



ASOCIACION ARGENTINA
DE ECONOMIA POLITICA

ANALES | ASOCIACION ARGENTINA DE ECONOMIA POLITICA

LII Reunión Anual

Noviembre de 2017

ISSN 1852-0022

ISBN 978-987-28590-5-3

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Income Distribution in Latin America
The Evolution in the Last 20 Years: A Global Approach

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Abstract

While Latin America has historically been considered a region of very high inequality, the performance of most Latin American countries in terms of reduction of income inequality has been remarkable good in the first decade of this century. Given that those improvements took place in a context of rising inequality in most of the world, the evolution of income inequality in the region has caught the attention of researchers and policy makers around the world.

Taking advantage of a large database of comparable microdata from household surveys, this article updates the evidence on the trends of income inequality in all Latin American countries for the period 1992-2015. It also provides an analysis of how the distinctive evolution of income inequality in this century in Latin America has changed the position of the different countries of the region in both, the global distribution of income in the world and the global distribution of income in Latin America. Finally, the paper decomposes the evolution of income inequality in several countries of the region, discussing the role played by several factors on that evolution.

JEL Code: D31, D63, I31, J11, J21, J31, N36

Keywords: inequality, income, distribution, Latin America

* I am grateful to Anda David and seminar participants at AFD for valuable comments and suggestions. All errors and omissions are my sole responsibility.

1. Introduction

In the last few years, inequality has occupied a prominent place in public policy discussions. This renewed interest in inequality is mainly explained by the availability of new evidence showing that inequality in the distribution of income has been rising in most developed country in the last 30/40 years. Thomas Piketty's book, "*Capital in the Twenty-First Century*" (2014), triggered a worldwide debate on the evolution of inequality at national level in the most developed economies. While Piketty's work attracted a lot of attention (and controversy), in 2015 there were two other excellent books analyzing rising inequality: Tony Atkinson's "*Inequality: What Can Be Done*" and François Bourguignon's "*The Globalization of Inequality*".

While the works mentioned in the previous paragraph are focused on the evolution of income inequality at national level in a few (developed) countries, two of the most interesting and discussed works on income inequality in 2016 study not only the evolution of income inequality at national level but also the evolution of global/world income inequality². These two works are Branko Milanovic's "*Global Inequality: A New Approach for the Age of Globalization*" (2016) and "*Global Income Distribution: From the Fall of Berlin Wall to the Great Recession*" (2013), by Christoph Lakner and Branko Milanovic. These authors provide evidence on the evolution of global income inequality over the period 1988-2008, and their results offer a more optimistic point of view than the one arising from the results of the aforementioned studies. According to the authors, global income inequality has slightly decreased in the last decades: the "world" Gini index declined from 72.2 in 1998 to 70.5 in 2008, with most of the decline (82%) taking place after 2003.

However, Lakner and Milanovic (hereinafter L&M) are very cautious about interpreting this evidence as a definitive sign of improvement in the level of global income inequality. More specifically, the authors consider that given the data constraints they "...would suggest a conservative approach and conclude that the changes we observe over time are not statistically significant". This conclusion does not imply that the distribution of income in the world has remained stable along the period 1988-2008, a situation that would be very unlikely considering that several developing countries joined the global economy during those years. On the contrary, L&M found that behind a seemingly stable global income distribution there were "*substantial re-ranking of country-deciles and changes in the regional composition of different parts of the global distribution*".

Although they do not explore in detail the evolution of income inequality at regional level, L&M also present very interesting evidence on the level and the evolution of global income inequality in Latin America. Regarding the level of global income inequality in Latin America, they found that the Gini index estimated across all individuals living in a certain region of the world is highest in Latin America and Sub-Saharan Africa. This finding is not a surprise, there were several well-known previous studies (e.g. Morley (2001), Lopez and Perry (2008), UNDP (2010), Alvaredo and Gasparini (2015) and ECLAC and OXFAM (2016)) establishing that Latin America is one of the most unequal regions around the world.³

With respect to the evolution of global income inequality within Latin America, L&M report that it has "...remained virtually unchanged with some ups and downs in the intervening period". This can be seen as an unanticipated result: there is a growing literature showing that almost all Latin American countries have enjoyed a strong process of reduction in income inequality since the beginning of this century (e.g. López Calva and Lustig (2010), Gasparini *et al.* (2011), Gasparini and Lustig (2011), Azevedo *et al.* (2013), Cord *et al.* (2014), ECLAC (2014), Székely and Mendoza (2015), Gasparini *et al.* (2016), Székely and Mendoza (2016)).

² Global income inequality measures the distribution of incomes among all individuals in the world irrespective of their country of residence.

³ However, none of those works is focused on measuring global income inequality at regional level.

For example, Gasparini, Cruces and Tornarolli (2016) found that the (unweighted) average Gini index for Latin American countries increased almost every year between 1992 and 2002 (from 50.8 to 54.0). After that year, the value of that Gini index has steadily decreased, reaching a minimum of 47.5 by 2014. The results showing a strong decrease in income inequality inside most Latin American countries are not necessarily contradictory with the one in L&M: if there was a significant increase in income inequality “between” countries over the same period, then decreasing inequality “within” countries can be perfectly compatible with increasing global inequality in the region. However, this particular case seems to be very unlikely.

This paper tries to be a useful addition to the literature on income inequality in Latin America, analyzing both income inequality at national level as well as global income inequality at regional level. More specifically, it tries to understand if and why global income inequality in the region has evolved following a different pattern than the one showed by income inequality at national level. In doing that, this work will contribute to the discussion on income inequality in Latin America in three aspects. **First**, it updates the evidence on the trends of within- country income inequality in all Latin American countries for the period 1992-2015. **Second**, it provides a detailed analysis of the evolution of global income inequality in the region over the same period, explaining why the findings of L&M differs from previous results in the literature on income inequality in Latin America. **Finally**, it presents a decomposition (by income sources) of the evolution of income inequality in several countries of the region. Following the results of the decomposition, the role played by several factors on the evolution of income inequality is carefully discussed.

The remainder of this paper is structured as follows. In Section 2 the databases and the methodology employed on the estimations are presented. Section 3 is devoted to analyze both, the evolution of the average level of income inequality in the region and the evolution of income inequality at national level. Section 4 deals with global income inequality using two different approaches. In Section 5 the results of the decomposition by income sources of the evolution of income inequality are presented and discussed. Finally, Section 6 closes with a summary of the results and a brief discussion of next steps.

2. Data and Methodology

The measurement of global/regional inequality is conceptually similar to the measurement of inequality at national level: it involves the comparison of a welfare measure among individuals. However, the measurement of global inequality is much more complicated from an empirical point of view. The main difficulty associated with this exercise is the lack of a global/regional household survey that collects statistically representative information for the whole world (or at least for different world regions). The only possible way to overcome this absence of a global/regional household survey is to combine the information of national household surveys. The subsection describes the characteristics of the two databases used in the estimations of global and regional income inequality.

2.1. The Data

SEDLAC databases

Part of the statistics presented in this paper were obtained by processing microdata from household surveys of Latin American countries. These micro-databases are part of the Socioeconomic Database for Latin America and the Caribbean (SEDLAC), a project jointly developed by the Centro de Estudios Distributivos, Laborales y Sociales (CEDLAS) at the Universidad Nacional de La Plata in Argentina and the World Bank’s LAC poverty group (LCSP). Currently, SEDLAC contains information on more than 400 household surveys in all Latin American countries. Most household surveys included in SEDLAC project are nationally representative; the exceptions are Uruguay before 2006 and Argentina, where

surveys cover only urban population which nonetheless represents more than 85% of the total population of those countries.

Household surveys are not uniform across Latin American countries and in several cases not even within a country over time. SEDLAC team has made all possible efforts to make statistics comparable across countries and over time by using similar definitions of variables in each combination country/year, and by applying consistent methods of processing the data (see SEDLAC (2014) for details on the process followed to harmonize the databases). However, it is not possible to overcome all differences in geographical coverage and in the questionnaires of household surveys. In that sense, perfect comparability among country/years is not fully assured.

To analyze the level and the evolution of global income inequality in the region, six Latin America micro-databases (one for each of the following years: 1993, 1998, 2002, 2008, 2011 and 2014) were constructed by merging the microdata of the harmonized household surveys of each Latin American country. In the case that a household survey for a given country is not available for some year/s, the nearest household survey of that country was used with one adjustment: incomes of all individuals were increased/decreased by a common factor reflecting the evolution of per capita GDP between the benchmark year and the year of the household survey. In the final Latin America micro-databases, each individual is represented by his/her household per capita income expressed in US dollars at 2005 Purchasing Power Parity and by his/her original weighting factor in the national survey.

L&M Database

In addition to SEDLAC databases, the World Panel Income Distribution (LM-WPID) database is also used to produce the statistics reported on this paper. The LM-WPID was assembled by Lakner and Milanovic for their paper “Global Income Distribution: From the Fall of the Berlin Wall to the Great Recession”, and contains both a balanced and an unbalanced panel of country/deciles for the period 1988-2008. By expressing the average income of each country/decile in common currency and prices (US dollars at 2005 Purchasing Power Parity), the LM-WPID allows users to compare average income by decile both across countries and across time. Using this database, it is possible to derive global and regional income distributions for five years, at regular five-year intervals (1988, 1993, 1998, 2003 and 2008). Overall, the LM-WPID database includes 565 country/year observations, and each of them is represented by the average per capita income (in US dollars at 2005 PPP) of ten income decile groups. Given that the decile is weighted by its population, interpersonal global income inequality is measured assigning to each individual the average income of his/her national income decile.

It is worth mentioning some important “rules” followed by L&M in the construction of their database: 1) in the case that a household survey for a certain country is not available for some year, L&M used household surveys carried out from two years before to two years after the precise benchmark year; 2) for a given country, they do not use surveys too close (less than 3 years) or too far (more than 7 years) from each other in time (for example, if a survey from 1995 is used for benchmark year 1993, then surveys from 1996 and 1997 cannot be used for benchmark year 1998); and 3) they use income and consumption surveys interchangeably among countries, but they always use either income or consumption surveys for all years of a given country.

2.2. The Methodology

In this paper, the evolution of income inequality in Latin America is evaluated following three different but complementary approaches:

1) Country-by-country: this is the most traditional approach used to study the level and the evolution of income inequality. While some general results can be found on the analysis of the evolution of income inequality in Latin America (inequality first increased in a majority of countries during the 1990s, and then decreased in almost all countries after 2002), patterns and trends are not completely homogeneous across nations. In that sense, delving into the country experiences always unveils some interesting stories.

2) Average Latin America: analyzing average statistics for Latin America is a possible way to summarize an enormous bulk of information. The first part of Section 3 presents Gini indexes estimates as the *unweighted* average⁴ of national Gini indexes, a practice commonly used for cross-country evaluations in the economics literature. This information allows to draw first conclusions regarding the level and evolution of income inequality in the region.

3) Global Latin America: looking at the region as if it were a big country is another interesting way of summarize an abundant amount of information. In this kind of analysis, each World/Latin American inhabitant has the same weight in the estimations, irrespective of his/her country of residence.

3. The Evolution of Income Inequality in Latin America

Long before growing economic inequality became a major concern worldwide, the study of the evolution of income inequality and the analysis of its determinants were very important topics in social and economic discussions in Latin America. This is hardly surprising considering that the level of income inequality in most of the countries of the region has historically been very high and that there was a clear trend of increasing inequality in the region in the last three decades of the past century: during the 1970s there were some countries (Colombia, Mexico, Panama, Peru and Venezuela) where inequality went down, while other countries (Argentina, Chile, Uruguay) experienced an increase in inequality. The 1980s (a decade of weak macroeconomic performance in the region) and the 1990s (a period of deep reforms, with mixed macroeconomic results) were decades of frustrating performances in terms of inequality and most countries in the region suffered large increases in income inequality.

However, the most remarkable period for Latin America in terms of the evolution of inequality was the first decade of this century: almost all countries in the region were able to reduce significantly their levels of income inequality. This situation caught the attention of researchers all around the world, not only because it meant a turning point in the evolution of income inequality in the region, but also because those improvements took place in a context of growing income inequality in most of the world.

