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Is Globalization a Driver of Income Inequality?

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ABSTRACT

Since the late 1970s inequality of income distribution within countries has widely increased all over the world. Wages among workers began to vary considerably: some of them earned three times the wages of other workers. Much of this increase was attributed to a rise in education but certainly other factors contributed to such growth. A critical factor for income inequality is claimed to be the exponential growth in world trade – falling barriers to international economic transactions – and in particular the growing exports of manufactured goods from newly industrializing economies (NIEs). The increasing trade between developed and developing countries has progressively raised the wages of highly skilled workers and lowered the wages of less skilled workers, creating a relevant gap between the two work groups.

Why has wage inequality increased? The growth in world trade is definitely a contributing factor, but is it the real cause? Are there other factors? This paper attempts to answer these questions analysing what led to such inequality, considering other pivotal issues – such as **labour market**, analysed through the increase in the wages of high-skilled workers and the decrease in the wages of low-skilled workers; **education**, analysed through wage disparities among workers due to the education factor, which awards pay-raises, i.e. skill-premiums; **technology growth**, going through the Skill-Biased Technical Change hypothesis; **gender**, considering women which, on average, earn lower wages than those of men; using historical content, evidence support, and theoretical models.

Introduction

The global path of trade liberalization has taken an upward direction since the beginning of the '80s, when several developing countries started to expose their economies towards international markets. Even though countries experienced dissimilar performances, the general spread of trade flows has been rapid and ever increasing over the past few decades, also due to the large diffusion of technological development (Meschi, Vivarelli, 2012).

This phenomenon, usually referred to as globalization, has had many consequences both within and across countries. Although international trade potentially benefits nations, one of the major issues discussed is whether the falling of trade barriers – through increased flows of goods, services, capital and labour – has caused the widening of income disparities within newly industrializing countries, this being a strong subject of debate in academic and policy circles and economic literature (Pavcnik, 2011). During the years of globalization, definitely, demand for high-skilled workers started to grow at the expense of low-skilled workers, resulting in a growing income gap between the two groups. Undoubtedly, trade liberalization period has *coincided* with the widening of income disparities and higher unemployment for low-skilled employees (Slaughter and Swagel, 1997). The question is whether and to what degree is trade liberalization accountable for diminishing real wages or increasing unemployment among the less-skilled workers.

Several scholars have exposed their doubts about the «trade hypothesis» arguing that what really structures the division of labour according to the workers' skills is not trade, rather technology development, more precisely a «skill-biased technical change» (Heitger et al. 2003).

The changes concerning income inequalities in both developing and developed countries, in some respects, are in line with the predictions of Heckscher-Ohlin model – a main-building block of international economics theory – while in others, the changes diverge from these predictions (Wood, 2002). The model predicts that (1) countries which have abundance of a factor will export that factor (e.g. a country which has abundance of labour will export a good which is intensive in labour); (2) a variation in the price of output will have an impact on the price of the factor (e.g. a price increase of a good will be followed by a price increase of the factor which the industry uses intensively and, consequently, a price reduction of the other factor); (3) when a country experiences an increase in the endowment of a factor, it follows that there will be an increase in the output which uses that factor intensively and a decrease in the output of the other good; (4) there will be good and factor price equalization when countries engage in free trade, implying workers' wages and rents earned on capital equalization across the world (Saylor Academy, 2012).

The aim of this paper is to analyse the various factors contributing to the widening of income inequality, providing an overview of economic theory, literature, evidence and historical context.

The paper is structured as follows.
Chapter I is the introductory part of the paper and is divided into four sections. Section I provides an overview of the historical background, going through the two waves of globalization. Section II explains the theoretical framework – Heckscher-Ohlin model – on which the paper builds its analysis. Predictions and criticism of the model follow. Section III introduces the problem of income inequality based on a global view. Section IV runs an analysis of the literature, considering several approaches to the effects of globalization on income inequality, providing different scholars' hypotheses and taking into account relevant factors such as skill-biased technical change and gender.
Chapter II focuses on providing empirical support to the theoretical framework. The analysis is run considering the effects of globalization on a developing country, namely Mexico. The results show a negative relationship between income distribution and trade liberalization, implying that Mexico's engagement to the global market has made the distribution of income more equal. The analysis is solely based on data on income distribution, measured by Gini coefficient, and trade openness measured as percentage of GDP. However, the correlation found is not causal, i.e. other factors may have affected the trend. Subsequently, the effects that the Mexican tax system has on income distribution are analysed. It follows that Mexico, through fiscal reforms, may improve the issue of income inequality that is currently facing. Other policies to address income disparity are provided.
Final considerations conclude.

CHAPTER I

1. Historical Context

According to Nayyar (2006), globalization is defined as a «process of integration into the world economy, [...] an expansion of economic activities across national boundaries».

The path and the structure of current global economic activity, implying world trade, has quite changed from what it was decades ago, or even a century ago. Many people claim that the world has gotten smaller, meaning that the expansion of communications and transportations has brought everyone much closer, abolishing any type of barrier. Distance has been virtually eliminated thanks to the spreading of the Internet, which makes communication basically free, and to planes, allowing access to any place of the world (Krugman et al. 2012). These claims show actually some truth: technology has lowered the distance barriers, making the world a smaller place.

Nonetheless, evidence shows how political factors can influence the "size" of the world, rendering technology effect void. As a matter of fact, the world has experienced *two waves of globalization* – roughly from 1820 to 1914 and from 1960 to the present day. The first wave was about shipbuilding, railroads and telegraph, through which most major cities were connected (Baldwin and Martin, 1999). The British economist John Maynard Keynes wrote about that first wave, in 1919:

«What an extraordinary episode in the economic progress of man that age was which came to an end in August 1914! ... The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth, in such quantity as he might see fit, and reasonably expect their early delivery upon his doorstep» (Krugman et al. 2012).

It was the year 1914 that represented the end of the international openness – the two world wars, the Great Depression and the protectionism made the world small again, suppressing global trade. The recovery dates back to the 1970s, when the second wave of globalization upsurged. Then, the internet and the jets were the main players of international connection, with the world share of GDP that had risen to unprecedented heights (Krugman et al. 2012). The increased integration in world trade can be justified by the rapid diffusion of vertical disintegration – a process in which finished products need several different phases of production, and each phase is executed in different nations (Open School of Management).

As recently as the 1970s, countries' major exports were primary goods – agricultural and mining goods. Since then, however, the composition of world trade saw dramatic changes. Manufactured

goods long-term demand increased sharply at the expense of agricultural products, whose share decreased from more than 40% (1950) to less than 10% (1999), and non-fuels minerals (WTO, 2008). The huge share in exports of manufactured goods was strictly linked to the prominent position of the newly industrializing economies (NIEs), like South Korea and China, in world merchandise exports in the 1990s (WTO, 2008). The late twentieth-century globalization coincided with a very large North-South income gap, resulting in deindustrialization and industrialization across the northern and southern areas of the world, creating huge income divergence among groups that were initially much closer (Baldwin and Martin, 1999). This divergence has developed, but it is somewhat still present in the modern world.

1.1 Why Countries Choose Trade

It is common knowledge that, to a certain extent, opening to international commerce is advantageous – for instance, trade allows countries that are not able to produce some goods themselves due to scarcity of raw materials, climate conditions, geographical location issues, etc. to actually get those goods. Still, there is a general concern about "protecting" a country from international trade, the reason being producing their own products and services to help create jobs in *that* country.

That being said, one of the most relevant facts about international economics is that there are *gains from trade*, meaning that when countries engage in international trade, the exchange of products and services to each other is almost always a mutual benefit process. Many are of the opinion that if countries have a different level of national income or productivity, then trade eventually proves to be detrimental. Developing countries' concern is based on the idea that opening to international trade is risky because their industries will not be able to compete. On the other hand, in advanced economies, there is a common belief that trading with developing economies, lower-wages countries, may lower their standard of living. These claims are basically misconceptions. As we will see later in this paper, theoretical models prove that countries can mutually benefit from trade even when one country has a higher rate of national income or is more efficient in productivity. Also, trade allows efficient allocation of resources and specialization in the production of niche products, resulting in increased efficiency in large-scale production (Krugman et al. 2012).

It is possible, though, that while international trade mostly produces benefits, particular groups within countries may be hurt due to the strong effect that international trade has on the distribution of income. The consequences of trade on income distribution represent a major insight among theorists, who

generally associate income disparities with trade growth, more specifically with growing exports of manufactured goods from developing countries (Saylor Academy, 2012).
In the next paragraph, international trade predictions will be analysed using a theoretical framework.

2. Theory

The theoretical model used to conduct the analysis in this paper is the Heckscher-Ohlin Model (subsequently referred to as HO), the standard model used by economists to study the influence of trade on the relative returns to different factors of production. The HO is built on the *competitive advantage theory* of David Ricardo – one-factor model – and uses the factors endowment of trading countries to make forecasts about trade trends and direction (Meschi, Vivarelli, 2007). It involves some features of production associated with the real-world context. For instance, it highlights the volume of different factors of production that the countries either have availability of or use in producing different goods – for this reason, it is also known as the *factor-proposition theory* (Krugman et al., 2012).
As reported in Krugman et al. (2012), the simplest version of the factor-proportions model sees two countries, two goods and two factors of production. For the aim of this paper, we will consider the two countries as being *developed* and *developing countries*, the two goods as being produced *skilled-* and *unskilled-labour intensive* and the two factors of production, namely *skilled* and *unskilled labour*. The model's main assumption is based on the fact that the countries have different endowments of factors of production. Eventually, we will see that trade will occur, it will be nationally beneficial, and it will have significant effects on prices, wages, and rents according to each nation relative factor endowments. It is worth stressing one critical conjecture of the HO model: production technologies are assumed to be the same across countries. The reason behind this assumption is that it allows a more precise understanding of how differences in resource endowments cause trade and it demonstrates which effects will result exclusively from these differences (Saylor Academy, 2012).

2.1 Heckscher-Ohlin Predictions

From Saylor Academy (2012), the Heckscher-Ohlin model is developed upon four key theorems: the Heckscher-Ohlin theorem, the Stolper-Samuelson theorem, the Rybczynski theorem, and the factor-price equalization theorem. The first two theorems define relationships between variables in the model, while the last two theorems provide the main outcomes of the model.

Heckscher-Ohlin Theorem. The theorem predicts that «the capital-abundant country will export the capital-intensive good, while the labour-abundant country will export the labour-intensive good» (Saylor Academy, 2012).

Stolper-Samuelson Theorem. The theorem states «how changes in output prices affect factor prices in the HO model. It states that an increase in the price of a good will cause an increase in the price of the factor used intensively in that industry and a decrease in the price of the other factor» (Saylor Academy, 2012).

Rybczynski Theorem. The theorem says that «an increase in a country's endowment of a factor will cause an increase in output of the good that uses that factor intensively and a decrease in the output of the other good» (Saylor Academy, 2012).

Factor-price equalization Theorem. The theorem states that «when the prices of the output goods are equalized between countries, as when countries move to free trade, the prices of the factors will also be equalized between countries. This implies that free trade will equalize the wages of workers and the rents earned on capital throughout the world» (Saylor Academy, 2012).

Assuming the *two countries* (Home and Foreign)*, two goods* (good *x* and good *y*) *and two factors of production* (labour and capital) model, the factor-prize equalization theorem can be demonstrated graphically as follows:

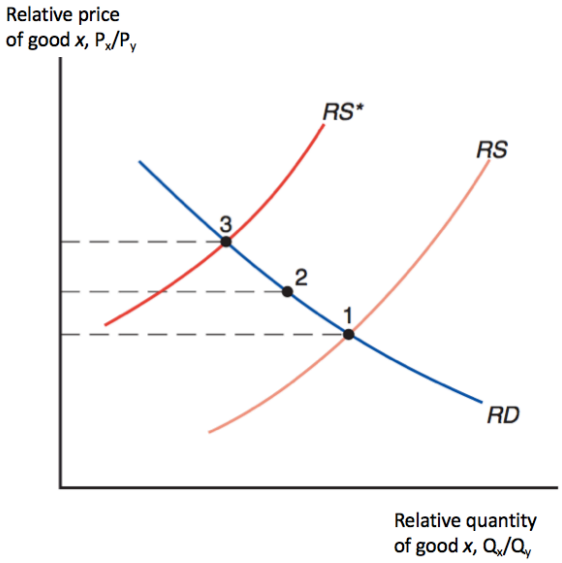


Figure 1: Convergence of Relative Prices
Source: Krugman et al. 2012

Trade Leads to a Convergence of Relative Prices

«In the absence of trade, Home's equilibrium would be at point 1, where domestic relative supply RS intersects the relative demand curve RD. Similarly, Foreign's equilibrium would be at point 3. Trade leads to a world relative price that lies between the pre-trade prices, that is, at point 2» (Krugman et al. 2012).

2.2 Aggregate Efficiency

The HO model hence shows how countries engaging in international trade will face an increment in *aggregate efficiency*. It proves a shift in the production of both goods due to price changes in both countries; each nation will focus on the production of its exports rather than its imports. This production shift will benefit both countries – by expanding productive efficiency, and consumers – by improving consumption efficiency (wider choice, lower prices, etc.). Eventually, there is an increase in total social welfare for countries entering into free trade.

