 0.09 (FE), and -0.18 (FD). OLS estimation result suggest that one point increase of infant mortality is related with 0.32 increase of Gini coefficient.

As family integrity (urban single parent household and infant mortality) is considered negative social capital indicator, increases in these variables signifies a decrease of social capital. In other words, high number of infant mortality and urban single parent household for male and

female is considered as a situation of low social capital accumulation and theoretically should be related with increases of income inequality.

Table 4.4 Regression Result

	OLS β /(se)	FE β /(se)	FD β /(se)
Urban Single Female Parent	0.097	0.482*	-0.437*
	(0.15)	(0.27)	(0.23)
Urban Single Male Parent	-1.344*	-0.6	0.057
	(0.75)	(0.68)	(0.5)
Infant Mortality Rate	0.316***	0.088	-0.18
	(0.05)	(0.09)	(0.29)
Years of Schooling Completed by Urban Male	-2.355***	2.272^	1.338
	(0.46)	(01.53)	(01.23)
Years of Schooling Completed by Urban Female	1.597***	-3.339**	-0.868
	(0.48)	(01.29)	(01.09)
Urban Male Economic Participation Rate	0.425***	0.031	-0.003
	(0.08)	(0.18)	(0.14)
Urban Female Economic Participation Rate	0.136***	-0.072	-0.297**
	(0.05)	(0.12)	(0.12)
Unemployment Rate	0.288***	0.245***	0.436***
	(0.08)	(0.08)	(0.12)
Log of Total Population	0.969***	10.175	7.615
	(0.16)	(08.21)	(30.02)
Population Living with Under $1.90	0.342***	0.510***	0.227**
	(0.08)	(0.1)	(0.11)
Constant	-9.739^	-119.644	-0.348
	(06.37)	(138.01)	(0.36)
R-sqr	0.886	0.807	0.42
Observations	106	106	83
fd_r			
Bic	448	393.4	299.9

^ p<0.20, * p<0.10, **p<0.05, *** p<0.01

Years of schooling completed by urban male is only significant in OLS and not significant in FE and FD with coefficients of -2.36 (OLS), 2.27 (FE), and 1.34 (FD). For females, it is significant in OLS and FE and not in FD with coefficients of 1.6 (OLS), -3.34 (FE), and -0.9 (FD).

Inferring from the OLS estimation result, one year increase of schooling completed by urban male is related with 2.36 decrease in Gini coefficient while for urban female, one year increase of schooling completed is related with 1.6 increase in Gini coefficient. FE estimation result show a different direction for years of schooling for female where on year increase is related with 3.34 decrease in Gini coefficient.

The relationship for educational achievement with income inequality has contradicting signs between male and female for OLS, FE, and FD. A possible explanation is the imbalance of schooling opportunities in Latin America for males and females. One gender is likely absorbing most of the benefit of education while the other is being left out. This issue may stem from schooling policies and schooling opportunities differentiated by gender.

Urban economic participation for male and female are significant in OLS and not significant in FE. Urban female economic participation rate is also significant in FD. Economic participation rate for urban male has coefficient of 0.43 (OLS), 0.03 (FE), and -0.003 (FD). Additionally, economic participation for urban female is also significant in OLS, FE, and FD. Coefficients for urban female are 0.14 (OLS), -0.07 (FE), and -0.3 (FD).

OLS estimation result suggests that one percent increase in urban male economic participation rate is related with 0.43 point increase in Gini coefficient while one percent increase for female is related with 0.14 point increase in Gini coefficient. FD shows a contradicting estimation result where urban female economic participation rate is related to 0.3 decrease in Gini coefficient.

Educational achievement (years of schooling completed) and economic participation (urban economic participation rate) are assumed to be negatively related to gini coefficients suggest that increasing social capital reduced income inequality. However, the estimation results

do not show a consistent result across the different models and are inconsistent with the social capital explanation for income inequality proposed here.

The economic condition variables of unemployment rate, log of total population, and population living with under $1.90 behaved as expected. These variables have a positive relationship with income inequality. Unemployment rate and population living with under $1.90 are significant for all models, log of total population is significant for OLS. Unemployment rates have coefficients of 0.29 (OLS), 0.25 (FE), and 0.44 (FD). Log of total population have coefficients of 0.97 (OLS) 10.18 (FE), 7.62 (FD). Population living with under $1.90 have coefficients of 0.34 (OLS), 0.51 (FE), and 0.23 (FD). With every point increase of the variables in the economic condition group, the Gini coefficient is expected to go up accordingly with their coefficients.

Overall, the results showed that social capital variables influence Gini coefficient as expected and support the rejection of the null hypothesis of this thesis that social capital does not influence income inequality. However, the coefficients for social capital variables are not consistent across the OLS, FE, and FD models. Therefore, the results are robust and there is a need to choose which one of the models is the best one

Of the three models, estimation results from FE is shown to have the best fit with theoretical knowledge on social capital and its relationship with income inequality compared to results from OLS and FD. The major issue with OLS is that since changes in government policies between countries could be a major determinant of income inequality, OLS model is not be able to pick up these changes which could lead to a problem of omitted variable and will result in a biased estimation result. Using FE model, changes in government policies are implicitly captured. The FD model seems to have issues from the data used where some of the changes between observation

of the social capital variables such as urban single male and female parent households are very small. Wooldridge (2002) explained that FD estimator will be imprecise when the regressor changes very little over time. For these reasons, I conclude that FE seems to be the best model.

CHAPTER 5. DISCUSSION

The estimations result from the previous chapter have been shown to be inconsistent for different coefficients across different model. For the FE model, the estimations that help explain income inequality that are statistically significant are the variables of urban single female parent household, and years of schooling completed by urban female. Other social capital variables such as urban single male parent household, infant mortality rate, years of schooling completed by urban male, and urban economic participation rate for male and female does not have statistical significance against income inequality. These inconsistencies found from the results means that additional specification and information on social capital are needed to increase our understanding of social capital and its relation to income inequality.

The variable urban single female parent household is shown to have an association with income inequality where one percentage increase of population of urban single female parent household is related with 0.48 points increase of Gini coefficient. Urban single male parent household does not have statistical significance towards income inequality. This could be because the population number for this type of household is very small where only 1 in 10 single parent household is a single male parent household (Cepalstat).

To better understand how this association between household type and income inequality is reflected in the data of household type and income inequality, I examined the distribution of income by quintile in different types of households in Latin America. Data on income distribution by quintile for single parent and other types of household in Latin America is shown in Figure 5.1 below. Income quintile is where a country's income is divided into five quintiles with the quintile 1 represents the poorest fifth or 20%, quintile 2 is the next 20%, up until quintile 5 as the richest 20%. This shows us that the income earned among single parent and two-parent with children

households in quintile 1 is spread between more households while the income earned in quintile 5 is spread between fewer households than before.

According to the data of income quintile ratio from Cepalstat, the average income for quintile 5 household in Latin America earns roughly 16 times the earnings of household in quintile 1. This disparity of income earned in addition to the growing household in quintile 1 translates into more income inequality for single parent and two-parent with children households. Looking at the distribution of income for all household types, there is a possibility that children have a more profound impact in changes in income inequality than previously expected.

Another possible reason why single parent households in Latin America are found to have weaker relationship than expected with income inequality compared to the other social capital variables could be because of the complex nature the household types in Latin America. Esteve et al. (2012) argued that it is very common for females in Latin America to be in a union rather than being legally married. Therefore, the record for single female parent household is likely to be inaccurate depending on how the females completed their survey questions. This type of household is referred to as “false singles” and “visiting unions.” In these instances, females report the presence of their own children in the household, but without any reference to a male partner. These females probably have been a part in a union household in the past, but it is unclear now if they are newly single or have a partner that visits from time to time.

Figure 5.1 Latin America Distribution of Income Quintile by Household Type 2001-2018 (Data from Cepalstat)

Esteve et. al continued to argue that the issues with census records on household type can exaggerate the proportion of singles and affect the ratio between married and cohabiting couples. If the ratio of one household is incorrect, then it is likely that the ratio of other households is also affected and will be inaccurate.

