Income Distribution
in the Latin American Southern Cone
during the first globalization boom and beyond◊

(This version April 10, 2009. Please, do not quote without asking the authors)

Luis Bértola, Universidad de la República – Uruguay (lbertola@fcs.edu.uy)
Cecilia Castelnovo, Universidad de la República - Uruguay (ccastelnovo@ fcs.edu.uy)
Javier Rodríguez, Universidad de la República - Uruguay (jerweber@fcs.edu.uy)
Henry Willebald, Universidad Carlos III - Madrid (hwilleba@clio.uc3m.es)

Abstract:

Latin America is the most unequal region in the world and there is intense debate concerning the explanations and timing of such high levels of income inequality. Latin America was also the region, not including European Offshoots, which experienced the most rapid growth during the first globalization boom. It can, therefore, be taken as an interesting case of study regarding how globalization forces impinged on growth and income distribution in peripheral regions. This paper presents a first estimate of income inequality in the Southern Cone of South America (Brazil 1872 and 1920, Chile 1870 and 1920, Uruguay 1920) and some assumptions concerning Argentina (1870 and 1920), and Uruguay (1870). We find that inequality increased between 1870 and 1920, both within individual countries and between countries. This trend is discussed along three lines: the relationship between inequality and per capita income levels; the dynamics of the expansion to new areas, and movements of relative factor prices and of the terms of trade. During the current globalization process inequality remained apparently stable, as a result of contradictory movements: within-country inequality increased, especially in the three countries with the highest per capita income; on the other hand, between-country inequality was reduced due to the process of club-convergence among the Southern Cone countries. Divergence with core countries was deepened. Some implicit results seem to show that state-led industrialization was featured by decreasing inequality, both within and between countries.

1. Introduction

Latin America is the continent with the highest inequality levels. Economic growth has not changed that long-term trend. Quite on the contrary, income inequality has worsened in recent decades.

There has been heated debate on the origins of Latin American inequality. While some scholars have stressed colonial roots, others have emphasized the role played by the first globalization boom, or even the Import-Substituting-Industrialization (ISI) period.

Latin America is also a region which has been growing at an average world level, in a context where growth rates worldwide have been diverging. While Latin America is not a slow-growth region, no Latin American country has grown rapidly and well enough to be labeled as a developed country. An obvious question, then, is whether high inequality levels have been hindering Latin American growth or whether the lack of fast growth lies beneath the relatively high inequality levels in a Kuznets-like approach.

The main goals of this paper are: to provide new estimates of inequality in the Latin American Southern Cone (LASC) on the eve and at the zenith of the first globalization boom, ca: 1870-1920, and to identify the underlying forces that rule the estimated inequality trends. In doing so, we will try to identify the interaction between globalization and different institutional settings. Furthermore, the paper offers a comparison with the second globalization boom and some hints on inequality and growth during state-led industrialization.

The quality of the data does not allow us to be precise as regards absolute levels of inequality or to compare them with contemporary figures. However, what we learn from this study, is that no matter the original inequality levels, the first globalization boom appears as a process of increasing inequality in the Southern Cone at two different levels: among countries and within countries. Regardless of the standard applied, inequality levels at the zenith of the first globalization boom have to be considered high. Paradoxically, during the first globalization boom, the relative gap in income levels between the Southern Cone and the core countries was reduced, even if it continued to increase in absolute terms.

The second globalization boom had quite different impacts on the Southern Cone. The whole region's per capita income diverged significantly in relation to core countries and inequality levels within the region remained constant. However, this was the result of contradictory movements: the high inequality levels in Brazil remained constant, but it caught up in per capita income with other Southern Cone countries. The latter grew slowly and showed down the increase of inequality.

In contrast, state-led industrialization appears as the only period combing relatively high growth rates and decreasing inequality within and between countries.

In short, the study shows that income distribution in the Southern Cone experienced important changes over time. While globalization tends to promote increasing inequality, the actual result depends on the prospects for growth and the different structural and institutional features of the different regions and countries.

2. History and theory

According to a wide range of studies carried out between the 1950s and the 1970s the roots of Latin American underdevelopment were to be found in the colonial period, when both a domestic structure of wealth concentration and international dependency relations were responsible for a pattern of development characterized by sluggish growth and high levels of social and economic inequality (Stein and Stein 1970, Cardoso & Faletto 1967 & 1979, Cardoso & Perez Brignoli 1979, Furtado 1974, Frank 1967, and many others). These authors generally had a negative view of what we now call the first globalization boom, as it combined an authoritarian construction of national states, the reinforcement of power and wealth concentration in the hands of an oligarchy which, in turn, was highly dependent on markets, trading, finance, services and

technology in the hands of foreign companies and states. Generally, these authors were critical of, but somewhat sympathetic with, the different attempts made by Latin American countries during the so-called ISI period to change the basis for economic growth, promoting structural change, social transformation and improvement in social conditions, such as education and health. This process was later on labeled as a process of growth "from within" (Sunkel 1991) or as *state-led industrialization* (Ocampo 2007). According to this tradition, the structural reforms promoted since the 1970s in most Latin American countries were seen as containing some good fundamentals, but promoting a development path in line with the long-run path, based on high income and wealth concentration, international competitiveness based on a perverse pattern of specialization in low-skilled and natural resource-intensive sectors, and high volatility.

In recent decades, the intellectual atmosphere has shifted towards different approaches which have taken for granted that Latin American backwardness was mainly a 20th century problem. The core idea was that inward-looking growth, state interventionism, forced and artificial industrialization, and different varieties of populism were the main causes of the disappointing economic and social outcomes of Latin America until the 1980s. By going global and following best practices, Latin America should have caught up with developed countries, as the South-East Asian countries had recently done. Accordingly, what we now call the first globalization boom appeared as the golden path to development, and deviation from this path cost Latin America dearly.

In the last decade, the first globalization has been revisited by many scholars and many of them even reached Latin America. Jeffrey Williamson studied the period from many different points of view (Williamson 1995, 1999, 2002). His main message is that Latin America did relatively well during that period and could have done much better, had it been less protectionist. Latin America also suffered an increase in inequality due to the process of factor price convergence, which took place in line with the Heckscher-Ohlin approach: the price of land increased significantly in relation to wages, while immigration intensified. The terms of trade moved in favor of Latin America, strengthening the position of landowning classes and inhibiting structural change in the long run. These latter contributions helped nuancing the strong pro-global points of view of the early 1990s.

Latin American economic history has also been revisited by other scholars. Neo-institutional economic history has been producing many comparisons between Latin and North America, in order to unearth the fundamental explanations for long-run growth. Engerman and Sokoloff (1997, 2000), North, Summerhill & Weingast (2000), Landes (1998), Robinson (2006), Acemouglu, Johnson & Robinson (2002, 2005), have all agreed with the previous thesis regarding the colonial roots of Latin American inequality and backwardness. Even though they give different explanations of the origins and causes of the institutional settings in Latin America, they all stress that the institutional setting that emerged soon after the conquest is the main explanation for long-run trends. The major features of these institutions were: wealth concentration, mercantilism, religious and cultural intolerance, racism and exclusion, authoritarian and centralized states, low human capital formation, limited political democracy and extensive presence of many kinds of privileges for the elite. Implicit in this line of research is the idea that what happened in Latin America over the last two centuries followed the path of this previous period. This resembles Braudel's ideas of the *longue durée*. However, long-run jails are no longer cultures, but institutions.

While the idea of colonial heritage seems to be a plausible one, it does not necessarily mean that what happened in subsequent periods was almost a foregone

conclusion. Those periods are being intensively discussed, especially the years following independence. As many authors have proposed (Prados de la Escosura 2007, Bates, Coatsworth & Williamson 2006), the way how independent states were built could have had a long-lasting effect on Latin American countries' institutional settings, contributing also to the understanding of the post-colonial era in Africa.

Similarly, the facts that took place during the first globalization do not necessarily neglect "colonial roots", though this period may certainly provide useful information for a better understanding of Latin American economic history. Previous contributions to Latin American economic history agree on the profound changes that occurred during the first globalization and on the variety of transitions in Latin America (Cardoso Faletto 1967, Duncan & Rutledge 1977, Cardoso & Pérez Brignoli 1979, Sunkel & Paz 1982, Bauer 1986, Glade 1986, Bulmer-Thomas 1994, Bértola & Williamson 2006).

Basically, the opportunities provided by the first globalization promoted a drastic expansion of the agrarian frontier and radical changes in the distribution of assets among the population. At the same time, the power of the state was significantly strengthened, adopting the already mentioned authoritarian shape and content, which certainly enforced the property rights of the elite. Latin American responses varied according to previous institutional settings and social structures, and also according to natural endowments and what has been labeled as the commodity lottery. They also varied according to different colonial heritages. As a result, Latin America became more unequal at the zenith of the first globalization. In turn, these outcomes constituted different contexts within which the subsequent process of import substitution took place.

The debate about the role of inequality in growth has been growing. The literature is already well-known. The discussion on Kuznets' curve, which mainly focused on the impact of growth on inequality, has provided grounds for the study of the impact of inequality on growth. From a neo-classical point of view, income inequality affects human capital formation negatively, reduces access to credit and generates political instability. Inequality has also received attention from other points of view. Income inequality sets limits for domestic demand, the domestic market does not allow sophisticated consumption to grow, thus hampering innovation and specializing in mass-production of low quality goods, the elite consumes a limited amount of luxuries without any positive impact on domestic economy.