Still, not everyone benefits from trade. As stated in the Stolper-Samuelson theorem, there will be different effects on income distribution: some countries will incur in income increases while others will face income decreases, thereby some resulting as winners and some others as losers. This implies that the increase in total welfare is an *overall* increase, meaning that gains of trade exceed the losses from trade (Saylor Academy, 2012).

2.3 Criticism of the HO model

The Heckscher-Ohlin model is considered an important tool for the analytical approach to the theory of global trade. Nonetheless, like many other theories, the model has its lacunas, which have been stressed by several scholars, providing inaccurate predictions.

Oversimplification

The theory relies upon several simplifying assumptions thereby making the model quite distant from the real world. As reported in Krugman et al. (2012), without any doubt, three assumptions essential to the prediction of factor-price equalization are truly wrong: (1) both countries produce both goods, (2) same technology across countries, (3) price equalization induced by trade in the two countries.

1. The fact that both countries produce both goods is not always the case. Assuming the two factors of production being skilled and unskilled labour, a country abundant in skilled labour may produce only the skilled labour-intensive good, while an unskilled labour abundant country may produce only the unskilled labour-intensive good. This implies that factor-prices will converge only if the concerned countries have adequately analogous relative factor endowments. Consequently, having radically different ratios of factors of production is not necessary for factor-prices equalization.

2. In reality, countries do have different technologies of production. This truth does not allow for factor price equalization, since it is necessary for price convergence that technologies be

the same. Recent study stresses the importance of allowing for such technologies disparities to settle with empirical evidence on world trade.

3. The assumption predicting full price equalization induced by international trade is not verified in reality. Prices of goods do differ due to transportation costs, tariffs, import quotas and other restrictions that the model does not take into account.

Still, it does not mean that disparities in factor abundance do not help clarify the observed patterns of trade across countries.

The Heckscher-Ohlin predictions concerning the distributive effects of free trade have frequently been used to justify trade liberalization in the developing countries: engaging in international trade should raise the relative demand and prices for unskilled work and result in a more even distribution of wages in countries that are abundant in low-skilled-labour (Meschi, Vivarelli, 2007). When looking at world facts, these predictions are not exactly accurate. The following paragraph explains the increase of income inequality throughout decades, supported by statistical data.

3. Income Inequality

During the same years of growing exports of manufactured goods, labour markets in developed countries have experienced a stable shift in demand from the less skilled workers to the more skilled ones – the workers were classified according to their education, experience or job classification (Slaughter and Swagel, 1997). For instance, in the United States (1979), «a male worker with a wage at the 90th percentile of the wage distribution (earning more than the bottom 90 percent but less than the top 10 percent of wage earners) earned 3.6 times the wage of a male worker at the bottom 10th percentile of the distribution. By 2005, that worker at the 90th percentile earned more than 5.4 times the wage of the worker at the bottom 10th percentile» (Krugman et al. 2012).

This steady trend consequently caused increased unemployment among the less-skilled workers and considerably unequal distribution of wages within countries. Empirical data show how the average wage of a US college graduate compared to a high school graduate increased by 20%, during the years 1979-1988 (Slaughter and Swagel, 1997). Other high-income countries like Germany and the United Kingdom experienced wage disparities among workers, where education awarded pay-raises. Moreover, researches confirm that these increases in skill premiums were not limited to advanced

economies – Argentina, China, Mexico and others, all faced skill premiums growth during the 80s and the 90s (Pavcnik, 2011). In the graph below, the top 10% global income shares during the time-span 1980-2016 can be seen – inequality increased almost everywhere, even though following different paces.

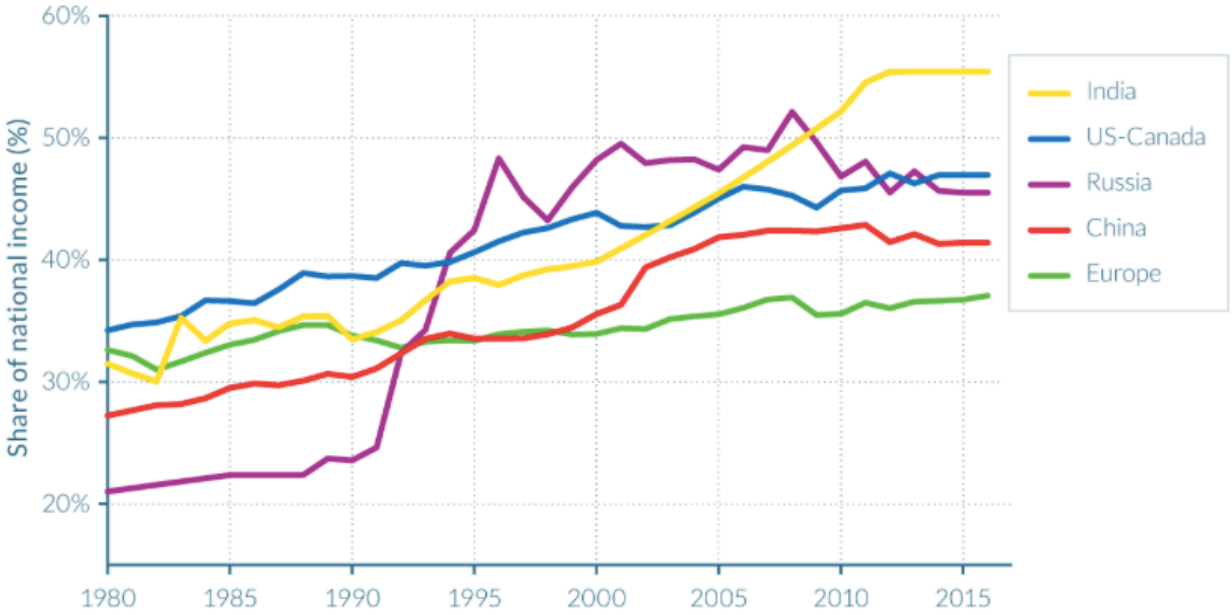


Figure 2: Global Income Inequality Trends
Source: WID.world (2017)

A 2015 study about skills and wage inequality run by OECD reveals several findings:

- *«Wage inequality is much higher in some countries than in others»* (OECD 2015)

In Scandinavian countries workers at the 9th decile earn three times less than those at the 1st decile, while in Estonia the D9/D1[1] ratio is 4.7, 4.8 in the United States and 5.8 in Korea.

- *«Wage inequality is lower in countries that are better at meeting the demand for skills»* (OECD 2015)

If the supply of skills is higher relative to its demand, then skills premium is lower and so is wage disparity. This is mostly experienced at the topmost of the income distribution: the supply of high- versus medium-skilled workers accounts for circa one-third of the disparities among countries in the D9/D5[2] ratio. If we consider instead the bottom of wage distribution (D5/D1[3]), the supply and demand

[1] D9/D1: ratio of the income of the 10 per cent richest to that of the 10 per cent poorest.
[2] D9/D5: ratio of the income of the 10 per cent richest to the income of those at the median of the earnings distribution.
[3] D5/ D1: ratio of the income of those at the median of the earnings distribution to the 10 per cent poorest.
Source: Development Strategy and Policy Analysis Unit

for skills seem to be less relevant to justify the disparities in wage distribution. This may imply that market institutions and policies have a stronger influence on the setting of wages of low-skilled workers.

- *«Wage inequality is also lower in countries where skills are more equally distributed»* (OECD 2015)

The distinction in skills between the high- and low-skilled (skills inequality) is highest in the United States and lowest in Slovak Republic. Estimates show that if the skills in the US were more equally distributed, the US wage inequality could be reduced by 4% with respect to its actual value. This is equal to saying that a reduction in US wage inequality by 1.2% would be induced by a 10% reduction in skills inequality.

- *«Countries that make better use of the skills of their workforce tend to have lower wage inequality»* (OECD 2015)

Some countries show a tendency toward jobs requiring a low use of skills but the number of such jobs is higher than the number of workers with low competences, resulting in non-optimal use of skills in the workplace. In contrast, some countries like Finland or the US, are better at employing workers' skills than others (e.g. Italy, Spain). The optimal use of skills would lower wage disparities.

The data above show how income disparity has expanded since the 1980s in both developed and developing countries. The most part is currently at its highest level in 30 years. Nowadays, the richest 10% of the population of the OECD region earns 9.5 times more income yearly with respect to the poorest 10% (OECD, 2015).

4. Literature

There is a huge debate about what lies at the heart of inequality of income distribution. A large body of literature has dealt and still deals with this issue, basing their claims on theories and hypotheses. The rapid growth of international trade integration, together with technological development, is the most discussed. The next sections provide an overview of the literature and the relative hypotheses.

4.1 Globalization on Inequality

According to Atkinson et al. (2011), the reduction in capital share of income due to the Great Depression and the wars – associated with subsequent hyperinflation and bankruptcy – caused a drop

in inequality after the Second World War. In the second part of the twentieth century, countries did not recover from inequality, and the authors impute this status to the introduction of progressive taxation and estate taxes, the differences in labour market institutions and executive compensation across countries, which prevented the upturn in several developed countries (Pavcnik, 2011).

In some English-speaking countries, as the United States, income inequality been recently accentuated by the growth in wage income among highly-skilled workers. Atkinson et al. (2011) justify this increase focusing on the role of globalization that, together with technological innovation, created a global market for exclusive talents, thereby increasing global demand and earnings for high-skilled workers.

Slaughter and Swagel (1997) use two different approaches – based on economic theory – to evaluate whether increased international trade, particularly in developing countries, worsens income inequality. One sees the influence of import prices on reducing the prices of goods and, accordingly, salaries. The other approach centres on the volume rather than the price of imports to assess the intensity of import competition. For what concerns the first approach, the authors argue that trade openness, influencing prices of commodities in both exporting and importing countries, affects in turn wages and the labour demand. New profit opportunities arise due to changes in prices, causing firms to move their resources toward more profitable industries. A shift in the demand for labour follows induced by trade streams, since more workers are required in newly profitable industries and less in unprofitable ones. Assuming fixed labour supply, this shift in demand causes wages to increase because workers ask a premium for entering into more profitable sectors. Another point they make is that import competition also decreases the price of low-skilled intensive goods compared to the price of high-skilled intensive goods, inducing domestic firms to embrace the high-skilled production of commodities. Research shows that there is evidence, even though not robust, that trade has played a role in rising income inequality. The other approach analysed by Slaughter and Swagel focuses on the volume of trade – rather than on the prices of imports – using it as an evaluation tool in explaining the relationship between trade and wages. The writers define trade as a shipping of the workers' services involved in the production of the merchandised goods, asserting that imports increase the labour endowment of the receiver country while decreasing the labour endowment of the country that delivers. They base their claim on U.S. trade flows data, analysing the magnitudes of labour involved in trade. The tendency of the United States to export high-skilled intensive goods, together with the significant position of the US in world trade, has increased the supply of unskilled labour relative to the supply of skilled labour. Data show 15% intensification in income inequality due to trade openness during the period 1980-1985, but the trend contracted in the successive years. Moreover,

auxiliary reports have exhibited, for developed countries, a 20% reduction in the labour demand for manufacturing – particularly dense among unskilled workers.

Krugman et al. 2012 attribute the increase in the wages of high-skilled workers and the decrease in the wages of low-skilled workers to the shift in exports toward manufactured goods. From the 1970s onward, former raw material exporters started to trade manufactured goods to advanced economies as the United States. Developing countries radically changed the composition of their exports, abandoning the traditional sector of agricultural and mineral products to prioritize their commerce on manufactured goods. Trading with high-income countries certainly offered a growing market opportunity for exports. However, the exports of developing countries varied significantly in factor intensity from their imports. The goods exported by newly industrializing economies (NIEs) involved low-tech goods, i.e. unsophisticated products such as shoes or clothing, with relative production intensive in low-skilled labour. On the other hand, developed countries exports to the NIEs consisted of goods whose production was is intensive in high-skilled labour, e.g. chemicals and aircraft. Therefore, the disparities in factor intensity caused the gap between wages of skilled and unskilled workers to increase.

Adrian Wood, in his work for *The Economic Journal* (1998), carries out an analysis of the effect of globalization on labour market disparities. Specifically, he examines the relative supply and demand of college graduates and their relative wages, first in the four decades 1940-1980 and then in the period going from 1980 to 1996. He makes a distinction between the *rise* in the relative demand for skilled labour and the *acceleration* in the growth rate of the relative demand for skilled labour. The author claims that most of the rise in the relative demand for skilled labour was due to a *skill-biased technical change* and that, at the same time, most of the acceleration in the growth rate of the relative demand for skilled labour – implying the increase in inequality in the market for labour – was caused by trade openness.

Wood, in assessing his analysis, takes into consideration the role of technological innovation as a contributing factor of increasing income inequality. The results of the studies reported above, as confirmed by the authors (Slaughter and Swagel), are subject to some uncertainty precisely because of the missing impact of technological development.

