

Effects of Globalization on Inequality in Latin America

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Abstract:

This paper explores the relationship between globalization and inequality in Latin American countries. The study uses a number of different globalization indicators in conjunction with the globalization index developed by Dreher (2006). The study works to identify whether globalization has effect income equality and whether specific components of globalization have a greater magnitude of impact on inequality over others within the region. The conclusion of the study is that GDP per capita, foreign direct investment, and trade intensity have the greatest effects on income inequality.

JEL Classification: F62, B17, D31

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1.0 INTRODUCTION

Over the last thirty plus years the world has undergone a great change from being a very non-interconnected to an extremely interconnected global community in a relatively short period of time. With the advancement of technology and change in trade policy along with many other factors globalization has been facilitated. Nations that were at one time subsistent societies have developed into key participants on the international stage with their rise in industry. People today are communicating and doing business with individuals from around the world more than ever. Millions of domestic laborers are being employed by foreign corporations who set up operations abroad.

We can question whether or not the benefits of globalization have been enjoyed by all of a nation's people, rather than just those proximate to the many large industrial hubs that have been the center of a country's emergence. Being able to link the root causes of the disparities between a nations people and the changes that have transpired under globalization will better help to identify and understand where globalization has done a portion of a population no good.

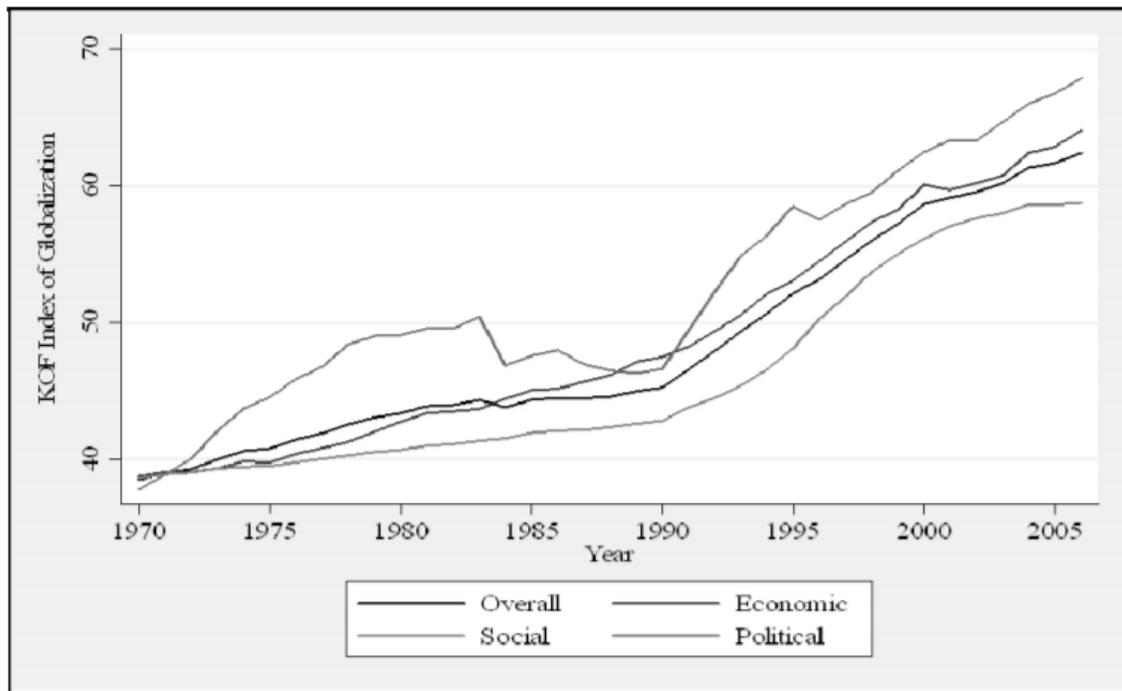
The study will aim to explore the effects of globalization on income inequality and to identify which specific factors lead to higher levels of inequality. The basis of the study will to look at the effects from a regional stand point rather than a global overview.