The present paper concentrates on Latin America's Southern Cone (LASC). The reason for selecting this sample is quite simple: these are the countries we understand the best and for which we have better information. The objective is to include more countries in the future, especially México. However, LASC is a defendable unit of analysis from different points of view. Geographically, the region includes the temperate areas, which can be considered an extension of the European frontier. Except for its Southern provinces and states, Brazil is not well-suited to such criteria. LASC, from another point of view, includes examples of the three main transitions to capitalism in Latin America, to be found in many typologies: the slave economies (Brazil); the highlands where pre-Columbian population was mainly concentrated, becoming the core of the conquest (Chile could be considered an example, even if it is not a classical case), and the settler economies, represented by Argentina and Uruguay.

Each country deserves detailed studies and considerations. However, this paper aims at considering them as a single unit and extracting some lessons from their common features and from the extent to which those features are common.

3. Estimating inequality in the Southern Cone

Antecedents

Many efforts have been made in recent decades to increase the availability of information and the current situation has improved. However, serious problems persist and each attempt to discuss any economic history topic has to start off by making a major effort to obtain data. This paper is no exception.

Williamson has repeatedly used rental-wage ratios to compare trends in different groups of countries (land- and labor-abundant; center and periphery, etc.) with very interesting results. For the cases of Argentina and Uruguay, the trend during the first globalization boom is very clear: the rental-wage ratio increases significantly (Williamson 2002). This pattern is also common to other settler economies, such as Australia and New Zealand (see Graph 1). One of the shortcomings of these series is that they show considerable changes and variations in terms of real income distribution, which are difficult to believe. What is more, they probably show the relationship between extreme components of the distribution, ignoring changes in the middle. Additionally, wage data series are based on unskilled workers' wages, therefore excluding improvements in skill premiums. Another shortcoming of Williamson's proxies is that they do not show absolute levels and are difficult to aggregate.

Graph 1 about here

Williamson, and later on Prados de la Escosura (2005), constructed a GDP per worker series to compare with the real-wage index. This series must be less volatile. Besides, Prados reports nine-year moving averages. His results also indicate a trend of increasing inequality during the first globalization boom. This latter attempt, even though it is also valuable, may be subject of similar criticisms to Williamson's. One of them is to compare real wage data deflated by consumer price indices, with estimates of GDP figures deflated by GDP deflators or simply estimated through volume estimates. In spite of such criticisms, these estimates have been very useful and quite accurate in most cases.

The present paper is strongly inspired by similar concerns to those that inspired Bourguignon and Morrison (B&M) (2002). Until some years ago, income distribution was discussed in two different and relatively independent ways. One strand of research was centered on the convergence-divergence debate, i.e., the inequality trends in average per capita incomes between countries. Income distribution within countries was thus neglected. A second strand of research dealt with cross-section studies of country data-pairs for per capita income and distribution (Gini-coefficients). The aim of these studies was to establish correlations between per capita income levels and inequality levels, most of them trying to find the Kuznets curve. Such studies were concerned with within-country inequality, and did not take international inequality into account.

B&M attempted to overcome the restrictions of both approaches through the construction of a world database for 1820-2000, on the basis of national population, GDP, and inequality estimates. Using purchasing power parity GDP measures (Maddison 2001) and national inequality measures, the Gini-coefficients were transformed into deciles assuming a lognormal distribution. The average income of the different deciles could later be added to a single database.

B&M's courageous attempt faced several problems, being the most important the lack of historical data for many countries and regions. In order to bridge this gap, they made some important assumptions. In the case of Latin America, the assumption made was that inequality had not changed between 1820 and 1950. At first glance, this assumption looks completely unsustainable and absurd, especially because we have already shown evidence that income distribution in Latin America did change over time.

However, this assumption at least makes it possible to take into consideration changes in between-country inequality, as different countries' per capita GDP and population grew at different rates. An assumed Gini-coefficient "simply" helps to measure the impact of other known components.

Present estimates

The present paper is part of a long-run line of research which aims at constructing databases on income distribution in Latin America for the period 1870-1960, a time-span for which household surveys are not available. The objective is to work on a network basis, aiming at incorporating Latin America in world databases.

Obviously, the underlying purpose is to approach the relationship between income distribution and growth. Thus, after some years of work, the present paper presents a first attempt in estimating income distribution in the Latin American Southern Cone.

Brazil

A detailed presentation of the Brazilian estimate may be found in Bértola, Castelnovo & Willebald (2009). The estimate uses Brazilian population census figures from 1872 and 1920. Both censuses contain information at province (19 in 1872) and state (21 in 1920) level, for 48 professions.

The strategy was to assign income to this population using a wide range of sources and an important set of assumptions.

1872

About 1.5 million, of an estimated active population of more than 6 million people, were slaves in 1872. They were assigned income according to different reports on the cost of maintenance of slaves. As detailed information on the activity slaves were involved in is available, in cases where the activity implied a special skill, income was increased proportionally to the increase in the price of slaves with this special qualification. The difference was about 25%.

Obviously, there were differences among different slaves' incomes, women and men, in the access to land, production for own consumption, etc. Similarly, the duration of a working day and alimentation could vary from place to place. In some cases, slaves were able to save money and buy their freedom. It seems realistic, however, to assume that differences among slaves did not significantly increase total inequality in Brazilian society in 1872.

About 5% of the active population consisted of civil servants. Our database includes official information regarding the income of each and every one of them.

Our third important group of data is the list of voters at municipal level. The Brazilian electoral system was institutionalized in 1821 and was well-developed by the 1870s. Participation in Brazilian elections reached similar levels as in contemporary European countries (Nunes 2003). Unfortunately, this kind of information is very limited. We have access to complete lists for the state of Río Grande do Sul (RGS, more than 2000 cases) and processed information for San Pablo (SP) (Klein 1995) and Río de Janeiro (RJ) (Nunes 2003). Fortunately, the income limit to be declared in order to obtain the right to vote was extremely low: 200 mil-réis (slaves' "income" was estimated to be 64 mil-réis). The register for Rio Grande do Sul, kindly provided by Leonardo Monasterio, includes more than 2,000 observations, indicating the voter's profession, compatible with the census arrangement of professions, and income.

The estimation was performed as follows. First, the income distribution for each professional category of the province of Río Grande do Sul was applied to similar

professional categories in the other states. However, the level was not the same. A recent study by Eustaquio Reis provides estimates of the level of income per active population (Reis, 2008). These different mean income levels were maintained for each profession in relation to Rio Grande do Sul, keeping the distribution pattern of each profession as in Monasterio. The resulting average income per active population did not coincide with that of Reis, because these different income levels were applied only to some professions (not to slaves and not to civil servants). This was specially the case of provinces with high shares of slaves and high shares of civil servants, being the Province of Río de Janeiro a typical case.

The second step of the strategy thus consisted in estimating the loss of estimated income of each province, and to assign it to the province's elite. The income of the elite is usually a source of underestimation of total inequality. In order to assign this income share, the professional groups probably being part of the elite were selected: "advogados", "notaries y escrivoes", "capitalistas y propietarios", "manufactureros y fabricantes", "comerciantes, guarda libros y cajeros", as well as high income civil servants in important positions, as presidents, commanders, etc. The estimated income loss was distributed among the richest 1% of the active population of the province that also was among these professional groups.

With respect to women, the income assigned was 2/3 of similar male income. This was the average result obtained from many different sources of information. In the cases of capitalists and owners, and in the case of slaves, the same income as that of males was assigned.

The data base assigns income to about 5.6 million people, out of an active population slightly above 6 million.

1920

This estimate is also based on the population census. It assigns income to 8.1 million people out of an active population of 18 million. The main sources for income are as follows.
- A list of 32,000 civil servants (out of 186,000) with detailed information on income and profession.
- A survey of wages in the secondary sector with the number of workers by 21 income intervals (8 male adult, 5 female adult, 4 male 14-20, 4 female 14-20), for 14 branches and 21 states. The survey covers about 1/5 of the total population registered by the census in these activities.
- Information on average wages for 10 categories of primary workers at state level (21).
- An estimate of landowners' income, according to census data on the size of farms and wage-ratios for 1920 and regional productivity differences for 1940.
- An estimate of industrial capitalists' incomes, using the industrial survey from 1920, and assuming the existence of one owner per enterprise.

If the database is expanded to the whole active population according to the census and using the obtained average income, a total income of 17.3 billion mil-reis is obtained, compared to 14.9 billion estimated by Goldsmith (1986, p. 147, Table IV-2).

Chile

Detailed information on how the Chilean estimates were constructed can be found in Rodríguez (2009, forthcoming), and in Bértola & Rodríguez (2009). The changing structure of the active population by sector of activity (agriculture, mining,

manufactures, buildings, transport and communications, commerce, and others) was taken from Braun et. al (2000, tables, 7.1-2). These large sectors include several professions each. The weight of each profession within each sector was taken from the 1907 census. Additional disaggregation was made for some professions, such as the agrarian sector and mining. On the contrary, other professions were grouped in fewer units.

With respect to income, several different sources were used and made comparable for both years. When prices or income were not directly available, factor price series were applied to existing data in order to complete the information for both years. In some cases, the values are the result of interpolation between other available years.