4.2 Skill-Biased Technical Change on Inequality

The relationship between technology and wage inequality has been and still is the subject of research of many scholars. It is documented that the rise in labour market inequalities in the U.S. can be associated with a technological change – particularly the development of microcomputers. Labour markets experienced a shift in the production technology which chooses skilled over unskilled labour,

thereby rising its relative productivity and, thus, its relative demand. Conventionally, technical change was considered as a neutral factor but the fast increase in relative wage and supply of skilled labour suggested that technology has been skill-biased (Violante, 2008).
Card and DiNardo (2002) also support this hypothesis. They claim that «one piece of evidence that points to computer technology is timing»: the rise of wage inequality (1980s) almost coincided with the invention and development of microcomputers. This also corresponds to the fact that more skilled workers are more likely to use computers in the workplace, implying a complementarity between computer technology and human capital.
The hypothesis that the expansion of technology caused a shift toward highly skilled labour and away from less skilled labour is referred to as *Skill-Biased Technical Change* (SBTC) hypothesis.

There are different perspectives on the SBTC hypothesis given by several scholars. Johnson (1997) associates skill-biased technical changes to various forms of innovation and makes a distinction between [1] *intensive*, [2] *extensive* and [3] *neutral* technical change.

1. Intensive SBTC is defined as rendering skilled workers more productive in the job they already do (e.g. introduction of computers);

2. Extensive SBTC refers to a technical change that creates employment for more skilled workers for jobs that were previously performed by less skilled workers (e.g. automation in manufacturing);

3. Neutral SBTC is a technical change that increases the productivity of all workers by the same amount.

Katsoulacos (1986) instead runs his analysis on two kinds of innovation: *process innovation* and *product innovation.* The first reduces employment by essentially removing jobs for unskilled labour, while the second increases employment by generating new jobs that require skilled labour. According to Heitger et al. (2003), based on data, both process and product innovation can be considered as skill-biased technical change. The authors, though, clarify that product innovation is more precisely described as a *sectoral structural change*, because it helps the creation of new markets. Product innovation introduces new goods and removes old ones. They define structural change as the reallocation of economic activity as a reply to innovations, specifically, the reallocation of production factors according to different uses or different sectors. For what concerns labour supply, increments

in unemployment can be also caused by gradual adjustment to variations in labour demand. Therefore, Heitger et al. conclude stating that the discrepancy between skill-biased technical change and structural change is not that obvious. The observed literature shows a broad unanimity that skill-biased technical change runs the skill composition in industrial economies. Still, some authors show some criticism about the hypothesis of the SBTC, claiming that it fails to explain some changes in the wage structure. For example, Card and DiNardo (2002), on one hand they stand by SBTC hypothesis; on the other hand, they argue that SBTC fails to explain why wage inequality trend was steady in the 1990s, despite ongoing progresses in computer technology. To obtain a better understanding of the developments on income inequality, other factors need to be examined.

4.3 Gender on Inequality

The disparities in the distribution of wages are subject to gender considerations. Statistics from Our World in Data (2018) show how in most countries there is a considerable «gender pay gap», meaning that male workers tend to earn higher wages with respect to female workers. The gender pay gap trend is experienced worldwide and, in the major advanced countries, it is minor between the end of formal education and the beginning of employment, and it gets larger with age.

What helps better understand the gap among skilled and unskilled labour, adjusted for gender considerations, is that women, globally, tend to be underrepresented in high-profile jobs, a sector that provides higher pay. The chart below designs the percentage of women in senior and middle management positions around the world, demonstrating their minority in senior managerial positions (Ortiz-Ospina and Roser, 2018).

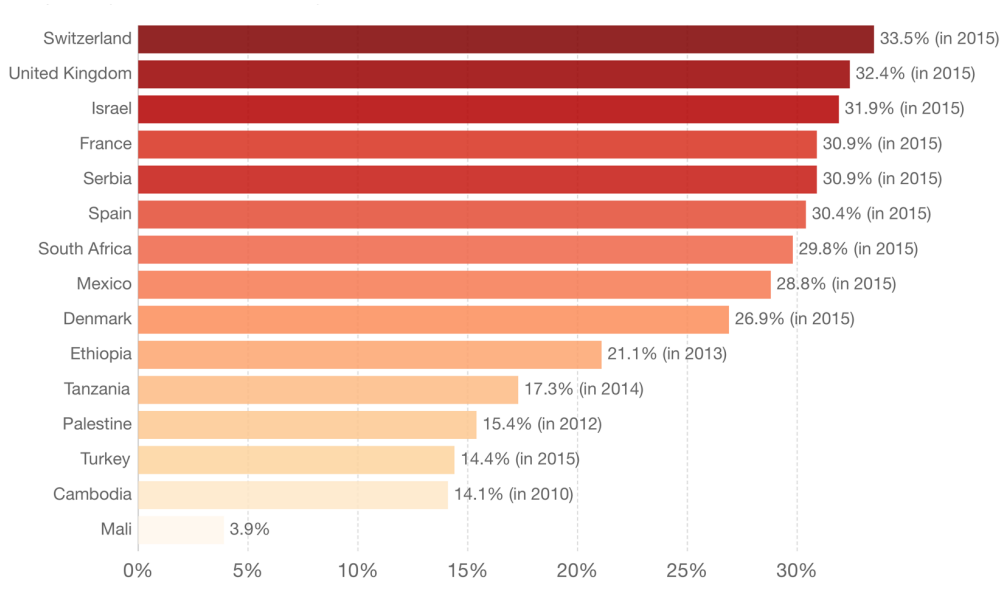


Figure 3: Proportion of women in senior and middle management positions, 2016
Source: United Nations Statistics Division

Card and DiNardo (2002) run their analysis on rising wage inequality including the gender factor. The data examined show that the gender gap reduced vaguely in the early 90s, but wages between male and female workers continue to be quite different. They argue that some percentage of the gender gap can be attributed to disparities in unobserved skills, but it cannot be explained by the skill-biased technical change hypothesis. The authors justify this claiming that «to the extent that complementarity with computer-based technologies is measured by computer use rates, these patterns suggest that technological changes should have led to upward pressure on women's wages relative to men's […] In the case of the gender differential, however, the two methods are inconsistent. Thus, the argument that recent technological changes have raised the relative productivity of more highly paid workers – the "rising skill prices" view of SBTC – suggests that computer technology should have led to a widening of the male-female wage gap» (Card, DiNardo, 2002).

Burstein, Morales and Vogel (2016) built a model to provide a clear quantitative study of wage determinants in US economy, in which workers vary in education and gender, and labour productivity differs across job types as a function of worker kind and the kind of equipment matching the worker's labour input. They focus on computer usage, which proves to be a significant channel affecting wage inequality. The spread of computers in the US was unequal among workers according to their occupations and, additionally, it was biased toward workers with higher education and toward women. Mincer in his work of 1974 used education, experience and gender to explain the disparities of workers' wages too. Even though the approach resulted to be successful, it just provides a partial explanation of wage inequality (Helpman, 2016).

4.4 Globalization on Inequality: Broadening the Canvas

Bourguignon (2016) and Milanovic (2016) have largely discussed the concept of income inequality, stressing the significant role of globalization. They have dedicated two books to this topic, sustaining the thesis that globalization has been the major driving force of inequality between or within countries. Milanovic develops a «broad-brush picture, with some intriguing hypotheses on the processes at work» based on his own interpretations of the evidence, while Bourguignon runs a «deep and suitably qualified economic analysis» based on neoclassical economics, though using many real-world features such as poverty traps and market failures (Ravallion, 2018). Both authors agree that average inequality within countries was stationary or even decreasing during the period 1829-1990, while this trend changed radically at the end of the twentieth century: overall, income inequality was falling between countries and rising within countries. This pattern of the evolution of global income inequality is the major theme of both books.

Milanovic begins its analysis by providing an informative tool for explaining the global income inequality evolution over the period 1988-2008, the so-called «elephant chart» that we can see below.

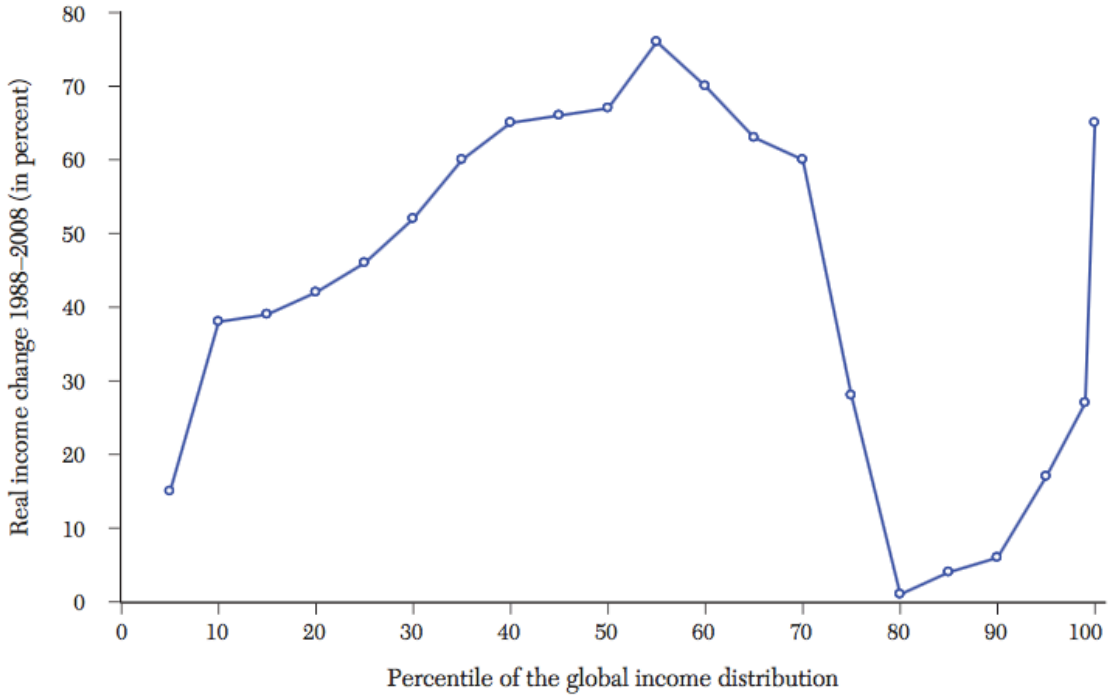


Figure 4: Elephant Chart
Source: Based on estimates in Lakner and Milanovic (2016a)

The chart shows that «the share of the world's top 1 percent rose from 12 percent to 15 percent between 1988 and 2008», implying an ambiguous representation of distributional change, rather than a decline in global inequality. Through this graph, Milanovic depicts how the gains from globalization are not evenly distributed, claiming that globalization has made the emerging middle class in the developing countries winners and the relatively poor and middle class within the reach country losers. This theory has gained popular attention, rendering the link globalization-inequality obvious (Ravallion, 2018). Though, the elephant chart shows some discrepancies, allowing the possibility of plausible doubts. Ravallion (2018) questions the thesis of Milanovic and its elephant chart based on the fact that, during the cited period, other major events occurred, thereby affecting the distribution of income. The relevant events of the period involve the collapse of the ex-Soviet Union and the long period of inertia in Japan, which cannot be associated with globalization; technical innovations play their role in the interaction of inequalities and education, too.

Milanovic introduces a second hypothesis based on Kuznets (1995) that he calls "Kuznets waves". According to this theory, based on historical events, there are waves in which inequality rises and then falls. With the Industrial Revolution inequality rose progressively, then the First World War

made the wave break. By the beginning of the twentieth century, the government took action against inequality. As a consequence, Milanovic states that when high levels of income inequality are reached, something will happen to reduce them, pushing the wave to break (Ravallion, 2018).
On the other hand, Bourguignon's approach is based on how the evolution of income inequality has developed and how it might continue, analysing factors as external aid, trade restrictions imposed by rich countries and liberalization within poor countries. The author makes positive forecasts for the middle-income countries, while shows more uncertainties for what concerns low-income countries, due to their reliance on commodity exports. The figure above shows the series of global inequality measures analysed by Bourguignon, based on a Theil index[4].