1.1 Global Trends

According to Dreher's (2006) globalization index (*Figure 1*), the trend in globalization has had a fairly consistent rise over the last three decades. This comes as no surprise as many of the world's largest companies have established a substantial footing

internationally. Coinciding is clear evidence of globalization as the amount of exports that are being traded through the international markets has risen significantly over time. From before 1970 the world traded less than two trillion dollar equivalents of goods. Today, international trade produces over twenty trillion dollars equivalents, a true sign that we have become more interconnected than in prior history (Federal Reserve of St. Louis). Through globalization not only has the world become more interconnected, but the worlds markets have been opened up in a way which has allocated the production of goods and services to countries with a comparative advantage who can produce goods more efficiently at a lower cost. Producers have been exposed to a much more complete environment and for that reason have been forced to produce more efficiently and invest deeply into research. Consumers are also now exposed to a much wider variety of goods.

Figure 1: Globalization Index



Source: Dreher (2006)

Foreign direct investment has also is a sheer sign of the globalized world we are now living in. Foreign direct investment has gone from well less than half a trillion dollars, to a peak of nearly 2 trillion dollars equivalent in 2007. Developing countries have been able to advance their economies significantly following increases in the amount of investment targeted towards developing economies. According to United Nations Conference on Trade and Development (UNCTAD), the amount of foreign investment inflows to developing countries has increased from less than a quarter to well over half foreign direct investment inflows. Additionally, foreign investment outflows have gone from 7-percent in 1999 to nearly 39-percent in 2013 (UNCTAD).

Through the same time period which we have seen rapid globalization, the World Bank and a number of economists have witnessed a draw down in the level of income inequality. The GINI coefficient, which is used to measure income inequality, has fallen from 68.7 in 2003 to 64.9 in 2013 (Hellebrandt and Mauro, 2015). A few authors have disputed this fall, however, there is fairly solid consensus supporting this fall from both international organizations and also publishing economists.

1.2 TRENDS IN LATIN AMERICA

Figure 2: Dreher's (2014) globalization index if averaged between all Latin American counties shows that there is a fairly steady rise of globalization in the region. The average of the index of the region has risen from just below a value of 40 to nearly 60 between 1992 and 2012.

Figure 3: The income inequality level in Latin America has followed well with the trend of the rest of the world, as inequality fell significantly in the 2000s. The fall in the

coefficient was felt across 16 of 17 countries with comparable inequality data. Signs of this were also observed through changes in the poverty levels across Latin American countries.

Figure 4: GDP per capita in Latin America has grown exponentially since the early 2000s. This was likely a rebound coming off of the regions debt crisis of the early 1980s where national economies in the region were set back significantly. Wealth has begun to build within the region and is something to take note of when looking at the inequality trends.

Figure 5: Foreign direct investment has fallen in line with the increase in output within the region. Foreign investors have more than ever taken large stakes within the region and have begun to rely on the regions large labor force in order to drive industry.

Figure 6: The percentage of the population living on \$2.50 or less fell by just over 10-percent, while the percentage living on under \$4.00 a day fell by 15-percent between 1992 and 2010 (Lustig, et al., 2013).