Uruguay

1870

As regards Uruguay we do not have an own inequality estimate for 1870, as we do for 1920. In Section 4 we will discuss the so-called Inequality Possibility Frontier as proposed by Lindert, Milanovic & Williamson (2007). According to the value obtained for Uruguay in 1920 and assuming a subsistence income of 400 international 1990 dollars (implying that inequality should be almost zero at that average income level), we estimated a polynomial regression (third order) to obtain a hypothetical value for 1872. This value helps us assign weight to other Uruguayan variables such as per capita GDP and population. Alternatively, we will also assume that income inequality in Uruguay did not change between 1870 and 1920.

1920

The 1920 inequality estimate is provided by Bértola (2005) and takes into consideration an exhaustive series of civil servant incomes, 8 income categories for industrial workers in 8 different industrial branches and the whole agrarian sector, including owners and tenants according to the size of farms, and wage earners. The data base covers about 70% of the active population.

Argentina

Unfortunately, it has not yet been possible to make much progress in the estimation of Argentine incomes. In order not to exclude the important role played by Argentina in the region with respect to per capita GDP growth and population growth, we have decided to make some assumptions regarding inequality in Argentina.

1870

For 1870, a similar procedure to that used in the case of Uruguay was followed. Argentina is a larger and more diverse country than Uruguay. In order not to ignore valuable information regarding differences in regional per capita GDP in Argentina, we applied the Gini-coefficient obtained to any single province. Total inequality will be the result of similar within-province inequalities and a component of between-province inequality. One further problem for 1870, was the fact that differences in province-per-capita GDP were assumed to be the same as in 1920, following Llach (2004). Province-per capita GDP figures provided by this author for earlier periods looked less reliable. As in the case of Uruguay, we will also test total Southern Cone inequality assuming that the distribution of income in Argentina between 1870 and 1920 did not change.

1920

The Uruguayan 1920 Gini-coefficient was applied to each Argentine province for which reliable per capita GDP estimates are available. See Llach (2004).

Southern Cone

The estimate of total inequality in the Southern Cone was obtained in the following way:
- The estimate or assigned country Gini-coefficients are transformed into deciles assuming a normal distribution.
- The average per capita income of each decile of each country is estimated using the purchasing power parity per capita GDP, according to Maddison (2001).
- Thus, each year´s (1870 and 1920) estimate is the result of a database of 40 observations (10 country deciles and 4 countries; see Appendix Table 1).

This data base will allow us to see how much total inequality increased in the region as an aggregate of the changes produced within each country and between the four countries. This latter change derives from both changes in GDP levels and population.

When reading the results on changes in within-country inequality we have to keep in mind that the 1870 and 1920 Argentine absolute inequality level for each province were assumed, as well as that of Uruguay in 1870. As will be discussed, the results are consistent with other proxies and we consider we have made a moderate assumption regarding the inequality increase in Argentina and Uruguay.

As mentioned above, this estimate will be confronted with another, in which Argentine and Uruguayan within-country income distribution remains the same through the period 1870-1920.

3. Growth and Inequality

Growth

The first globalization boom was characterized by very rapid economic expansion in new areas. GDP growth in LASC and in the USA was 70% higher than the world average and six times higher than that of the 12 leading Western-European countries. GDP growth in the USA was slightly above that of LASC.

Population grew faster in the LASC than in the USA, due to the well-known fact that Latin European emigration took place later than North-European (Hatton & Williamson 1994) and due to the "delayed" Latin American growth (Halperin 1985, 1999).

Per capita GDP growth in the USA was 20% higher than that of LASC. However, the growth rate of the latter was remarkable: 40% higher than that of the Western-European countries (see Table 1).[1]

Table 1 about here

Within LASC, several differences can be observed. Argentina stands out, growing faster than the others in all respects. Brazil and Uruguay experienced rapid population growth, but per capita GDP did not rise too much. The population of Chile did not grow much, but a higher per capita GDP compensated for this.

As a result, an important shift occurred between 1870 and 1920 mainly in the Argentine and Brazilian shares of total income: while the first doubled, the latter was reduced to almost half of previous values. What is more, Argentine income surpassed that of Brazil, which had almost tripled the Argentine level in 1870. The mean income of

---

[1] For 1870-1913, the growth rates of the per capita GDP of Latin America and Europe were 1.8 and 1.3 respectively.

Argentina reached almost 4 times that of Brazil in 1920. Chile and Uruguay also had much higher mean incomes than Brazil.

Table 2 about here

Inequality

As shown in Table 3, all the comparable measures reported indicate that inequality grew in the Southern Cone during the first globalization boom. All the so-called Kuznets-coefficients report a coherent picture of increasing inequality. In all cases the relations between the income shares of a poorer group of the population and a richer one show a reduction of the relation in detriment of the poorer. An alternative estimate in which Argentine and Uruguayan income distribution between 1870 and 1920 is left unchanged, shows similar aggregate results, as also shown in Table 3.

Table 3 about here

According to Table 4, distribution of income in all the countries worsened. The clearest cases are those of Brazil and Chile, as our estimates for these countries cover both periods of time. The increasing inequality in Argentina and Uruguay are not surprising, as the values were assigned (except for Uruguay 1920). In our defence we can argue that all the other available inequality proxies confirm the existence of a negative trend (see next section). In the case of Argentina we can also argue that we are underestimating the differences arising from uneven per capita GDP growth in different provinces. By keeping relative per capita GDP at province level constant, we are only capturing inequality differences arising from uneven population growth, but not from uneven per capita GDP growth. Much evidence points to the fact that Buenos Aires and the provinces of the *Pampa Gringa* (especially Santa Fe and Córdoba) as well as Mendoza and Tucumán, could have grown at faster rates than other less developed regions.

Table 4 also shows results concerning that part of inequality that can be explained within the countries, and the part arising from differences between countries. It is possible to conclude that between-country inequality contributed more to total inequality in 1920 than in 1870. This implies that the different rates at which the different countries grew had a more profound impact than changes in domestic inequality.

Table 4 about here

4. Inequality and per capita GDP level

In previous estimates of Brazilian inequality 1872 the low inequality levels obtained were very surprising, as Brazil is nowadays one of the most unequal societies in the world. The results shown in the present paper are much higher and look more reliable.

When trying to understand the low inequality levels of Brazil in 1872, we found an interesting framework in Lindert, Milanovic & Williamson (2007). Their basic idea is that the level of possible inequality, the *inequality possibility frontier (IPF),* in their words, depends on the level of per capita income, the subsistence level for the majority of the population and the size of the elite that can appropriate the eventual surplus. They present a final equation as follows:

$G^* = ((\alpha - 1)/ \alpha) (1-\varepsilon),$

where G^* is the IPF for a certain level of per capita income, ε is the proportion of people belonging to a very small upper class and α is the relation between average income and the subsistence income. In other words, an economy at a very low levels of

development, where average income is not much higher than subsistence level, does not produce a surplus large enough to allow for high inequality levels.

The authors present a theoretical IPF-curve, assuming that the elite is 0.1% of the population and that subsistence income is 300 or 400 international purchasing power parity dollars (the latter figure is used by Maddison as an historical benchmark).

Their results are plotted in Figure 1, together with our previous values. If we introduced Brazil's mean income to LMW's equation, we should obtain a very good fit of our estimate to the curve, showing that Brazil was, both in 1872 and in 1920, almost on the IPF-curve: the Brazilian elites were extracting from the working population all potential surplus.

Figure 1 about here

However, there are many misleading assumptions there.

In Appendix Table 2 we present three panels.

Panel A presents LMW's estimates with our Gini-coefficients. As we saw, our previous estimate for Brazilian inequality lied almost on the curve. However, our data says that the 400PPP$ is not a correct estimate of subsistence level. Our data tells us that the lowest Brazilian decile in 1872 had an average income of nearly 60PPP$. Using our 1870 Brazilian Gini with 400PPP$ means that the elite was extracting more income than available.

Panel B changes Maddison's subsistence levels estimates for our own as represented by the average income of the first decile in 1990PPP$. According to this picture, potential inequality was much higher than real, with an extraction rate of 64% on average.

Finally, Panel C replicates Panel A, but using our current estimates of average and subsistence income for Brazil and Chile, in 1870 and 1920. These results look interesting and much more reliable, as we avoid to go over the bridge searching for water, i.e., we avoid using Maddison's 1990 PPP$. According to Panel C, the Brazilian slave society in 1872 had a rather high extraction rate (0.83) of potential or frontier inequality, and the Chilean *hacienda*-based economy an even higher extraction rate (0.89). While the Brazilian extraction rate fell to 0.76 in 1920 (the income of the elites are probably underestimated in 1920), the Chilean remained at similar levels.

5. Inequality and globalization, 1870-1920

Globalization

Globalization can be defined as a process of declining spread between commodity and factor prices at different points of a market. The underlying forces can be the reduction of tariffs and other barriers to the mobility of factors and goods and the reduction of transport and other transaction costs.

The first globalization boom was mainly driven by technological and organizational changes in the transport sector, both maritime and land. The reduction of real freight prices was impressive: the North freight rate index for American export routes (North 1958) dropped by more than 41 percent in real terms between 1870 and 1910, while the British index fell by about 70 percent between 1840 and 1910 (Bértola & Williamson 2006).

However, in the case of LASC, the impact was somewhat lower: average freight costs between Montevideo and Liverpool fell annually by 0.7 percent between 1870 and 1913 (Bértola 2000: Table 4.1, p. 102). Juan Stemmer, however, has shown (1989: p. 24), that overseas freight rates fell much less in the case of the southward leg than in that of the northward leg. This means that bulky South American exports benefited more from freight reductions than more valuable imports per unit of weight.