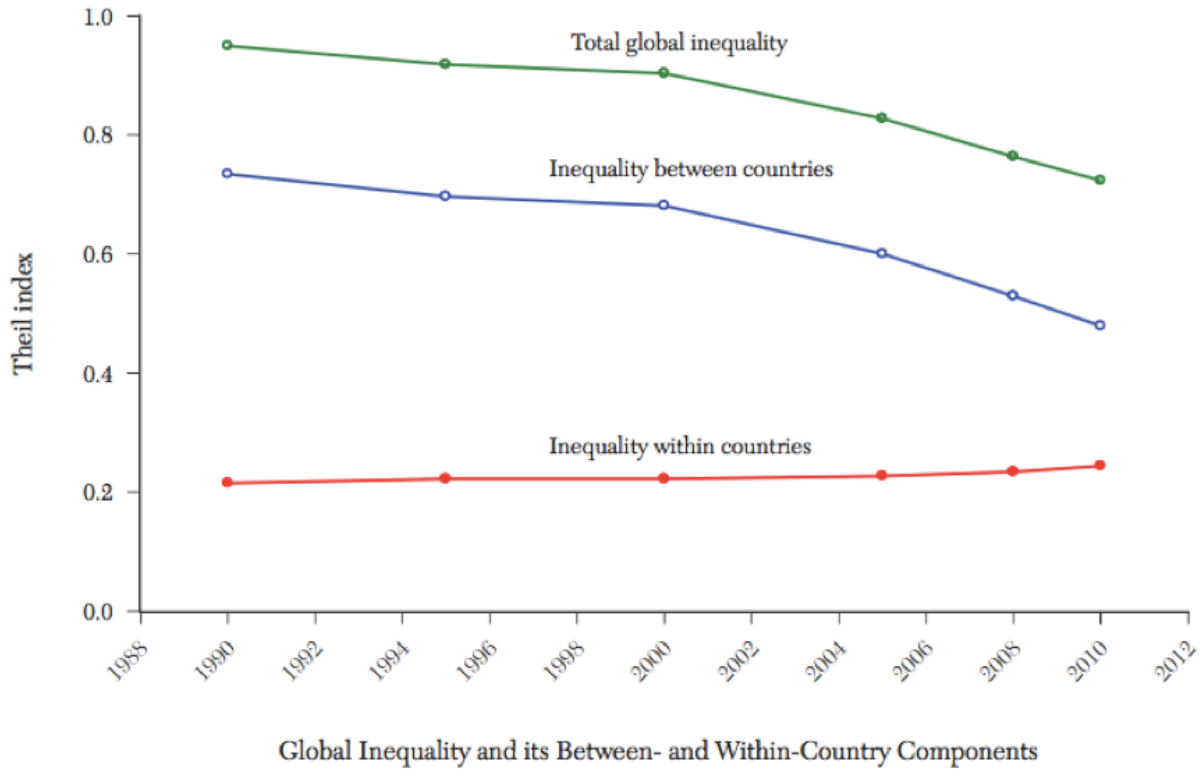


Figure 5: Global inequality measures based on Theil Index
Source: data in Bourguignon (2016, table 1)

The chart depicts decreasing global inequality caused by a reduction in inequality between countries, while inequality within countries shows an increasing trend since 2003. The current period of globalization is seen by Bourguignon – but also by Milanovic – as the result of these two trends,

[4] «A statistic used to measure economic inequality; it measures an entropic "distance" the population is away from the "ideal" egalitarian state of everyone having the same income. The numerical result is in terms of negative entropy so that a higher number indicates more order that is further away from the "ideal" of maximum disorder. Formulating the index to represent negative entropy instead of entropy allows it to be a measure of inequality rather than equality».
Source: United States Census – Bureau

namely falling inequality between countries and rising inequality within countries. The author points out that it may be obvious to look for a global answer given the occurrence of similar things across countries. However, even if there is homogeneity across countries, inequality has risen more in some places than in others. Bourguignon uses France as an example to show that, among other OECD countries, it did not see the increased pattern of inequality experienced elsewhere since the 80s. He claims that also labour-market policies contributed to rising inequality – France's statutory minimum wages and limitations of income-based measures played their role, «given the concerns about inequalities of opportunity associated with the country's high unemployment rate». At the same time, market-labour policies help reduce unemployment and have the potential to produce rising income disparities and in-work poverty (Ravallion, 2018).

In summary, the two causes that made the evolution of global inequality are identified by both authors in falling between-country factor and rising within-country factor as a result of trade openness, taking into account also policies, which affect both poor and rich economies concerning distributional issues. Helpman (2016) run a review of several theoretical and empirical models addressing the relationship between globalization and wage inequality, broadening the canvas by discussing new theoretical developments and new facts regarding such relationship, recently introduced by vibrant literature. Three expansions of the standard trade model are introduced: «firm heterogeneity within industries, worker heterogeneity beyond the classification into two groups of low-skilled and high- skilled individuals, and labour market frictions such as unemployment, wage bargaining and costly mobility» (Helpman 2016).

New data sets showed *firm heterogeneity* in terms of productivity and size within industries, with a limited number of firms being exporters. Based on this data, Meliz (2003) built a theoretical model to address the study of trade and wages. He assumed labour homogeneity and the payment of an upfront entry cost for the acquisition of manufacturing technology by the entrepreneurs, implying that the productivity of the technology can be known only after the payment of the entry cost. In such circumstances, due to fixed operating costs to be paid every period, only firms with high enough productivity can profitably export, thereby remaining in business. In the model, all workers are assumed to receive the same pay, regardless of whether they are employed by high- or low-productivity firms. As a consequence, international trade affects the wage level but not the wage disparity. However, Helpman analyses additional factors to suggest how firm heterogeneity can create an asymmetric wage distribution that meets international trade. One of such factors is *assortative*

matching[5], meaning types of matches that maximize the aggregate value. According to Becker (1973), complementarity is the feature through which matches maximize the aggregate value.

Helpman claims that this reasoning can be implemented to matching workers with managers or firms, by identifying a feature for workers – ability, and a feature for managers – managerial ability, or a feature for firms – technological sophistication. Moreover, several workers can be matched to a single manager or a single firm. Based on exhibiting complementarity, «a marginal increase in the characteristic of one party raises the marginal value of the other party's characteristic proportionately more than the value of the match. In this event more-able workers are paid higher wages, and the rate at which wages rise with ability depends on how strong the complementarity between worker ability and firm sophistication is in the productivity function». Following this reasoning, a shift in matching can even further increase the gap in wages. Thus, globalization can affect wage inequality due to its impact on the assortative matching of workers with firms.

The other factor of the canvas concerns the influence of *market labour frictions*, like minimum wages or firing costs, on international trade and wages, sorting out wage inequality. Helpman cites the theory developed by Mortensen and Pissarides (1994) and Diamond (1982a,b) about search and matching in labour markets. This theory involves firms posting vacancies and workers searching for a job; workers and vacancies are subject to matching but only some workers find a job and only some vacancies are filled. At this point, matched workers and firms undertake the process of wage bargaining; since failure to reach an agreement would result inefficient, each party has an incentive to make a successful bargaining. Here, international trade changes the options available to firms and workers, thereby altering wages and employment.

Based on this theory, Helpman (2016) reviews a series of models examined by several scholars, providing results that are approximately similar. The model developed by Costinot and Vogel (2010) is a variant of the factor proportions model, assuming several sectors and several kinds of workers, competitive markets and matched workers and sectors. The hypothesis of increasing income disparity is confirmed when workers are matched with more-sophisticated sectors (or firms). This applies also to countries that differ in the diversity of factor endowments. The same results are shown in the model proposed by Grossman, Helpman and Kircher (forthcoming), with two factors of production, that is to say, workers and managers, both being heterogenous, with varying abilities; and

[5] «Matching has a long tradition in economics, be it for the assignment of firms to locations, of individuals to houses, or workers to firms. Becker (1973) applied it to marriages, deriving a condition under which there is Positive Assortative Matching (PAM). For illustrative purposes, suppose that there are a fixed number of "men" and a fixed number of "women" and the number of men equals the number of women. Moreover, men can be ranked by a single characteristic from low to high and so can women. A marriage consists of pairing a man and a woman, and every pair produces a value based on the characteristic of the man and the characteristic of the woman, and this value is higher, the higher the characteristic of either the man or the woman».
Source: Helpman (2016)

the one proposed by Antràs, Garicano and Rossi-Hansberg (2006), assuming a managerial hierarchy. Their framework shows heterogeneity and continuous distribution of ability, and competitive economy which leads better workers to be matched with better managers.

Helpman (2006) further discusses wage inequality on the grounds of the previous theory but with the difference that firms can choose among technologies of different quality. Yeaple (2005) and Bustos (2011b) both constructed a model in which firms can select between two types of technologies: a high-fixed-cost technology and a low-fixed-cost technology. In the event of trade, there are fixed and variable trade costs, which make symmetric firms not to engage in trade of traditional goods; rather, with sufficiently low fixed export costs, firms trade differentiated products. If both technologies are used, then firms will choose to invest in better technology export. The fraction of firms that will choose not to export will only serve the domestic market. This implies that firms choosing to export also choose better technology and, consequently, will hire more-skilled workers. The result is that, according to employment selection, relative wages will change, thereby affecting income inequality. This piece of evidence analysed by Helpman, according to him, shows a modest impact of international trade on wage inequality, suggesting that other factors have contributed to rising wage inequality. This hypothesis is supported by other authors' studies[6]. These factors are defined by the author to be affecting *residual inequality*, i.e. «the component of earnings that is not explained by workers' observed characteristics», rather by workers' unobserved characteristics.

[6] See Helpman (2016), IX section «Residual Inequality»

CHAPTER II

5. Empirical Analysis

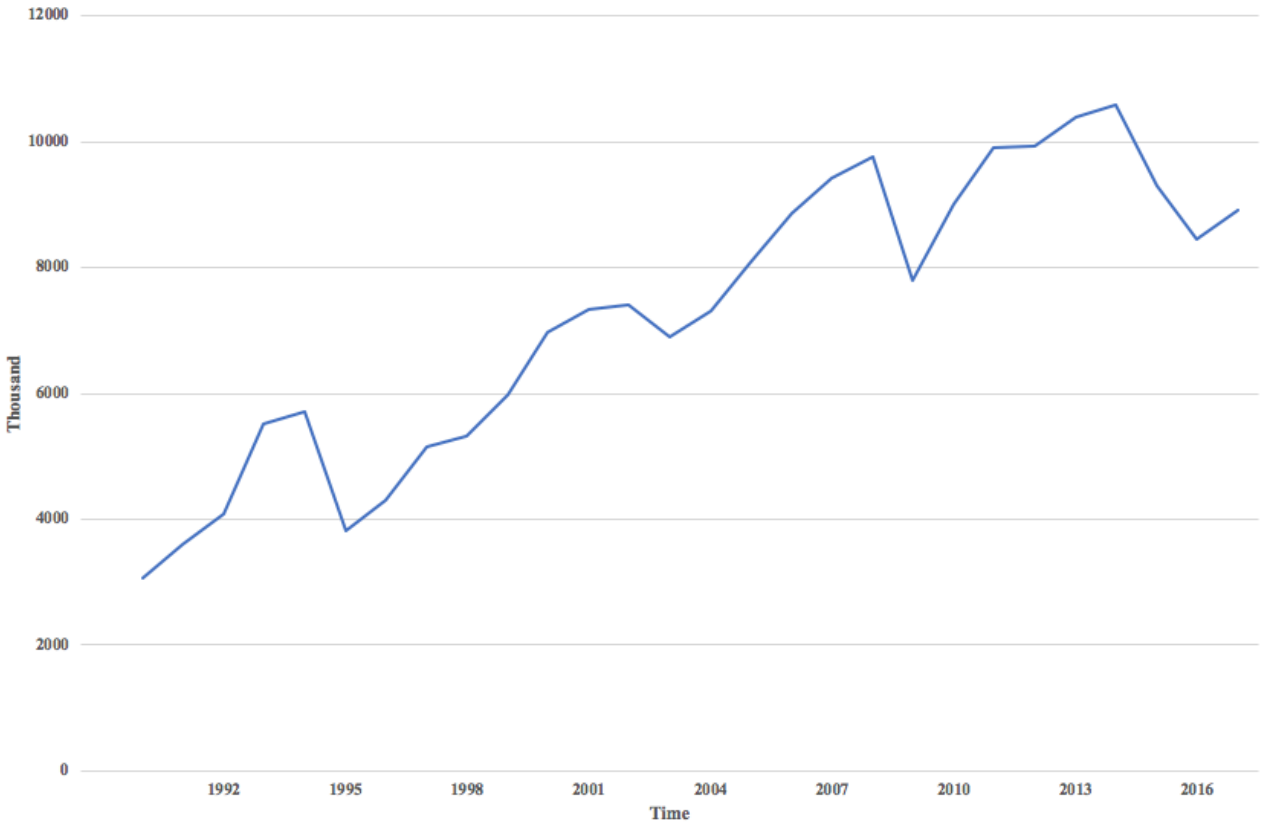
After having discussed historical and theoretical considerations, in this section an analysis of empirical data is provided. Specifically, it will focus on evaluating whether differences in income inequality within a country may be related to the country's integration to the global economy – "globalization" for short. For the sake of this analysis, I have selected one of the members of the developing countries, namely Mexico, seeking to assess to what extent trade liberalization has affected the income distribution of the country. Mexico's economic performance is appropriate to run such analysis, specifically due to its trade experience during the 1990s, thereby being a particularly interesting case for the study of the consequences of globalization. The reason lies in the fact that the country has implemented a very aggressive trade strategy when opening up its economy to the rest of the world, with huge results. The policy changes implemented have contributed to increasing the share of international trade in Mexico's GDP, which nearly tripled (Davis, 2019). Also, investment flows and the share of employment linked to the world economy rose substantially. These changes had implications for the distribution of income within the country.

Thus, analysing Mexico case may serve as an exemplary case to show a potential relation between globalization and disparities in households' income.

5.1 Developing Countries and Income Inequality: Mexico

Mexico is considered a developing country because of its low level in the development of industrial base and a low level of Human Development Index (HDI) compared to other countries. Another factor that includes the country into such category is the level of its GDP per capita, compared to other nations.

As we can see from the graph below, which displays Mexican GDP per capita over the period 1980-2017, even though the average GDP per capita in Mexico has been increasing over time, it remains below $12,000, which is the common threshold for developed countries. Moreover, the country is characterized by several quality-of-life dynamics that do not reach acceptable levels for developed-countries status. Other factors include life expectancy, which reaches 77 years, infant mortality rate – 11 per 1.000 live births, the presence of large bands of poverty, the absence of quality health care and limited access to clean water. Moreover, its HDI score is about 0.76 (Investopedia, 2019).



