

SOUTHERN CONE REAL WAGES COMPARED: A PURCHASING POWER  
PARITY APPROACH TO CONVERGENCE AND DIVERGENCE TRENDS,  
1870 - 1996

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**Unidad Multidisciplinaria - Programa de Población  
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***Southern Cone Real Wages Compared: a Purchasing Power Parity Approach to Convergence and Divergence Trends, 1870-1996.***

**Bértola, L.♦, Calicchio, L.♦, Camou, M. ♦, Porcile, G.♦**

***Introduction***

This paper extends to the field of real wages the discussion presented in another recent paper concerning convergence and divergence trends between the *per capita* GDP of some Latin American countries and that of a group of developed countries.<sup>1</sup>

The first section summarises our approach to the discussion on convergence and divergence trends. The second section presents recent research concerning convergence and divergence trends in international real wages, specially the contributions made by Jeffrey Williamson. The third section examines new evidence on real wages and benchmarks estimates for Argentina and Uruguay for the period 1870-1996 and discusses the results of introducing our estimates for the Latin American countries in the Williamson data set. Section four searches for explanations of the presented evidence. Our conclusions are summarised in a final section.

***1. An approach to different convergence and divergence regimes***

The debate on the international convergence and divergence of levels and growth rates of output and income has been reinvigorated in recent years by new theoretical developments in the theory of economic growth and international trade.<sup>2</sup> These developments have focused on the conditions that stimulate the process of technological catching-up and the increase in international competitiveness. First, it has been observed that countries differ widely in terms of their ability to learn from and improve on foreign technology,<sup>3</sup> which, in turn, depends on the features of the technological paradigm and on the institutional framework shaping investment decisions in technology.<sup>4</sup> Secondly, differences in growth rates may as well arise from different patterns of international specialisation. These patterns affect the expansion of domestic and external markets<sup>5</sup> and if a country is to achieve higher rates of economic growth, it should be able to successfully compete in fast-growing markets and sectors. Finally, path-dependency and lock-in effects can have a large impact on growth.<sup>6</sup> Structural and institutional change at a certain moment may create a bifurcation of the growth trajectory, contributing to the diversity of patterns of convergence and divergence that can be found in the international economy.<sup>7</sup>

Our basic argument is that for each country and at different historical periods, the combination and interaction of technological learning on one hand, and structural as well as institutional change on the other, define specific scenarios of convergence and divergence of laggard in relation to advanced countries.

Convergence and divergence in Argentina, Brazil and Uruguay occurred in different historical scenarios resulting from different combinations of technological spill-overs and learning, openness, specialisation and institutional arrangements at the domestic and international levels. Each specific configuration of these variables defined a regime of convergence or divergence. A sample of regimes

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<sup>1</sup> Bértola, L. & Porcile, G., "Argentina, Brazil, Uruguay and the World Economy: an approach to different convergence and divergence regimes".

<sup>2</sup> Cf. Nelson, R., "What Has Been the Matter With Neoclassical Growth Theory?".

<sup>3</sup> Abramovitz, M., "Catching Up, Forging Ahead and Falling Behind".

<sup>4</sup> Nelson, R., "Economic Growth via the Co-Evolution of Technology and Institutions".

<sup>5</sup> Cimoli, M., "Technological Gaps and Institutional Asymmetries in a North-South Model With a Continuum of Goods"; McCombie, J.S. & Thirlwall, A.P., *Economic Growth and the Balance of Payments Constraint*, Chap.3.

<sup>6</sup> Arthur, W.B., *Increasing Returns and Path-Dependency in the Economy*, Chap.1.

<sup>7</sup> Verspagen, B., *Uneven Growth Between Interdependent Economies*.

of convergence and divergence based on our empirical research on Argentina, Brazil and Uruguay and theoretically founded in the referred theories follows below.

### Convergence regimes

1. The first regime is the case in which a country achieved a dynamic insertion in the golden era of classic liberalism. Income convergence with structural divergence with the leaders occurred based on the specialisation in goods facing high income elasticity of demand in a context characterised by a liberal international regime and fast growing international trade. Competitive advantages were related to the relative abundance and relative prices of the production factors. This was the case of Argentina and Uruguay in 1870-1913. Not only did Argentina converge in this period but she also forged ahead in relation to the European countries, producing a trajectory which resembled (with less intensity) the successful experience of the United States.
2. The second convergence regime was characterised by structural convergence with the leaders, based on technological diffusion in sectors of mature, standardised technology. Industrial production in this regime was aimed principally at the domestic market as the international economy featured slow growth and fragmentation and/or the country faced a low WGDG elasticity of demand for her exports. This was the case of Brazil in 1930-1950 and Uruguay in 1943-1954. Structural transformation towards industrial production was in turn stimulated by significant changes in the institutional setting favouring the expansion of domestic demand, the management of external trade and the facilitation of credits for industrial investment.
3. A third convergence regime was defined by structural convergence with the leaders, based on a process of industrial learning and catching-up in the new metal-mechanical and chemical industries implanted in the late fifties. Structural transformation in the “developmentalist” period irreversible changed the growth trajectory of Argentina and Brazil and initiated a path of incremental, cumulative industrial learning. Although the domestic market remained the principal outlet for industrial production, a continuous process of export diversification occurred, especially with respect to South markets (South-South trade). This regime emerged in a period in which international trade grew at very high rates (1960-1973) or in which international financing expanded compensating the loss of dynamism of international trade (1973-78). The only ABU country which displayed such a pattern of convergence was Brazil. At least in part the Brazilian relative success in achieving convergence in the post WWII period seems to have been related to industrial policies which enhanced structural change, allowing for structural convergence with the core countries.