Figure 2: Average Latin America Globalization Index

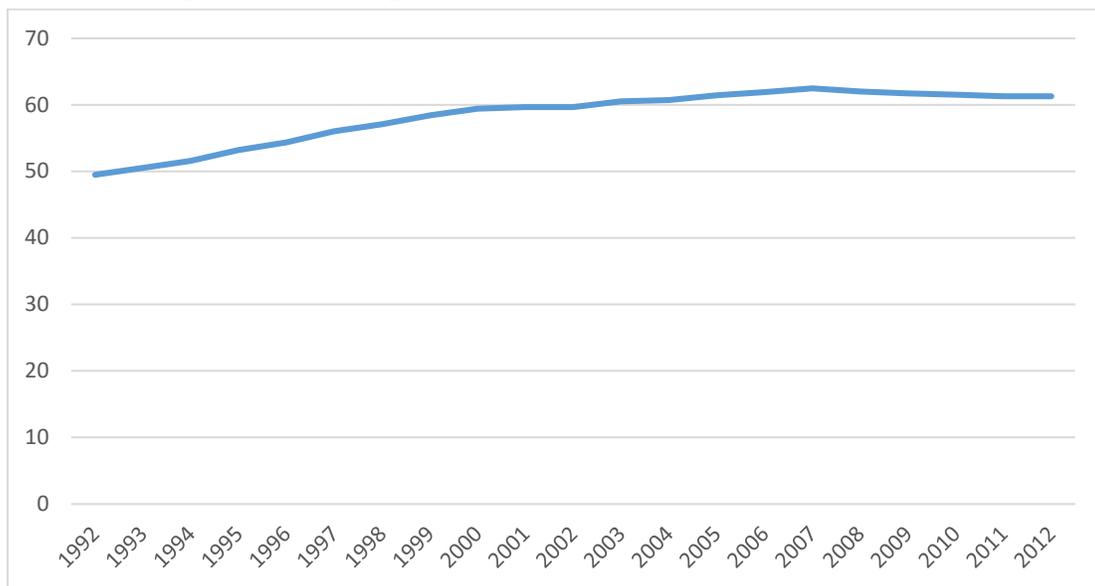
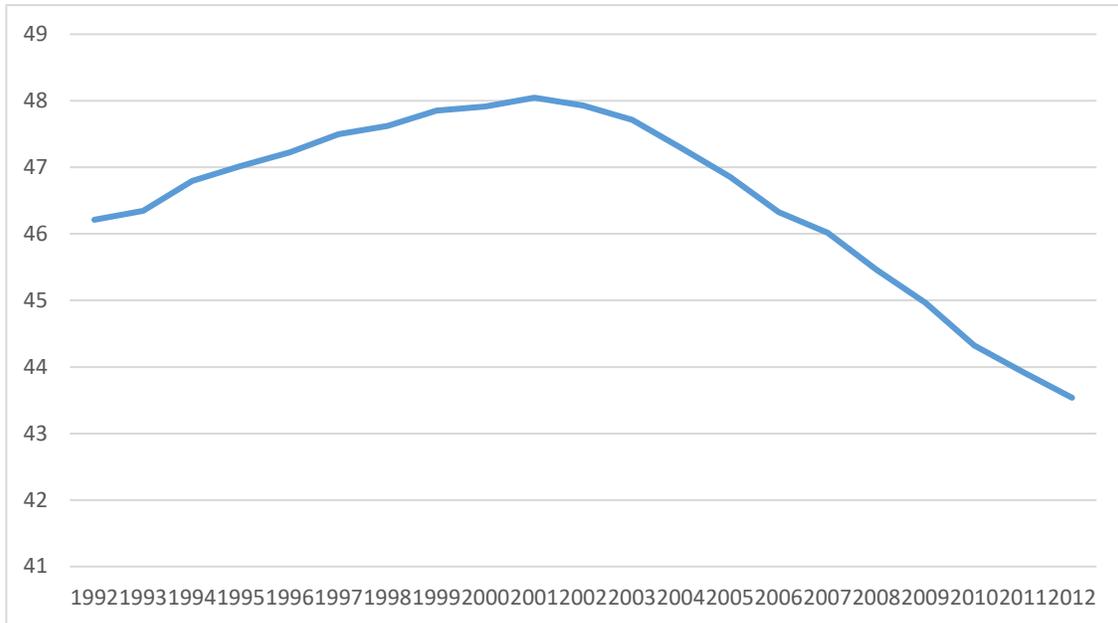
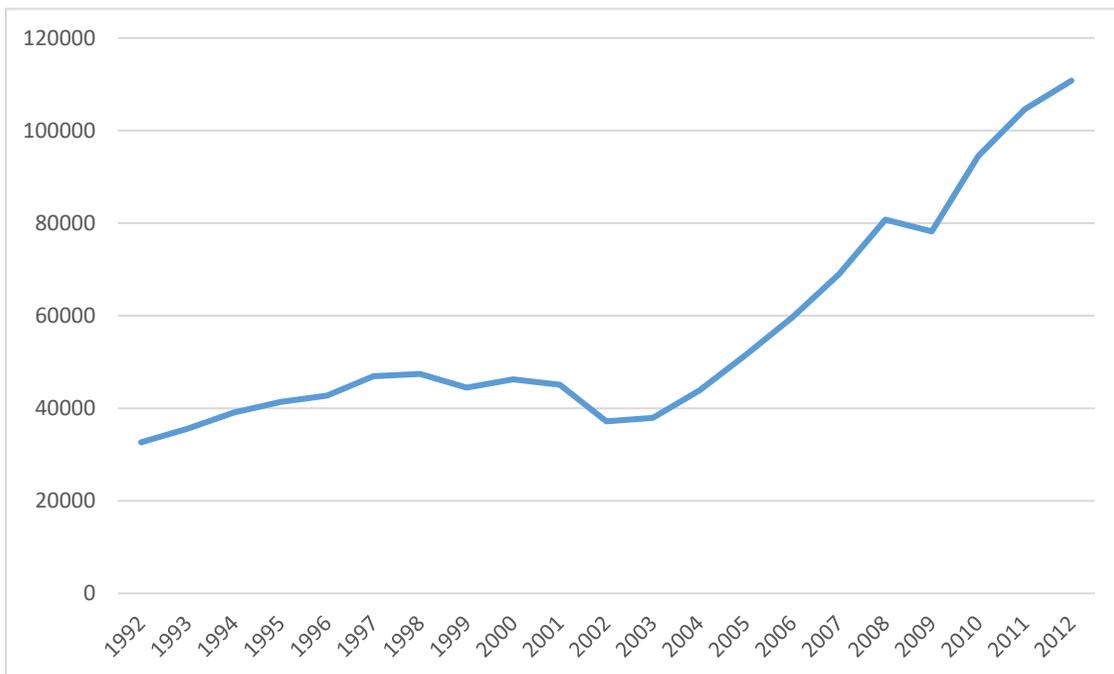