Graph 1: Mexico GDP per capita (current US$)

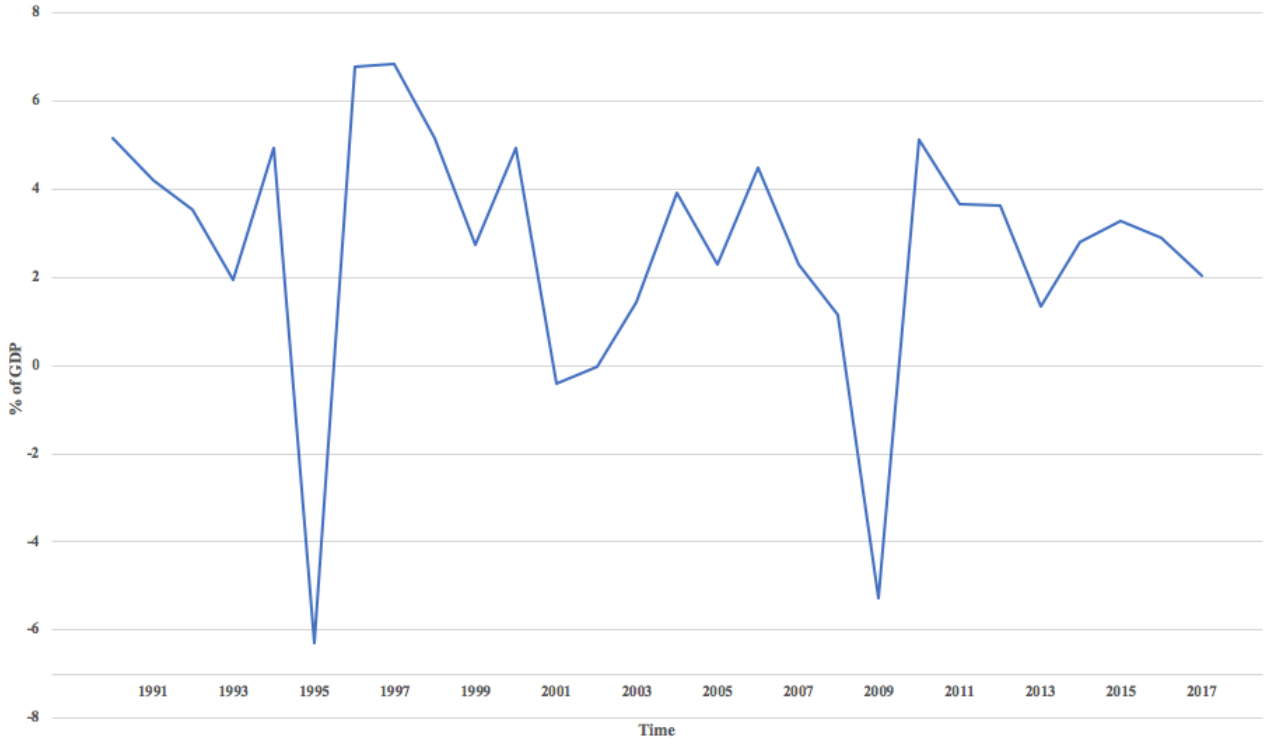
Source: The World Data Bank

Mexico Economic Conditions

To better understand the dynamics of the Mexican country, a review of the economic conditions of the country is provided.

The 1980s have been a tough decade. The annual real per capita growth did not reach 4 percent until the end of the decade. In 1987 the level of inflation was so high that reached 159 percent. What worsened the already disastrous conditions was the earthquake of 1985, which devastated the country. Standards of livings were brought down due to huge levels of indebtedness, which also implied a reduction in domestic consumption. The country started to recover when the NAFTA was signed (1994), which resulted beneficial due to the connection among Mexico, Canada and the United States and the increased trade activity. Even though it looked like the Mexican economy was starting to recover, the following years showed disappointing results (Salvucci, EH.net). The early 1990s were expected to be prosperous years, based on the prospect of NAFTA. Indeed, they were years marked by increased foreign direct investment and investor confidence. However, the economy of Mexico proved to be weak when some financial, political and economic complexity caused the country to fall

again. As we can see from the graph below, from 1993 GDP growth started to decrease, with a very low drop in 1995 (Angeles Villarreal, 2010).



Graph 2: Mexico GDP growth (annual %)

Source: The World Data Bank

The event that led to the huge struck in Mexican economy can be identified in the assassination of the Mexican candidate to the presidential elections Luis Donaldo Colosio, in March 1994. The consequences of the murder where dramatic: Mexican economy faced the outflow of foreign exchange reserves and concerns grew about a potential devaluation of the currency. The government reacted by issuing short term dollar-indexes notes to allow the financing of the growing current account deficit.

In the months succeeding the presidential elections, there was an increment in the current account deficit with imports increasing due to a peso overvaluation. This resulted in a short-term liquidity crisis for the Mexican government. Foreign direct investment inflows persistently decreased, together with foreign exchange reserves, thereby pushing the Mexican government to acquire a floating exchange rate regime, while abandoning its previous fixed exchange rate policy. The outcome was a sharp drop in Mexico's currency by 50% in six months, leading the country into a grave recession (Angeles Villarreal, 2010).

To cope with the imminent recession, the government took several steps to heal the economic conditions and make the impact of the currency crisis less strong. Mexico was not alone in this crisis; the country was supported by the United States and the International Monetary Fund (IMF), which provided financial aid – an amount of $50 billion. The measures taken consisted of tight monetary and fiscal policies to decrease inflation, increase in the value-added-tax, budget cuts, and price increases in electricity and gasoline.

The decreasing trend in GDP growth at the end of the 1990s can be explained by a steady depreciation of the peso, which led to an increased export level but, at the same time, caused real income to drop, harming mainly the poorest. Nonetheless, the orientation toward a more export-based economy, also due to NAFTA, lessened the impact of the currency evaluation.

In the aftermath of the financial crisis in 1995, GDP growth experienced a decline of 6.2%, soon after increasing by 5%-6% annually. In 2001, we can see again a drop – GDP growth went from around 5% to -0.2%. Things started getting better after 2001, when the growth in the economy of the United States had a positive influence also on Mexican economy (Angeles Villarreal, 2010). Between 2005 and 2007 GDP growth was around 5%. After that, the 2009 global financial crisis strongly hit the economy of Mexico, leading GPD growth at -5.28%. In 2010 GDP growth reached a level of 5.12%, the highest level since then. The most recent value is 2.04% in 2017.

Poverty

The deep level of poverty in Mexico is a serious concern for the country, and one of its major causes is identified in the daunting social issue of unequal distribution of income across the country (Harrigan, 2017). Data show how Mexico's wealth is unequally distributed among its people where 10 percent of the country's richest own 42.2 percent of all income and 10 percent of the country's poorest own only 1.3 percent of the residual income (MercoPress).

Even though the government has taken several steps toward poverty reduction, this issue is still one of the main challenges for the Mexican country. OECD data show the most recent levels of poverty in Mexico measured by the poverty rate – «the ratio of the number of people (in a given age group) whose income falls below the poverty line; taken as half the median household income of the total population. It is also available by broad age group: child poverty (0-17 years old), working-age poverty and elderly poverty (66 year-olds or more)» (OECD 2019). Poverty values for 2016 show 0.198 for age range 0-17, 0.138 for age range 18-65, and 0.247 for 66-years-old and more.

5.2 Mexican Economy Globalization

As in many other Latin American countries, historically, income disparity has been a relevant issue in Mexico. During the 80s, to stand against such disparity, the Mexican country implemented aggressive liberalization policies, with which it succeeded into integrating its economy to the international market, and more specifically to the market of United States. This strategy resulted in a substantial growth into trade and investment streams, as well as in employment activity during the 90s. Mexico began by gradually eliminating import and export licenses and simplifying tariffs between January 1983 and July 1985. Immediately following this plan, there was a reduction from 100% to 36% in the portion of imports liable to licensing requirements. Moreover, after having joined GATT in 1986, Mexico committed to «bind tariffs at a 50-percent level, to eliminate reference prices, and to continue eliminating import licenses» (Borraz and López-Córdova, 2004).

Certainly, a pivotal role was played by the Free Trade Area of the Americas (FTAA) negotiations, specifically by NAFTA (North America Free Trade Agreement). The agreement, among USA, Canada and Mexico, entered into force on 1st January 1994, with the aim of eliminating trade and investment barriers among its members, in order to foster economic and employment growth (Treccani). In most part of the 80s, the Mexican economy had faced numerous complications with severe intensification in poverty. Supporters of NAFTA, at the time, had positive expectations: the agreement would increment the level of confidence among investors in Mexico, increase export diversification, open the field to higher skilled-jobs, raise wage rates, and decrease poverty. Moreover, NAFTA was seen as an opportunity to make the gap among incomes much narrow overtime (Angeles Villarreal, 2010).

Actually, the agreement succeeded in liberalizing the Mexican economy, making possible the opening up of US and Canadian markets to Mexican producers. They agreed on trade liberalization on most commodities not later than 2008. This was an important step for Mexican import economy, since the greatest part of them come from North American goods. Thus, through the elimination of tariffs on US and Canadian goods, Mexico essentially opened up to world trade.

Following the elimination of barriers to trade, Mexican world trade experienced a significant increase: data show that, over the decade 1990-2000, the rate of total imports and exports did more than quadruple, with numbers hitting 174 and 166 billion, correspondingly. The export activity of Mexico to North America raised from 80 to 91 percent, over the same period – while imports from North America followed a constant path, specifically around 75%.

This implies a more intense level of competition in Mexican home-market and a greater amount of output sent overseas. Foreign investors became suddenly attracted to Mexican economy, with subsequent effects on the country's Foreign Direct Investment (FDI). While from 1970 to 1985 FDI

as a percentage of GDP stayed less than one percent, it was over 1986-1993 that it rose between one and two percent; after 1994, it has remained above two percent ever since. The level of employment found benefits from Mexican trade openness too: exporting firms faced an increase in employment from 21 to 29 percent in 2000. Nonetheless, the level of globalization of the Mexican economy is not equally distributed – there is ample regional disparity; for instance, geographical proximity to the US border allows for a greater share of employment in exporting or foreign-owned firms (Borraz and López-Córdova, 2004).

Therefore, it can be said that NAFTA overall effects on Mexican economy were quite positive; however, the effects of such benefits have spread unequally across the country. Definitely, states facing high foreign direct investment and trade are those with higher levels of wages and employment. The unequal effects across the various regions may also imply that trade liberalization played an important role in the distribution of income. While the boost of trade may reduce the income inequality gap over the long run, it may actually lead to larger income disparities within the country. The Mexican commercial background helps understand the challenges that globalization brings with it but mostly it raises doubts about whether, in light of the negotiations of the Free Trade Area of the Americas, trade engagement may be tied to heightened levels of disparities in terms of income distribution.

With regard to such matter, the question is whether global economic integration has adversely affected the distribution of income in the Mexican country. To answer this question, an analysis based on Mexican income distribution and trade openness is provided.

Investigating the effects of globalization on income distribution is important for the Mexican economy, due to the effects that NAFTA implementation has had on the country, which, even though not equally distributed, still have been beneficial. While NAFTA surely helped the country to reach development levels which get closer to those of US and Canada, it alone has not been and still is not sufficient to lower income disparities within Mexico. Studies suggest that in order for Mexico to make the gap in income levels narrower, reforms in other areas need to be implemented. They actually claim that income gap has not been reduced due to some reasons concerning poor implementation of economic reforms (Angeles Villarreal, 2010). This implies that Mexico still has to find additional fields to better apply its strategy, with the aim of narrowing the inequalities among households' incomes. Studying the effects of globalization on income distribution may further shed light on the next move to take.

5.3 Empirical Evidence

The empirical analysis provided uses data retrieved from *The World Bank* national accounts data and *OECD National Accounts* data files in order to trace Mexico's **income distribution** and **trade openness** during the period that goes from 1992 to 2016.

The data set collected by *Income National Statistics Office* (INEGI) is based on population estimates from *UN Population Division's World Population Prospects* (2019). Both estimates are calculated on annual periodicity.

The distribution of income in the Mexican country is traced using **Gini index**. «Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution. A Lorenz curve plots the cumulative percentages of total income received against the cumulative number of recipients, starting with the poorest individual or household. The Gini index measures the area between the Lorenz curve and a hypothetical line of absolute equality, expressed as a percentage of the maximum area under the line. Thus, a Gini index of 0 represents perfect equality, while an index of 100 implies perfect inequality[7]» (The World Data Bank, 2019). The unit of measure is expressed in percentage.
Data are based on primary household survey data obtained from government statistical agencies and World Bank country departments.

To trace Mexico's globalization, or trade liberalization, a measure for trade openness is utilized, namely **Trade as a percentage of Gross Domestic Product (GDP)**.
«Trade (% of GDP) is calculated as the sum of exports and imports of goods and services measured as a share of gross domestic product[8]» (The World Data Bank, 2019). Data are obtained from World Bank national accounts data, and OECD National Accounts data files.

In the following table, both Gini Index and Trade (% of GDP) data are shown.