### Divergence regimes

1. A first pattern of divergence was defined by income and structural divergence with the leaders, associated to: low WGDG elasticity of demand for exports due to demand changes or to the limits to improve production (no more land to win or sharply decreasing returns); strong domestic heterogeneity (competitive export sector and a large low productivity domestic sector); institutional mismatch, in spite of the stimulus provided by high rates of growth of international trade (slavery and its abolition). This was the pattern exhibited by Brazil in the 1870-1900 period, when this country persistently fell behind the leaders and also behind Argentina and Uruguay.
2. A second pattern combined structural convergence and income divergence. There existed structural convergence but it was unable to prevent income divergence. This was the case of Argentina in 1912-1955 and Uruguay in 1912-1944. Serious problems of international competitiveness (both in price and quality) remained in place, as reflected in the low income elasticity of the demand for exports.
3. The last divergence regime was defined by structural and income divergence. Structural change gave rise to industrial structures increasingly asymmetric with respect to the leaders. This was characterised by de-industrialisation, export reorientation towards industrial commodities, deteriorating quality competitiveness and a rising import coefficient sustained by an increasing dependence on financial capital inflows. This trend seems to have been present, with some discontinuities and varying intensity, in Argentina since 1985, Uruguay since 1978 and Brazil since 1990.

This diversity of the growth trajectories challenges the usual assumption found in the literature about a clear-cut relationship among convergence, trade openness and the international context. Our results, nevertheless, are consistent with a broader theoretical perspective on the various forces shaping technological learning, catching-up and specialisation patterns.

## **2. Recent research on convergence of real wages**

### **2.1 The main contributions**

Until recently, the debate concerning convergence and divergence in the world economy had been mainly focused on GDP and GDP related productivity estimates, based primarily on the data collected by Maddison.

According to Williamson, there are at least four reasons to concentrate on factor prices, specially wages, rather on "that statistical artifact known as GDP per capita", in order to properly tackle convergence processes:

- the pre-WWI real wage data are of far better quality than the GDP data;
- income distribution matters, wage rates combined with other factor prices offer a window to look at distribution issues, while by averaging all incomes, GDP estimates throw away valuable information;
- factor price movements are helpful to understand the sources of convergence or divergence;
- economic change nearly always involves winners and losers, and that can be approached by examining the behaviour of factor prices.<sup>8</sup>

Williamson's central idea was that the creation of global labour markets and "the venerable factor price equalisation theorem", had been absent in the convergence/divergence debate, which had been extremely centred on international technology transfers as the engine of growth and convergence:

"...there has been significant variance in the rate of convergence since the mid-19<sup>th</sup> century, so much so that it suggests that the world economic environment mattered a great deal, and that different explanations may be more relevant for some epochs than for others. I don't mean by this that a "general theory" of convergence is out of reach, but only that the forces driving convergence (or divergence) are likely to have had very different quantitative significance within different epochs."

"In the late 19<sup>th</sup> Century it appears that commodity price convergence –generated by transport improvements – made a profound contribution to real wage convergence. And exactly how did experience in each of these three markets – labour, capital and commodities – interact? It seems to me that economic historians should attack these issues first, before elevating international technological transfer to the status of prime mover, a thesis so ably argued by Gerschenkron that it has dominated the convergence debate ever since."

Based on the variation coefficient of an unweighted sample of real wages for 15 countries (mainly OECD countries plus Argentina), Williamson drew the following conclusions:

- Convergence in real wages took place during the period 1870-1980, although convergence started earlier, already in the 1840s, which is not to be expected according to his theoretical points of departure.
- In 1870-1913 convergence in real wages was much more significant than convergence in *per capita* GDP.
- Convergence in 1870-1913 was more intensive than from 1950 onwards.
- Convergence in the pre-1913 period showed two phases: abrupt until 1900 and stable afterwards.
- Convergence in 1840-1913 was due to narrowed gaps between the New and the Old World, while differences within Europe remained high.
- In the inter-war period divergence reversed the achievements of the earlier period.
- In the post-war period convergence comprised all countries.