For infant mortality, this variable is consistent with the null hypothesis. There is no statistical significance, and the coefficient is also small at 0.09. Even though infant mortality has been shown to have strong relation with extreme poverty according to Rosling et al. (2019) and Yang et al. (2009), estimation result from FE is inconsistent with this argument. A possible reason for this is due to the interaction of Gini coefficient and the scope of the data for infant mortality. Because Gini coefficient in Latin America has a downward moving trend and data on country level infant mortality has very little variance, the relationship between them could not be observed in this thesis.

Educational achievement is inconsistent with null hypothesis where there is correlation between it and income inequality. Coefficients for years of schooling completed by urban female is -3.34 in FE and it is statistically significant at 5%. Inferring from this, a 1-year increase in schooling completed by urban female is associated with lower Gini coefficient of 3.34 points. The coefficient signs for both of the social capital variable groups suggest that gender differences have different coefficient signs, similar to what is shown from the urban single parent households.

Regarding educational achievement, a possible reason why it has a stronger association with income inequality is because schooling not only builds technical skills, but it also causes the networks for everyone involved in it to grow. Thus, schooling increases both human capital and grows social capital. This growth of network gained may also have an influence on economic participation and income inequality. As seen in Figure 5.2, as time in schooling spent increases for urban male and female to around high school level (12 years of schooling), the difference in gender wage ratio tends to be smaller. The colored columns represent the years spent on schooling with different lengths for each color, a value of one hundred (100) percent means that females are paid

at the same rate as males. That lower wage gap could give females more incentive to pursue higher education if they have the means to do so.

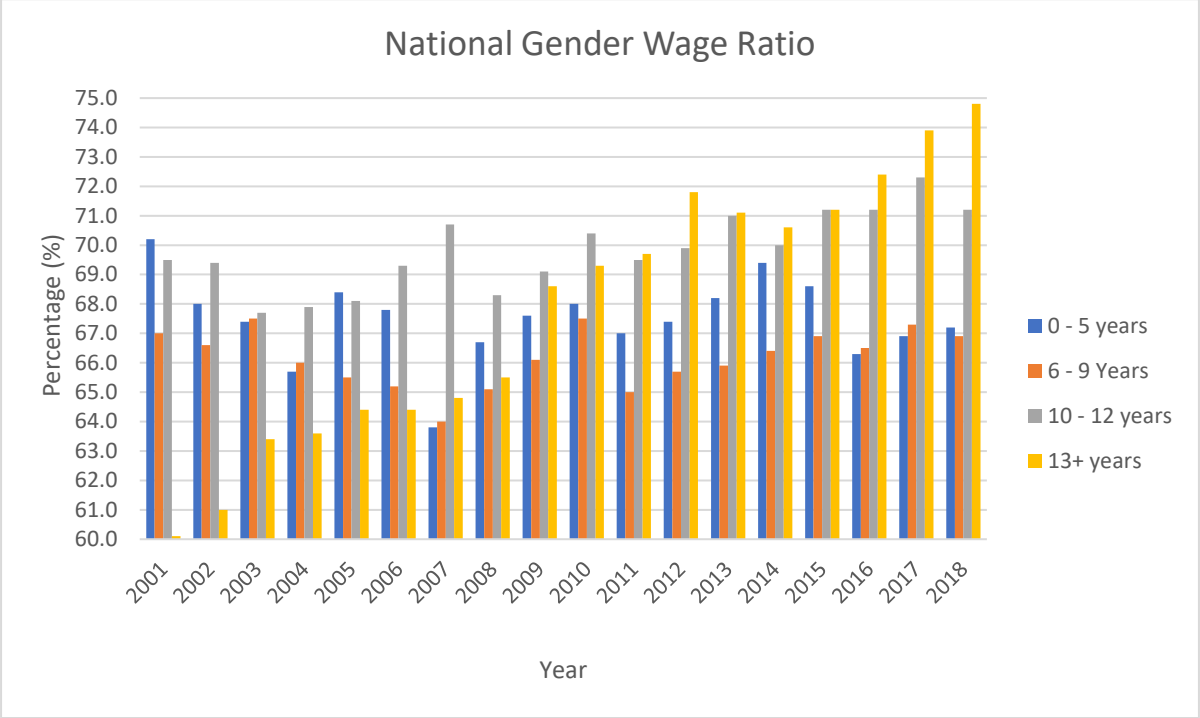

Figure 5.2 Female to Male Latin America Gender Wage Ratio 2001 – 2018 (Data from Cepalstat)

The trend in gender wage gap affected by years of schooling for female has been changing since 2001 in Latin Americe. As the demand for skilled and educated workers in Latin America grows, the incentive for schooling grows, especially for females. The effect on schooling is apparent for females when they spend at least 10 – 12 years of schooling. This could be the reason why the total years of education did not show a clear signal in the regression model even though it shows higher statistical significance for urban females compared to urban males.

Typically, when there are growing demands for educated workers alongside shrinking demand for non-educated workers, the change could be attributed to how the labor markets are moving away from agricultural-based jobs which are labor-intensive to value-added manufactures such as services and goods industries (International Labour Organization, 2010).

Economic participation rate is consistent with null hypothesis. There is no statistical significance for urban male and female economic participation rate towards income inequality. The coefficient for urban male economic participation rate is 0.031 while it is -0.072 for female.

This result can be explained because it is typically harder for urban females to participate in economic activities compared to urban males, so when an increase in economic participation happens it has a larger impact for urban females. Before becoming economically active however, data shows females require more time in school on average. Figure 5.3 shows the disparity of time spent in school for Latin American males and females, where females spend an extra 0.7 years, or 8 months, longer in school than their male counterparts.

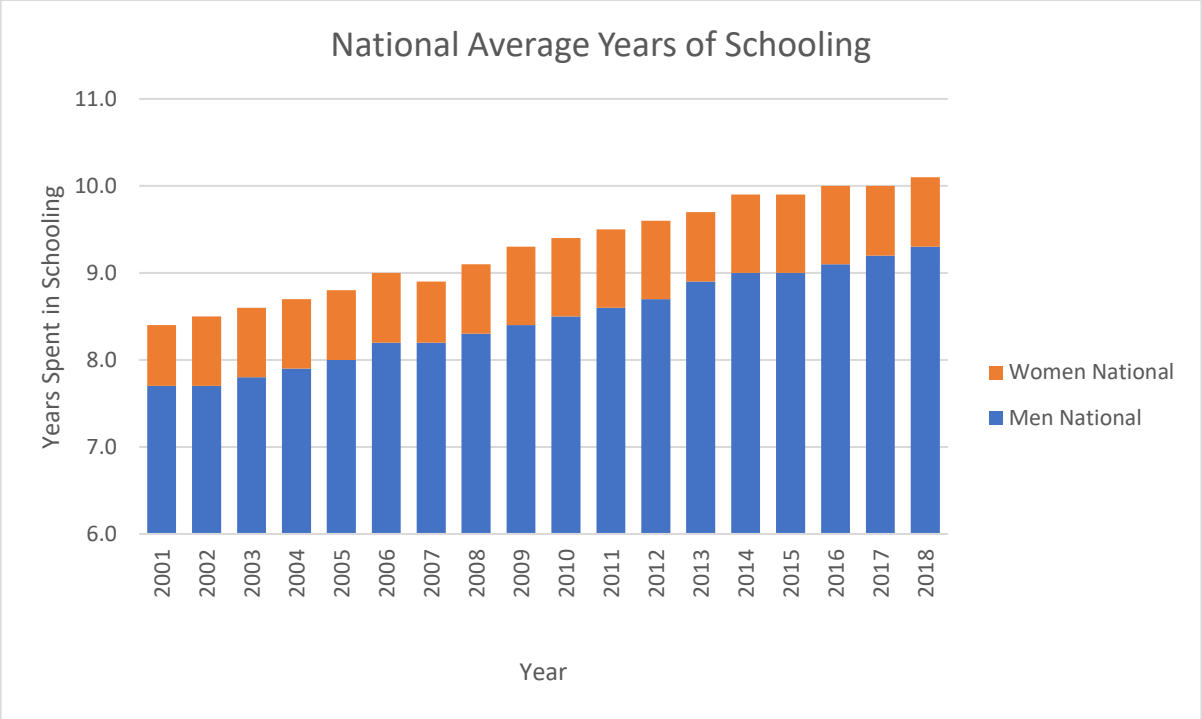

Figure 5.3 Latin America Average Years of Schooling for Economically Active Population, by Gender 2001 -2018 (Data from Cepalstat)

A note, however, is that this data does not necessarily show who graduated school, only the average schooling years spent before participating in economic activities. In fact, López &

Vargas (2017) stated that 7 out of 10 female adolescents in Latin America do not attend school at all and are not doing paid work, while at the same time 7 out of 10 males are economically active. For those adolescent females who are not in school and not doing paid work, this could severely restrict their growth of social capital networks compared to male adolescents, who can at least grow their networks through their time doing paid work. Additionally, the increased time schooling years for females translates as a higher opportunity cost when they are deciding whether to continue schooling or drop out. Especially since it is easier to see the immediate costs of school compared to the long-term benefits (Oreopoulos & Salvanes, 2011).