Even railroads made their contribution to the reduction of economic distances. In the case of the small Uruguayan territory, between the 1870s and 1913, railroad tariffs decreased by 3.1 annually (Bértola 2000: Table 4.1, p. 102). This fall in prices has to be added to the relative cost reduction between railroads and traditional means of transport.

Expansion of the frontier and inequality

The immediate consequence of these transport price reductions was the improvement in the competitiveness of Latin American production on the basis of the exploitation of natural resources. As the world became smaller in economic terms, new areas could compete at an advantage, meeting an increasing demand on world markets, driven by rapid per capita income growth and industrialization in Europe. Besides, the fast domestic growth of the USA was consuming an increasing share of America's agrarian surplus.

The impact of these freight price changes on the productive front can be approached with the help of Figure 2. Different economic activities are arranged according to the relative productivity in the center and in the periphery. Transport costs determine the width of the range (Z^x-Z^m) within which goods are not tradable, as transport costs outweigh differences in productivity. As freight costs are reduced, trade is created, thus increasing the range of tradable activities in both the South and the North. The creation of employment, of course, will depend on the features of the export sectors.

Figure 2 about here

Accordingly, the agrarian frontier advanced at high rates, mainly on the Atlantic coast of LASC. In the case of Argentina, a country with an extensive open frontier, the land-labor index moved from 29 to 100 between 1883 and 1911 (Williamson 2002, Appendix Table 3) in spite of very rapid population growth, implying an increase in the number of hectares per worker. The same situation affected Brazil, where the leading region was the South East, which experienced its own "conquest of the West" and South. The smaller Uruguay, on the contrary, without an open frontier to occupy, saw how the land-labor ratio was reduced by half during the same period, implying that the territory had twice as many people per hectare in 1911 as in 1883. A similar trend can be found in the core of the Buenos Aires region.

Chile was not an exception and expanded its frontier both towards the South and the North, especially after the War of the Pacific. The Northern region was rich in nitrates, copper and guano. Besides, the Panama Channel should have had a great impact in transport costs with the Atlantic. This impact, however, should be more important after the period we are dealing with.

The expansion of the frontier implied major changes in the distribution of the population in the territory and subsequently in the distribution of income, depending on the relative per capita income of each region. The Argentine Pampas grew very rapidly in relation to the less dynamic inland. The population of the Pampa Gringa and Buenos Aires increased from 60 to 80% of the total population.

In Brazil, as shown in Table 5, the stagnating and poor North-East lost ground to the dynamic South and South-East, in terms of both population share and average per capita income. The income share of the South and South-East increased from 58 to 67% following a similar increase in population. However, in Brazil, between region inequality did not grew significantly. It seems that important changes took place inside each region, as, for example, the changing roles between San Paulo and Rio de Janeiro in the South-East.

Table 5 about here

Regional inequality depends also on the so-called commodity lottery. Economic growth was strongly dependent on the availability of natural resources. Moreover, economic growth depended on how demand, prices and international competition changed in these different commodity markets. In Bértola & Williamson (2006) these features were analyzed from the point of view of the international commodity markets and the dominant labor markets in these commodity markets. The Argentine Pampas, Uruguay and Southern Brazil produced similar commodities to those produced in core countries by high income peasants, who set a high marginal price for their products, also due to the high price of land. Countries producing tropical crops in competition with labor abundant economies could hardly be competitive if paying high wages, unless some kind of monopolistic position was taken, as in the case of the coffee plantations in Brazil. The production of minerals used to be highly concentrated in space and faced varying degrees of market competition. The commodity lottery was thus favorable for temperate regions such as those of the Río de la Plata, for the almost monopolistic coffee production in Brazil and for the Chilean nitrates. However, the rubber plantations of Northern Brazil, for example, faced drastic changes in international competitiveness, first challenged by Indonesian production and later by synthetic rubber.

Globalization and relative factor prices

The Brazilian and Chilean cases point to the fact that inequality also increased within each country. As shown in Table 5, inequality also grew within each single Brazilian region, excepting for the South-east where inequality was already very high.

Taking into consideration one important economic force can make an important contribution to the understanding of within-region inequality: relative factor price movements. The previously mentioned inequality estimates for Latin America during the first globalization (Williamson 2002, Prados de la Escosura 2005, Bértola 2005) were based on the estimation of these variables.

The Heckscher-Ohlin model predicts an increase in the relative price of natural resources, the abundant factor, in relation to wages. Graph 1 shows how important these relative price movements were in different economies of new settlement.

The impact of these price movements on inequality is not obvious and depends on several social and institutional factors. If land is highly concentrated and labour demand is relatively scarce, inequality will probably rise more than if land-concentration is relatively low, immigrants have access to land and relative labor supply is low. This contrast has been exemplified by Adelman (1994) who compared the Pampas and Canada. Political institutions play a very significant role, as they define policy of access to land, the control of labor, etc. Recently, Alvarez (2007) has shown how the distribution of wealth (land, in this case) in New Zealand and Uruguay had a huge impact on the functional distribution of income. While in New Zealand the state owned an important share of the land and had an important impact on the level of land rents, in Uruguay the state was completely absent. This different distribution of wealth led to a quite different distribution of income between wages, profits and land rents. In the institutional framework of a slave economy, wages are doomed to remain close to subsistence minimum, but post-slave societies may face even worse conditions in a context of a large labor surplus, racial discrimination and authoritarian regimes.

Nevertheless, less attention has been paid to the counteracting factors to this trend. The Heckscher-Ohlin approach assumes the existence of a given amount of resources which suddenly are integrated into the world economy. Nevertheless, the expansion of the frontier implies that there is an increasing amount of land now accessible because of demand forces but also because of technological change and institutional improvement.

This increasing amount of factors may produce a reduction of the factor costs, counteracting trends in rental-wage ratios. While in core regions the H-O trend may prevail, frontier prices may reduce the average price land.

Terms of trade and inequality

The first globalization boom was followed by a positive terms of trade shock for most Latin American countries (Graph 2). So they did in Europe (Williamson 2002). Improved terms of trade were the result of many different forces. The first, and probably the most important one, was the previously mentioned reduction of transport costs. This particular force has the peculiarity that it may have produced the same impact on both sides of the Atlantic economy. This is because export prices are usually recorded at FOB prices, while import prices are CIF prices, thus registering the contraction of freight costs (Coatsworth & Williamson 2002).

An expected result is, however, that the terms of trade improvement trend will disappear in relation to the exhaustion of the effect of the revolution of transports. What is more, this seems to have coincided with the critical situation during WWI, when freight prices increased considerably.

Graph 2 about here

Terms of trade are also extremely volatile, depending on the demand for and prices of particular commodities. As the Latin American countries were highly dependent on a few natural resources, changing terms of trade had a huge impact on relative domestic prices.

The impact of terms of trade on income distribution is also highly dependent on the structure of exports, on social and institutional factors, as well as on the per capita income of the population.

Given the agrarian origin of LASC exports, there tends to be a direct correlation between terms of trade and relative factor prices, as shown in Graph 3.

Graph 3 about here

A particular case is the Chilean one during the age of the nitrates. As export incomes were highly concentrated in foreign enterprises, the improved terms of trade did not have a huge impact on domestic inequality. However, when considering the functional distribution of income between wages and profits, the impact on inequality is clearly noticeable (Rodríguez 2007, Graph 11).

In the case of Brazil, the terms of trade did not improve, or even worsened. However, the construction of regional export price indices may reveal the existence of important differences.

6. Inequality and globalization, 1970-2000

The dominating features of Southern Cone policies during most of the period in question were pro-global. They affected trade, capital movements, privatization of State-owned enterprises, de-regulation of several markets, and many other related measures. The underlying principle was that Latin American backwardness had been mainly the result of bad policies, that had had, by large, a much more negative impact than the market failures they aimed at overcoming.

During 1970-2000 per capita income in the LASC lagged further behind both USA (from 29 to 22%) and Europe 12 (from 40 to 32%). For the first time, since the 1870s, the LASC lost positions in relation to world average: its advantage was reduced from 16 to 6%.

In order to estimate the trends in inequality we selected the most coherent groups of estimates among those presented in the WIDER income inequality database. The results

are shown in Tables 2-4. What happened to inequality trends within the LASC is rather ambiguous:

- one positive trend is that D1 increases its share in relation to D1-9;
- the fact that D1-9 falls in relation to D1-5 points out that the "middle" classes are suffering a decline (deciles 6-9); this is also shown by the decrease in the relation 75/25;
- both Gini- and G(1) coefficient show increasing inequality; they tend to show what happens in the medium and the top of the distribution, respectively;
- G(0)-coefficient, which better shows what happens in the lower part of the distribution, points to a reduction in inequality.

In short, we find an improved position of the lower income groups mainly at the expense of the middle sectors. The top income groups seem to have increased their position. These trends are mainly explained by what happened at the between-country level. The period was featured by some kind of club-convergence in which Brazil almost caught up with the other Southern Cone countries' per capita income (its relative mean increased from 0.77 to 0.87). This fact explains an important reduction of inequality, especially, as Brazil's numerous population was the main part of the poorest deciles. This trend was also fueled by Brazil's faster population growth (its population share increased from 73 to 76%). As a result, between-country inequality in 2000 was reduced to about 40% of that of 1970.

This trend was counteracted by an increase in within-country inequality. As shown in Table 4, inequality increased significantly in the three richest countries of the region. The Brazilian case is different: the already high inequality levels were slightly reduced.