Figure 3: Latin America Gini Coefficient



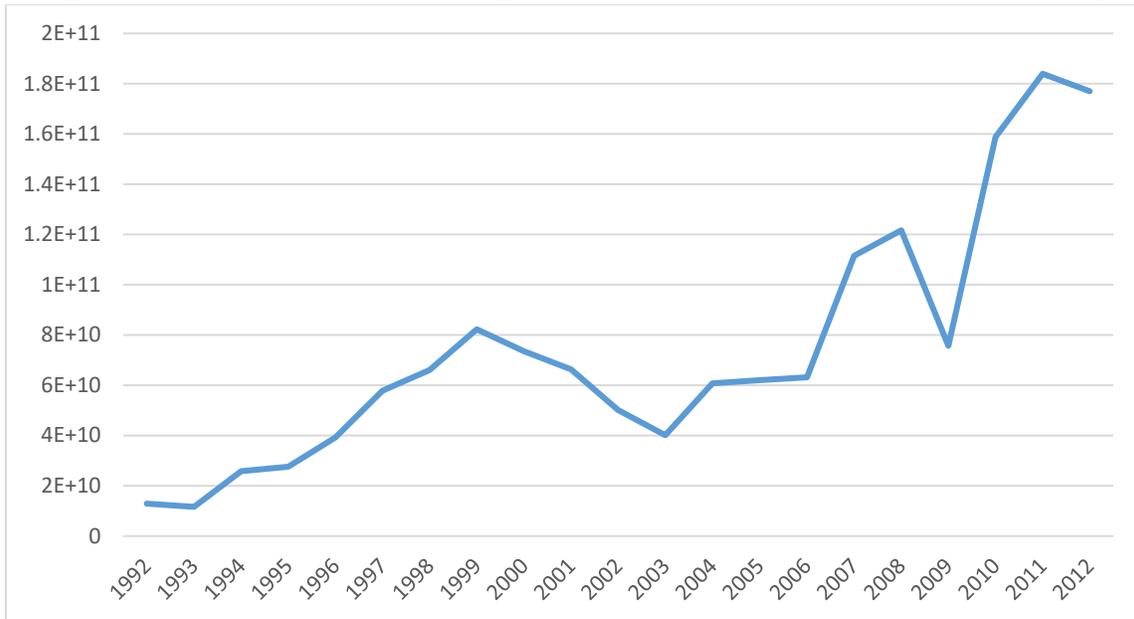
Source: Solt (2016)

Figure 4: Latin America GDP per Capita, Countries Under Study (\$USD)