Another finding related to economic participation rate is the stark difference of numbers between males and females who are active in the economy, represented in the figures below. Figure 5.4 and Figure 5.5 shows how female in Latin America are consistently at a disadvantage in terms of employment opportunity and quality.

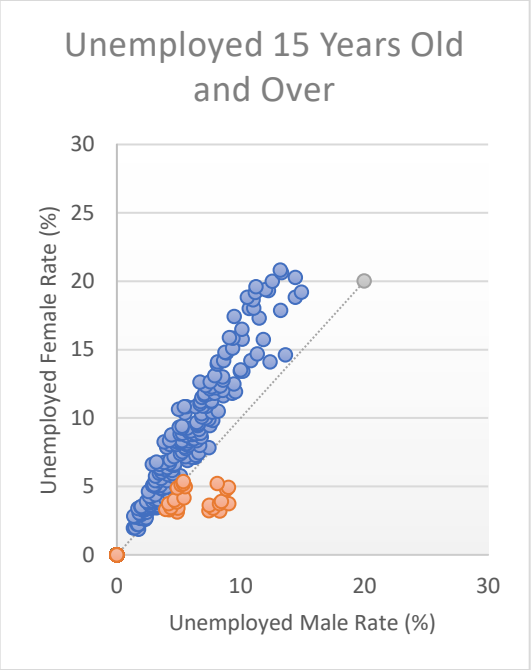

Figure 5.4 Distribution of Unemployed Population 15 Years Old and Over by Sex Year 2000 – 2018 (Data from Cepalstat)

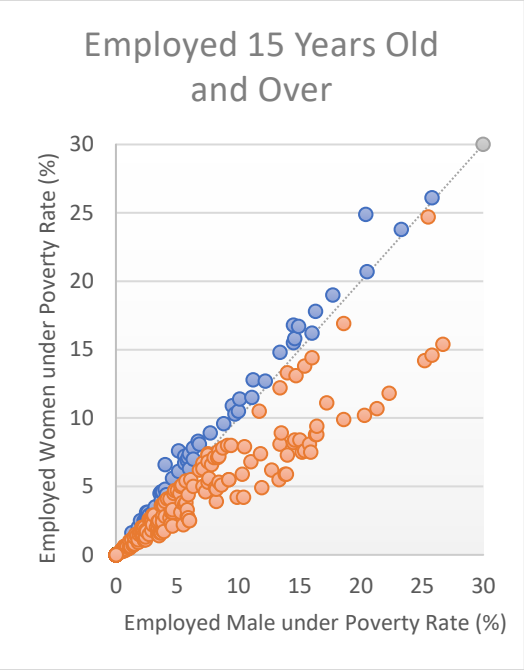

Figure 5.5 Distribution of Employed Population 15 Years old and Over by Sex Year 2000- 2018 (Data from Cepalstat)

The blue dots in Figure 5.4 show the situation in Latin American countries where data suggests that female have higher unemployment rate compared to their male counterparts. The orange dots show observations where male have higher rate of unemployment. Countries with higher observed male unemployment rate are El Salvador for year 2000 to 2018, and Mexico for year 2009, to 2012. This distribution of unemployment rate between male and female can give us a better picture on how opportunities of employment is very unequal between genders in Latin America.

The blue dots on Figure 5.5 signify data where the population of employed females in a country have a higher poverty rate compared to employed males under poverty. The orange dots signify where the employed males have the higher poverty rate compared to employed females. Interestingly, this distribution seems to break my earlier arguments on how females are identified

to be performing worse economically compared to males. However, I can also say that since this is the condition for employed population under poverty, the data is proving a point that males have higher rates of employment, even for low paying jobs. As an illustration, assume that there are 100 openings for employment; 50 of them do not provide enough wages to put the employees above the poverty line. The dots in Figure 5.5 above are an approximation that out of those 50 employment opportunities, 33 of them are filled by males and 17 filled by females.

Increasing the fairness in employment between males and females could be a good starting point to reduce income inequality. This sentiment is also supported by Harkless (2010) who argued that generally, raising female employment and reducing employment inequality between female and male would have a substantial impact on reducing household income inequality.

Generally, it seems that social capital in Latin America is possibly gender biased where urban males may inherently have advantages in gaining or accumulating social capital compared to urban females.

CHAPTER 6. CONCLUSION

This thesis set out to see if social capital has help explain income inequality in Latin America. Findings from the econometric models suggests that the null hypothesis of this study is rejected; social capital has a correlation with income inequality in Latin America. Out of all social capital indicators used in this study, economic participation rates and infant mortality rates have little statistical influence on income inequality. Urban single female parent households are positively correlated with income inequality, while years of schooling completed by urban female are negatively correlated with income inequality. However, the estimation results from different models (OLS, FE, and FD) are inconsistent with each other. We conclude that the models are not robust.

Our results suggest that an important approach for reducing income inequality would be to increase the accessibility for urban females to at least finish high school level (12 years of education). By getting the education standards to this point, the gender wage gap will be smaller, while also possibly leading to a lower employment inequality between genders in Latin America.

Future research should consider additional specification of the models. More insights on how social capital are associated with income inequality in Latin America could be potentially gained by models using additional variables and country data. Additionally, using different household types or having more focus on gender and accumulation of social capital could also help identifying social capital accumulation in Latin America.

Limitations of my study include the use of secondary data, unbalanced panel data, and not having actual household income data for Latin American countries. Having this data would have allowed me to estimate the actual change in household income alongside with income equality, which should lead to a more comprehensive analysis. Despite these limitations, my study suggests that the relationship between social capital and income inequality in Latin America should be the focus of research in the future.