The driving forces behind the second globalization boom where quite different from those of the first one. At least in Latin America, policy changes were the main driving force of the globalization process. Within this context, Southern Cone inequality was slightly reduced, but the whole region continued to diverge from core countries, thus increasing between-country inequality within the sample of the Southern Cone, USA and Europe 12. Even if inequality in Brazil was reduced, and even if Brazil could, to some extent, catch up with the other countries of the region, the Southern Cone remained relatively poor and unequal.

7. Some implicit results of state-led industrialization

According to the figures in Table 1, between 1920 and 1970, the per capita income of the LASC remained at rather similar levels to the USA's (between 27-29%). Furthermore, LASC countries slightly improved their position in relation to world average, but lost ground in relation to Europe 12, mainly due to the fast post-WWII growth in Europe.

The data we have produced on income distribution for the first globalization boom is not easy to compare to that we used for 1970-2000. However, the implicit changes that arise from the data point to some trends that look similar to what other estimates have shown. In terms of country trends (Table 4), Argentina, Chile and Uruguay show significant reductions in inequality. These results are in line with Bértola (2005) for Argentina and Uruguay and with Prados de la Escosura (2005) for Argentina, Chile and Uruguay. The Brazilian case is the only one in which inequality slightly increased, in contrast to the huge increase observed by Prados de la Escosura (2005).

If these implicit results were to hold, all measures of LASC inequality seem to show a sharp decline (Table 3). According to Table 4, this decline is both a within- and

between-country phenomena. Inequality was reduced in the richest countries, but Brazil was catching up with the leading countries of the region.

State-led industrialization is thus confirmed as the only period in Latin American economic history during which growth was relatively fast, relative performance at a world level was acceptable (even in relation to the USA), and inequality was reduced. As shown by Bértola, Camou, Maubrigades & Melgar (2008), this was also a period in which Latin American performance in human development was relatively good (see also Astorga, Bergés & FitzGerald 2004 and Prados de la Escosura 2004).

Summary of findings and agenda for future research

This paper presents a first generation of direct estimates of income inequality in the LASC countries. The evidence presented is of varied quality, including relatively good estimates for Brazil, Chile and, in part, for Uruguay, combined with some assumptions regarding Gini-coefficients for Argentina, 1870 and 1920 and Uruguay, 1870.

The results may have underestimated inequality increases in Argentina, as only changes in the distribution of population among its provinces were taken into consideration.

The picture obtained is that of high income inequality levels already at the eve of the first globalization and a further increase in LASC inequality between 1870 and 1920. This increase is the result of many different, but reinforcing forces:

1. Population increased at different rates and grew more in countries and regions with higher average per capita income.
2. Per capita income grew at different rates in different countries and regions. Highly populated and relatively high-income Argentina grew faster than populous Brazil. Relatively high-income regions in Brazil grew faster than poor ones.
3. The combination of these first two factors resulted in an important increase in between-country inequality.
4. Within-country inequality grew in Brazil and Chile, and probably in Argentina and Uruguay too, as also suggested by complementary proxies for income inequality, such as land-labour ratios, per capita GDP-real wage ratios and terms of trade. This trend was present in every Brazilian region, excepting for the South-East, an already highly unequal region in 1870.

The objective of this paper is not to present detailed national or regional studies, but to concentrate on the global view. Some lines of interpretation of the trends discovered are as follows:

1. Globalization implied a drastic reduction of transport prices and introduced changes in the set of tradable goods in the Atlantic economy. Changes in relative productivity favored a dramatic expansion of the frontier and an increasing demand for labor. While "old" areas saw how the land-labour ratios diminished, others, like the Argentine West, experienced an important increase in this ratio. As an outcome, high-income, export-led regions increased their shares in total population and total income, producing increases in between-country and between-region inequality. What is more, countries and regions producing commodities similar to those produced in the core countries were able to achieve higher levels of per capita income, as the prices of their commodities were set by the production in high-income European countries, with high land prices.
2. Within-country and especially within-region inequality were also fueled by relative factor price movements. Prices moved *a la* Heckscher-Ohlin resulting from factor movements across the Atlantic, making the price of land, the

abundant factor, rise and that of labor, fall in relative terms. There is sound evidence in this area. The special way in which these price movements impact on the distribution of income depends on the distribution of assets. The highly concentrated pattern of landownership, compared to other settler societies, makes it possible to conclude that the impact of this factor was important. However, as mentioned, the expansion of the frontier acted as a counteracting factor.

3. The paper leaves the field open for more detailed institutional studies on factors which make it possible to explain the difference between the Inequality Possibility Frontier and the real inequality in different countries and regions. Differences arising from quite different institutional settings, such as the transition from a slave to a free labor economy, or the expansion towards the frontier on the basis of immigrant labor, leave ample space for the debate on the role of institutions and inequality for growth. Further contributions within the framework of the present project will tackle these issues.

When compared to the first globalization, the available information for the second globalization boom shows more ambiguous trends. While the Southern Cone as a whole diverged from leading countries and lost positions in relation to average world per capita income, inequality trends within the Southern Cone seems to be rather stable. However, this is the apparent result of contradictory underlying movements. On the one hand, between-country inequality was reduced due to club-convergence in the region: Brazil, the economy with lowest per capita income, grew faster in per capita income and population. Brazil had already high inequality levels, which were slightly reduced. On the other hand, the richest countries of the region grew less and more unequally. As a result, the poorest deciles of the region improved their income share, at the expense of the region's middle class.

The data for 1920 and 1970 can only be compared with caution. The implicit results, however, point to a significant reduction of inequality in the region between 1920 and 1970. This reduction is partly due to the fast Brazilian growth compared to the richer neighbors, and to a significant reduction of inequality in the other three countries, a result in line with previous evidence. State-led industrialization thus appears as the only single period in which relatively fast growth was compatible with increased inequality and improvements in relative human development.

Bibliography

ÁLVAREZ, J, (2007): "Distribución del ingreso e instituciones: Nueva Zelanda y Uruguay en el largo plazo". En Álvarez, J., Bértola L. y Porcile G. (eds), *Primos Ricos y Empobrecidos: Crecimiento, Distribución del Ingreso e Instituciones en Australia-Nueva Zelanda vs Argentina-Uruguay*, Montevideo.

ACEMOGLU, D., JOHNSON, S. and ROBINSON, J.A. (2002): "Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution". *Quarterly Journal of Economics* 117, 4: 1231-1294.

ACEMOGLU, D., JOHNSON, S. and ROBINSON, J. (2005): "Institutions as the Fundamental Cause of Long-Run Growth", en Aghion, Ph. & S. Durlauf *Handbook of Economic Growth*.

BALDWIN, Richard (2006): "Globalisation: the great unbundling(s)", Prime Minister's Office, Economic Council of Finland, September.

BATES R., COATSWORTH, J. H. and WILLIAMSON, J.G. (2006): "Lost Decades: Lessons from Post-Independence Latin America for Today's Africa". *NBER Working Paper Series* W12610.

BAUER, A., (1986): "Rural Spanish America, 1870-1930". In Bethell, L. (ed), *Cambridge History of Latin America IV*, 151-186.

BÉRTOLA, L. & WILLIAMSON, J. (2006): "Globalization in Latin America before 1940". In Bulmer-Thomas, V., Coatsworth, J. & Cortés Conde, R. (ed.) *The Cambridge Economic History of Latin America*. (vol II).

BÉRTOLA, L. (2005): "A 50 años de la Curva de Kuznets: Crecimiento y distribución del ingreso en Uruguay y otras economías de nuevo asentamiento desde 1870". *Investigaciones en Historia Económica*, 3/2005, 135-176.

BÉRTOLA, L. (2000): *Ensayos de Historia Económica: Uruguay en la región y el mundo*. Montevideo, Trilce.

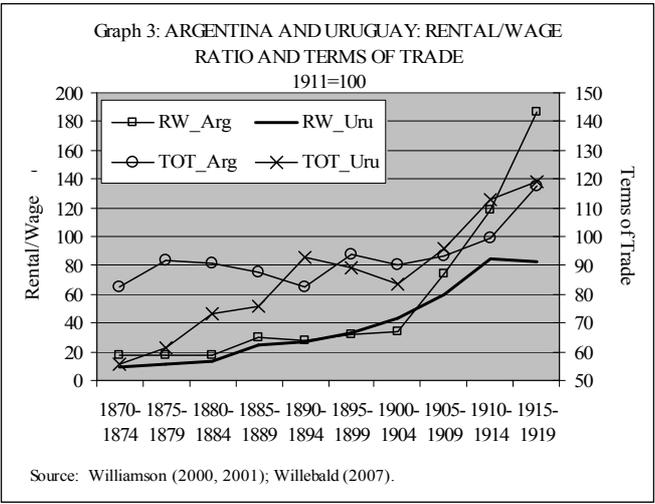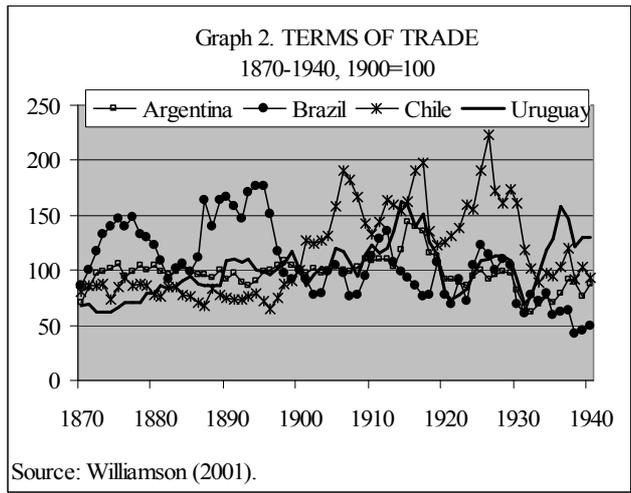BÉRTOLA, L., C. CASTELNOVO & H. WILLEBALD (2008): "The distribution of income in Brazil during the first globalization". *Documentos de Trabajo del Programa de Historia Económica y Social*, Facultad de Ciencias Sociales, Universidad de la República.