As a result, there is a vast literature analyzing the evolution and the determinants of income inequality in Latin American countries. Most of that literature focuses in individual countries, while a few papers take a more regional perspective and analyzes jointly the evolution and the determinants of inequality for all countries in the region. By presenting estimates of the level of income inequality for 2015 for all countries in the region, the next two subsections will update the evidence on the evolution of income inequality in Latin America countries.

⁴ Weighting by population would imply that highly populated countries, such as Brazil and Mexico in Latin America, would account for most of the observed regional evolution.

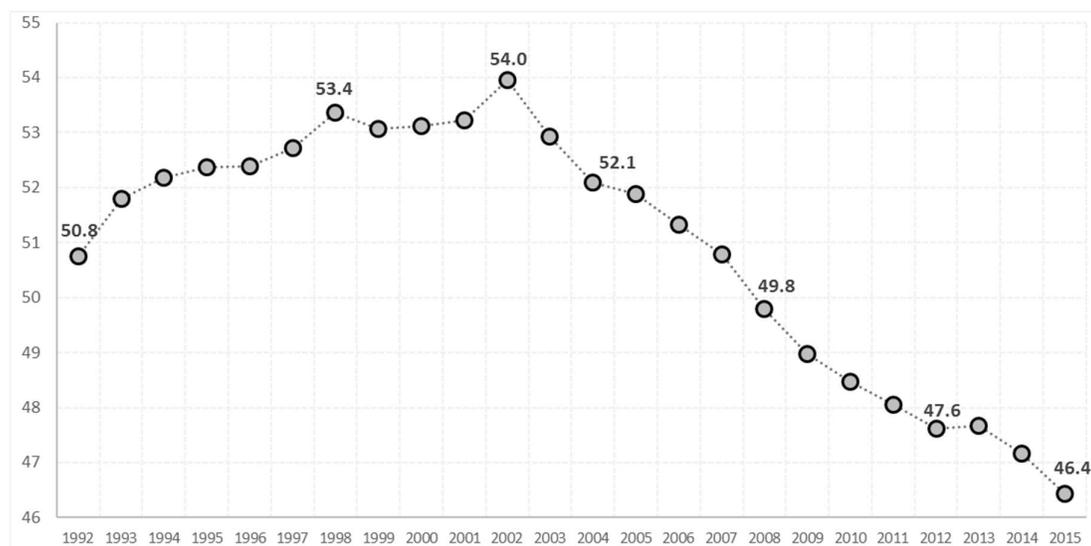
3.1. Average Income Inequality in Latin America

Figure 1 depicts the evolution of the Gini index⁵ for the distribution of household per capita income across 15 Latin American during the period 1992-2015.⁶ The estimates indicate that the level of income inequality skyrocketed (from 50.8 to 54.0) between 1992 and 2002, and strongly fell from that year on, reaching a minimum (46.4) in 2015.

The sharp contrast between the evolution of income inequality during the 1990s and during the 2000s is documented and discussed in several studies (e.g. López Calva and Lustig (2010), Gasparini *et al.* (2011), Gasparini and Lustig (2011), Azevedo *et al.* (2013), Cord *et al.* (2014), ECLAC (2014)). According to Figure 1, the average Gini index increased 0.32 points a year between 1992 and 2002, and decreased 0.68 points a year in the period 2002-2010. The fall in inequality decelerated during the first few years of the 2010s: the average Gini index declined by 0.33 points a year between 2010 and 2014, less than half the speed in the previous period. **The main finding in Figure 1 is the one showing that the decrease in income inequality seems to have quickened again between 2014 and 2015: the average Gini index dropped by 0.73 points between those two years.**⁷

The latter result seems to support a more optimistic view on the evolution of inequality in Latin America in the near future than other recent studies (e.g. Székely and Mendoza (2015), Gasparini *et al.* (2016), Székely and Mendoza (2016)), but it must be interpreted with caution: at the same time that the average Gini index for the region went down 0.73 points, there were several countries (Argentina, Brazil, Chile, Ecuador, Ecuador, Peru, Venezuela) in which income inequality remained stagnant or even slightly increased between 2014 and 2015.

Figure 1: Gini Index – Latin America 1992/2015



Source: own elaboration with data of SEDLAC (CEDLAS and The World Bank).

Note: The Gini Index for Latin America is the simple average of the Gini Indexes of the 15 countries.

⁵ Reporting simple averages for each year requires having a balanced panel, but several countries in the region do not have (or release) household surveys each year. A balanced panel was constructed by filling the gaps where surveys were missing. In doing that, interpolation of information from adjacent surveys and reports from national statistical offices were used.

⁶ Guatemala, Nicaragua and Dominican Republic are not included in the analysis due to lack of data for several years in the period under analysis.

⁷ The estimation for 2015 is still preliminary. The acceleration in the decrease of the average Gini index for Latin America between 2014 and 2015 is mainly explained by the strong decline in income inequality experienced by Bolivia, Colombia, Panamá and Paraguay.

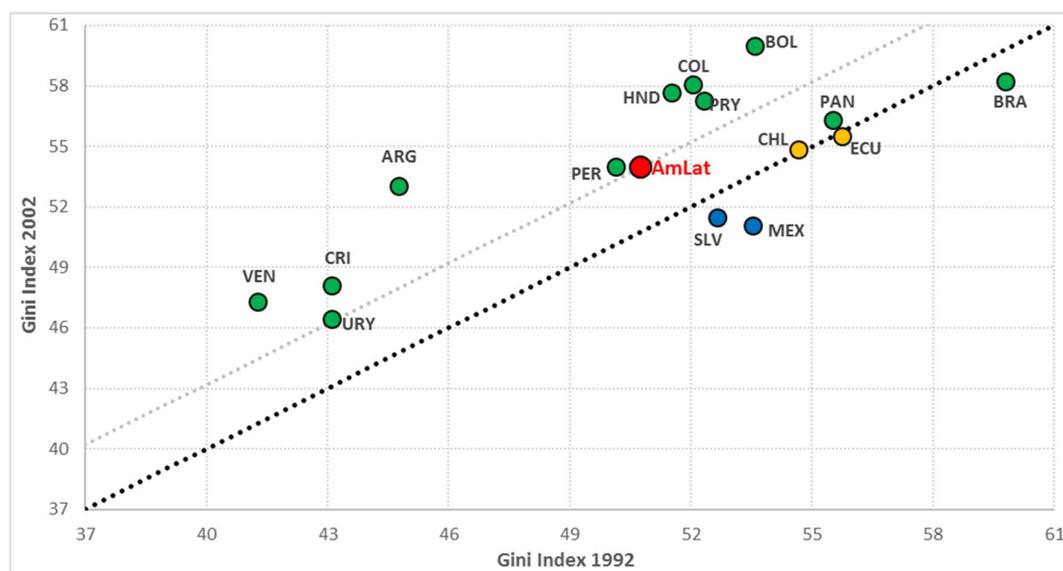
While the estimates in the previous figure confirm that, on average, the evolution of income inequality in the region followed very different patterns before and after 2002, they do not imply that the evolution of income inequality along the period has been the same in every country in the region. The next subsection provides detailed information to assess the evolution of income inequality in every country in the region in the period under analysis.

3.2. A Country-by-Country Analysis

The country-by-country evolution of income inequality in the period 1992-2002 is presented in Figure 2. The location of the red circle over the 45-degree line implies that the average Gini index for Latin America increased over the period (from 50.8 to 54.0). As expected, income inequality also increased in a majority of countries (Argentina, Bolivia, Colombia, Costa Rica, Honduras, Panamá, Paraguay, Peru, Uruguay and Venezuela), although the magnitude of the change was not the same in all of them: while the increment was very small in Panama and it was similar to the average of Latin America in Uruguay, the remaining countries (Argentina, Bolivia, Colombia, Costa Rica, Honduras, Paraguay, Peru and Venezuela) suffered a noticeable increase in income inequality.

Figure 2 also shows that Brazil, El Salvador and Mexico, along with Chile and Ecuador, are those countries in which income inequality didn't grow between 1992 and 2002: the first three countries enjoyed a reduction on inequality, while in the other two countries income inequality remained virtually unchanged.

Figure 2: Evolution of Income Inequality – Latin American countries 1992/2002



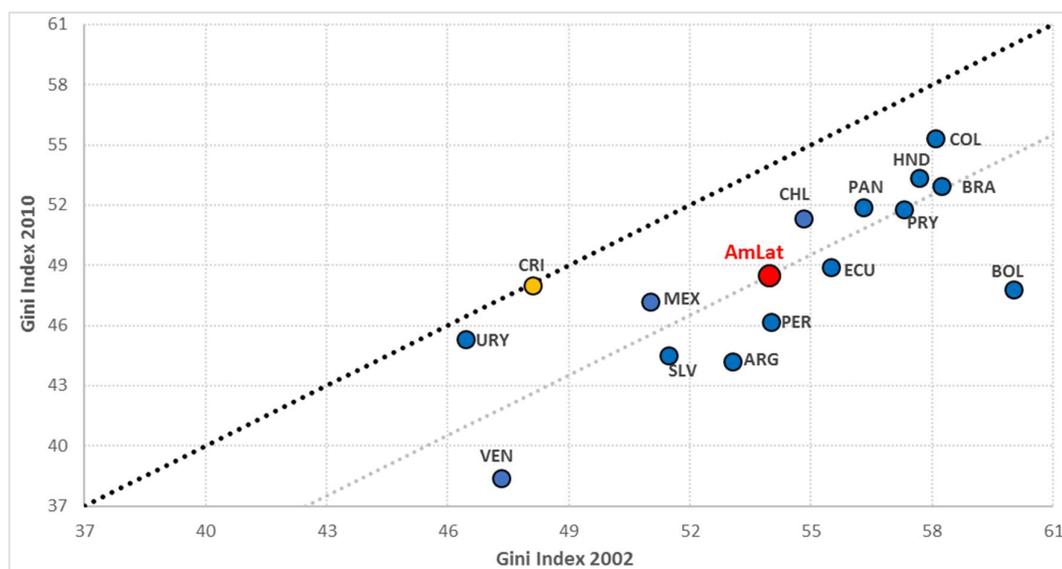
Source: own elaboration with data of SEDLAC (CEDLAS and The World Bank).

The evolution of income inequality over the period 2002-2010 is portrayed in Figure 3. As it was already mentioned, this was an exceptional period for Latin America: income inequality fell in all countries of the regions but Costa Rica, where income inequality remained at the same level between the beginning and at the end of the period.

Argentina, Bolivia, Ecuador, El Salvador, Peru and Venezuela were the countries with the biggest reductions on income inequality in those 8 years, while in Brazil and Paraguay the decline was very similar to the one observed for the average of Latin America. Chile, Colombia, Honduras, Mexico, Panama and Paraguay were also able to reduce their levels

of income inequality, although the speed of improvement was slower than in the countries mentioned in the previous sentence.

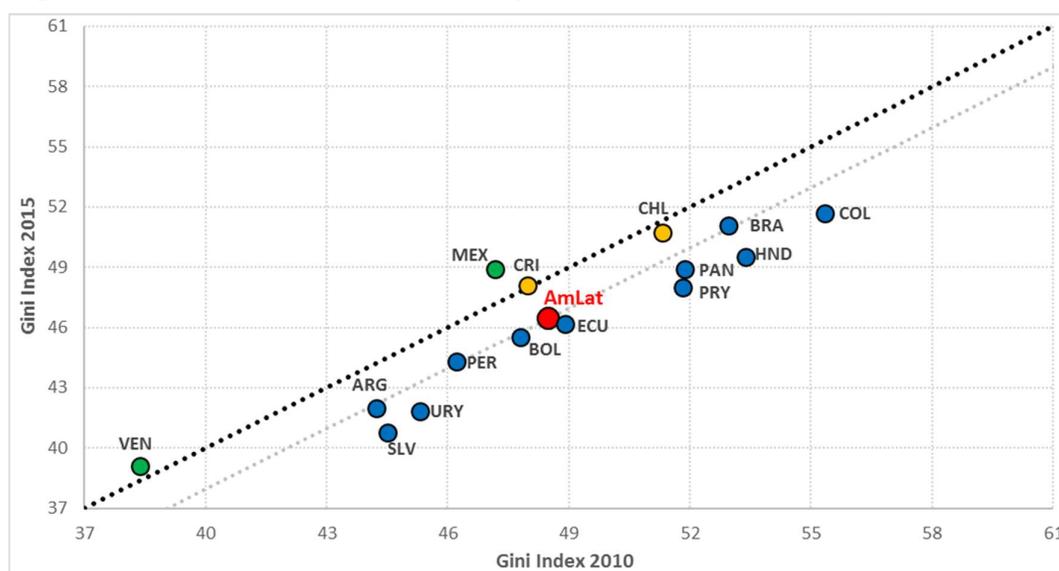
Figure 3: Evolution of Income Inequality – Latin American countries 2002/2010



Source: own elaboration with data of SEDLAC (CEDLAS and The World Bank).