APPENDIX

Table A.1 Data Used in the Model

Country	*Year*	*Gini*	*Urban Single Male Parent*	*Urban Single Female Parent*	*Infant Mortality Rate*	*Years of Schooling Completed by Urban Male*	*Years of Schooling Completed by Urban Female*	*Urban Male Economic Participation Rate*	*Urban Female Economic Participation Rate*	*Total Population*	*Unemploymen t Rate*	*Population Living with Under $1.90*
Argentina	2000	51.1	1.5	9.3	17.5			73.0	44.2	37057452	15.1	5.70
Argentina	2001	53.3	1.6	9.6	16.9			72.0	43.0	37471509	17.4	9.42
Argentina	2002	53.8	2.2	9.5	16.3			71.6	45.2	37889370	19.7	13.99
Argentina	2003	51.2	1.9	9.7	15.8	9.9	11.0	75.6	50.0	38309379	17.3	7.05
Argentina	2004	48.6	1.8	9.8	15.3	10.0	11.0	75.8	49.8	38728696	13.6	5.37
Argentina	2005	48	1.9	10.5	14.8	10.1	11.3	75.0	50.0	39145488	11.6	3.89
Argentina	2006	46.7	1.8	10.5	14.4	10.3	11.5	75.0	49.6	39558890	10.2	3.33
Argentina	2007	46.6	2.4	10.2	14	10.4	11.6	74.0	48.2	39970224	8.5	2.94
Argentina	2008	45.3	1.9	10.4	13.7	10.5	11.7	74.2	49.0	40382389	7.9	2.56
Argentina	2009	44.1	1.9	10.6	13.3	10.5	11.8	73.8	49.2	40799407	8.7	2.59
Argentina	2010	44.5	1.9	9.7	12.9	10.6	12.1	74.2	47.4	41223889	7.7	1.11
Argentina	2011	42.7	2.1	10.1	12.4	10.7	12.0	74.6	47.6	41656879	7.2	0.95
Argentina	2012	41.4	2.0	10.0	11.8	10.8	12.1	74.2	48.0	42096739	7.2	0.80
Argentina	2013	41	2.0	10.1	11.3	10.8	12.0	72.8	48.2	42539925	7.1	0.75
Argentina	2014	41.7	1.9	10.7	10.7	10.7	12.1	72.4	48.6	42981515	7.3	0.74
Argentina	2015				10.2					43417765	6.5	
Argentina	2016	42	2.1	11.3	9.7			70.2	47.2	43847430	8.5	0.58
Argentina	2017	41.2	2.1	11.3	9.3			71.4	48.4	44271041	8.4	
Argentina	2018	41.4	1.9	11.5	8.8			71.0	49.4		9.2	
Bolivia	2000	61.6	1.6	10.2	55.7			76.6	53.8	8339512	4.8	28.65
Bolivia	2001	57.4	1.5	10.0	52.9			77.6	61.0	8496375	5.2	22.84
Bolivia	2002	59.3	1.8	10.5	50.2	9.7	8.4	77.0	57.2	8653345	5.5	24.74
Bolivia	2003				47.7	9.6	8.2			8810420	6.0	

Table A.1 (cont'd)

Bolivia	2004	55	2.4	13.0	45.2			78.6	58.4	8967741	4.2	13.68
Bolivia	2005	58.5	1.6	11.4	42.8			75.0	54.2	9125409	5.4	19.32
Bolivia	2006	56.7	3.1	11.2	40.6			77.2	57.6	9283334	5.1	16.38
Bolivia	2007	54.5	1.9	11.9	38.4	10.7	9.4	76.8	54.6	9441444	5.2	12.44
Bolivia	2008	50.8	2.9	12.0	36.4	10.5	9.6	77.2	57.6	9599855	2.8	11.05
Bolivia	2009	49.2	2.7	11.4	34.4	10.7	9.9	78.0	58.8	9758748	3.3	10.46
Bolivia	2010				32.6					9918242		
Bolivia	2011	46.1	2.4	10.2	30.9	10.9	10.1	78.2	56.6	10078343	2.7	7.29
Bolivia	2012	46.6	2.1	12.1	29.2	11.1	10.4	76.0	55.2	10239004	2.3	8.20
Bolivia	2013	47.6	2.5	11.6	27.7	11.7	11.0	76.4	54.8	10400264	2.9	6.86
Bolivia	2014	47.8	2.2	11.0	26.2	10.9	10.3	77.0	56.2	10562159	2.3	5.80
Bolivia	2015	46.7	2.5	10.1	24.9			75.8	51.2	10724705	3.5	6.35
Bolivia	2016	44.6	2.4	11.3	23.8			76.8	55.4	10887882	3.5	7.07
Bolivia	2017	44	2.2	11.5	22.8			75.4	52.2	11051600	3.6	
Bolivia	2018	42.2	2.5	12.8	21.8			74.4	52.6		3.5	
Brazil	2000				30.4					175287587	7.1	
Brazil	2001	58.4	1.3	10.2	28.6	7.2	8.1	79.4	53.2	177750670	9.4	11.60
Brazil	2002	58.1	1.2	10.4	26.8	7.4	8.3	79.6	54.6	180151021	9.2	10.31
Brazil	2003	57.6	1.3	10.7	25.2	7.5	8.5	79.0	55.0	182482149	9.7	11.09
Brazil	2004	56.5	1.4	10.8	23.6	7.7	8.6	79.4	56.0	184738458	8.9	9.73
Brazil	2005	56.3	1.3	10.9	22.1	7.9	8.8	79.8	57.2	186917361	9.3	8.64
Brazil	2006	55.6	1.3	10.7	20.7	8.1	9.0	79.4	57.2	189012412	8.4	7.20
Brazil	2007	54.9	1.3	10.9	19.5	8.2	9.1	79.0	57.2	191026637	8.2	6.81
Brazil	2008	54	1.4	11.0	18.4	8.3	9.3	79.2	57.4	192979029	7.1	5.59
Brazil	2009	53.7	1.3	10.9	17.5	8.5	9.4	79.0	57.8	194895996	8.3	5.41
Brazil	2010				16.7					196796269		
Brazil	2011	52.9	1.3	10.9	16	8.6	9.7	77.4	55.2	198686688	6.7	4.73
Brazil	2012	53.5	1.4	10.8	15.4	8.8	9.9	77.2	55.4	200560983	7.3	3.77
Brazil	2013	52.8	1.4	11.1	14.9	8.9	10.0	76.6	55.2	202408632	7.1	3.83

Table A.1 (cont'd)

Brazil	2014	52.1	1.4	10.8	14.5	9.0	10.1	77.0	56.2	204213133	6.8	2.76
Brazil	2015	51.9	1.4	10.9	14			75.8	55.0	205962108	8.5	3.36
Brazil	2016	53.3	1.5	10.6	14.6			74.6	55.0	207652865	11.5	
Brazil	2017	53.3	1.5	10.5	13.2			74.8	55.8	209288278	12.7	
Brazil	2018	53.9	1.6	10.6	12.8			74.4	56.2		12.3	
Colombia	2000	58.7			21.1					40403958	17.3	16.37
Colombia	2001	57.2			20.5					40988909	13.8	19.67
Colombia	2002	55.8	1.5	10.2	19.9	8.7	9.3	80.0	57.0	41572491	14.4	14.30
Colombia	2003	53.4	1.4	10.5	19.4	8.8	9.3	80.4	57.8	42152151	13.1	11.95
Colombia	2004	54.8	1.5	10.7	18.9	9.0	9.5	79.4	56.0	42724163	12.7	10.88
Colombia	2005	53.7	1.6	11.1	18.3	9.1	9.7	78.4	55.6	43285634	11.0	9.71
Colombia	2006				17.8					43835722	11.1	
Colombia	2007				17.3					44374572	10.2	
Colombia	2008	55.5	1.6	12.4	16.8	9.4	10.0	77.2	54.8	44901544	10.5	10.40
Colombia	2009	54.4	1.6	12.6	16.3	9.1	9.9	79.0	57.8	45416181	11.3	9.02
Colombia	2010	54.7	1.6	12.8	15.8	9.3	9.9	79.4	59.2	45918097	11.0	7.85
Colombia	2011	53.5	1.6	12.9	15.3	9.4	10.1	80.2	60.4	46406646	10.1	6.36
Colombia	2012	52.7	1.6	13.0	14.9	9.5	10.1	80.6	61.4	46881475	9.7	6.35
Colombia	2013	52.8	1.7	12.8	14.4	9.7	10.4	80.0	61.2	47342981	9.0	5.74
Colombia	2014	52.7	1.9	12.9	13.9	9.8	10.5	80.4	61.4	47791911	8.5	5.03
Colombia	2015	51.1	1.8	12.8	13.5			80.2	61.6	48228697	8.3	4.53
Colombia	2016	50.8	1.8	12.6	13.1			79.8	61.2	48653419	8.6	4.53
Colombia	2017	49.7	1.8	12.9	12.6			79.4	60.8	49065615	8.8	
Colombia	2018	50.4	1.8	12.7	12.2			79.0	60.2		9.1	
Mexico	2000	52.6	1.3	8.1	22.2	8.7	8.7	82.0	41.8	101719673	2.6	9.08
Mexico	2001				21.1					103067068	2.8	
Mexico	2002	50.1	1.4	9.4	20.1	9.0	9.1	80.6	44.8	104355608	3.0	6.71
Mexico	2003				19.1					105640453	3.4	
Mexico	2004	50	1.6	9.1	18.3	9.1	9.5	81.2	45.8	106995583	3.9	6.02