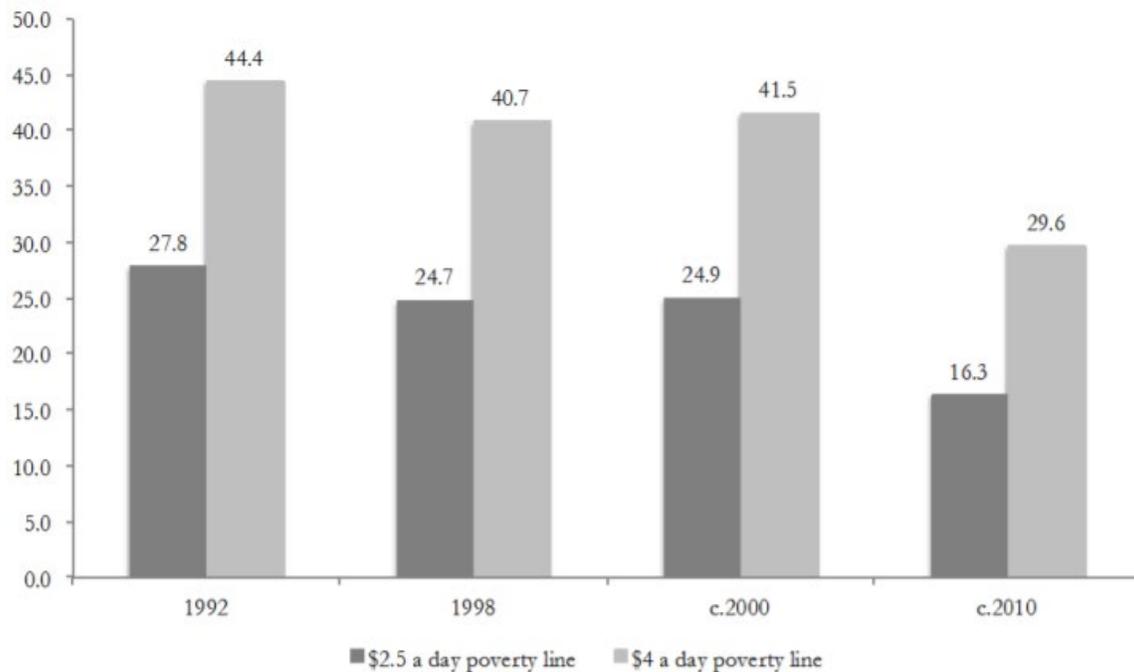
Source: World Bank Open Data (2017)

Figure 5: Latin America Foreign Direct Investment, Countries (\$USD)



Source: World Bank Open Data (2017)

Figure 6: Latin American Poverty (% below \$2.50/\$4 Poverty Line)



Source: Lustig, et al. (2017)

2.0 LITERATURE REVIEW

According to the Kuznet's curve, a nation in a pre-industrialization period holds a low amount of inequality when it is best characterized as an agrarian society. As that same nation emerges into industrialization inequality grows as opportunities arise for relatively few and then in the later stages of industrializing as a country emerges into the post-industrial period, in equality hits a maximum and then begins to decline. Through globalizing we would assume that literature would note an increase in income inequality as Kuznets suggests, however, the census is mixed from an academic is mix but world organizations have affirmed a decline in inequality.

If referencing the internationally supported organizations such as the World Bank to determine how equal the world has developed under globalization, you would likely be lead to believe that inequality and poverty have improved over the years. However, this is all put clear as there is criticism around how these organizations have gauged the decline in poverty. Wade (2014) finds that the methodology behind the calculation of poverty figures by the World Bank and International Monetary Fund. The author finds that the calculation fails to take into account purchasing power parity, as the difference between the purchasing ability between nations when determining the amount of money it takes to provide the basic necessities. In many cases it is found that with the lack of consistency to a nations specified level of minimum income for the most marginal of subsistence has under estimated the figure which captures the population living in poverty, providing a smaller count versus the actual. In addition, world organizations have failed to adjust the poverty line accordingly overtime, this is best reflected in their strong relationship to estimating the number of people who live on under a dollar a day.

Noticing this, the World Bank has effectively portrayed a world which has seen poverty artificially dissipate over the last few decades.

Bergh and Nilsson (2010) identify a similar problem as Wade (2014) with the world's methodology of tracking the progress towards eliminating poverty. However, Bergh and Nilsson investigate the root cause of income inequality through breaking down the economic freedom index, developed by Dreher (2006), in order to extract the leading causes of inequality generated through trade openness. Of the five aspects of the index, the freedom to trade internationally component was found to have a positive effect on income inequality. Additionally, deregulation was also found to have a significant positive effect.