The evolution of income inequality over the period 2010-2015 is depicted in Figure 4. As previously stated, the period starting in 2010 is characterized by a deceleration in the rate of decrease of income inequality in Latin America. There were even some countries (Mexico and Venezuela) in which there was a reversion in the tendency towards a lower level of inequality, and other countries (Chile and Costa Rica) in which income inequality appears remained stagnant.

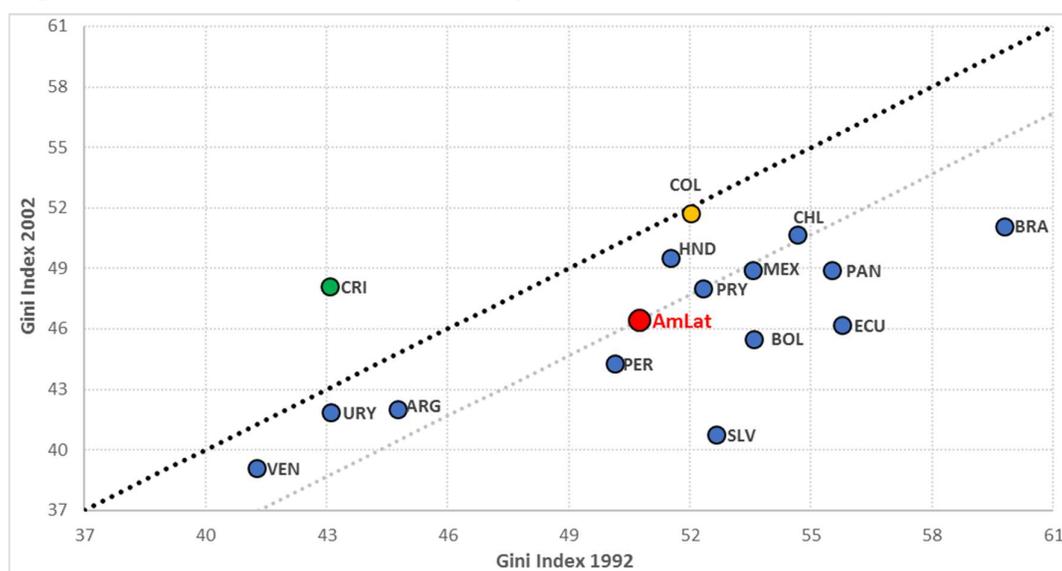
The figure also shows that, among those countries that managed to reduce income inequality (Argentina, Bolivia, Brazil, Colombia, Ecuador, El Salvador, Honduras, Panama, Paraguay, Peru and Uruguay), the rate of improvement was clearly lower than in the period 2002-2010. In fact, while over the latter period there were six countries (Argentina, Bolivia, Ecuador, El Salvador, Peru and Venezuela) in which the Gini index fell, on average, by more than 0.8 points a year, no country was able to reduce income inequality at a similar rate during the period 2010-2015.

Figure 4: Evolution of Income Inequality – Latin American countries 2010/2015

Source: own elaboration with data of SEDLAC (CEDLAS and The World Bank).

Finally, Figure 5 contains a summary of the country-by-country evolution of income inequality over the whole period 1992-2015. Several interesting conclusions can be drawn from that figure:

- 1) **Income inequality has clearly decreased after 1992 in almost all Latin American countries.** The only exceptions in our sample are Colombia and Costa Rica. In Colombia, the level of inequality in 2015 was slightly lower than in 1992, but at least the country has experienced an important decline in income inequality during the last five years. The case of Costa Rica is more worrisome: income inequality has remained stagnant or has increased in all the subperiods considered in this analysis.
- 2) **There was some kind of “convergence” in inequality levels between countries:** the four countries with the lowest levels of income inequality in 1992 (Venezuela, Uruguay, Costa Rica and Argentina) are among the six countries with lowest levels of inequality reduction over the period 1992-2015. On the contrary, five out the seven countries with the highest levels of income inequality in 1992 (Brazil, Ecuador, Panama, Bolivia and El Salvador) are the five best performers on inequality reduction from 1992 to 2015.
- 3) **Brazil, the country in this sample with the highest level of inequality in 1992, is one of the countries with a more constant performance:** after 1993, income inequality has decreased almost every single year and the country has not witnessed any single episode in which inequality rose by more than 0.1 points a year. As the country is currently going through its deepest recession in the last three decades, it is very likely that this positive streak has already come to an end.

Figure 5: Evolution of Income Inequality – Latin American countries 1992/2015

Source: own elaboration with data of SEDLAC (CEDLAS and The World Bank).

In summary, this section provided updated empirical evidence that confirms previous findings, as well as contributes to the discussions on the future evolution of income inequality in Latin America by adding a new result. The estimates show that, on average, income inequality sharply increased in Latin America over the period 1992-2002 and, after reaching a peak on 2002, it decreased significantly during this century, particularly over the period 2002-2010. There was a clear deceleration in the rate of decrease of income inequality after 2010, but the new results presented in this work indicate that the rate of decline of income inequality between 2014 and 2015 was similar to the rate observed between 2002 and 2010.

While the findings on the previous paragraph refer to the evolution on income inequality for the average of Latin America, the evidence presented above also confirms that almost all individual countries were able to reduce income inequality in the period 1992-2015.

4. Global Income Inequality in Latin America

The literature on global/regional inequality in Latin America is still scarce. In addition to the work of L&M, there is another contribution by Amarante, Galvan and Mancero (2016). These authors study how global income inequality in Latin America evolved between 2002 and 2012.⁸ Their results indicate that there was a significant decrease in the global Gini index for the region over the period, from 58.7 to 53.9.

This section of the paper is devoted to analyze the evolution of global income inequality in Latin America, following two different approaches to estimate global inequality. In the first one, the main objective is to understand a “surprising” result reported by L&M: global income inequality in Latin America did not change much between 1988 and 2008. The estimates are obtained using the same database (LM-WPID) used by those authors, but unlike their work, the analysis will pay special attention the results for Latin America.

The second approach takes advantage of SEDLAC Project, which provides more detailed and more up-to-date information for Latin American countries. In this case, the main

⁸ Their analysis is restricted to those two years, they do not track the evolution of global inequality along the period.

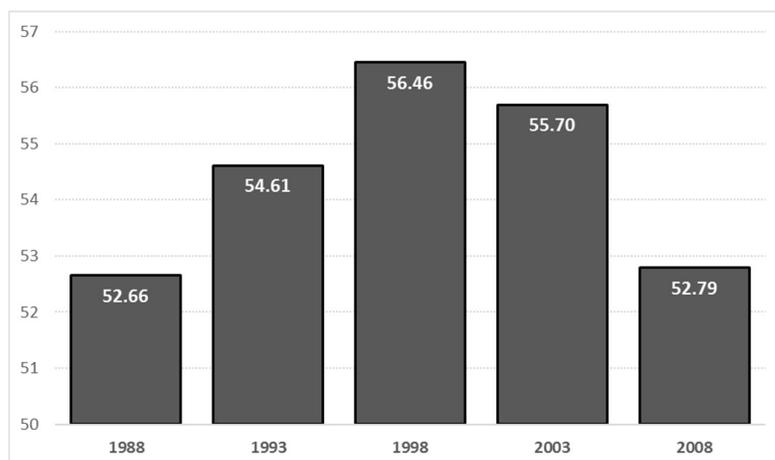
objectives are to confirm or to reject the findings of L&M findings for Latin America, and to updated the estimates of global income inequality for the region.

4.1. Lakner-Milanovic Methodology: Latin America in a World Context

In their paper on global income inequality, L&M present some results on the evolution of global income inequality in Latin America. As previously mentioned, their main conclusion about the situation of Latin America is that *“Inequalities within Latin America...have remained virtually unchanged with some ups and downs in the intervening period (1988-2008)”*. These conclusion is based on both, their estimation of the global Gini index for Latin America region as well as their estimation of the global growth incidence curve for Latin America 1988-2008.

Figure 6 summarizes the estimations of L&M of the Global Gini index for Latin American countries. As it can be observed, these authors found that Latin America experienced a sharp increase in global income inequality between 1988 and 1998. There was a significant decrease on global income inequality after 1998, by 2008 the level of the Global Gini index for the region was almost the same than in 1988.

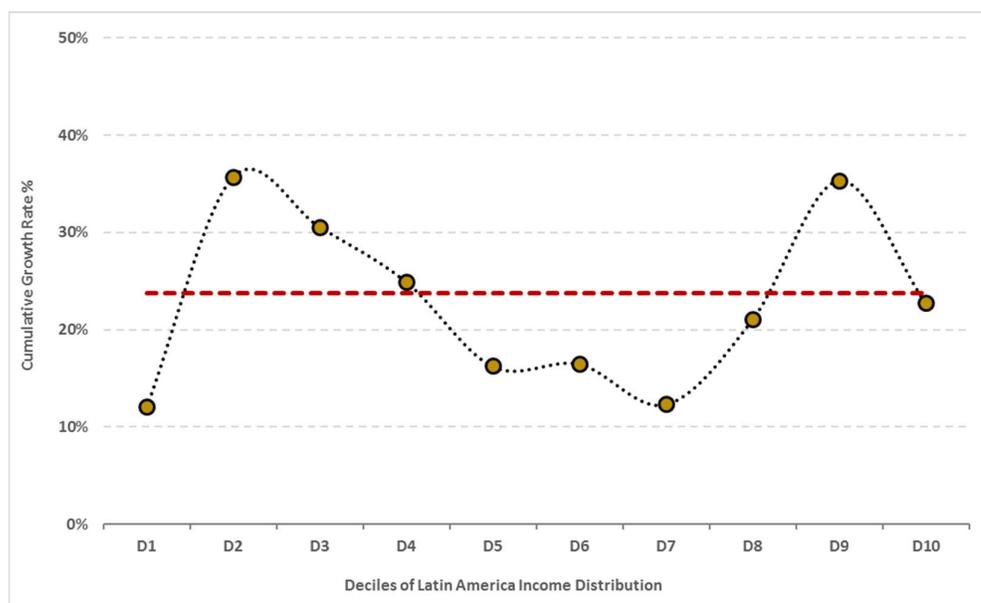
Figure 6: Global Gini Index for Latin America – Lakner & Milanovic



Source: own elaboration with data of LM-WPID.

Figure 7 displays the Growth Incidence Curve (GIC) for Latin America in the period 1988-2008. This is a “anonymous” GIC: it compares the average income of individuals in a given decile in 1988 with the average income of (other) individuals in the same decile in 2008. If the GIC has a downward (upward) slope, this implies that the growth process reduced (increased) the level of inequality along the period.

The GIC in Figure 7 shows that every decile had higher average income in 2008 than in 1988, which means that there is first-order stochastic dominance of the Latin American global distribution of 2008 over the one of 1988. However, the GIC does not have a clear downward or upward slope: the growth rate was highest for deciles 2, 3, 4 and 9, while the deciles with the lowest growth rates were 1, 5, 6 and 7. As a result, the process of growth between 1988 and 2008 did not affect much the level of global income inequality in the region, and the information on Figure 7 is consistent with the results of the global Gini indexes presented in Figure 6 above.