Table A.1 (cont'd)

Mexico	2005	50.1			17.5					108472228	3.6	6.67
Mexico	2006	48.9	1.3	9.9	16.9	9.4	9.4	81.4	50.6	110092378	3.6	4.23
Mexico	2007				16.3					111836346	3.6	
Mexico	2008	49.9	1.3	9.8	15.8	9.4	9.7	80.2	46.0	113661809	3.9	5.48
Mexico	2009				15.3					115505228	5.4	
Mexico	2010	47.2	1.3	10.0	14.9	9.7	10.1	79.2	45.2	117318941	5.3	4.57
Mexico	2011				14.5					119090017	5.2	
Mexico	2012	48.7	1.4	10.0	14.1	10.0	10.2	79.2	47.0	120828307	4.9	3.93
Mexico	2013				13.7					122535969	4.9	
Mexico	2014	48.7	1.4	9.8	13.2	10.1	10.5	78.6	46.8	124221600	4.8	3.79
Mexico	2015				12.7					125890949	4.3	
Mexico	2016	46.3	1.7	10.1	12.2			80.2	51.6	127540423	3.9	2.17
Mexico	2017				11.6					129163276	3.4	
Mexico	2018	45.4	1.6	10.2	11			79.8	51.8		3.3	
Peru	2000	49.1	1.7	7.9	29.6	10.6	10.1	76.2	56.0	25914879	7.8	16.39
Peru	2001	51.3	2.1	8.0	27.4	10.5	9.7	74.8	54.8	26261363	9.2	17.14
Peru	2002	53.6	1.8	8.9	25.5	10.6	9.9	75.8	54.8	26601467	9.4	15.10
Peru	2003	53.1	1.5	8.8	23.7	10.7	10.0	75.4	55.6	26937738	9.4	11.89
Peru	2004	49.9	1.7	8.4	22.1	10.8	10.0	77.6	57.4	27273194	5.3	13.58
Peru	2005	50.4	1.8	8.6	20.7	10.7	10.0	74.4	54.6	27610410	5.4	15.49
Peru	2006	50.3	1.9	8.8	19.5	10.9	10.1	77.6	58.2	27949944	4.7	13.54
Peru	2007	50	1.7	8.8	18.3	11.2	10.5	80.6	61.6	28292724	4.7	11.11
Peru	2008	47.5	1.9	9.7	17.3	11.1	10.3	80.4	61.8	28641980	4.6	8.94
Peru	2009	47	1.9	9.4	16.4	11.2	10.6	80.6	61.8	29001507	4.5	7.04
Peru	2010	45.5	1.7	9.9	15.6	11.2	10.5	80.4	63.0	29373646	4.1	5.50
Peru	2011	44.7	2.1	10.3	14.9	11.2	10.6	79.8	62.2	29759989	4.0	5.20
Peru	2012	44.4	2.0	9.9	14.3	11.4	10.9	80.0	62.0	30158966	3.7	4.72
Peru	2013	43.9	2.0	10.0	13.7	11.3	10.8	79.4	62.0	30565716	4.0	4.32
Peru	2014	43.2	2.2	10.3	13.1	11.3	10.7	78.6	60.8	30973354	3.7	3.72

Table A.1 (cont'd)

Peru	2015	43.4	2.0	10.9	12.5			78.6	60.0	31376671	3.5	3.55
Peru	2016	43.6	1.9	10.8	12			79.4	61.4	31773839	4.2	3.49
Peru	2017	43.3	2.1	10.8	11.5			79.2	62.2	32165485	4.1	
Peru	2018	42.8	2.0	11.3	11.1			79.0	62.0		3.9	
Paraguay	2000				27.9					5302700	10	
Paraguay	2001	54.6	1.5	8.5	27.3	8.9	9.0	81.4	56.8	5406624	7.6	8.94
Paraguay	2002	57.3	1.6	8.9	26.7	8.6	8.9	82.8	56.4	5508611	10.8	13.24
Paraguay	2003	54.9	1.3	10.0	26.1	9.2	9.3	81.2	55.4	5607950	8.1	8.30
Paraguay	2004	52.3	1.6	10.9	25.6	9.0	9.2	83.2	59.6	5703740	7.3	5.71
Paraguay	2005	51.4	2.5	10.2	25	9.5	9.7	81.6	58.6	5795494	5.8	6.07
Paraguay	2006	53	2.1	9.6	24.4	9.4	9.8	80.0	53.8	5882796	6.7	7.95
Paraguay	2007	53	2.0	9.2	23.8	9.4	9.7	81.2	56.2	5966159	5.6	7.83
Paraguay	2008	50.7	2.5	9.2	23.2	9.7	10.2	83.4	57.4	6047117	5.7	4.31
Paraguay	2009	49.1	2.0	10.8	22.5	9.9	10.3	83.8	58.4	6127837	6.3	5.77
Paraguay	2010	51	1.5	8.4	21.9	9.8	10.2	82.0	57.4	6209877	5.7	5.46
Paraguay	2011	52.3	1.8	9.3	21.3	10.3	10.8	80.4	58.0	6293783	5.5	5.05
Paraguay	2012	47.6	1.6	10.3	20.7	10.2	10.8	82.6	61.8	6379219	4.6	3.28
Paraguay	2013	47.9	1.8	10.5	20.1	10.6	11.1	80.6	62.4	6465740	5.0	1.79
Paraguay	2014	50.7	1.6	10.7	19.5	10.6	11.2	81.6	59.0	6552584	6.0	2.41
Paraguay	2015	47.6	2.1	9.9	18.9			81.0	58.2	6639119	5.4	1.89
Paraguay	2016	47.9	1.7	9.6	18.4			82.8	60.2	6725308	6.0	1.68
Paraguay	2017	48.8	1.9	10.3	17.8			82.6	60.2	6811297	6.1	
Paraguay	2018	46.2	1.4	10.4	17.2			83.4	60.6		6.2	
El Salvador	2000	51.5	1.3	11.1	27.2	8.5	8.1	75.0	51.2	5867626	6.7	12.25
El Salvador	2001	51.4	1.4	11.6	25.8	8.6	8.3	75.2	50.8	5905962	7.0	13.46
El Salvador	2002	51.9	1.3	12.0	24.6	8.8	8.4	72.6	50.6	5940303	6.2	13.99
El Salvador	2003	50.4	1.4	11.2	23.3	8.8	8.5	75.4	52.2	5971535	6.9	14.82

Table A.1 (cont'd)

El Salvador	2004	47.8	1.3	11.7	22.2	8.8	8.5	74.4	50.8	6000775	6.8	10.91
El Salvador	2005	48.5	2.0	11.1	21	8.9	8.6	74.6	50.8	6028961	7.2	10.40
El Salvador	2006	45.7	1.8	12.6	20	9.0	8.8	74.4	51.6	6056478	6.6	6.90
El Salvador	2007	45.2	1.9	12.3	19.1	8.9	8.7	76.4	51.2	6083475	6.3	4.54
El Salvador	2008	46.9			18.1					6110301	5.9	6.75
El Salvador	2009	45.8	1.5	11.4	17.3	8.8	8.8	75.6	52.4	6137276	7.3	6.40
El Salvador	2010	43.5	1.6	12.7	16.5	8.8	8.9	75.4	52.4	6164626	7.0	5.50
El Salvador	2011	42.3			15.7					6192560	6.6	4.54
El Salvador	2012	41.8	1.9	12.3	15	9.1	8.9	76.0	52.4	6221246	6.1	4.10
El Salvador	2013	43.4	1.9	12.5	14.3	9.3	9.0	75.6	53.8	6250777	5.9	3.22
El Salvador	2014	41.6	1.6	12.4	13.7	9.3	9.2	76.0	53.0	6281189	7.0	2.97
El Salvador	2015	40.6	1.8	12.0	13.2			75.2	51.4	6312478	7.0	1.93
El Salvador	2016	40	1.6	12.3	12.7			75.4	52.0	6344722	7.1	2.25
El Salvador	2017	38	1.6	12.6	12.2			75.6	51.4	6377853	7.0	
El Salvador	2018	38.6	1.8	13.0	11.8			74.8	51.2		6.3	
Uruguay	2000	43	1.3	8.4	14.8	8.8	9.9	73.4	50.2	3321245	13.6	0.36
Uruguay	2001	44.9	1.5	8.8	14.4	8.9	9.9	73.6	51.8	3327103	15.3	0.39
Uruguay	2002	45.5	1.6	8.6	14	9.0	10.1	72.0	50.2	3327773	17	0.54
Uruguay	2003	45	1.5	9.4	13.6	9.0	10.0	70.4	49.8	3325637	16.9	0.71
Uruguay	2004	45.8	1.7	9.1	13.1	9.1	10.1	71.4	49.4	3324096	13.1	0.80
Uruguay	2005	44.7	1.6	10.6	12.4	9.1	10.2	70.8	50.2	3325612	12.2	0.71
Uruguay	2006	45.9			11.7					3331043	10.8	0.46
Uruguay	2007	46.4	1.5	10.3	10.9	8.1	8.9	75.0	54.0	3339741	9.4	0.33