BÉRTOLA, L., CALICCHIO, L., CAMOU, M. & PORCILE, G. (1999): "A Southern Cone Real Wages Compared: A Purchasing Power Parity Approach to Convergence and Divergence Trends, 1870-1996". Universidad de la República, Facultad de Ciencias Sociales, Documento de Trabajo Nº 44.

BOURGUIGNON, F. & MORRISSON, C. (2002): "Inequality among World Citizens". *American Economic Review* 92, 4: 727-44.

BRAUN, J., BRAUN, M., BRIONES, I. & DÍAZ, J. (2000): "Economía chilena, 1810-1995. Estadísticas Históricas". Documento de Trabajo 187, Pontificia Universidad Católica de Chile.

BULMER-THOMAS, V. (1994): *The Economic History of Latin America since Independence*. Cambridge: Cambridge University Press.

CARDOSO, F.H. y FALETTO, E. (1967): *Dependencia y desarrollo en América latina*. Siglo XXI.

CARDOSO, F.H.and FALETTO, E. (1979): *Dependency and Development in Latin America*. Nueva York 1979.

CARDOSO, C.F.S. & PÉREZ BRIGNOLI, H. (1979): *Historia Económica de América Latina*, Vol. I-II, Barcelona.

COATSWORTH, J. and WILLIAMSON J. G. (2002): "The Roots of Latin American Protectionism: Looking Before the Great Depression". *NBER Working Paper Series* 8999.

CORTÉS CONDE, R. (1997): *La economía argentina en el largo plazo (Siglos XIX y XX)*. Buenos Aires.

DUNCAN, K. & I. RUTLEDGE (ED.) (1977): *Land and labour in Latin America. Essays on the development of agrarian capitalism in the nineteenth and twentieth centuries*. Cambridge Latin American Studies 26.

ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN [ECLAC] (2000): The *Equity Gap. A Second Assessment*. Santiago de Chile.

ENGERMAN, S. L. and SOKOLOFF, K.L. (1997): "Factor Endowments, Institutions, and Differential Paths of Growth Among New World Economies". In S. Haber, ed., *How Latin America Fell Behind. Essays on the Economic Histories of Brazil and Mexico, 1800-1914*. Stanford: Stanford University Press, 260-304.

ENGERMAN, S. L., HABER, S. H. & SOKOLOFF, K. L. (2000): "Inequality, Institutions, and Differential Paths of Growth among New World Economies". In C. Menard, ed., *Institutions, Contracts, and Organizations*. Edward Elgar: Cheltenham, 108-34.

FRANK, A. G. (1967): *Capitalism and underdevelopment in Latin. America: historical studies of Chile and Brazil*. New York.

FURTADO, C. (1974): *La Economía Latinoamericana desde la Conquista Ibérica hasta la Revolución Cubana*. México.

GALLO, E. (1984): *La Pampa Gringa. La Colonización Agrícola en Santa Fe (1870-1895).* Buenos Aires.

GERCHUNOFF P. & LLACH L. (2003): *El ciclo de la ilusión y el desencanto. Un siglo de políticas económicas argentinas*. Ariel Sociedad Económica.

GLADE, W. (1986): "Latin America and the International Economy, 1870-1914". In Bethell, L. (ed) *The Cambridge History of Latin America*, *Volume IV: c 1870 to 1930*, Cambridge: Cambridge University Press.

GOLDSMITH, R. W. (1986): *Brasil 1850-1984: Desenvolvimento Financieiro sob um Século de Inflaçao*. San Pablo.

GONÇALVEZ, R. & COELHO BARROS, A. (1982): "Tendências dos Termos da Troca: a Tese de Prebisch e a Economia Brasileira – 1850-1979". *Pesquisa e Planejamento Económico*, 12.

HALPERIN DONGHI, T. (1985): "Economy and Society in Post-Independence Spanish America", in Bethell L. (ed), *The Cambridge History of Latin America*, *Volume III: From Independence to c 1870*, Cambridge: Cambridge University Press.

HALPERIN DONGHI, T. (1999): "Historiografia colonial y multiculturalismo. La historia de la colonización entre la perspectiva del colonizador y el colonizado", in Mengus Bornemann, M. (ed.), *Dos décadas de Investigación en Historia Económica comparada en América Latina. Homenaje a Carlos Sempat Assadourian*, Mexico.

HATTON, T. & WILLIAMSON, J. (1994): "Latecomers to mass emigration: the Latin experience". In Hatton, T. & Williamson J. (ed), *Migration and the International Labor Market 1850-1939*, 55-71, Routledge.

KLEIN, H. (1995) "A participação política no Brasil do Século XIX: os votantes em São Paulo em 1880". *DADOS - Revista de Ciências Sociais*, v. 38, n.3, p. 527-544.

LANDES, D. (1998): *The Wealth and Poverty of Nations*. New York: Norton.

LLACH, L. (2004): "The Wealth of the Provinces: Unequal Federalism, Economic Policy and Crisis in Argentina, 1880-1890", mimeo, Harvard University.

LINDERT, P., MILANOVIC, B. & WILLIAMSON, J. (2007): "Measuring Ancient Inequality", Policy Reseacrh. *The World Bank Development Research Group Poverty Team Working Paper Series 4412,*.

MADDISON, A. (2003): *The World Economy. Historical Statistics*. Paris, OECD.

MADDISON, A. (2001): *The Word Economy: A Millenial Perspective*. Development Centre Studies, Organization for Economic Cooperation and Development.

NORTH, D. C. (1958): "Ocean Freight Rates and Economic Development 1750-1913", *Journal of Economic History* 18, December, 538-555.

NORTH, D.C., WALLIS, J.J. & WEINGAST, B.R. (2006): "A conceptual framework for interpreting recorded human history", *NBER WP* 12795.

NORTH, D.C., WEINGAST, B. & SUMMERHILL, W. (2000): "Order, Disorder and Economic Change. Latin America versus North America", in Bruce Bueno de Mesquita & Hilton L. Root (eds), *Governing for Prosperity*. New Haven, 17-58.

NUNES, N.F.M.(2003), "A experiência em Campos dos Goytacazes (1870-1889): Freqüência eleitoral e perfil da população votante". *DADOS - Revista de Ciências Sociais*, Rio de Janeiro, v. 46, n.2, p. 311-343.

O'ROURKE, K. H. & J. G. WILLIAMSON (1999): *Globalization and History*. Cambridge, Mass.: MIT Press.

PRADOS DE LA ESCOSURA, L. (2004): "Colonial Independence and Economic Backwardness in Latin America". *Universidad Carlos III Working Papers* 04-65.

PRADOS DE LA ESCOSURA, L. (2005): "Growth, inequality, and poverty in Latin America: historical evidence, controlled conjectures". *Economic History and Institutions Series* Working Paper 05-41(04), Dpto. de Historia Económica e Instituciones, Universidad Carlos III, Madrid.

PRADOS DE LA ESCOSURA, L. (2007a): "Lost Decades? Independence and Latin America's Falling Behind, 1820-1870". *Economic History and Institutions Series* WP 07-18, Dpto. de Historia Económica e Instituciones, Universidad Carlos III, Madrid.

PRADOS DE LA ESCOSURA, L. (2007b): "When Did Latin America Fall Behind?". In Edwards, S., Esquivel, G. and Marquez, G. (eds), *The Decline of Latin American Economies. Growth, Institutions and Crisis.* The University of Chicago Press.

PREBISCH, R. (1950): "The Economic Development of Latin America and its Principal Problems", New York.

REIS, E.J. (2008): A renda per capita dos municipios brasileiros circa 1872. Unpublished manuscript.

ROBINSON, J. (2006): "El equilibrio de América Latina". En Fukuyama, F., *La brecha entre América Latina y Estados Unidos*. Buenos Aires.

RODRÍGUEZ WEBER, J. (2007): "Una aproximación a la distribución del ingreso en Chile para el período 1860-1930, en perspectiva comparada", *1er Congreso Latinoamericano de Historia Económica y 4as Jornadas Uruguayas de Historia Económica*, Montevideo, Uruguay.

SOKOLOFF, K. & ENGERMAN, S. L. (2000): "Institutions, Factor Endowments, and Paths of Development in the New World". *Journal of Economic Perspectives*, 14, 3: 217-32.

STEIN, S.J. and STEIN, B.H. (1970): *The Colonial Heritage of Latin America. Essays on Economic Dependence in Perspective*. New York: Oxford University Press.

STEMMER, J. E. O. (1989): "Freight Rates in the Trade between Europe and South America". *Journal of Latin American Studies* 21, pt. 1, February, 22-59.

SUNKEL, O. (ed.) (1991): *El desarrollo desde dentro. Un enfoque neoestructuralista para la América Latina*. Lecturas de El Trimestre Económico, Nº 71, México.