Figure 7: Growth-Incidence Curve Latin America 1988/2008 – Lakner & Milanovic

Source: own elaboration with data of LM-WPID.

The evidence discussed in the previous paragraphs is somewhat surprising because most works on income inequality in Latin America arrive to the same result: income inequality decreased in almost every country in the region over the period under analysis. Given that income inequality *within* countries declined, income inequality *between* Latin American countries should have significantly increased at the same time to keep global income inequality unchanged in the region. However, it does not seem to be the case: there was not such a divergence of incomes among Latin American countries over the period.

The potential inconsistency between the results in the literature and the results in L&M can be explained by a simple fact: the reduction on income inequality within Latin American countries is not fully reflected in the information included in the database used by those authors: according to the information on the LM-WPID database, income inequality increased in 10 (Argentina, Bolivia, Colombia, Costa Rica, Dominican Republic, Ecuador, Honduras, Mexico, Paraguay and Uruguay) out of the 15 countries of Latin America with information for 1988 and 2008.

While it is possible that income inequality increased between 1988 and 2008 in some of those countries, there are some “problematic” cases in the L&M-WPID database:

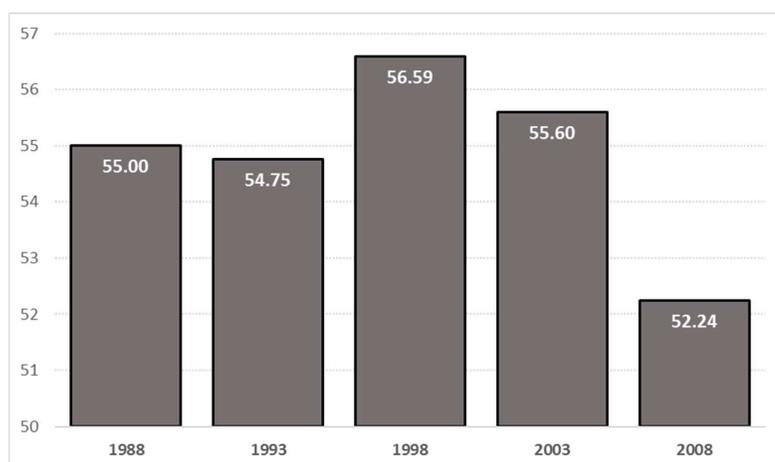
1. **Mexico 1989:** the Gini index is extremely low (26.0). This seems to be a mistake.
2. **Bolivia 1990:** the Gini index is very low (41.1). A probable explanation is that the estimates for that year were obtained with a survey covering only metropolitan or urban areas.
3. **Paraguay 1990:** the Gini index is very low (39.8). Same explanation than in the case of Bolivia 1990, the household survey only covered metropolitan area of Asuncion.
4. **Colombia 1988 – Colombia 1992:** the Gini indexes for both years (51.4 and 49.9) are much lower than the Gini indexes for the remaining years. This is probably explained by the urban coverage of the survey in the first two years.
5. **Bolivia 1993:** the mean income of decile 3 is higher than the mean income of decile 4. This is for sure a typo/mistake.

Among those problems, the most problematic one is the extremely low Gini index for Mexico 1989. Given that Mexico is the second most populated country in the region, the distribution

of income in Mexico significantly affects global income inequality in Latin America. To solve this problem, the income values for Mexico 1989, Bolivia 1990 and 1993, Paraguay 1990 and Colombia 1988 and 1992 in the L&M-WPID database were “corrected” using information from SEDLAC. After this correction, Figure 6 and Figure 7 were estimated again.

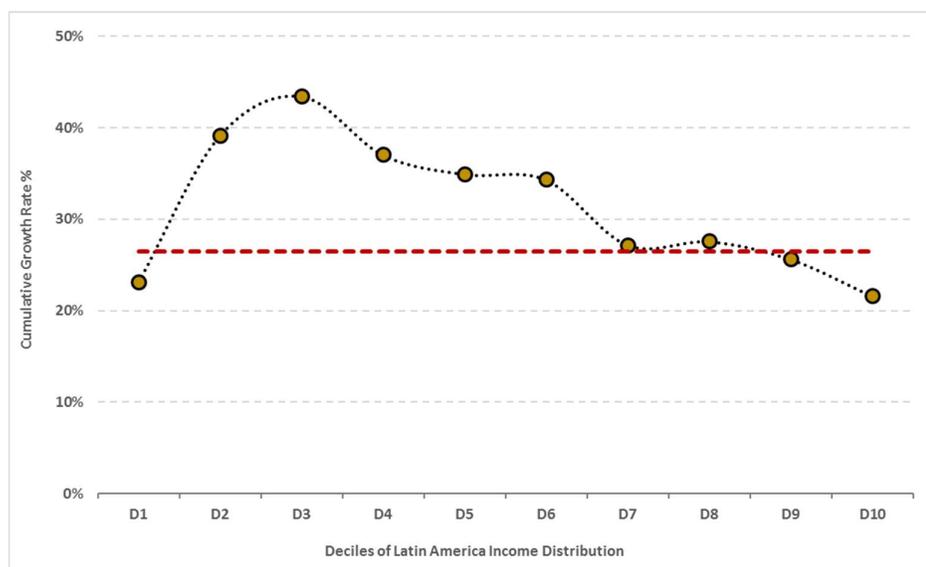
The new results suggest a story more in line with previous findings: at the same that that income inequality was decreasing in almost every country in the region, between 1988 and 2008 there was a significant reduction on global income inequality in Latin America. Figure 6_new indicates that the Global Gini index decreased over the period (from 55.0 in 1988 to 52.2 in 2008), while the GIC depicted in Figure_7_new reveals that during the period 1988-2008 the cumulative growth rate for the richest decile was lower than the rate for any other decile, and the cumulative growth rate for any of the 4 richest deciles was lower than the rate for any of the deciles 2 to 5.

Figure 6_new: Global Gini Index for Latin America



Source: own elaboration with data of LM-WPID and SEDLAC.

Figure 7_new: Growth-Incidence Curve Latin America 1988/2008

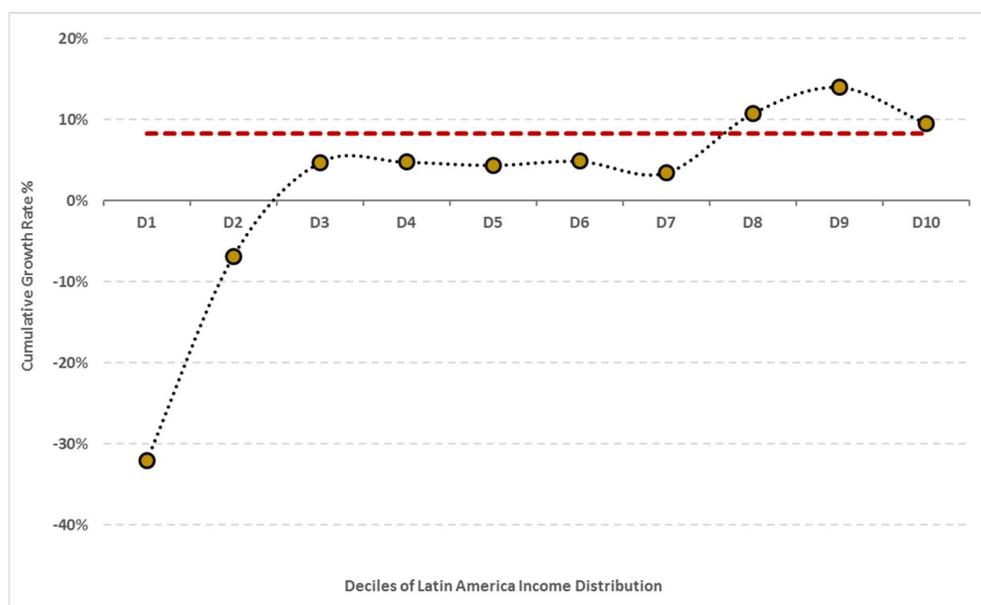


Source: own elaboration with data of LM-WPID and SEDLAC.

Summarizing, once the data for Mexico, Bolivia, Colombia and Paraguay is corrected in the LM-WPID database, the results on global income inequality for Latin America over the period 1988-2008 show the same decreasing trend than average income inequality in Latin America and inequality within the countries of the region.

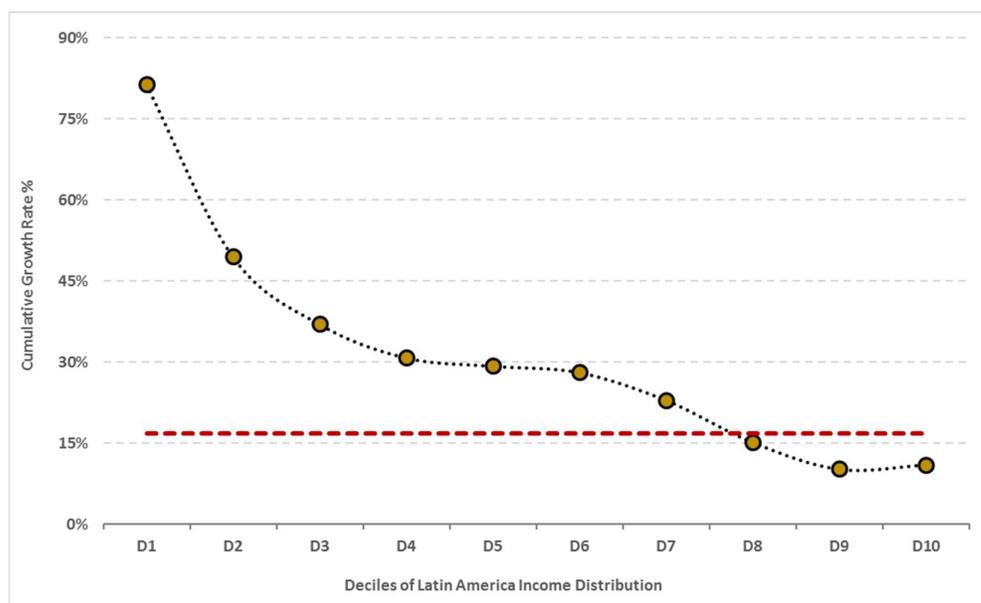
Moreover, the new results also show another similarity with the evolution of average income inequality in Latin America: global income inequality evolved following very different patterns in the last decade of the past century and in the first decade of this one. The GIC in Figure 8 informs that the (very weak) growth process verified between 1988 and 1998 increased income inequality: the three richest deciles were the only ones enjoying growth rates higher than 5% over that period, while the growth rates for the two poorest deciles were clearly negatives (approximately -32% and -7%, respectively).

Figure 8: Growth-Incidence Curve Latin America 1988/1998



Source: own elaboration with data of LM-WPID and SEDLAC.

On the other hand, the downward-sloped GIC in Figure 9 demonstrates that between 1998 and 2008 there was a strongly equalizing growth process in Latin America: while all deciles enjoyed positive growth rates over that period, the size of the growth rate was significantly higher for the three poorest deciles.

Figure 9: Growth-Incidence Curve Latin America 1998/2008

Source: own elaboration with data of LM-WPID and SEDLAC.

Finally, Figure 10 displays the so-called “elephant graph”, probably the main results in the work of Lakner and Milanovic. The graph depicts the GIC for the world in the period 1988-2008, and shows how much each percentile of the global income distribution has grown over that period.