Table A.1 (cont'd)

Uruguay	2008	45.1	1.5	10.5	10.2	9.1	10.2	74.0	54.8	3350824	8.0	0.17
Uruguay	2009	45.5	1.6	10.5	9.6	9.2	10.4	74.8	55.4	3362755	7.7	0.20
Uruguay	2010	44.5	1.7	10.5	9.2	9.2	10.4	74.2	55.4	3374415	7.2	0.15
Uruguay	2011	42.1	1.7	11.0	8.8	9.5	10.8	75.2	57.2	3385624	6.3	0.11
Uruguay	2012	39.9	1.5	10.9	8.5	9.6	10.7	74.2	56.6	3396777	6.5	0.14
Uruguay	2013	40.4	1.7	11.0	8.2	9.6	10.7	75.0	55.6	3408005	6.5	0.16
Uruguay	2014	40.1	1.8	11.0	7.9	9.6	10.8	75.4	57.0	3419546	6.6	0.11
Uruguay	2015	40.1	1.8	11.1	7.6			74.0	56.6	3431552	7.5	0.13
Uruguay	2016	39.7	1.7	11.4	7.2			73.4	56.6	3444006	7.8	0.06
Uruguay	2017	39.5	1.8	11.5	6.8			72.6	56.4	3456750	7.9	
Uruguay	2018	39.7	1.9	11.4	6.4			71.8	56.2		8.3	

Table A.2 Descriptive Statistics of Social Capital Variables

	Urban Single Male Parent	*Urban Single Female Parent*	*Infant Mortality Rate*	*Years of Schooling Completed by Urban Male*	*Years of Schooling Completed by Urban Female*	*Urban Male Economic Participation Rate*	*Urban Female Economic Participation Rate*
Mean	1.753020134	10.65771812	18.81403509	9.611009174	9.934862385	77.21073826	54.71812081
Standard Error	0.028642372	0.099322853	0.658034055	0.094760275	0.093205972	0.261813467	0.390105324
Median	1.7	10.6	16.7	9.4	10	77	55.4
Mode	1.6	10.5	13.7	8.8	10.1	79.4	57.2
Standard Deviation	0.349624711	1.212389934	8.604911838	0.989326319	0.97309892	3.195840644	4.761842332
Sample Variance	0.122237439	1.469889352	74.04450774	0.978766565	0.946921509	10.21339742	22.67514239
Kurtosis	1.39298688	-0.397706705	4.31567709	-0.605348549	-0.3500801	-0.820280978	-0.457060147
Skewness	1.016185155	0.056319379	1.804609792	0.012338064	0.202983166	-0.050499946	-0.371513627
Range	1.9	5.1	49.3	4.5	4	13.6	21.2
Minimum	1.2	7.9	6.4	7.2	8.1	70.2	41.8
Maximum	3.1	13	55.7	11.7	12.1	83.8	63
Sum	261.2	1588	3217.2	1047.6	1082.9	11504.4	8153
Count	149	149	171	109	109	149	149

Table A.3 Descriptive Statistics of Economic Performance Variables

	Gini	*Total Population*	*Unemployment Rate*	*Population Living with Under $1.90*
Mean	48.76	49786025.56	7.420896101	6.817007299
Standard Error	0.421723279	4784870.172	0.264062029	0.467339213
Median	48.8	28821743.5	6.96	5.7
Mode	53.3	#N/A	7.1	13.99
Standard Deviation	5.250412476	60901454.63	3.432806375	5.470065244
Sample Variance	27.56683117	3.70899E+15	11.78415961	29.92161377
Kurtosis	-0.803699074	0.931865979	1.341260609	1.814364713
Skewness	0.030239304	1.480892937	1.124864159	1.193574762
Range	23.6	205967033	17.4	28.59
Minimum	38	3321245	2.3	0.06
Maximum	61.6	209288278	19.7	28.65
Sum	7557.8	8065336141	1254.131441	933.93
Count	155	162	169	137

BIBLIOGRAPHY

BIBLIOGRAPHY

Ahmad, N., & Sadaqat, M. (2016). Social capital household welfare and poverty: evidence from Pakistan. *Pakistan Development Review, 55*(4), 467+.

Alesina, A., & La Ferrara, E. (2000). Participation in Heterogeneous Communities. *The Quarterly Journal of Economics, 115*(3), 847-904.

Alesina, A., & La Ferrara, E. (2002). Who Trust Others? *Journal of Public Economics 85*, 207-234.

Antonioni A., & Tomassini M. (2011). Network Fluctuations Hinder Cooperation in Evolutionary Games. PLoS ONE 6(10): e25555. doi:10.1371/ journal.pone.0025555

Ariely, D. (2010). Predictably irrational: the hidden forces that shape our decisions. New York: Harper Perennial

Atria, R. (2004). Social Capital and Poverty Reduction in Latin America and the Caribbean: Towards a New Paradigm. Chile: CEPAL.

Bartolini, S., & Sarracino, F. (2014). "It's not the economy, stupid! How social capital and GDP relate to happiness over time," Papers 1411.2138, arXiv.org

Beugelsdijk, S., & van Schaik, T. (2005). Social capital and growth in European regions: An empirical test. *Elsevier*. doi:10.1016/j.ejpoleco.2004.07.004

Blau, F., & Kahn, L. (1996). Wage Structure and Gender Earnings Differentials: An International Comparison. *Economica, 63*(250), new series, S29-S62. doi:10.2307/2554808

Borenstein, M., Hedges, L.V., Higgins, J. P., & Rothstein, H. R. (2010). A basic introduction to fixed-effect and random-effects models for meta-analysis. *Research synthesis methods, 1*(2), 97–111. https://doi.org/10.1002/jrsm.12

Borghans, L., Ter Weel, B., & Weinberg, B. A. (2005). People People : Social Capital and the Labor-Market Outcomes of Underrepresented Groups 67, *IZA Discussion Paper No. 1494*.

Brisson, D. S., & Usher, C. L. (2005). Bonding social capital in low-income neighborhoods. *Family Relations, 54*(5), 644-653. doi:http://dx.doi.org.proxy1.cl.msu.edu/10.1111/j.1741-3729.2005.00348.x

Brueckner, M., & Lederman, D. (2017). Inequality and GDP per capita: The Role of Initial Income.

Grootaert, C., Narayan, D., Nyhan, J., Veronica., & Woolcock, M. (2004). Measuring Social Capital: An Integrated Questionnaire. *World Bank Working Paper;No. 18*. Washington, DC: World Bank. © World Bank. https://openknowledge.worldbank.org/handle/10986/15033 License: CC BY 3.0 IGO.

Coleman, J. (1988). Social Capital in the Creation of Human Capital. *American Journal of Sociology, 94,* S95-S120.

Corak, M. (2013). Income inequality, equality of opportunity, and intergenerational mobility. *The Journal of Economic Perspectives, 27*(3), 79-102. doi:http://dx.doi.org.proxy1.cl.msu.edu/10.1257/jep.27.3.79

Cicatiello, L., Ercolano, S., & Gaeta, G. (2015). Income distribution and political participation: a multilevel analysis. *Empirica*. 42. 447-479. 10.1007/s10663-015-9292-4.