Baek and Shi's (2016) study takes into account different control factors in order to investigate a wide range of countries in order to question how globalization has taken effected inequality in a comparison of developed and emerging economies. The study has a relatively small window range of twenty years, which may be put into question of length significance. However, the authors find a linked between trade and inequality, additionally, a contrast in the inequality effects across developed and emerging economies.

Similar to Baek and Shi (2016), Zhou et al. (2011) takes a close look at the effects of broad globalization factors and their effects on income inequality. The variables used for the study are economic integration, personal contact between domestic and international individuals, technology connection, and political engagement. The results of the study find that globalization over an extensive period of time has produced a negative effect on income inequality.

Nascia and Pianta (2009) takes a more granular look into the relationship of globalization and income inequality by specifically looking into Europe. The study includes the effects of economic integration between European nations in its methodology. The ultimate findings are that individuals have benefited from economic integration through the lowering of market prices of goods and firms have enjoyed higher volumes of profits which have contributed to the fall in inequality.

Cumulatively the research around the relationship of income inequality and globalization does provide a clear case that there is a significant effect present. The opponents of the assertion that inequality has declined under globalization drive a hard case. Many authors have provided clear evidence through comparing globalization and the individual components of globalization to the changes in income inequality that there is a negative relationship in a number of different levels of granularity. Less work has been done to look specifically on certain regions and how this relationship does or does not apply to that particular area. It is important as the research progresses that it continues to move into a more granular focus of the relationships effects.

3.0 EMPIRICAL METHODOLOGY AND MODEL

3.1 Empirical Methodology

The method of this study will be to specifically run control variables extracted from within the Globalization Index in order to identify the specific components of globalization which attribute to the rise of income inequality. The hope is to provide a better understanding to whether the outside consensus can be verified or whether the analysis can prove otherwise.

The methodology will follow closely to that used by Bergh and Nilsson (2010) and Baek and Shi (2016). The Baek and Shi (2016) example has an expansion opportunity to measure the effects on a more focused scale as the study takes a fairly broad view in emerging versus developed. The goal will be to extract a deeper understanding of how inequality and globalization are interacting specifically in Latin American countries and drive towards a set of policy implications which the governments of those nations should consider when attempting to eradicate inequality in a more globalized world. The earlier study had used a broader brush than the hopes of this study as the Baek and Shi (2016) study looked to compare global emerging and developed economies under their empirical model. The time period which the study will focus upon will be the years of 1992 and 2012. The countries that are in the focus of this study are the top ten countries according to the Human Development Index (HDI) in Latin America.

The type of analysis that will be ran on the data will be an Ordinary Least Squares (OLS) regression. The method has been identified to be used in order to link the significance of variables of globalization against income inequality.

3.2 Empirical Model

Dependent: Gini Coefficient (CREAT A CHART SHOWING THE

Independent: GDP per Capita, GDP growth rate, Foreign Direct Investment, Education Level, Technology level, Industry Structure

$$Gini = \beta_0 + \beta_1 GDP_perCap + \beta_2 FDI + \beta_3 Industry + \beta_4 Tech + \beta_5 Trade_Inten + \varepsilon$$