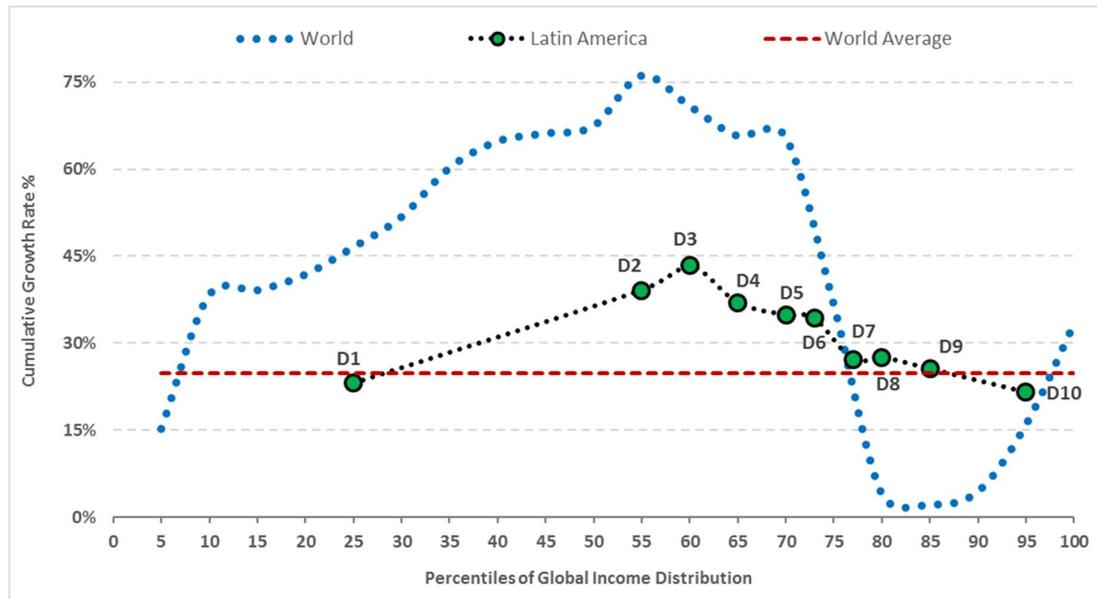
In Figure 10 was also included the cumulative growth rate for each decile of the income distribution in Latin America. Each Latin American decile is located over the global income distribution according to the position occupied by that decile in the global income distribution of 1988. For example, the poorest (richest) decile of the Latin America income distribution in 1988 belonged to the fifth (nineteenth) ventile of the global income distribution in 1988.

There are several results in Figure 10 that are worth mentioning:

- By 1988, the average individual belonging to the poorest 10% of Latin America population was richer than a quarter of the world population;
- Over the period 1988-2008 the cumulative growth rates for the deciles belonging to the poorest 60% of the population in Latin America were similar or higher than average cumulative growth rate for the world population.
- However, the cumulative growth rates for those deciles were lower than the cumulative growth rates enjoyed for the average non-Latin American individual with similar income at the beginning of the period.
- The situation of the deciles belonging to the richest 40% of the population of Latin America was significantly different to the one of their poorest counterpart: their cumulative growth rates were similar or lower than the average cumulative growth rate for the world population.
- However, the four richest Latin American deciles enjoyed similar or higher cumulative growth rates than the average non-Latin American individual with similar income at the beginning of the period under analysis.
- Deciles 7, 8 and 9 of Latin America in 1988 belonged to the “disadvantaged” global percentiles in the “elephant chart”, the ones with the lowest cumulative growth rates

over the period. However, their cumulative growth rates were markedly higher than for the average non-Latin American individual with similar income in 1988.

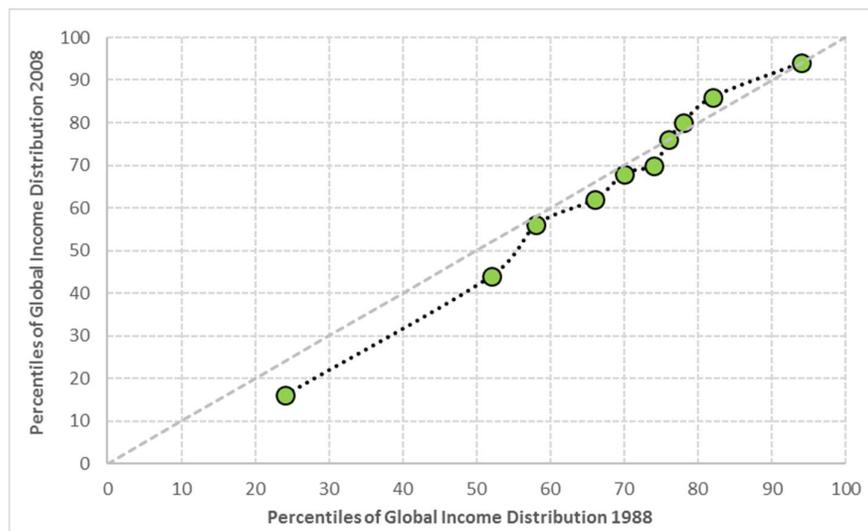
Figure 10: Global Growth-Incidence Curves 1988/2008



Source: own elaboration with data of LM-WPID and SEDLAC.

A logic consequence of the difference between the cumulative growth rates of each Latin American decile and the cumulative growth rate of its comparable global percentile is that the position of the different Latin American deciles in the global income distribution changed between the beginning and the end of the period 1988-2008: while deciles 1 to 6 lost some positions, deciles 7 and 10 kept their position and deciles 8 and 9 improved their position in the global income distribution.

Figure 11: Position of Latin American Deciles in the Global Income Distribution



Source: own elaboration with data of LM-WPID and SEDLAC.

Figures A.1 to A.4 in the Annex depict the GIC for the world and the GIC for Latin America over different subperiods: 1988-1998, 1998-2008, 1993-2008 and 2003-2008. While the global GICs show a similar pattern (“the elephant”) in every period, each Latin America’s GIC has a distinctive shape: the one for 1988-1998 reflects a process of increasing inequality, the one for 1998-2008 indicates that income inequality decreased in the region over that subperiod, the one for 1993-2008 is the more similar to the global GIC (“the elephant”) and the one for 2003-2008 reveals that most of the decrease in income inequality in the region was experienced over that subperiod.

Figures A.5 to A.9 in the Annex present the GIC for the world for the period 1988-2008, and the GIC for some Latin American countries: Argentina, Brazil, Colombia, Mexico and Peru (in the last country both, the world GIC and the country GIC are for the period 1993-2008 because there is not available information for Peru 1988). The most interesting result is the one for Brazil: the cumulative growth rate enjoyed for each Brazilian decile was higher than the cumulative growth rate enjoyed in the same period for non-Brazilian individuals who had the same level of income that the Brazilians in 1988. As it is obvious, that implies that Brazilian improved their position in the global income distribution over the period.

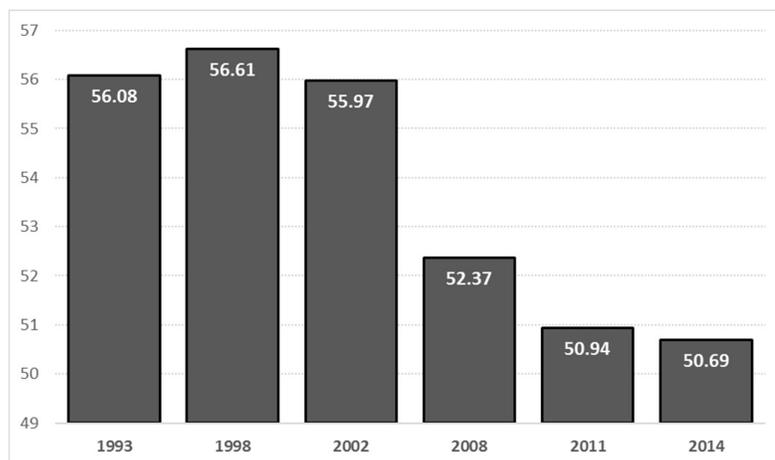
4.2. Global Income Inequality: a more Detailed Approach for LAC

This subsection takes advantage of the harmonized microdata from SEDLAC Project to update the estimates on global income inequality for Latin America as well as to confirm or reject the results in L&M.

Figure 12 exhibits the estimates of the global Gini index for Latin America using data from SEDLAC. The results indicate that after a period of 9 years without significant variations (there was a small increase between 1993 and 1998, followed by a small decrease between 1998 and 2002), the level of global income inequality in the region experienced a clear decrease between 2002 and 2008. In the following years, it showed an additional decrease until 2011, and then remained almost constant between 2011 and 2014.

These estimates confirm and reinforce the result presented in Figure 6 after “correcting” the data of LM-WPID: the level of global income inequality in Latin America in 2008 was significantly lower than it was in the last decade of the past century. In other words, at the same time that most Latin American countries were able to reduce the level of income inequality within their frontiers, the region as a whole experienced a reduction in the level of global income inequality.

Figure 12: Global Gini Index for Latin America



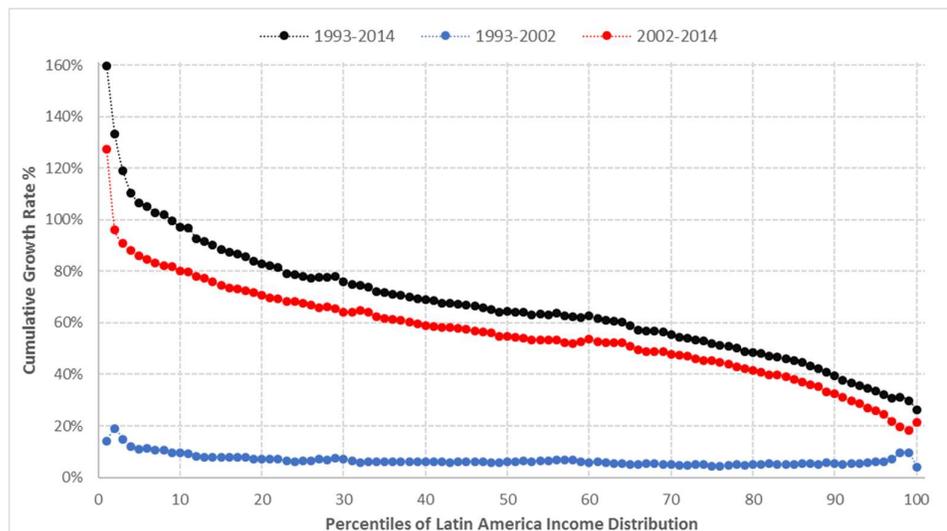
Source: own elaboration with data of SEDLAC.

The GICs depicted in Figure 13 illustrate how income evolved for different percentiles of the distribution of income in Latin America. The small (almost zero) decrease in global income inequality between 1993 and 2002 is represented by the blue GIC: it shows that the cumulative growth rate for the poorest 20% of the population (depending on the percentile, it was between 8-19%) was just slightly higher than the mostly flat growth rate (around 5-7%) enjoyed by most of the percentiles of the remaining 80%. As a result, in this period global income inequality went down in Latin America, but the magnitude of the improvement was very small.

As it was already mentioned, most of the decrease in the level of global income inequality in the region was experienced after 2002. The GIC for the period 2002-2014 is represented by the red GIC in Figure 13. As expected, this GIC has a sharp downward slope, which reflects the strong equalizing effect of the growth process over that period. In terms of the Global Gini Index, this process implied a reduction of 5.3 points (from 56.0 in 2002 to 50.7 in 2014).

Finally, the black GIC displays the cumulative growth rates for the different percentiles over the whole period 1993-2014. In this case, the slope of the curve is quite similar to the slope of the curve for 2002-2014. This is not a surprise: most of the “movements” in the distribution of income in Latin America took place during that period. In particular, the monotonically decreasing black GIC has a very sharp downward slope for the poorest 10% of the population, showing that the cumulative growth rate for this group of the population was markedly higher than for any other income group. The distinctive decreasing shape of the curve reflects a reduction in the global Gini index from 56.1 in 1993 to 50.7 in 2014.

Figure 13: Growth Incidence Curve for Latin America: 1993-2002-2014



Source: own elaboration with data of SEDLAC.