SUNKEL, O. y PAZ, P. (1982): *El Subdesarrollo Latinoamericano y la Teoría del Desarrollo*, (16ª). México.

WILLEBALD, H. (2007): "Distribution, Specialization and Economic Performance in Settler Societies, 1870-2000". *1er Congreso Latinoamericano de Historia Económica y 4as Jornadas Uruguayas de Historia Económica*, Montevideo, Uruguay.

WILLEBALD, H. (2006): "Distribución y especialización productivo-comercial: Uruguay y las economías templadas de nuevo asentamiento, 1870-2000". Programa de Historia Económica y Social, Facultad de Ciencias Sociales, Universidad de la República, Uruguay, Tesis de Maestría en Historia Económica, diciembre, mimeo.

WILLIAMSON, J.G. (1995): "The Evolution of Global Markets since 1830: Background Evidence and Hypotheses". *Explorations in Economic History* 32: 141-96.

WILLIAMSON, J.G. (1999): "Real Wage Inequality and Globalization in Latin America before 1940". *Revista de Historia Económica* XVII (special issue): 101-142.

WILLIAMSON, J.G. (2002): "Land, Labor, and Globalization in the Third World, 1870–1940". *Journal of Economic History* 62, 1: 55-85.

WORLD BANK (2003): "Historical Roots of Inequality in Latin America", in *Inequality in Latin America and the Caribbean: Breaking with History*, Chapter 4.

Graph 1. NEW SETTLEMENT ECONOMIES: WAGE/RENTAL RATIO 1911=100

Source: Williamson (2000, 2001); Willebald (2007).

Graph 2. TERMS OF TRADE
1870-1940, 1900=100

Source: Williamson (2001).

Graph 3: ARGENTINA AND URUGUAY: RENTAL/WAGE
RATIO AND TERMS OF TRADE
1911=100

Source: Williamson (2000, 2001); Willebald (2007).
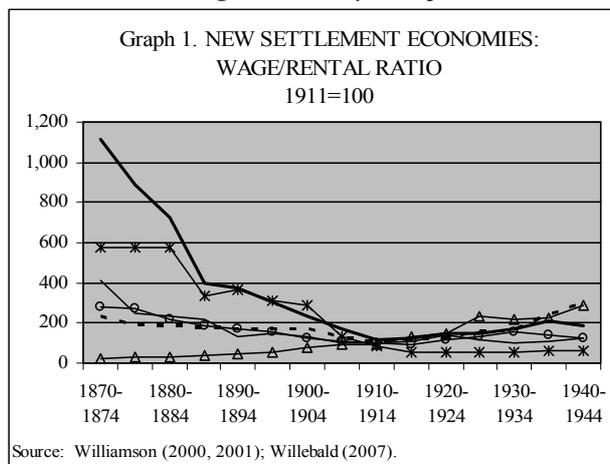
Figure1. The Inequality Frontier Curve

Ancient Inequalities: Estimated Gini Coefficients,
and Two Inequality Possibility Frontiers

Note: The solid line IPF is constructed on the assumption that s=$PPP400; the broken-line IPF is constructed on the assumption that s=$PPP 300. Estimated Ginis are Ginis2 unless only Gini1 is available.

Source: Lindert, Milanovic & Williamson (2007).
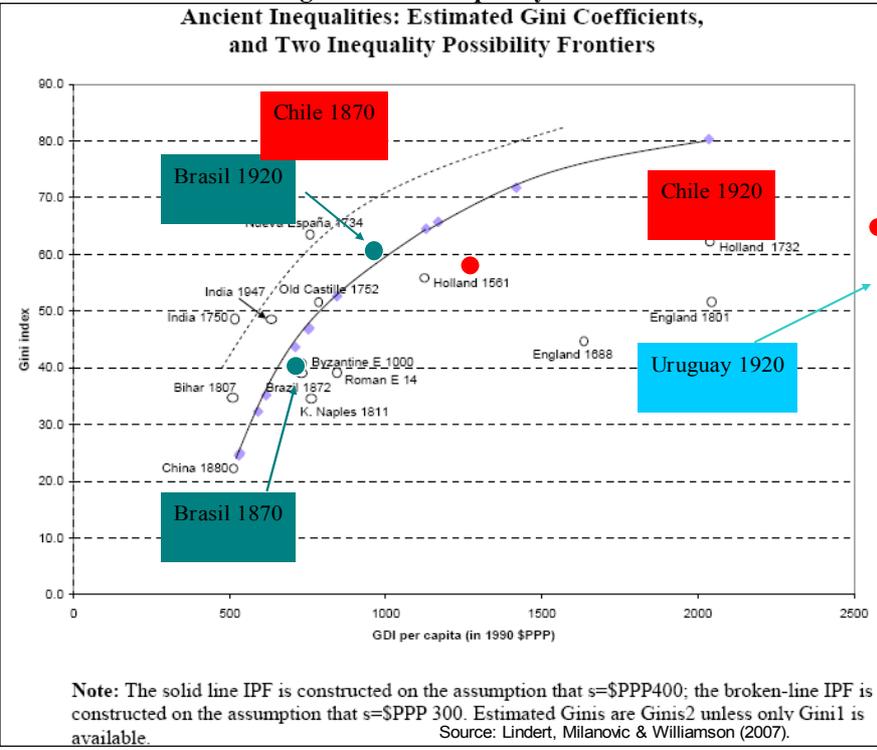
Figure 2. Productivity gaps and transport costs

Productivity Gap South/North

New exports from the South

New exports from the North

Actual productivity gap (g)

$A(z)/g$

$A(z)$

$A(z)g$

Sectors arranged according to decreasing comparative advantage

z

Exports of the South   No tradable   Exports of the North

z^a z^b
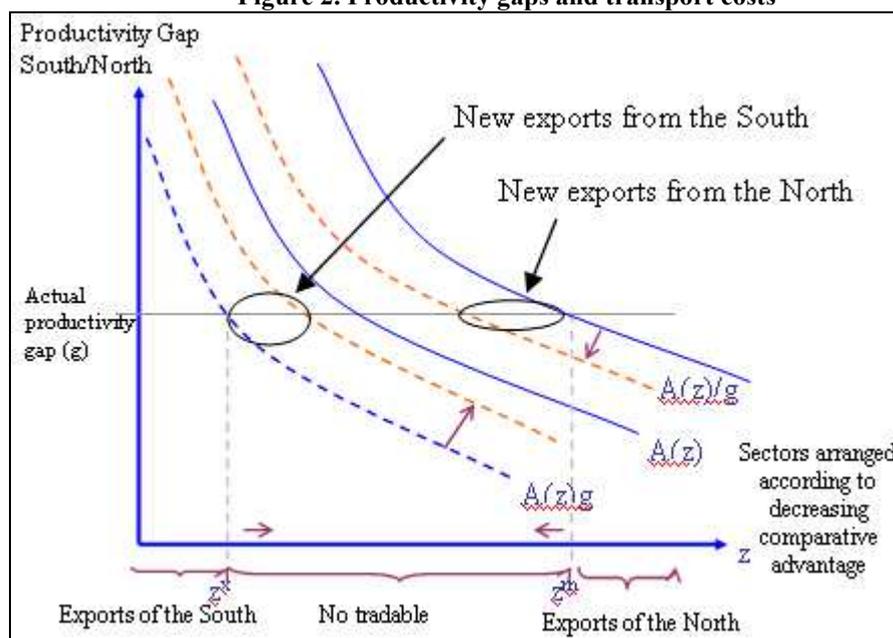
Source: Inspired by BALDWIN (2006), Figure 3, p. 17

Table 1. Population, GDP and Per capita GDP Growth of the Southern Cone, USA, Western Europe and the World, 1870 and 1920.

		Argentina	Brazil	Chile	Uruguay	**SC**	USA	W. Europe 12	World
Population (1000)	1870	1796	9797	1945	343	**13881**	40241	162386	**1271915**
	1920	8861	27404	3723	1371	**41359**	106881	223731	**1791323**
	1970	23962	95684	9369	2824	**131839**	205052	295723	**3685058**
	2000	37498	175553	15153	3324	**231528**	282339	324197	**6071144**
annual growth rate	1870-1920	3.2	2.1	1.3	2.8	**2.2**	2.0	0.6	**0.7**
	1920-1970	2.0	2.5	1.9	1.5	**2.3**	1.3	0.6	**1.5**
	1970-2000	1.5	2.0	1.6	0.5	**1.9**	1.1	0.3	**1.7**
	1870-2000	2.4	2.2	1.6	1.8	**2.2**	1.5	0.5	**1.2**
GDP	1870	2354	6985	2509	748	**12596**	98374	339103	**1112655**
(1990 Geary-Khamis dollars)	1920	30775	26393	10305	3666	**71139**	593438	739408	**2732131**
	1970	183458	322159	53400	14498	**573515**	3178106	3240769	**13768791**
	2000	320364	975444	156245	26203	**1478256**	8019378	6420997	**36501872**
annual growth rate	1870-1920	5.3	2.7	2.9	3.2	**3.5**	3.7	1.6	**1.8**
	1920-1970	3.6	5.1	3.3	2.8	**4.3**	3.4	3.0	**3.3**
	1970-2000	1.9	3.8	3.6	2.0	**3.2**	3.1	2.3	**3.3**
	1870-2000	3.9	3.9	3.2	2.8	**3.7**	3.4	2.3	**2.7**
Per capita GDP	1870	1311	713	1290	2181	**907**	2445	2088	**875**
(1990 Geary-Khamis dollars)	1920	3473	963	2768	2674	**1720**	5552	3305	**1525**
	1970	7302	3057	5231	5184	**4350**	15030	10959	**3736**
	2000	8544	5556	10311	7883	**6385**	28403	19806	**6012**
annual growth rate	1870-1920	2.0	0.6	1.5	0.4	**1.3**	1.7	0.9	**1.1**
	1920-1970	1.5	2.3	1.3	1.3	**1.9**	2.0	2.4	**1.8**
	1970-2000	0.5	2.0	2.3	1.4	**1.3**	2.1	2.0	**1.6**
	1870-2000	1.5	1.6	1.6	1.0	**1.5**	1.9	1.7	**1.5**

Maddison, A. (2003).
World: 1913 instead of 1920.