[7] GINI index – World Bank estimate
[8] Trade (% of GDP) – World Bank estimate

Year	(I) Gini Index	(II) Trade (% of GDP)
1992	49,6	35,55
1994	50,3	30,71
1996	48,2	50,42
1998	48,7	51,00
2000	51,4	52,43
2002	49,0	46,70
2004	48,3	58,42
2005	48,9	62,36
2006	47,7	56,09
2008	44,6	57,78
2010	45,3	60,76
2012	45,4	65,77
2014	45,8	64,96
2016	43,4	76,18

Table 1: Gini Index and Trade (% of GDP)

Source: The World Data Bank

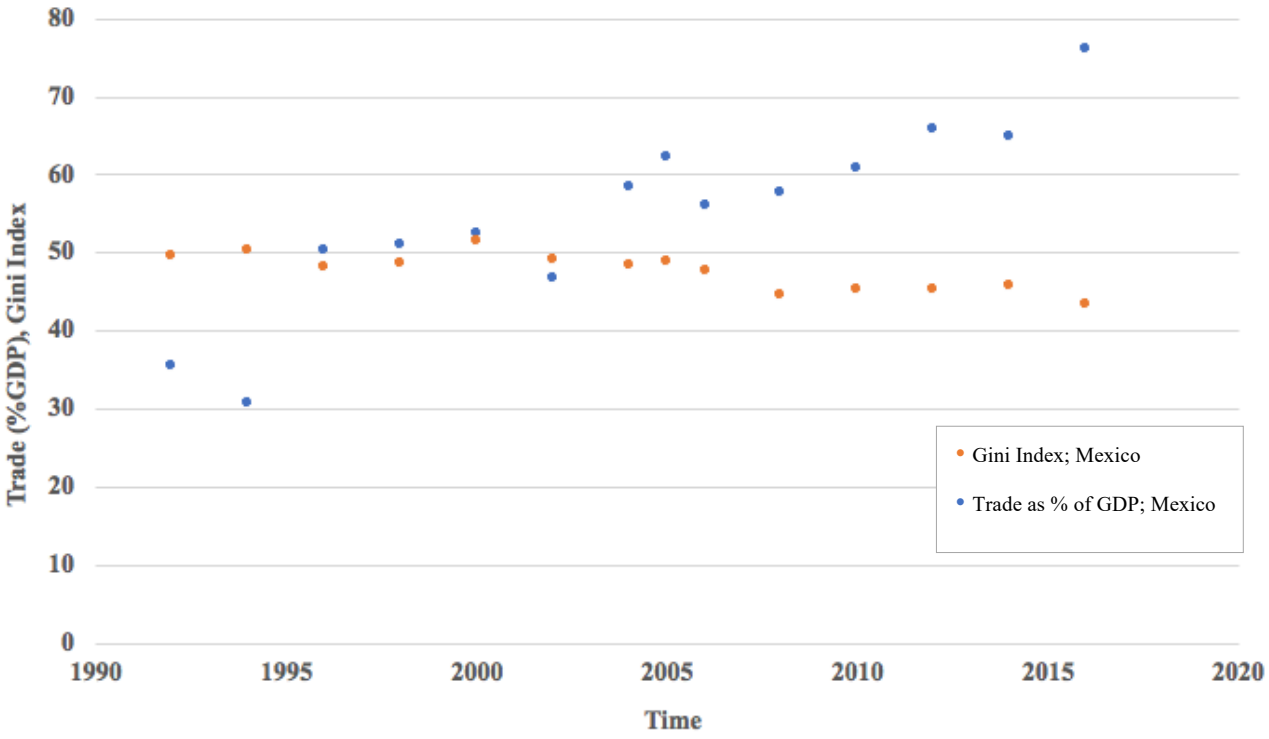
The period selected to analyse such data goes from 1992 to 2016 (most recent value). This time-span is appropriate for the scope of the question proposed, namely whether global economic integration has adversely affected the allocation of income in the Mexican country.

The 90s are the years in which the effects of the implemented aggressive liberalization policy had their *exploit*, succeeding into integrating the economy of Mexico to the global market. Moreover, the year 1994 is the one when NAFTA came into force. Indeed, as we can see from the table, column II, there is a net growth in trade openness from 1992 to 1998. Specifically, trade as percentage of GDP grew from 35,55% to 51%, showing a net increase of 30%. Even though some years show a few pitfalls, e.g. a decrease from 52,43% to 46,70% (2000-2002) or a decrease from 62,36% to 56,09% (2005-2006), from the 2000s onwards there is a positive trend towards exposure to trade, with Mexico's international trade gradually increasing from 2006 up to 2016, in which year it reaches the highest share of trade to GDP.

Column I of *Table 1* shows instead the numbers tracking income distribution in Mexico over the same time-span. Before 1992 there is lack of data about Gini index, thereby impeding the analysis. *The*

World Bank provides just one piece of data before those selected, specifically during the year 1984, showing a value of 48,9 Gini Index, which is anyway close to 1992 value, i.e. 49,6 percent.
These values prove how income distribution within the Mexican country is pretty unequal, since the higher the value, the higher the inequality. The data show an almost constant trend from 1992 up to 2000, in which the highest peak is reached – 51,4. Before that, the values stay around 48-50 percent. From 2000 onwards, we can say that there is a decreasing trend, implying a more equal distribution of income within the Mexican country, with the lowest value in 2016.

To better understand the paths of the two variables – income inequality and trade liberalization, a scattered plot based on the data above is provided.

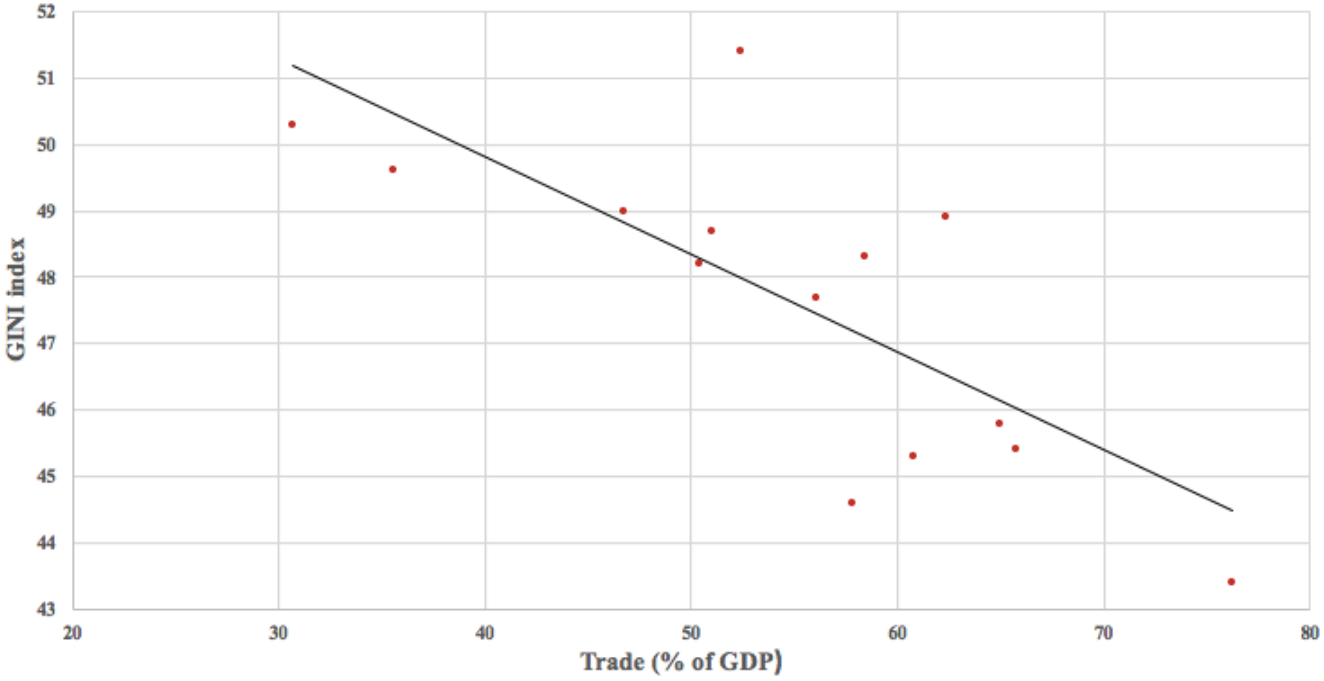


Graph 3: Trade (% GDP) and GINI Index over time
Source: The World Data Bank

The horizontal axis measures time, expressed in years (period 1990-2020), while the vertical axis measures both trade as percentage of GDP and Gini Index, both expressed in percentage value. The blue dots represent trade liberalization, while the orange ones income distribution.
As we can see, the two trends follow opposite directions over the time span 1990-1995, when Mexican trade activity still represented a lower percentage of GDP. In the same period, income was quite unevenly distributed. Soon after 1995, therefore after the implementation of NAFTA,

international trade starts to increase sharply, presumably due to the country's trade policy strategy. From 1995 to 2000, the two variables seem to share the same direction, implying a potential correlation. It is only after 2000 that, again, income distribution and trade liberalization seem to choose opposite paths: income gets more evenly distributed while trade as percentage of GDP grows.

To have a clearer view of whether the two variables are related, an additional scattered plot is provided – graph 4. It puts trade openness and income distribution against each another, seeking to assess their potential correlation.



Graph 4: Correlation between Trade and Income Distribution
Source: The World Data Bank

Looking at the graph, based on the data provided by *The World Bank*, one can assume that it actually exists a *negative correlation* between Mexico's integration to the global market and the level of inequality of income distribution within the country. This implies, overall, that there exists a relationship between two variables in which both variables move in opposite direction. Thus, while trade openness increases, income inequality decreases.
It is important to specify that this kind of correlation is **not causal**. It is a simple correlation, which may be affected by other factors that in this analysis have not been accounted for.

To sum up, the results of the empirical analysis show that Mexico's engagement in international trade has not adversely affected the income distribution within the country. On the contrary, it seems that

the higher the level of trade openness, the lower income disparity is. This path appears to continue nowadays, in Mexico as in other countries.

These findings are consistent with other empirical research dealing with the same question.

Gerardo Esquivel (2008) confirms that the important reduction of income inequality in Mexico is the result of «the combination of a late outcome of trade liberalization (as predicted by standard theories of trade) and a structural change in Mexico's workforce composition in terms of education and experience». The author ran a review of Mexico's income inequality path since 1994, when NAFTA came into force. The surveys used refer to nationally representative information from households, which helped show the relevant reduction in income disparity in Mexico. With the analysis based on a decomposition of the Gini index, he concluded that the effects of trade liberalization have played an important role in equalizing the distribution of income.

Fernando Borraz and Ernesto López-Córdova's (2004) conclusions show that the integration to global market has not increased income disparity in Mexico. Quite the reverse, they present convincing evidence which shows that the distribution of income is more evenly distributed in states which present a higher share of integration to worldwide economy and that, those states, reveal greater drops in inequality.

They provide an econometric model based on Mexican states' economic performance during the years of globalization boom. They analyse gross state product (GSP), state population (POP) and measure their variable of interest, globalization, in four different ways: «as the percent of state employment in exporting firms; as the percent of state employment in firms that are foreign-owned; as the ratio of state exports to GSP; or as the share of total state trade to GSP» (Borraz, López-Córdova's 2004). The dependent variable is the Gini coefficient, which rises the higher the income concentration. The aim of their analysis is to answer three main questions:

"Do globalized states have a better distribution of income?"
"Does inequality decline faster in states that are more globalized?"
"Do changes in the extent of globalization translate into reductions in inequality?"

The results strongly indicate that the more states are globalized, the less their income distribution is unequal. There is even some clue about how deepening globalization has decreased inequality. Most importantly, none of the results suggests that trade liberalization is correlated or has worsened income disparities within Mexican states.

The negative correlation among globalization and trade liberalization is a hypothesis shared by several scholars, not only as a trend specific to Mexico's case, but more as a general one, characterizing different countries' paths. Ravallion (2018) questions the thesis of two authors – Francois Bourguignon and Branko Milanovic, who share the thesis that globalization has been a major driving force of inequality between or within countries. His analysis is based on data about countries which, since 2000, experienced high rates of economic growth. After evaluating the literature on the empirical factors which may have caused such economic growth at country level, he claims that trade integration in the global market has not played a determinant role in the dynamics of income distribution changes – as the authors suggest. His conclusions saw trade openness as a factor helping the promotion of economic growth and, at the same time, the reduction of poverty in the developing area as a whole. However, he also states that globalization is only one of the many variables that had their role in such dynamics.

Among the OECD countries, Ravallion picks the example of France, which did not face the rising inequality during the 1980s. France is not the only one; Belgium, Greece, Hungary and Spain also experienced falling inequality, depending on the time span – which, according to the author, is a pivotal variable. He dismisses the hypothesis of Kuznets (1995), namely the "inverted U", whose focus sees a «common global force of economic integration driving up inequality everywhere». Kuznets asserts that income disparity would first increase in poor countries when their economies went through the process of urbanization, but after that, eventually, inequality would fall. Empirical evidence found in the literature on growth and inequality in developing countries shows how disparity seems to fall in some countries when they open up their economies to trade, while increasing in others; essentially neglecting Kuznets' hypothesis.

In support of Ravallion's thesis, also the OECD (2011) considers neither trade openness nor financial integration as a relevant factor to the enhancement of rising inequality. Ferreira, Leite, and Wai-Poi (2007) found compelling evidence proving that trade liberalization *did* contribute to significant reduction in income inequality in Latin America, too.