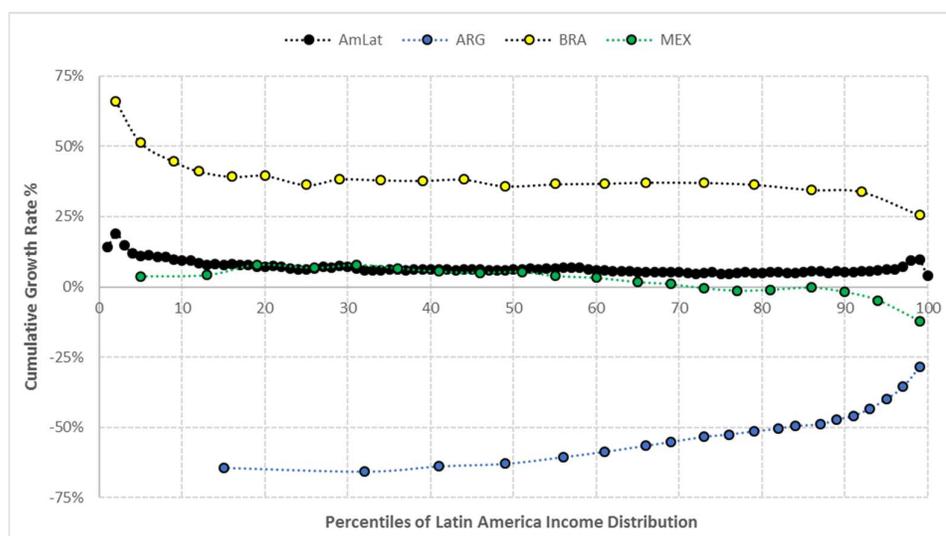
As it was already established in Section 3.2, income inequality increased in a majority of Latin American countries during the last years of the past century and the first years of this one, while the opposite is true for the period running from 2002 to 2014. However, there were very different cases in both periods, as well as in the whole period 1993-2014.

Figure 14 presents three different experiences, Argentina, Brazil and Mexico. In Brazil, most of the percentiles enjoyed significant growth rates, but the cumulative growth rates were higher (lower) for the poorest (richest) than for any other percentile of the distribution. This situation resulted in the decrease of income inequality (and poverty).

Mexico also experienced a decreased in income inequality over the same period, but the circumstances were very different than the Brazilian ones: the poorest 70% of the population was the only socioeconomic group that enjoyed a (very low) positive growth rate, while the growth rate for the richest 10% was negative. This situation provoked a reduction on income inequality, even when the real income of the poor did not increase much and poverty remained almost at the same level.

Argentina showed the worst situation in the region over the period 1993-2002. As a consequence of the macroeconomic crisis of 2001-2002, all socioeconomic groups in Argentina suffered a strong decrease in their real incomes. However, the ones who suffered more were those belonging to the poorest 50% of the population. This situation was reflected in a significant increase in the level of income inequality (and poverty).

Figure 14: Growth Incidence Curve for Latin America: 1993-2002



Source: own elaboration with data of SEDLAC.

Figure 15 exhibits the GICs for 2002-2014 five countries: Argentina, Brazil, Mexico, Colombia and Peru. Given that during this period income inequality decreased in almost every single Latin American country, all the GICs in the figure show a clear downward slope. However, there important differences in both, the level of increase of incomes and the slope of the curves. Argentina was the country with the best performance over this period: starting from a relatively low level of income and very high level of inequality, the country was able to quickly recover their previous levels of income and inequality with a strong and equalizing process of growth, especially in the 5/6 years following the macroeconomic crisis.

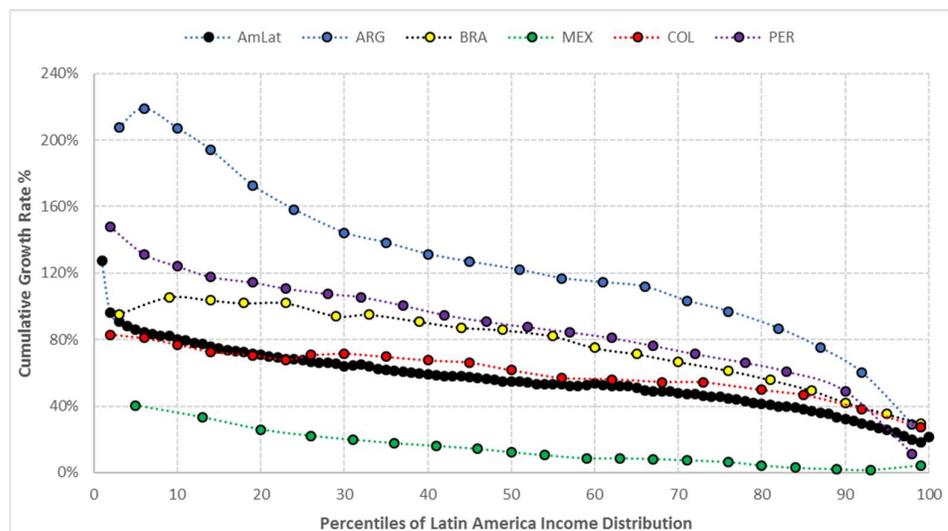
Brazil and Peru also achieved better results than the average of Latin America in both, income growth rate and income inequality reduction. This result is remarkable for the case of Brazil: as it was mentioned before, Brazil was the country with the highest level of income inequality in Latin America at the beginning of the 1990s, but since that moment the country was able to reduce income inequality at the same time that average income increased.⁹ Peru also showed significant growth rates for all percentiles, particularly for those belonging to the poorest groups of the population.

The case of Colombia over the period 2002-2014 was very similar to the aggregate of Latin America, with significantly positive growth rates for all percentiles and a GIC with a clear downward slope. Finally, Mexico enjoyed an improvement in both, average income and

⁹ Income inequality statistics for Brazil 2016 are still not available, but income inequality has probably increased during 2016 in Brazil.

income inequality over the period. However, the magnitude of that improvement was lower than the magnitude in which other countries were able to improve their situations. In that sense, the achievements of Mexico were somehow disappointing when compared with other countries of the region.

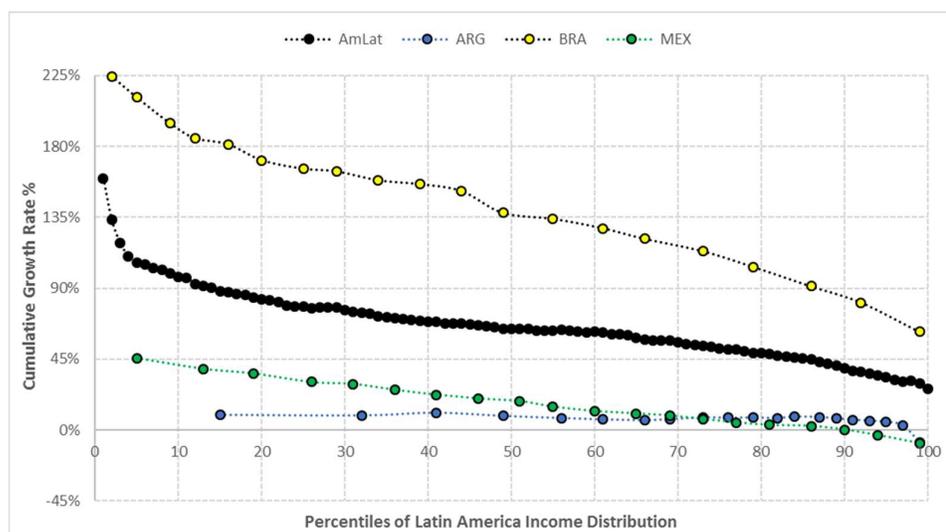
Figure 15: Growth Incidence Curve for Latin America: 2002-2014



Source: own elaboration with data of SEDLAC.

Figure 16 indicates that, as expected, that Brazilians enjoyed significantly higher income growth rates in the period 1993-2014 than the growth rates enjoyed by comparable individuals on the distribution of income of Latin America. As a consequence of this, Brazilians improved their position on the distribution of income in Latin America.

On the contrary, during the same period Argentina and Mexico had a worse performance than the average of Latin America. In the case of the South American country, this result is explained by the aggregation of two subperiods with very different performances: 1993-2002 when incomes decreased for all groups and income inequality skyrocketed, and 2002-2014 when incomes increased for all the population and income inequality declined. In the case of Mexico, the shape of the GIC in Figure 16 is similar to the shape of the GICs in Figures 14 y 15: the curve has a slightly downward slope, with positive (but low) income growth rates for the poorest groups of the population and close to zero (or even negative) growth rates for the richest socioeconomics groups.

Figure 16: Growth Incidence Curve for Latin America: 1993-2014

Source: own elaboration with data of SEDLAC.

5. The Evolution of Income Inequality: A Decomposition Approach

Income inequality is still a pervasive characteristic in Latin America. However, the results in the previous sections indicate that almost all countries in the region were successful in reducing income inequality in the last 10/12 years. Given that this result was obtained over a period in which income inequality was increasing in most countries of the world, it attracted the attention of numerous researchers and policy makers.

While the declined in income inequality in the region was a generalized trend, there was substantial heterogeneity between countries, as it was shown in Figures 14, 15 and 16. In any case, the results in those Figures highlight that the reduction in income inequality across the region is explained by an evident fact: the poorest sectors of the population witnessed an unprecedented increase in their real incomes, and this increase was higher than the one enjoyed by other socioeconomic groups.

Different studies (for example, Ferreira, Leite and Litchfield (2008), Jaramillo and Saavedra (2011), Lopez-Calva and Lustig (2011), Gasparini and Lustig (2011) and Gasparini, Cruces and Tornarolli (2016)) tried to identify the drivers of that decline on income inequality. Among the main explanations suggested in those studies are the following: 1) the wage gap between high and low-skilled workers shrank with the expansion of education and with the reduction in the pace of technological change; 2) the conditional cash transfers that were implemented have a higher population coverage and a better targeting performance than previous social assistance programs; 3) prices of commodities in international markets in the new century favor Latin American countries, particularly their rural areas (which tend to be poorer than the rest of/ the population); 4) labor markets were very dynamic over the period, unemployment rate decreased in all countries and some countries were able to reduce labor informality; and 5) governments used more active labor policies (for example, minimum wages increased in all countries).

The remaining of this section will present an exercise that tries to quantify the relative contribution of some of the drivers mentioned in the previous paragraph to the decline in income inequality in the region. In doing that, the approach employed by Azevedo, Inchauste and Sanfelice (2013) will be used. These authors propose a decomposition of the change in income inequality (and poverty) based on the Shapley-Shorrocks decomposition. This methodology is similar to the one applied by Barros, Carvalho, Franco and Mendonça

(2006), with the difference that Shapley-Shorrocks corrects the problem of path dependence.

The exercise can be explained in a relatively easy way: 1) household per capita income is decomposed in its (exhaustive) components (for example: household labor income per capita + household non-labor income per capita); 2) two years are chosen to compare the evolution of a selected indicator (in this case the Gini Index); 3) the selected indicator is estimated for both years; 4) the distribution of household per capita income in the second year is altered by sequentially replacing every income component by the data from the same component in the first year in any possible order (because the order in which the cumulative effects are calculated matters); 5) after each alteration, a new counterfactual inequality indicator is estimated with the altered distribution of income; and 6) the average contribution (over every possible path) of each income component represents its contribution to the change in the inequality indicator.

The results of the analysis for Argentina, Brazil, Colombia, Mexico and Peru are presented in Figure 1. In this exercise, household per capita income was decomposed in its five main sources: labor income, income from pensions, property income, private transfers (including remittances) and public transfers. The estimates show that for all countries, the most important contribution to the decrease in income inequality between 2002 and 2014 was the growth of labor income. This is not a surprise: labor income represents the main income source for most families. However, the result deserves further exploration, given that it could be a consequence of different situations: a reduction on the wage gap between different types of workers (skilled/unskilled, men/women, formal/informal, urban/rural), an increase in the employment rate of a particular population group (youth and/or women) or the implementation of a particular policy instrument (increase of the minimum wage).

The contribution of other income sources depends on the country. In Argentina, pensions (9.9%) and public transfers (15.4%) are the most important contributors to the reduction of income inequality after labor income (73.3%). Regarding pensions, after 2005 Argentina implemented different programs to increase the coverage pensions among elderly individuals without access to Social Protection and, at the same time, the growth in the real value of the minimum pension was consistently higher than the growth of the value of the average pension. Regarding public transfers, at the end of 2009 the government implemented an ambitious cash transfer program ("*Asignación Universal por Hijo*") in terms of both, coverage and amount of the transfer. While there are not official statistics on it, different estimations indicate that the program has had a very good targeting performance.