D'Hombres, B., Elia, L., & Weber, A. (2013). Multivariate analysis of the effect of income inequality on health, social capital, and happiness. 10.2788/68427.

Dmitri, W. (2006). On and off the 'Net: Scales for Social Capital in an Online Era, *Journal of Computer-Mediated Communication*, Volume 11, Issue 2, Pages 593–628, https://doi.org/10.1111/j.1083-6101.2006.00029.x

Esteve, A., Lesthaeghe, R. & López-Gay, A. (2012). The Latin American Cohabitation Boom, 1970–2007. *Population and Development Review*, 38: 55-81. doi:10.1111/j.1728-4457.2012.00472.x

Freitag, M., & Kirchner, A. (2014). Social Capital and Unemployment: A Macro-Quantitative Analysis of the European Regions. *Political Studies*. 59. 389-410. 10.1111/j.1467-9248.2010.00876.x.

Fukuyama, F. (1995). Social Capital and the Global Economy. Foreign Affairs, 74, 89.

Goldin, C., & Katz, L. (1999). Human capital and social capital: the rise of secondary schooling in America, 1910-1940. *The Journal of Interdisciplinary History* (Vol. 29, Issue 4) Publisher: MIT Press Journals

Gould, E., & Hijzen, A. (2016). Growing Apart, Losing Trust? The Impact of Inequality on Social Capital. Public Choice: Analysis of Collective Decision-Making eJournal.

Gradstein, Mark & Justman, Moshe. (2000). Human capital, social capital, and public schooling. *European Economic Review*. *44*. 879-890. 10.1016/S0014-2921(99)00044-6.

Granovetter, M. (1973). The Strength of Weak Ties. *American Journal of Sociology, 78*(6), 1360-1380

Granovetter, M. (1995). Getting a Job: A Study of Contacts and Careers. United Kingdom: University of Chicago Press.

Greene, W.H. (2008). Econometric analysis. Prentice Hall, Upper Saddle River, N.J

Guagnano, G., Santarelli, E., & Santini, I. (2015). Can Social Capital Affect Subjective Poverty in Europe? An Empirical Analysis Based on a Generalized Ordered Logit Model. *Social Indicators Research*. 128. 10.1007/s11205-015-1061-z.

Hair, J. F. Jr., Anderson, R. E., Tatham, R. L. & Black, W. C. (1995). Multivariate Data Analysis (3rd ed). New York: Macmillan.

Harkness, S. (2010). The Contribution of Women's Employment and Earnings to Household Income Inequality: A Cross-Country Analysis.

Hassan, R., & Birungi, P., (2011) Social capital and poverty in Uganda, *Development Southern Africa*, 28:1, 19-37, DOI: 10.1080/0376835X.2011.545168

Helliwell, J., & Putnam, R. (1995). Economic Growth and Social Capital in Italy. *Eastern Economic Journal, 21*(3), 295-307.

Hirschman, A. O. (2004). Exit, voice, and loyalty. United Kingdom: Harvard University Press.

Ichida, Y., Kondo, K., Hirai, H., Hanibuchi, T., Yoshikawa, G., & Murata, C. (2009). Social capital, income inequality and self-rated health in Chita peninsula, Japan: a multilevel analysis of older people in 25 communities. *Social science & medicine (1982)*, *69*(4), 489–499. https://doi.org/10.1016/j.socscimed.2009.05.006

Inaba, Y., Wada, Y., Ichida, Y., & Nishikawa, M. (2015). Which part of community social capital is related to life satisfaction and self-rated health? A multilevel analysis based on a nationwide mail survey in Japan. *Social science & medicine (1982)*, *142*, 169–182. https://doi.org/10.1016/j.socscimed.2015.08.007

International Labour Organization. (2010). A Skilled Workforce for Strong, Sustainable and Balanced Growth

Ismay, C., & Kim A.Y. (2019). Statistical Inference via Data Science A modern dive into R and the tidyverse. https://bookdown.org/cteplovs/ismaykim/

Iyer, S., & Killingback, T. (2016). Evolution of Cooperation in Social Dilemmas on Complex Networks. *PLoS Comput Biol 12(2):* e1004779. doi:10.1371/journal.pcbi.1004779

James D. (2001). The myth of social capital in community development, *Housing Policy Debate*, 12:4, 781-806, DOI: 10.1080/10511482.2001.9521429

Jäntti, M. (1994). A More Efficient Estimate of the Effects of Macroeconomic Activity on the Distribution of Income. *The Review of Economics and Statistics, 76*(2), 372-378. doi:10.2307/2109895

Kahneman, D. (2011). Thinking, Fast and Slow. United States: Farrar, Straus and Giroux.

Keith, B. (2005). Labour market participation: the influence of social capital Brook. *Market Trends; Mar 2005*; 113, 3; ABI/INFORM Collection pg. 113

Kawachi, I., Kennedy, B. P., Lochner, K., & Prothrow-Stith, D. (1997). Social capital, income inequality, and mortality. *American journal of public health, 87*(9), 1491–1498. https://doi.org/10.2105/ajph.87.9.1491

Knack, S., & Keefer, P. (1997). Does social capital have an economic payoff? A cross-country investigation. *Quarterly Journal of Economics*, *112*(4), 1251+. https://link.gale.com/apps/doc/A20568227/AONE?u=msu_main&sid=AONE&xid=f55521ab

Konno, T. (2010). A condition for cooperation in a game on complex networks. *Journal of Theoretical Biology*

Lau, L.J. (1986). Functional Forms in Econometric Model Building. In Z. Griliches, and M.D. Intrilligator eds. *Handbook of Econometrics.* Amsterdam: Elsevier, pp. 1515-1564.

Lecaillon, J., Paukert, F., & Morrisson, C. (1984). Income Distribution and Economic Development: An Analytical Survey. Germany: International Labour Office.

Lin., N. (2001), Social Capital A Theory of Social Structure and Action. United Kingdom: Cambridge University Press.

López, N., Opertti, R., & Vargas, C. (2017). Youth and changing realities. Rethinking secondary education in Latin America. the United Nations Educational, Scientific and Cultural Organization

McLanahan, S., & Booth, K. (1989). Mother-Only Families: Problems, Prospects, and Politics. *Journal of Marriage and Family, 51*(3), 557-580. doi:10.2307/352157

Mocan, H. (1999). Structural Unemployment, Cyclical Unemployment, and Income Inequality. *The Review of Economics and Statistics, 81*(1), 122-134. http://www.jstor.org/stable/2646791

Montgomery, J. (1991). Social Networks and Labor-Market Outcomes: Toward an Economic Analysis. *The American Economic Review, 81*(5), 1408-1418.

Mouw, T. (2003). Social Capital and Finding a Job: Do Contacts Matter? *American Sociological Review, 68*(6), 868-898.

Naschold, F. (2002). Why Inequality Matters for Poverty.

Narayan, D., & Pritchett, L. (1999). Cents and Sociability: Household Income and Social Capital in Rural Tanzania. *Economic Development and Cultural Change, 47*(4), 871-897. doi:10.1086/452436

Nasution, A., Rustiadi, E., Juanda, B., & Hadi, S. (2015). Two-Way Causality between Social Capital and Poverty in Rural Indonesia. *Asian Social Science*. 11. 10.5539/ass.v11n13p139.

Olurinola, I. (2011). Social capital and earnings distribution among female micro-entrepreneurs in rural Nigeria. *African Journal of Economic and Management Studies*. 2. 94-113. 10.1108/20400701111110795.

Oreopoulos, P., & Salvanes, K. (2011). Priceless: The Nonpecuniary Benefits of Schooling. *The Journal of Economic Perspectives, 25*(1), 159-184. Retrieved November 3, 2020, from http://www.jstor.org/stable/23049443

Paarlberg, L., Hoyman, M., & McCall, J. (2017). Heterogeneity, Income Inequality, and Social Capital: A New Perspective*. *Social Science Quarterly*. 99. 10.1111/ssqu.12454.