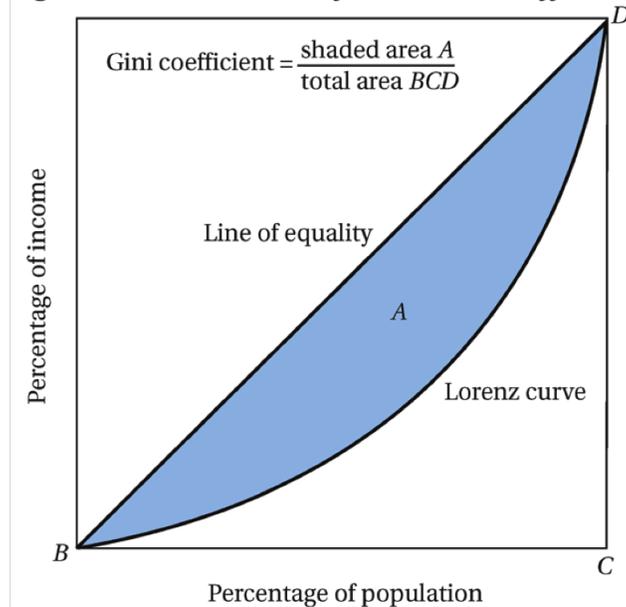
Variable	Notation	Measure	Source
Income Inequality	GINI	Gini Coefficient 0-100	Solt (2016)
GDP per Capita	Log_GDP_capita	GDP per capita (current US\$)	World Development Indicators
Foreign Direct Investment	Log_FDI	Foreign direct investment, net inflows (BoP, current US\$)	World Development Indicators
Industry	Industry	Industry, value added (annual % growth)	World Development Indicators
Technology	Technology	Computer, communications and other services (% of commercial service imports)	World Development Indicators
Trade Intensity	Trade_Inten	(Total exports + Total Imports)/GDP	World Development Indicators

3.3 Data

The data utilized from this study come from two different sources, both from a global organization and from academia. All data is well recognized and accepted as viable for academic research. The time range of the data is from 1992 to 2012. The countries that the data was selected are Argentina, Brazil, Chile, Costa Rica, Ecuador, Mexico, Panama, Peru, Uruguay, and Venezuela.

Income Inequality Data: Provided by Solt (2016), it what is recognized as one of the most complete datasets for income inequality available. Solt (2016) provides a dataset of income inequality from numerous nations across the globe spanning over thirty years. Income inequality is represented in the dataset as the GINI coefficient. The coefficient is calculated on a scale of 0 to 100, whereas 0 represents perfect equality and 100 as perfect inequality. The coefficient is derived as the area between the line of perfect equality, where income is perfectly distributed, and the Lorenz Curve, the line of distribution of income between a countries different levels of income earners (*illustrated in Figure 7*).

Figure 7: Calculation of the GINI coefficient



Gross Domestic Product (GDP) per Capita: Extracted from the World Development Indicators database and computed as the gross product of a nation divided by the total population that year. The figure is provided in current United States dollars. The variable is being used to derive a deeper understanding of the overall trend in wealth and expansion of the national economy.

Foreign Direct Investment (FDI): Extracted from the World Development Indicators database and computed as the total net inflows from foreign investors into a nation and denominated as current United States dollars. Represents foreign corporation interests within the country.

Industry: Extracted from the World Development Indicators database. Takes into account the net changes in output value of industries such as mining, manufacturing, construction, electricity, water, and gas.

Technology: Extracted from the World Development Indicators database. Computed by dividing the total value of technological imports by the total value of commercial service imports and denoted as a percentage.

Trade Intensity: Extracted the imports and exports data from each nation from the World Development Indicators database. The sum of each nations total of imports and exports were divided by its Gross Domestic Product. This computation is meant to represent how active the country is in comparison to the rest of the country's economic activity.

4.0 EMPIRICAL RESULTS:

The results of an OLS regression provided some important findings to our focused lens of research off of the Baek and Shi (2016) study. Our results provided similarities to the earlier study, however, did not find the same significance in some variables as the 2016 study did.

Consistent with the earlier studies of Baek and Shi (2016) and Bergh and Nilsson (2010) we find that there is a high level of significance between GDP per capita and trade intensity. Interestingly, GDP per capita has a negative coefficient which describes a negative relationship between income inequality and the domestic production per capita of a nation. This is consistent to the earlier study, however is found be significant to 99% significant versus the past study which has a bit lower of a significance at 95%. This aligns well with what the study hypothesizes of the relationship between income inequality and increase per capita output would be. This and the past study only confirm the hypothesis that with increased output there is only great opportunity for the lower echelons of a nation's wealth. Trade intensity provided a second alignment with Baek and Shi (2016). The coefficient in both studies were found to be significant the prior study to

90% significance and this study a 99% level of significance. However, the effect of trade intensity was opposite of each other. Baek and Shi (2016) found trade intensity to negatively affected income inequality while our regression found a positive effect.