The case of Brazil is similar to the case of Argentina: the main contributor to the reduction of inequality was labor income (61.8%), followed by public transfers (23.0%) and pensions (14.2%). While disentangling the factors behind the contribution of labor income requires a deep analysis, the contribution of pensions and public transfers to the reduction of inequality is closely linked to the operation of the conditional cash transfers program ("*Bolsa Familia*") and its different components.

In Colombia, labor income accounted for almost three-quarters (73.9%) of the observed reduction in income inequality. While it is not possible to separate the contribution of private and public transfers, it is possible to estimate the overall contribution of transfers: it was 35.1%. This result includes the effects of different government programs, like the conditional cash transfers program ("*Familias en Acción*"), as well as private transfers like remittances. In the case of Colombia, the contribution of pensions to the reduction of inequality was negative: the coverage of contributive pensions is low, and its expansion benefited mostly to individuals belonging to the top deciles of the distribution of income.

In the case of Mexico, the percentages in the table are higher because the change in income inequality was lower. The two income sources with positive contributions were labor income (90.4%) and public transfers (86.3%). In the case of private transfers, the result was expected, considering the good targeting performance reached by the conditional cash

transfers program (“Progresa”/“Oportunidades”/“Prospera”), but it also includes other programs like food stamps and transfers/non-contributive pensions for elderly people. Pensions (-50.0%) and private transfers (-20.4%) had a negative contribution to the reduction of income inequality. In the case of pensions, the explanation is similar to the one given for Colombia: in cases of low coverage, any expansion of the coverage goes mainly to individuals belonging to the richest deciles. The negative contribution of private transfers is probably explained by a reduction in the frequency and amount of the remittances received from the USA after the financial crisis of 2008/2009.

In the case of Peru, public transfers (19.2%) and private transfers (16.2%) are the main contributors to the reduction of inequality, besides labor income (59.4%). More specifically, the conditional cash transfers program (“*Juntos*”) that was implemented was focused on rural households, which represent a very high proportion of poor households in the country.

Table 1: Decomposition of the change in Income Inequality

	Gini Index		Percentual contribution to the change in Inequality				
	2002	2014	Labor Income	Pensions	Property Income	Private Transfers	Public Transfers
Argentina	53.0	42.3	73.3%	9.9%	1.1%	0.2%	15.4%
Brazil	58.2	51.2	61.8%	14.2%	1.5%	-0.4%	23.0%
Colombia	58.1	53.3	73.9%	-6.4%	-2.5%		35.1%
Mexico	51.0	48.9	90.4%	-50.0%	-6.3%	-20.4%	86.3%
Peru	54.0	44.1	59.4%	5.8%	-0.5%	16.2%	19.2%

Source: own elaboration with data of SEDLAC.

It is worth mentioning that while the results in the previous Table are very useful to empirically identify the relative contribution of different factors in different countries, it is not possible to identify causal effects using these decompositions. In other words, the previous decompositions are an important tool to guide further in-depth research efforts on the determinants of distributional changes.

6. Summary and Next Steps

While there is a wide literature on the evolution of income inequality at national level for Latin American countries, relatively less is known about the evolution of global inequality in the region. Lakner and Milanovic (2013), in a by now very well-known paper, presented the first piece of evidence on this topic: they report that even when a clear decreasing pattern can be observed after 2003, the level of global income inequality in the region remained “*virtually unchanged*” between 1988 and 2008. Amarante, Galván y Mancero (2016)¹⁰ confirmed the existence of a reduction on the level of global income inequality in Latin America during the first decade of this century, but they don’t study how global income inequality evolved during the 1990s.

This paper contributed to the stream of empirical literature on income inequality in Latin America in the following ways:

1. It updated the evidence on the evolution of income inequality at national level in Latin America countries to 2015 using information from SEDLAC Project.
2. It provided new evidence on the evolution of global income inequality in the region, using two different databases: a) LM-WPID database was used to scrutinize the findings of Lakner and Milanovic for the region; and b) SEDLAC databases were

¹⁰ This is the first paper focused on global income inequality in Latin America that uses microdata from household surveys in their estimations.

employed to update the evidence on global income inequality in Latin America to 2014.

3. It presented a decomposition by income sources of the evolution of global income inequality in Latin America. Although the exercise was not designed to identify causal relationships, it is still useful as a first approximation to the determinants of the evolution of global income inequality in the region.

The most significant results in this work can be summarized as follows:

- After some years in which the rate of inequality reduction seemed to be losing momentum, the average reduction on the Gini index for Latin American in 2015 was the highest since 2009. However, this result should be taken with caution: the increase in the average rate of inequality reduction in 2015 was mostly driven up by a few countries (Bolivia, Colombia, Panama and Paraguay), while in several countries income inequality remained stagnant or even increased in the last few years (Argentina, Brazil, Chile, Costa Rica, Ecuador, Mexico, Peru, Uruguay and Venezuela).
- Simultaneously with the decrease on income inequality that almost all Latin American countries has enjoyed, global income inequality in Latin America has also been declining steadily since the beginning of this century. By 2014 the level of global income inequality in the region was significantly lower than it was a quarter-century ago. As it was shown in Section 4, the inconsistency between this result and that of Lakner and Milanovic is mostly explained by Mexico 1989: according to the LM-WPID database the Gini index for Mexico in 1989 was around 26.0, a figure that seems to be too low to be right.
- Most of the reduction on income inequality in the region is explained by labor incomes. However, other factors like pensions and conditional cash transfers programs also played an important role in the observed distributional changes in the region. A more complete multi-country analysis in the spirit of Ferreira, Firpo and Messina (2017) would be very useful to identify with more accuracy the contributions of different income drivers across the region.

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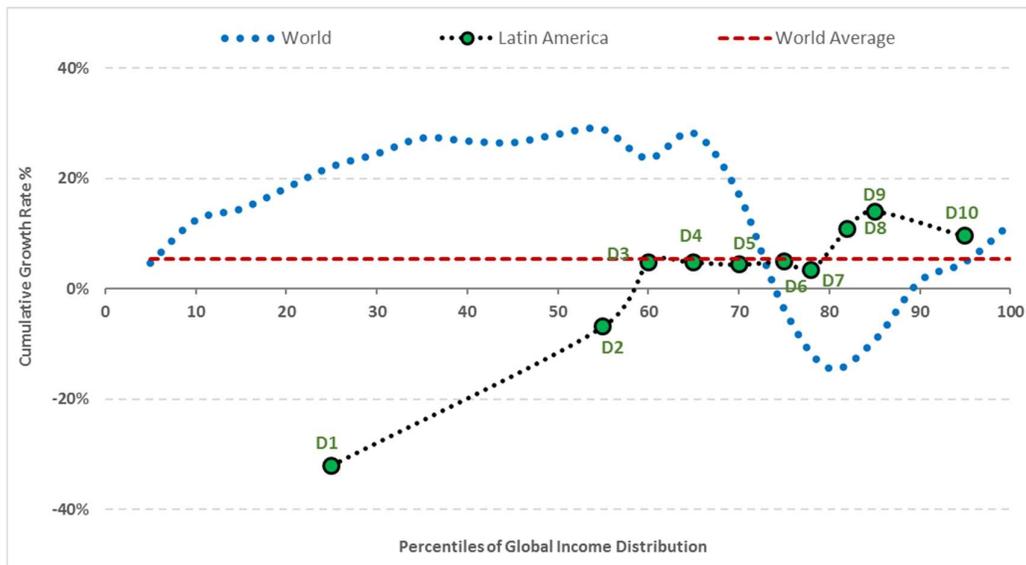
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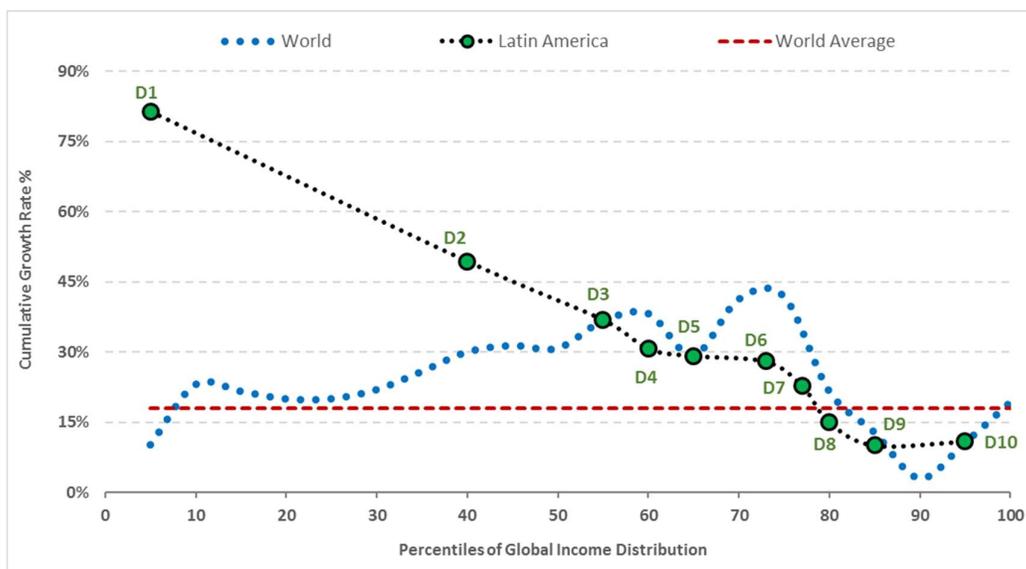
Annex

Figure A.1: Global Growth-Incidence Curves 1988/1998



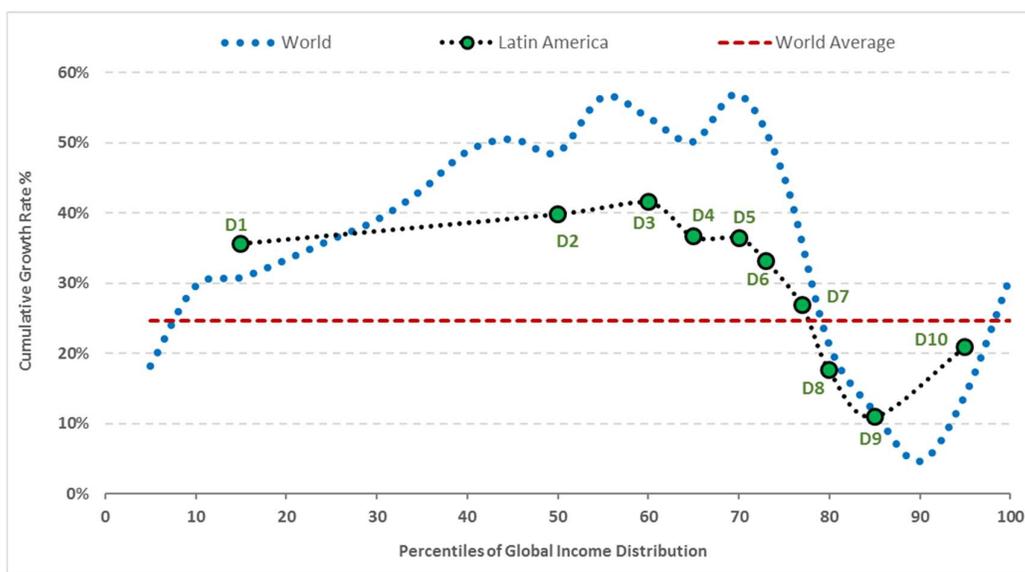
Source: own elaboration with data of LM-WPID and SEDLAC.