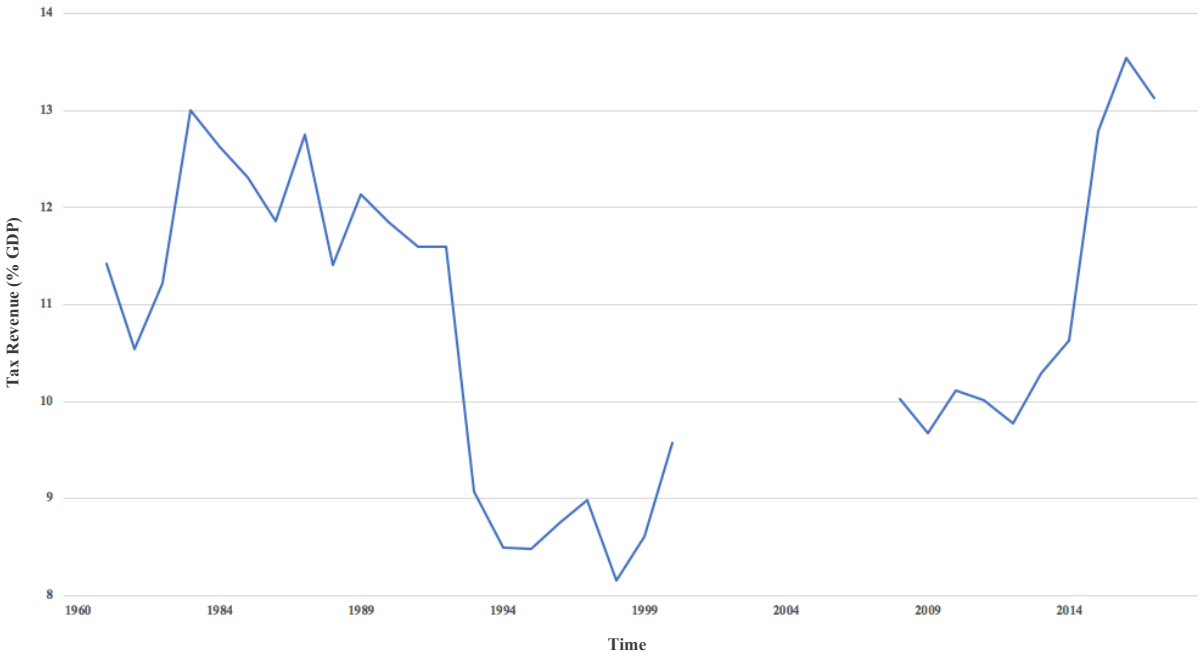
Neutel and Heshmati (2006) run a research to study the relationship between globalization, poverty and income inequality. They construct a completely new globalization index built on data covering a large sample of 65 developing countries, including Mexico. The index is made up of «four sub-indices, namely: economic integration, personal contacts, technological connections and political engagement» (Neutel, Heshmati, 2006). They provide a cross-sectional regression analysis which results in a meaningful relationship between globalization, poverty and income disparity. Actually, the relationship is found to be negative, where trade liberalization leads to poverty and inequality reduction. When checked for regional heterogeneity, the relationship stays significant. Moreover, the

results of a non-linear analysis prove that poverty has decreasing returns to benefits from trade liberalization.

5.4 Policies on Income Inequality

The implementation of fiscal policy may have played an important role in income inequality dynamics in Mexico. However, lack of data during the period of interest (1980-2000) impede the analysis.

The tax system in Mexico is one of the systems that earns the lowest level of tax revenue with respect to GDP. This is principally due to major deficiencies, which cause decreased efficiency and reduced levels of equity[9]. As we can see from the graph below, the level of tax revenue in relation to GDP has never gone above 13.54%, the highest value registered in 2016. The lowest level, i.e. 8.16%, was reached in 1998. From 2001 to 2007, the graph shows a gap because there is lack of data. After 2016 there seems to be a decreasing trend. According to OECD, the main amendments ought to be addressed to base broadening measures, like «eliminating the tax preferences for agriculture, fisheries, publishing and land transportation; substantially reducing the vast number of zero-rated and exempted goods and services in the VAT system; and broadening the income base of individuals by taxing fringe benefits and eliminate the fiscal subsidy» (Dalsgaard, 2000). Moreover, increases implemented in property taxes would be beneficial both for raising revenue and equalizing income distribution.



Graph 4: Mexico Tax Revenue (% GDP)
Source: The World Data Bank

[9] Source: OECD

Tax and Benefit System in Mexico

The Mexican tax-benefit system is defined by significant pre-fiscal income inequality. The taxes on income are the primary source of revenue collected from taxes, then followed by the Value Added Tax (VAT) and the Special Consumption Taxes (IEPS).

Concerning taxes on income, the Mexican *Personal Income Tax* (PIT) system is based on a progressive tax schedule, with eleven tax brackets for wage-earners' monthly income. Every tax bracket is subject to a combination of marginal tax rate and its equivalent tax payment.

VAT and IEPS are the principal indirect taxes, with VAT rate being 16 percent since 2014. Nonetheless, some goods and services are subject to zero rate or tax exempted, e.g. books, non-processed food and medicines are taxed at zero rate while public transports, schooling, medical services are subject to tax exemption.

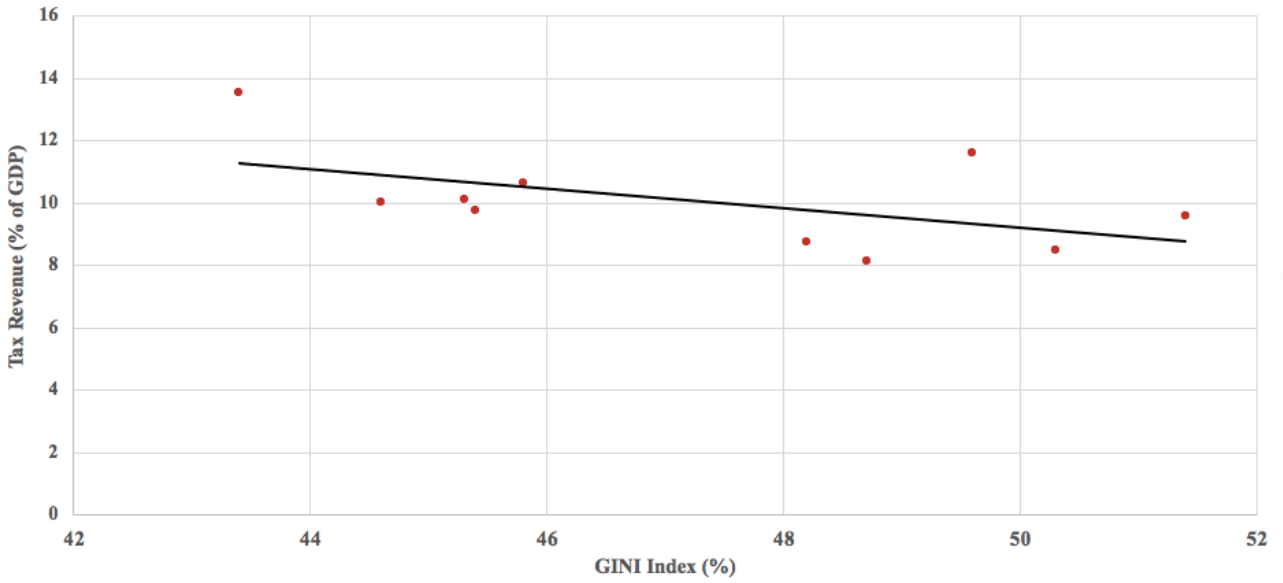
Social benefits are attributed according to whether families or individuals are eligible for government assistance based on the means they possess, that is, means-tested or non-means tested. Data show that 32 percent of households were eligible to means-tested transfer in 2014. *Prospera* is the main transfer provided to the poor: 28.04 percent of households qualified for this service, receiving an average transfer of 27 US PPP dollars. Soon after the *Prosepera* service there is the program for the elderly – 54.25 percent of households, granting an average transfer of 40 US PPP dollars. The pension system instead is based on non-means tested transfer since the payments are based on prior social security contributions. In 2014, 342 US PPP were provided for around 35 percent of households from the pension system (Llamasa, Araarb, Huescac, 2017).

Tax System on Income Distribution

Despite income taxes in Mexico follow a progressive tax scheme and, distributional purposes can be achieved through progressivity, it is largely known that equalizing distribution is more efficiently achieved through the expenditure system. Thus, according to OECD, Mexico's main issue with regards to income distribution and taxation is assessing the volume of progressivity needed to collect an amount of money that is enough for increasing public expenditure – comprising the improvement of distribution. An additional concern regards the influence of changes in marginal statutory rates for the wealthiest income groups on tax avoidance and evasion, implying an actual influence on the progressivity of the system.

Moreover, the varied income distribution of Mexico poses severe restrictions on the base for individual income taxation. The wage earners that are paying tax income in the formal sector amount only at 30% of the entire group; the remaining ones, i.e. 70% of wage earners, receive negative tax payment from the tax credit. This implies that only four to five million out of 15 million registered

taxpayers are actually paying income tax. A measure that could help implies increasing tax rates for high-income individuals, which are still relatively low in Mexico; however, there might be restricted scope for such increment since these income groups may be able to shift income into domestic or foreign low-tax regimes (Dalsgaard, 2000). Therefore, Mexico – as many other countries at global level (see Appendix, Figure 1) – shows a negative relationship between income inequality and tax revenue, where income inequality growth is associated with lower tax revenue. This relationship is displayed in the graph below.



Graph 5: Correlation between Tax Revenue and Income Distribution
Source: The World Data Bank

Another way through which the tax system influences the distribution of income, besides progressivity, is the indirect effect on relative wages and employment. Data from OECD show that progressivity in theoretical effective rates is much sharper in the lower income levels with respect to higher incomes, specifically those ten times higher than the minimum wage. Moreover, large reductions in effective tax rates have been implemented for income groups between two and four times the minimum wage, causing an increase in progressivity for those groups. The increase in progressivity for the groups at the lower income scale seems to have worsened the issues linked to under-declaration of income. OECD suggests an extension of the interval over which the tax credit is collected, together with an enlargement of the brackets of the income-tax system, in order to flatten the progressivity for the lower income groups.

On the other hand, aiming at increasing progressivity for the groups with higher incomes, OECD proposes the substitution of tax reliefs, deducted at the highest rate, with tax credits. This measure

alone would not be sufficient, improving the enforcement to render the latest increase in top statutory rates more effective would be necessary.

These data show that, through fiscal reforms, Mexico could improve the issue of income inequality that is currently facing. In support of this fact, in a recent report (2017), Linda Llamasa, Abdelkrim Araarb and Luis Huesca assessed the role of the tax-system implemented by the Mexican government in 2014, focusing on the redistributive effects brought with it. The authors study the effects of the fiscal policies by analysing pre-fiscal income and post-fiscal income inequalities, based on the Gini-Atkinson index. The results from the empirical study show that the fiscal system in Mexico has a positive effect on the reduction of inequality. More specifically, they found a reduction of inequality by 8.9 points, using a moderate sensitivity with the Gini-Atkinson index.
This analysis actually shows that fiscal reforms may be an important variable to be accounted for. Mexican society's needs concerning poverty reduction, education and health care are significant. For this reason, fiscal policy may be a determining element in order to deal with inequalities, aiming at creating a more fair and inclusive society.

Additional Policies

The fiscal field is not the only one in which Mexico may operate for the income gap to narrow. Angeles Villarreal (2010) suggests focusing on the relationship with the United States, by fostering economic integration between the two countries: improving or reinforcing institutions established under NAFTA or taking further measures to make the US-Mexico income gap reduced. Moreover, the idea of creating an infrastructure fund to promote investment in infrastructure, communication or education is proposed – this fund would be managed by the NADBank, which is the «North American Development Bank, created under a bilateral side agreement to NAFTA called the Border Environmental Cooperation Agreement» (Villarreal, 2010). An important portion of income inequality can be explained by the southern Mexican states' farmers, living in large poverty conditions. Mexico has taken several measures to cope with these severe poverty issues, but the results have been mixed.
Mexican government has been active also in the labour market to reduce poverty and increase inclusivity. In 2012, some reforms were approved by the Mexican Congress to the Federal Labour Law and Social Security Law. The scope was to increase flexibility in labour market and to ameliorate the conditions of young workers and women (Oona Palmer et al., 2018).
Despite Mexico's effort in pursuing policy strategies, it still struggles to cope with poverty and inequality issues.

Conclusions and Policy Considerations

This paper has discussed the effect that trade liberalization had on the trend of income inequality experienced by several countries worldwide during the end of the 20th century. A sure thing is that trade is beneficial, allowing for economic growth and financial efficiencies – however, some groups may be harmed by the trade flows, resulting as losers of the "globalization game". In some cases, the predictions of the Heckscher-Ohlin theoretical model are not accurate, due to some assumptions' inapplicability to the real-world context.