Industry and technology interestingly do not produce the same results as the prior study did. In the Baek and Shi (2016) and Bergh and Nilsson (2010) study, the authors had confirmed that technology and industry were strong components to reducing income inequality. From the results of our regression, we did not arrive at any level of significance. However, interestingly the sign of both variables was positive in our study. Although we must respect the fact that neither variable attained significance, there may be a great opportunity to explore the relationship between expansion in industry and technology from globalization. A focused study in the area may retrieve what may driving equality in either direction from possible exposure or lack thereof either variable.

No prior study that was explored found quite the significance between foreign direct investment (FDI) and income inequality like our study has. The regression finds a 99% level of significance between FDI and income inequality. This may be an area for further exploration in future studies.

Each of the parallels and discrepancies between the prior our study and the prior studies invoke thoughts of whether or not the effects of globalization need to be more explored than they currently are being, particularly on a region and more focuses level than most are taking.

Table 1: Regression

Variable	Notation	Coefficient	Standard Error
GDP per Capita	GDP CAPITA	-0.001020***	7.88E-05
Foreign Direct Investment	LOG_FDI	3.448860***	0.354491
Industry	INDUSTRY	0.012346	0.035069
Technology	TECHNOLOGY	0.018922	0.024407
Trade Intensity	TRADE INTEN	0.032570***	0.007574
Constant	C	17.59080	3.254973

Table 2: Correlation Matrix

	GINI	GLOB IND	GDP_capita	GDP growth	FDI	Ind	Tech	EXP	IMP
GINI	1								
GLOB IND	0.057984	1							
GDP_capita	-0.47053	0.419101824	1						
GDP growth	0.015245	0.043103967	0.059923411	1					
FDI	0.075511	0.178166726	0.430174441	-0.035930768	1				
Ind	0.093173	0.03262668	-0.050927261	0.760401776	-0.04922	1			
Tech	0.037744	-0.142513648	0.038353512	-0.122616818	0.321871	-0.14505	1		
EXP	0.045117	0.385097457	0.00068616	0.223079145	-0.27728	0.210219	-0.45829	1	
IMP	0.113868	0.282286518	-0.033920735	0.227915065	-0.24994	0.223429	-0.51388	0.952927	1

Table 3: Descriptive Statistics

	GINI	GDP_capita	Log_FDI	Industry	Technology	Trade_Inten
Mean	46.51737581	5663.85769	9.369921079	3.477685656	23.9078372	58.05120115
Standard Error	0.285171622	211.0779336	0.049439697	0.422328752	0.684851561	2.277812871
Median	47.0466	4917.637315	9.383781993	3.790902516	23.10235105	51.76764881
Standard Deviation	4.132529408	3058.809858	0.716449274	6.120125054	9.924441981	33.00864447
Sample Variance	17.07779931	9356317.749	0.513299562	37.45593068	98.49454863	1089.57061
Range	17.6731	13802.04005	3.951921007	55.90953974	45.40611022	150.6127351
Minimum	36.28894	1451.290776	7.053078443	-17.61930434	4.268022638	14.73098059
Maximum	53.96204	15253.33083	11.00499945	38.29023541	49.67413285	165.3437157

4.1 Limitation

The limitation of this study was that data on Latin American countries is largely incomplete as you expand across the whole grouping of the region and well into the past history. This is true whether considering income inequality data or development

indicators. It is in the authors opinion that due to the limitations of data, research has not necessarily allowed for the clearest depiction of truths within the global economy.

However, it has limited researchers to only reach conclusions off of those countries who have the most complete datasets supporting the trends within their economy.

5.0 CONCLUSION

Basing an assertion off of the results of our study we are able to conclude that globalization has negatively impacted income inequality, however, some factors have not contributed to the draw down in the same way. Different exposures to the effects of globalization seem to be making an impact on the Latin American economy in a variety of ways. The results of our study would suggest that Latin American policy makers aim policy towards domestic improvements within their economy in order to boost the output that is produced through internal efforts rather than looking to foreign investors or endeavoring into trade policy. In doing so, our results would suggest that such economic growth would be more beneficial for all of the regions people and the wealth would be spread more uniformly than it would be otherwise.

In conclusion, the direction of research needs to continue under a more focused lens than it currently is using. The majority of the studies that were referenced took a broad approach with their study. Different regions have different characteristics than others and when we interrelate nations and make the assumption that ‘if one thing works in one place it will another’ we will be making a fatal mistake.

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