Figure A.2: Global Growth-Incidence Curves 1998/2008



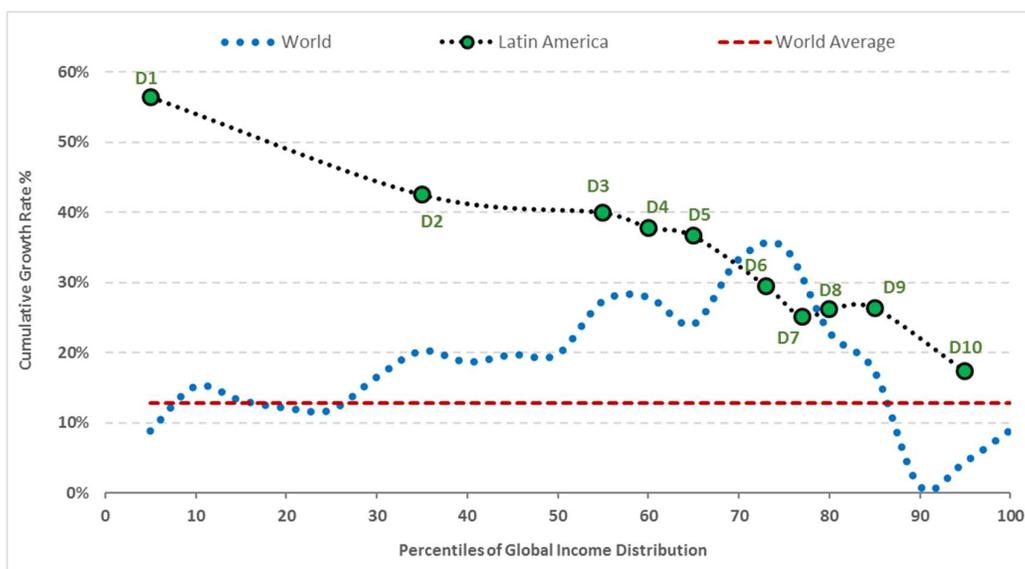
Source: own elaboration with data of LM-WPID and SEDLAC.

Figure A.3: Global Growth-Incidence Curves 1993/2008



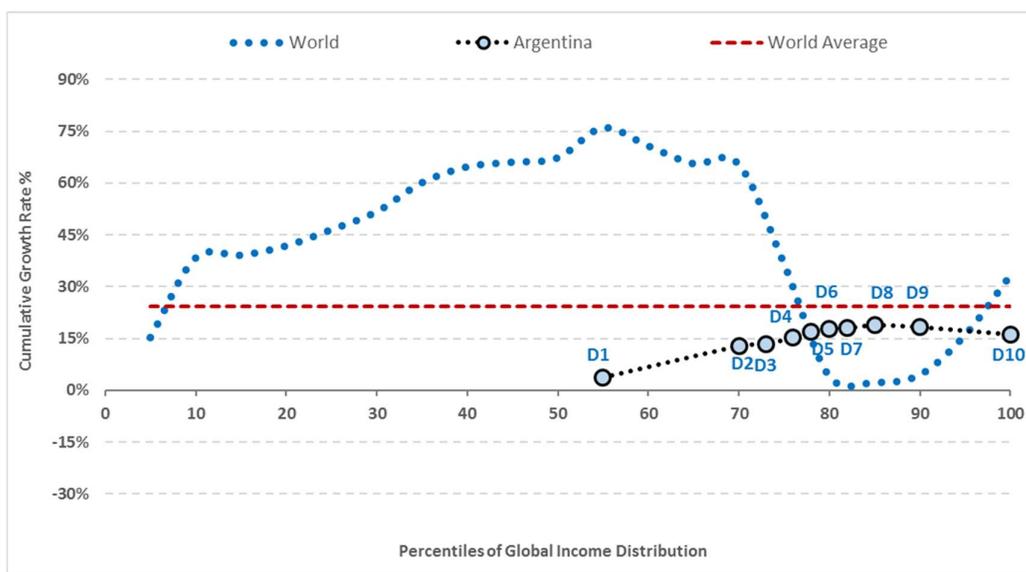
Source: own elaboration with data of LM-WPID and SEDLAC.

Figure A.4: Global Growth-Incidence Curves 2003/2008



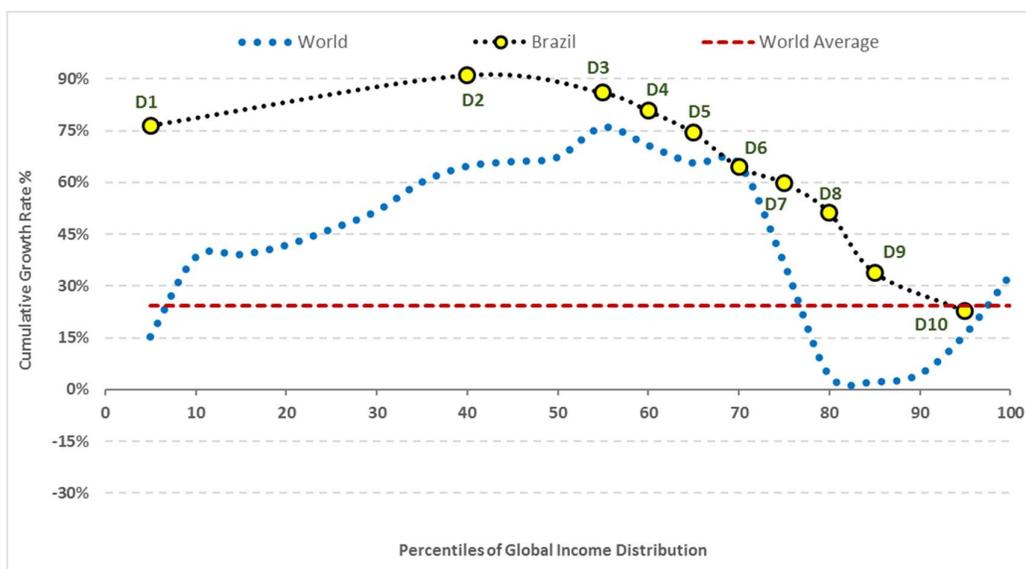
Source: own elaboration with data of LM-WPID and SEDLAC.

Figure A.5: Global Growth-Incidence Curves 1988/2008 - Argentina



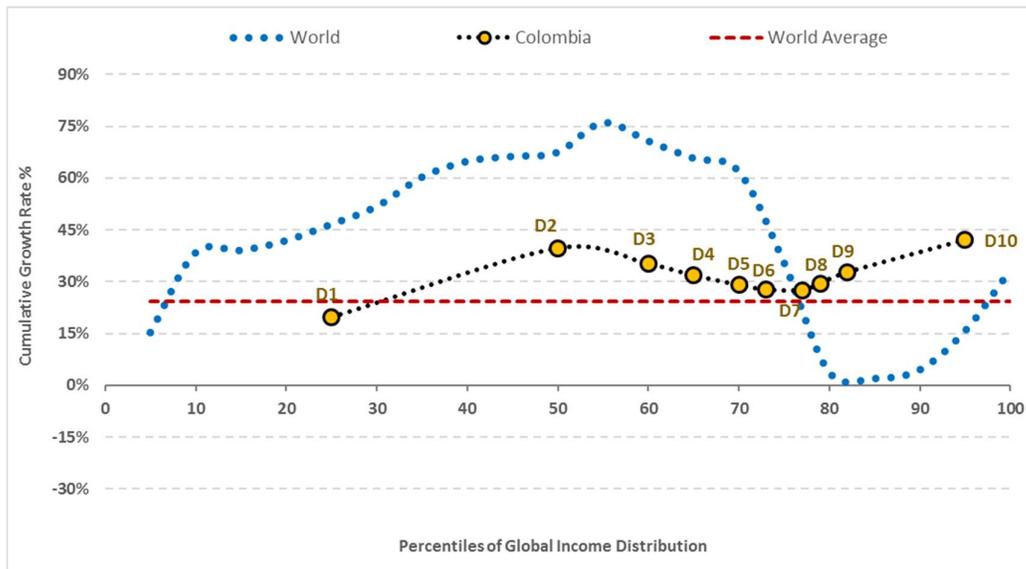
Source: own elaboration with data of LM-WPID and SEDLAC.

Figure A.6: Global Growth-Incidence Curves 1988/2008 - Brazil



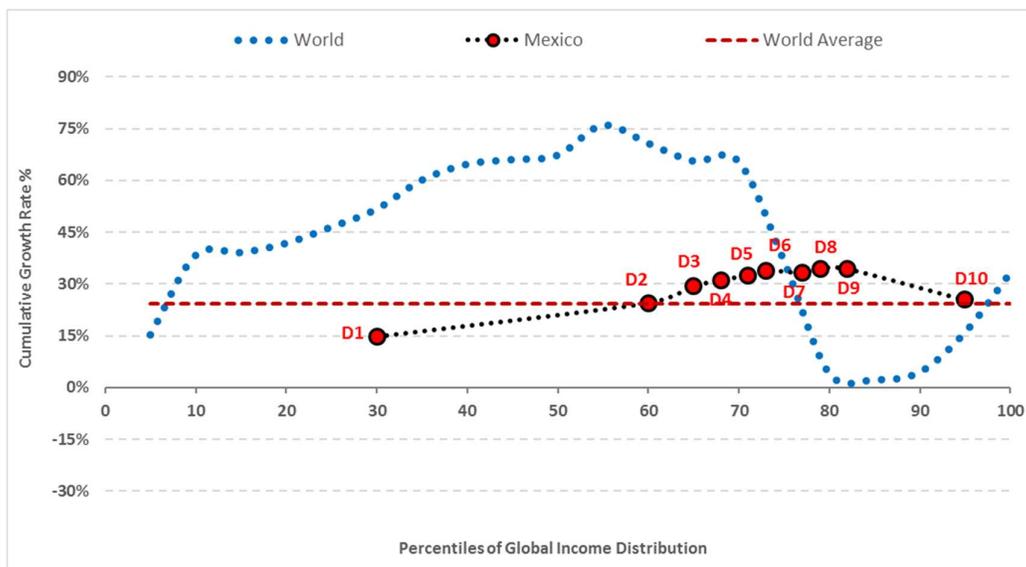
Source: own elaboration with data of LM-WPID and SEDLAC.

Figure A.7: Global Growth-Incidence Curves 1988/2008 - Colombia



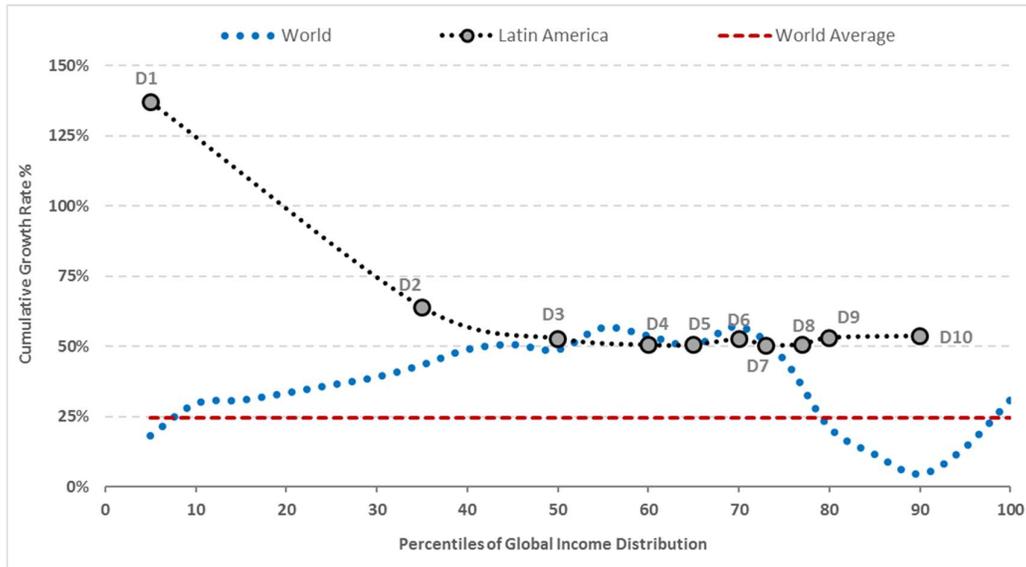
Source: own elaboration with data of LM-WPID and SEDLAC.

Figure A.8: Global Growth-Incidence Curves 1988/2008



Source: own elaboration with data of LM-WPID and SEDLAC.

Figure A.9: Global Growth-Incidence Curves 1993/2008



Source: own elaboration with data of LM-WPID and SEDLAC.