The income gap increased during the final period of the '900, with a reduced demand in unskilled labour and, at the same time, a higher request for high-skilled labour. The developing countries saw a variation in their export composition – they exported mainly low-tech products, and unsophisticated goods, like clothing or shoes. The discussed causes of the experienced inequality vary, where some believe that globalization played a pivotal role while others do not. One factor that is believed to have played a determinant role as well is technological development, pursuing the skill-biased technical change hypothesis. Technology is defined to be skill-biased because the increase for high-skilled labour demand almost coincided with the upsurge of technological innovation, more specifically with the introduction of computers in the workplace. Globalization and technological development are the most discussed causes, but other aspects also enter into the analysis – for instance, gender considerations. It is an actual fact that women, on average, earn lower wages than men. This trend is a worldwide trend which increases with age.

Many have gone through the study of how trade forces may have impacted the distribution of income, both in developing and developed countries. Some strongly believe that globalization has been the major driving force of inequality in the distribution of income – we have seen Bourguignon and Milanovic (2016) supporting this thesis. Others instead argue that trade flows have been a contributing factor but not a determinant one; some others focus on technology development. A recent study suggested that *unobserved characteristics* exist, which may be used to justify the increase in the residual income disparity. To investigate the theories and approaches proposed, the paper analysed empirical data, as a support. port.

The data provided are based on the Mexican economy performance, being a country with considerable bands of income inequality and poverty, which has experienced a significant growth in trade integration to the global economy. The results of the analysis show a negative correlation between trade liberalization and income inequality, meaning that the integration to the global market has brought benefits to the Mexican country, leading to a reduction in income inequality. It is important to say that the relation analysed is not causal and other factors may need to be accounted

for. An interesting additional factor in the case of Mexico is its tax system and its effect on the distribution of wealth. After studying the data, the outcomes show a positive effect of the fiscal reforms on the distribution of income within the country, in line with many other countries at a global level.

The income distribution causes within and across countries vary according to several factors: time, historical events, country composition, workforce, education, and many others.
The results of my study of literature and empirical research show that globalization has not been the major driving force of income inequality, in accordance with several scholars' theses. At most, it has been a contributing factor. Certainly, not everyone gains from trade. As stated by the Heckscher-Ohlin model, moving to free trade produces winners and losers, with adverse effects for some groups within the country. However, it is also true that, overall, trade integration has beneficial effects.
On the other hand, income inequality is a current severe issue, still faced by many countries around the globe. Reducing the uneven distribution of income and poverty and fostering equity are crucial purposes to be achieved. It is important to realize the root causes of income inequality and pursue proper policies to decrease poverty and make the income gap smaller.
Policies aimed at reducing inequality may involve achieving horizontal and vertical equity, that is taxing individuals that have the same financial resources at the same rate and those that have different financial resources should instead be taxed at different rates, respectively. Promoting equity can also be done through the implementation of a progressive tax system, with the aim of redistributing wealth to individuals with low income levels – even though progressivity of the tax system may create disincentive effects and moral hazard problems. Government may also provide cash benefits as support for those people who have a very low level of income (Economics Online, 2019).
Other policies may involve the amendment of laws that may discriminate some social groups, addressing regional inequality or pursuing labour market policies, such as improving the employability of laborers at the lower level of the market or setting a minimum wage to eradicate poverty.

References

Baldwin, Richard E. and Martin, Philippe. *Two Waves of Globalisation: Superficial Similarities, Fundamental Differences.* 1999.

Borraz, Fernando and López-Córdova, Ernesto. *Has Globalization Deepened Income Inequality in Mexico?*. 2004. Retrieved from: (https://www.gtap.agecon.purdue.edu/resources/download/1707.pdf)

Card John, David and DiNardo, E. *Skill Biased Technological Change and Rising Wage Inequality: Some Problems and Puzzles*. 2002.

Dalsgaard, Thomas. *The Tax System in Mexico: A Need for Strengthening the Revenue-Raising Capacity.* 2000. OECD Economics Department Working Papers No. 233. Retrieved from: (https://www.oecd-ilibrary.org/docserver/713001800850.pdf?expires=1559728274&id=id&accname=guest&checksum=D72B60A1C8207FBEBD1CDF5179FF1CB1)

Davis, Matthew. *Globalization and Poverty in Mexico*. 2019. Retrieved from: (https://www.nber.org/digest/apr05/w11027.html)

Esquivel, Gerardo. *The Dynamics of Income Inequality in Mexico since NAFTA*. 2008. Retrieved from: (http://economia.lacea.org/GEsquivel.pdf)

Ferreira, Francisco H.G.; Leite, Phillippe G. and Wai-Poi, Matthew. *Trade Liberalization, Employment Flows and Wage Inequality in Brazil.* 2007. Retrieved from: (http://documents.worldbank.org/curated/en/915661468226758546/pdf/wps4108.pdf)

Heitger, Bernhard and Stehn, Jürgen. *Trade, Technical Change, and Labour Market Adjustment*. 2003. Retrieved from: (https://www.econstor.eu/bitstream/10419/3101/1/Ste_Trade_Technical_Change.pdf)

Helpman, Elhanan. *Globalization and Wage Inequality.* 2016.

Krugman, Obstfeld, Melitz. *International Economics, Theory and Policy*. 9th edition. 2012.

Llamasa, Linda; Araarb, Abdelkrim and Huesca, Luis. *Income redistribution and inequality in the Mexican tax-benefit system.* 2017. Retrieved from: (http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0121-47722017000300301)

Meschi, Elena and Vivarelli, Marco. *Globalization and Income Inequality*. 2012

Nayyar, Deepak. *Globalisation, History and Development: a Tale of Two Centuries*. 2006. Retrieved from:(https://www.researchgate.net/publication/5208555_Globalisation_history_and_development_A_tale_of_two_centuries)

Neutel, Marcel and Heshmati, Almas. *Globalisation, Inequality and Poverty Relationships: A Cross Country Evidence*. 2006. Retrieved from: (http://ftp.iza.org/dp2223.pdf)

Ortiz-Ospina, Esteban and Roser, Max. *Economic Inequality by Gender*. 2018. Retrieved from: (https://ourworldindata.org/economic-inequality-by-gender)

Palmer, Oona; Mead, Ella; Tollas, Lana and Epelstein, Alexis. *Mexico: Monetary and Fiscal Policy Report*. 2018. Retrieved from: (https://www.reed.edu/economics/parker/341/proj/Mexico.pdf)

Pavcnik, Nina. *Globalization and Within-Country Income Inequality*. 2011. Retrieved from: (https://www.wto.org/english/res_e/booksp_e/glob_soc_sus_e_chap7_e.pdf)

Ravallion, Martin. *Inequality and Globalization: A Review Essay*. 2018.

Salvucci, Richard. Work in Progress: First half of a book-length project on the economic history of Mexico (with Moramay López Alonso). *The Economic History of Mexico*. Trinity University. Retrieved from: (https://eh.net/encyclopedia/the-economic-history-of-mexico/)

Slaughter, Matthew J. and Swagel, Phillip. *Does Globalization Lower Wages and Export Jobs?*. 1997. Retrieved from: IMF

Villarreal, M. Angeles. *NAFTA and the Mexican Economy*. 2010. Retrieved from: (https://fas.org/sgp/crs/row/RL34733.pdf)

Violante, Giovanni L. *Skill-Biased Technical Change.* 2008. New York University and CEPR.

Wood, Adrian. *Globalization and the Rise in Labor Market Inequality*. 1998.

Wood, Adrian. *Globalization and Wage Inequalities: A Synthesis of Three Theories*. 2002

Sitography

Web. Economics Online; 2019. "Policies to reduce inequality and poverty". Retrieved from: (https://www.economicsonline.co.uk/Managing_the_economy/Policies_to_reduce_inequality_and_poverty.html)

Web. Investopedia; 2019. "Top 25 Developed and Developing Countries". Retrieved from: (https://www.investopedia.com/updates/top-developing-countries/)

Web. MercoPress; 2010. "Gap between rich and poor in Latinamerica is largest in the world, says UN". Retrieved from: (https://en.mercopress.com/2010/03/27/gap-between-rich-and-poor-in-latinamerica-is-largest-in-the-world-says-un)

Web. OECD Data. "Poverty Rate". Retrieved from: (https://data.oecd.org/inequality/poverty-rate.htm)

Web. OECD; 2015. "Skills and Wage Inequality". Retrieved from: (https://read.oecd-ilibrary.org/employment/oecd-employment-outlook-2015/skills-and-wage-inequality_empl_outlook-2015-6-en#page3)

Web. Open School of Management. "Vertical Integration". Retrieved from: (https://www.openschoolofmanagement.com/resources/management-encyclopedia/vertical-disintegration)

Web. Saylor Academy; 2002. “The Heckscher-Ohlin (Factor Proportions) Model”, Chapt. 5. Retrieved from: (https://saylordotorg.github.io/text_international-trade-theory-and-policy/s08-the-heckscher-ohlin-factor-pro.html)

Web. The World Data Bank. GINI index; Trade (% of GDP); Mexico. Retrieved from: (https://data.worldbank.org/indicator/NE.TRD.GNFS.ZS)

Web. Treccani. “NAFTA”. Retrieved from: (http://www.treccani.it/enciclopedia/nafta/)

Web. UN.org; 2015. “Inequality Measurement”. Retrieved from: (https://www.un.org/en/development/desa/policy/wess/wess_dev_issues/dsp_policy_02.pdf)

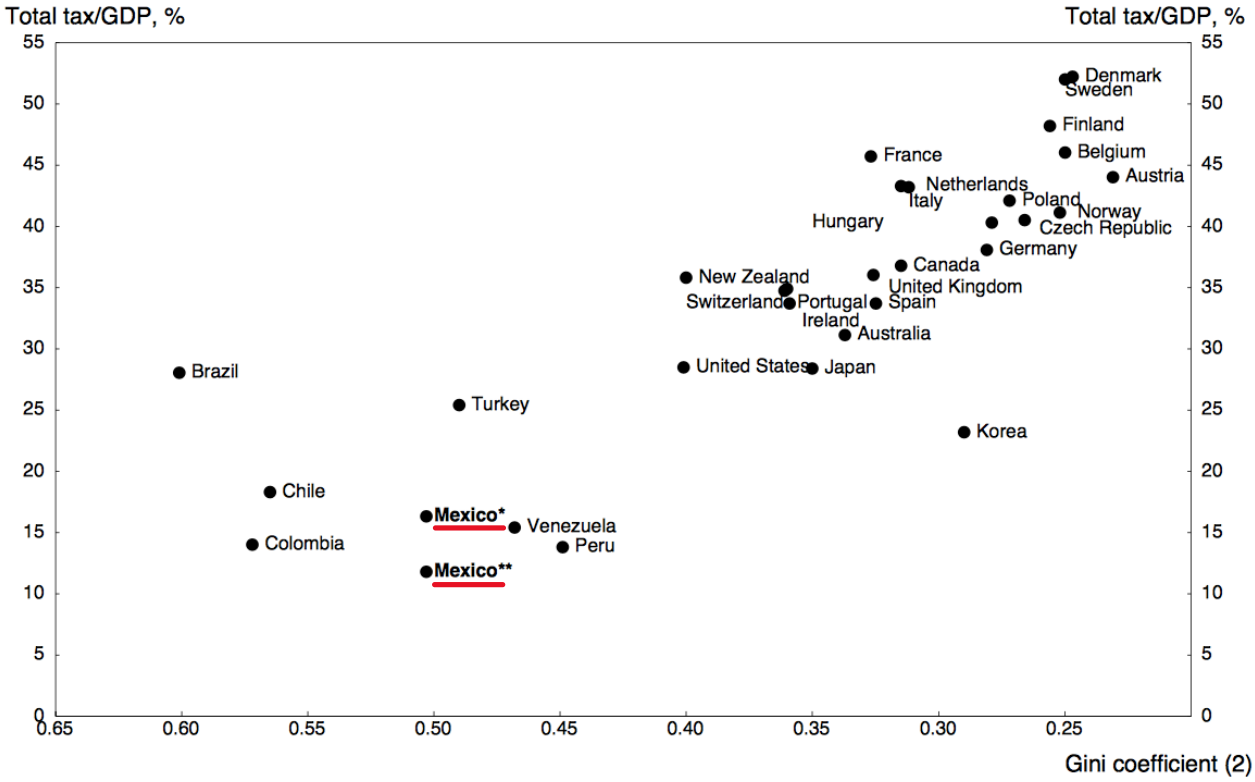
Web. United States Census Bureau. “Income Inequality: Theil Index”. Retrieved from: (https://www.census.gov/topics/income-poverty/income-inequality/about/metrics/theil-index.html)

Web. WID World; World Inequality Lab; 2018. “Trends In Global Income Inequality”. Retrieved from: (https://wir2018.wid.world/part-2.html)

Web. WTO; 2008. “Globalization and Trade”. Retrieved from: (https://www.wto.org/english/res_e/booksp_e/anrep_e/wtr08-2b_e.pdf)

APPENDIX

Figure 1. Tax Revenues and the Distribution of Income After Tax



1. General Government, including social security contributions. 1996 or nearest year available.

2. The Gini coefficient is a measure of income inequality: the higher the coefficient, the wider the income distribution.

* Mexico including PEMEX contributions.

** Mexico excluding PEMEX contributions.

«Sources: OECD, Revenue Statistics; IMF, Government Finance Statistics Yearbook, 1995 and 1996 issues» (OECD, 2000).