Table 2. The distribution of population and income among the SC countries, 1870 and 1920.

		Pop share	Mean Income*	Rel.mean	Income Share	log(mean)
1870	Ar	0.13	1311	1.44	0.19	7.18
	Br	0.71	713	0.79	0.55	6.57
	Ch	0.14	1290	1.42	0.20	7.16
	Uy	0.02	2181	2.40	0.06	7.69
1920	Ar	0.21	3473	2.02	0.43	8.15
	Br	0.66	963	0.56	0.37	6.87
	Ch	0.09	2768	1.61	0.14	7.93
	Uy	0.03	2674	1.55	0.05	7.89
1970	Ar	0.18	7660	1.76	0.32	8.94
	Br	0.73	3370	0.77	0.56	8.12
	Ch	0.07	5700	1.31	0.09	8.65
	Uy	0.02	5130	1.18	0.03	8.54
2000	Ar	0.16	8540	1.34	0.22	9.05
	Br	0.76	5560	0.87	0.66	8.62
	Ch	0.07	10300	1.61	0.11	9.24
	Uy	0.01	7880	1.23	0.02	8.97

* 1990 Geary-Khamis intenational dollars.

Table 3. Distribution measures for the Southern Cone, 1870 and 1920.

With increasing inequality in Argentina and Uruguay

	p90/p10	p90/p50	p10/p50	p75/p25
1870	24,63	6,83	0,28	5,32
1920	36,52	6,32	0,17	5,86
1970	32,12	5,31	0,17	6,14
2000	28,83	6,96	0,24	5,42

	GE(0)	GE(1)	Gini
1870	0,639	0,594	0,575
1920	0,897	0,821	0,653
1970	0,689	0,559	0,569
2000	0,670	0,590	0,576

With unchanged inequality in Argentina and Uruguay

	p90/p10	p90/p50	p10/p50	p75/p25
1870	24,63	6,83	0,28	5,32
1920	36,52	6,32	0,17	5,86

	GE(0)	GE(1)	Gini
1870	0,670	0,637	0,588
1920	0,897	0,821	0,653

Table 4: Inequality indices of the SC, 1870, 1920, 1970 and 2000.

	Country indices			Within-country		Between-country	
	GE(0)	GE(1)	Gini	GE(0)	GE(1)	GE(0)	GE(1)
1870				0,587	0,537	0,052	0,057
Ar	0,513	0,477	0,522				
Br	0,581	0,534	0,548				
Ch	0,715	0,643	0,594				
Uy	0,421	0,397	0,481				
1920				0,721	0,640	0,176	0,180
Ar	0,654	0,595	0,574				
Br	0,725	0,651	0,597				
Ch	0,886	0,776	0,641				
Uy	0,618	0,565	0,562				
1970				0,629	0,493	0,060	0,066
Ar	0,215	0,208	0,357				
Br	0,763	0,681	0,608				
Ch	0,438	0,411	0,489				
Uy	0,221	0,214	0,362				
2000				0,646	0,564	0,024	0,026
Ar	0,395	0,373	0,468				
Br	0,713	0,642	0,593				
Ch	0,558	0,514	0,539				
Uy	0,312	0,298	0,422				

Table 5. Brazilian inequality, 1872 and 1920.

	Pop. Share		Income Share		Mean Income		Relative mean	
	1872	1920	1872	1920	1872	1920	1872	1920
Center -West	3,3	2,7	4,9	3,1	291	3179	1,46	1,20
North	48,0	5,3	35,1	4,2	145	2084	0,73	0,79
North-East	2,6	37,4	1,7	25,7	128	1817	0,65	0,68
South	8,1	11,2	11,8	16,3	290	3824	1,46	1,44
South-East	38,0	43,4	46,5	50,7	243	3092	1,22	1,16

region	GE(0)	GE(1)	Gini
1872			
Center -West	0,346	0,523	0,443
North	0,351	0,433	0,460
North-East	0,627	0,751	0,597
South	0,418	0,521	0,495
South-East	0,745	1,546	0,640
1920			
Center -West	0,701	1,067	0,624
North	0,516	0,808	0,545
North-East	0,637	1,027	0,595
South	0,627	0,958	0,595
South-East	0,617	0,891	0,593
Within-region			
1872	0,513	0,971	
1920	0,623	0,939	
Between-region			
1872	0,041	0,040	
1920	0,039	0,038	

Source: Bértola, Castelnovo & Willebald (2009)

Appendix Table 1. Per capita GDP by deciles in the Southern Cone countries, 1870 and 1920 (1990 Geary-Khamis dollars).

Country	1870		1920	
	Nber	Income	Nber	Income
Argentina	179600	237	886100	248
Argentina	179600	405	886100	523
Argentina	179600	545	886100	799
Argentina	179600	689	886100	1121
Argentina	179600	852	886100	1519
Argentina	179600	1045	886100	2039
Argentina	179600	1292	886100	2767
Argentina	179600	1638	886100	3893
Argentina	179600	2213	886100	6012
Argentina	179600	4189	886100	15811
Brazil	979700	61	2740400	58
Brazil	979700	124	2740400	126
Brazil	979700	185	2740400	198
Brazil	979700	255	2740400	282
Brazil	979700	339	2740400	389
Brazil	979700	448	2740400	530
Brazil	979700	597	2740400	730
Brazil	979700	824	2740400	1046
Brazil	979700	1240	2740400	1653
Brazil	979700	3056	2740400	4619
Chile	194457	79	372260	114
Chile	194457	173	372260	269
Chile	194457	269	372260	440
Chile	194457	383	372260	652
Chile	194457	526	372260	929
Chile	194457	716	372260	1308
Chile	194457	985	372260	1866
Chile	194457	1408	372260	2778
Chile	194457	2218	372260	4612
Chile	194457	6145	372260	14715
Uruguay	34300	556	137100	209
Uruguay	34300	869	137100	432
Uruguay	34300	1109	137100	653
Uruguay	34300	1347	137100	907
Uruguay	34300	1604	137100	1219
Uruguay	34300	1898	137100	1623
Uruguay	34300	2261	137100	2183
Uruguay	34300	2748	137100	3043
Uruguay	34300	3520	137100	4643
Uruguay	34300	5895	137100	11828

Appendix Table 2: Estimated Gini-coefficients and the Inequality Possibility Frontier for the Southern Cone countries, 1870 and 1920.

Panel A: elite as 0,1% of the population and subsistence income at 400PPP$.

		%G-real/IPF	G-real	IPF	α	ε		mean 1990PPP$ μ	Maddison 1990PPP$ s
Argentina	1872	0,75	0,52	0,69	3,28	0,1%		1311	400
	1920	0,65	0,57	0,88	8,68	0,1%		3473	400
Brasil	1872	1,27	0,56	0,44	1,80	0,1%		721	400
	1920	1,02	0,60	0,58	2,41	0,1%		963	400
Chile	1870	0,86	0,59	0,69	3,23	0,1%		1290	400
	1920	0,75	0,64	0,85	6,92	0,1%		2768	400
Uruguay	1872	0,59	0,48	0,82	5,45	0,1%		2181	400
	1920	0,66	0,56	0,85	6,68	0,1%		2674	400
Averages									
	1872	0,87							
	1920	0,77							
total		0,82							

Panel B: own subsistence levels estimates (acerage of the lowest decile).

		%G-real/IPF	G-real	IPF	α	ε		mean 1990PPP$ μ	Own estimates 1990PPP$ s
Argentina	1872	0,68	0,52	0,77	5,52	0,1%		1311	300
	1920	0,62	0,57	0,93	14,03	0,1%		3473	248
Brasil	1872	0,62	0,56	0,91	4,71	0,1%		721	61
	1920	0,64	0,60	0,94	16,65	0,1%		963	58
Chile	1870	0,63	0,59	0,94	16,27	0,1%		1290	79
	1920	0,67	0,64	0,96	24,29	0,1%		2768	114
Uruguay	1872	0,65	0,48	0,74	3,92	0,1%		2181	556
	1920	0,61	0,56	0,92	12,82	0,1%		2674	209
Averages									
	1872	0,64							
	1920	0,63							
total		0,64							

Panel C: own estimates at courrent prices of subsistence and mean income.

		%G-real/IPF	G-real	IPF	α	ε		mean μ	subsistence real current values, domestic currency s
Brasil	**1872**	**0,83**	**0,56**	**0,68**	**4,71**	**0,1%**		**198**	**64**
	1920	**0,76**	**0,62**	**0,81**	**16,65**	**0,1%**		**2649**	**489**
Chile	**1870**	**0,89**	**0,59**	**0,67**	**16,27**	**0,1%**		**145**	**48**
	1920	**0,88**	**0,64**	**0,73**	**24,29**	**0,1%**		**2033**	**550**