Pain, A., & Pema, D. (2004). The matrilineal inheritance of land in Bhutan. *Contemporary South Asia, 13*(4), 421–435.

Park, H.M. (2011). Practical Guides To Panel Data Modeling: A Step-by-step Analysis Using Stata. Tutorial Working Paper. Graduate School of International Relations, International University of Japan.

Puga, I., & Soto, D. (2018). Social Capital and Women's Labor Force Participation in Chile. *Feminist Economics.* 24:4, 131-158, DOI: 10.1080/13545701.2018.1481990

Putnam, R., Leonardi, R., & Nonetti, R. (1993). Making Democracy Work: Civic Traditions in Modern Italy. PRINCETON , NEW JERSEY: Princeton University Press. doi:10.2307/j.ctt7s8r7

Putnam, R. D. (2000). *Bowling alone: The collapse and revival of American community*. New York: Simon & Schuster.

Rauli, S., (2015). Lecture 15 *Panel Data Models, https://www.bauer.uh.edu/rsusmel/phd/ec1-15.pdf*

Robison, L.J., & Flora, J.L. (2003), The Social Capital Paradigm: Bridging across Disciplines. American Journal of Agricultural Economics, 85: 1187-1193. https://doi.org/10.1111/j.0092-5853.2003.00528.x

Robison, L.J., Myers, R., & Siles, M. (2002). Social Capital and the Terms of Trade for Farmland. *Review of Agricultural Economics*. 24. 10.2307/1349820.

Robison, L.J., & Schmid, A. (1994). "Can Agriculture Prosper Without Increased Social Capital?," *Choices: The Magazine of Food, Farm, and Resource Issues, Agricultural and Applied Economics Association*, vol. 9(4), pages 1-3.

Robison, L.J., & Siles, M. (1999). Social capital and household income distributions in the United States: 1980, 1990. Journal of Socio-economics, 28, 43-93.

Robison, L.J., Siles, M., & Schmid, A. (2002). Social Capital and Poverty Reduction: Toward a Mature Paradigm.

Robison, L.J., & Ritchie, B. K. (2010). Relationship economics: The social capital paradigm and it's application to business, politics and other transactions. Farnham, England: Gower.

Robison, L.J., Shupp, R., Jin, S., Siles, M., & Ferrarini, T. (2012). The relative importance of selfishness and social capital motives. *The Journal of Socio-Economics*. 41. 118–127. 10.1016/j.socec.2011.10.008.

Robison, L.J., Siles, M., & Jin, S. (2011). Social Capital and Household Income Distributions in the United States: 1980, 1990. Journal of Socio-economics. 40. 538-547. 10.1016/j.socec.2011.04.004.

Robison, L.J., & Oliver, J. (2019). Rationalizing predictably irrational choices: the social capital synthesis. *The Annals of Regional Science*. 10.1007/s00168-019-00945-8.

Roser, M., Ritchie, H., & Dadonaite, B. (2013) - "Child and Infant Mortality". *Published online at OurWorldInData.org.*

Rosling, O., Rönnlund, A. R., & Rosling, H. (2018). Factfulness: Ten Reasons We're Wrong About the World--and Why Things Are Better Than You Think. United Kingdom: Flatiron Books.

Saracostti, M. (2007). Social capital as a strategy to overcome poverty in Latin America An overview. *International Social Work - INT SOC WORK*. 50. 515-527. 10.1177/0020872807077911.

Schmid, A., Robison, L., & Siles, M. (2002). Is Social Capital Really Capital?. Review of Social Economy. 60. 1-21. 10.2139/ssrn.280892.

Schmid, A. A. (2008). Conflict and Cooperation: Institutional and Behavioral Economics. Germany: Wiley.

Siles, M.E. (1992). The Role of Social Capital in Michigan Credit Markets. *Michigan State University*

Smith, A. (1994). An inquiry into the nature and causes of the wealth of nations. New York : Modern Library,

Smith, A. (1759). The theory of moral sentiments. London: Printed for A. Millar, and A.

StataCorp. (2011). Stata 12 Base Reference Manual. *College Station*, TX: Stata Press.

Taylor-Robinson, D., Lai, E., Wickham, S., Rose, T., Norman, P., Bambra, C., Whitehead, M., & Barr, B. (2019). Assessing the impact of rising child poverty on the unprecedented rise in infant mortality in England, 2000–2017: time trend analysis. BMJ Open, 9.

Tenzin, G., Otsuka, K., & Natsuda, K. (2015). Can social capital reduce poverty? A study of rural households in eastern Bhutan. *East Asian Economic Association.* doi:10.1111/asej.12057

Thaler, R. H. (2015). Misbehaving: The making of behavioral economics (First edition.). New York: W.W. Norton & Company.

Thitithep, S., & Kanyarat, L.H. (2016). On Income Inequality and Population Size. Khon Kaen University Online at https://mpra.ub.uni-muenchen.de/73684/ MPRA Paper No. 73684

Torres-Reyna, O. (2007). Panel Data Analysis Fixed and Random Effects using Stata (v.4.2). Princeton University

United Nations, (2015). The World's Women 2015: Trends and Statistics. New York: United Nations, *Department of Economic and Social Affairs*, *Statistics Division.* Sales No. E.15.XVII.8.

Uslaner, E., & Brown, M. (2005). Trust, Inequality, and Civic Engagement. *American Politics Research*. 33. 10.1177/1532673X04271903.

Van Oorschot, W., Arts, W., & Gelissen, J. (2006). Social Capital in Europe: Measurement and Social and Regional Distribution of a Multifaceted Phenomenon. *Acta Sociologica, 49*(2), 149-167.

Weckroth, M., Kemppainen, T., Fyhn, J., & Sørensen, J. (2015). Predicting the gross domestic product (GDP) of 289 NUTS regions in Europe with subjective indicators for human and social capital. *Regional Studies, Regional Science*. 2. 311. 10.1080/21681376.2015.1037863.

White, H., & Anderson, E. (2001). Growth versus Distribution: Does the Pattern of Growth Matter? *Development Policy Review 19*, 267-289. [On relative importance of growth and inequality for poverty reduction].

Wilkinson, R., & Pickett, K. (2009). The Spirit Level: Why Greater Equality Makes Societies Stronger. United Kingdom: Bloomsbury Publishing.

Winkelmann, R. (2009). Unemployment, Social Capital, and Subjective Well-Being. *Journal of Happiness Studies*. 10. 421-430. 10.1007/s10902-008-9097-2.

Wooldridge, Jeffrey. (2002). Economic Analysis of Cross Section and Panel Data. MIT Press, Cambridge, MA.

World Bank. (2016). Poverty and Shared Prosperity 2016: Taking on Inequality. Washington, DC: World Bank. doi:10.1596/978-1-4648-0958-3. License: Creative Commons Attribution CC BY 3.0 IGO

Wright Muelas, M., Mughal, F., O'Hagan, S. Day, P., & Kell, D. (2019). The role and robustness of the Gini coefficient as an unbiased tool for the selection of Gini genes for normalising expression profiling data. *Sci Rep* 9, 17960. https://doi.org/10.1038/s41598-019-54288-7

Yang, L. (2015). The Role of Individual Social Capital in Wage Determination: Evidence from China, *RIETI Discussion Paper Series 15-E-133.*

Yang, T., Teng, H., & Haran, M. (2009). The Impacts of Social Capital on Infant Mortality in the U.S.: A Spatial Investigation. Appl. Spatial Analysis 2:211–227 DOI 10.1007/s12061-009-9025-9

Zhang, S., Anderson, S.G., & Zhan, M. (2011). The Differentiated Impact of Bridging and Bonding Social Capital on Economic Well-Being: An Individual Level Perspective, *The Journal of Sociology & Social Welfare: Vol. 38*: Iss. 1, Article 7.

Zhang, S., Wang, Y., Chen, J., & Cheng, C. (2018). Social network: An emerging income distribution mechanism in transitional urban china. *Çanakkale Onsekiz Mart Üniversitesi Yönetim Bilimleri Dergisi, 16*(31), 83-108.