In a recent trilogy, Williamson concentrates on real wages convergence and divergence trends in peripheral regions: Asia, the Mediterranean Basin and Latin America.<sup>9</sup>

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<sup>8</sup> Williamson, J., "Real Wages and Relative Factor Prices in the Third World 1820-1940: The Mediterranean Basin". See also Williamson, J., "The Evolution of Global Labor Markets Since 1830".

<sup>9</sup> Williamson, J., "Real Wages and Relative Factor Prices in the Third World 1820-1940: The Mediterranean Basin", "...: Latin America" and "...Asia"

His central message concerning the Mediterranean Basin is that the core-periphery gap in Europe was not product of the late 19<sup>th</sup> century globalisation surge. Instead, it was the result of two events: 17<sup>th</sup> and 18<sup>th</sup> century pre-industrial economic success while the European periphery stagnated; and Britain's industrial revolutionary gains up to the mid 19<sup>th</sup> century which the others were slow to copy. In short, a good share of the core-periphery gap in Europe was more than the simple product of some uneven timing of industrial revolutions or of some inability to exploit the First Great Globalisation Boom. Rather, pre-industrial events between 1500 and 1800 mattered just as much.<sup>10</sup> On the contrary, the evidence suggests that all of the core-periphery gap between Europe and Asia was the result of the timing and location of industrial revolutions and the inability of Asia to exploit the globalisation boom after the mid 19<sup>th</sup> century. Asia pose some problems: while the wage-rental ratios in Japan and Ponjab India seem to move in the direction predicted by the Heckscher -Ohlin theorem, the real wage-per capita GDP ratios show an unexpected deterioration, which Williamson interprets as possibly depending on increased inequality along the Lewis dual economy model: "We have found an important Asian stylized fact. Real wages lagged behind GDP per capita growth everywhere in Asia up to the World War I decade (with the exception of China). Real wages outstripped GDP per capita growth thereafter. We interpret these trends as a proxy for rising inequality during the First Great Globalization Boom and falling inequality during the interwar years."<sup>11</sup>

With respect to Latin America, Williamson found some stylised facts: convergence with leading countries did not take place, excepting for the case of Argentina prior to 1913; convergence really occurred within the region, but the real wage hierarchy of the early 20<sup>th</sup> century has not been altered; there is no clear evidence that countries with faster population growth due to higher immigration rates lost relative positions within Latin America prior to 1914; the wage-rental ratio trends showed a downward trend in land abundant countries, while the opposite was true for the European emigration countries.

"Relative to the world leaders, better growth performance in Latin America prior to the 1920s than afterwards seems to be highly correlated with an open policy on one side of that divide and a closed policy on the other. But any agenda whose goal is to isolate the role of policy in accounting for the different growth experience on either side of 1914 needs to control for everything else that might matter: demography, bad luck in world factor and commodity markets, the tyranny of distance and other forces."<sup>12</sup>

In another recent work Williamson seems to have matured the idea that convergence and divergence in the world economy are not simple processes that can be tackled with simple theories: "...life is far too complex to expect unconditional convergence to be documented by their (Abramovitz', Barro's and Sach's, our comment) growth equations. The fact that poor countries do not always grow faster than rich countries does not necessarily imply a rejection of catching up. After all, powerful catching-up forces may be hidden by equally powerful, offsetting forces. Indeed, when the growth equation is properly conditioned, it seems that the process of catching up are *always* confirmed. But unambiguous convergence appears only when the growth equation with initial income is augmented to include globalization, public policy, institutional quality, schooling, natural resource endowment, and economic geography".<sup>13</sup> In this latter work, the effects of the demographic transition on growth are studied, specially taking into consideration the impact of the age structure of population on the active-dependent population ratio. The conclusion is that demography matters if demographic shocks are big, mostly exogenous with respect to growth itself, and if they translate into changes in the age distribution. That was, according to Williamson, the case of the 19<sup>th</sup> century, when differences in demographic regime accounts for a large share of the differences in GDP per capita growth performance within the countries of the Atlantic economy.<sup>14</sup>

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<sup>10</sup> Williamson, J., "Real Wages and Relative Factor Prices in the Third World 1820-1940: Asia", p. 17.

<sup>11</sup> Williamson, J., "Real Wages and Relative Factor Prices in the Third World 1820-1940: Asia", p. 24.

<sup>12</sup> Williamson, J., "Real Wages and Relative Factor Prices in the Third World 1820-1940: Latin America", p.17.

<sup>13</sup> Williamson, J., "Growth, Distribution and Demography: Some Lessons from History", p. 241-242.

<sup>14</sup> Williamson, J., "Growth, Distribution and Demography: Some Lessons from History", p. 259.

## 2.2. Some critical comments

Without any doubt, Williamson is making great contributions to the understanding of the forces underlying economic development and relative growth rates, and the data base he has been constructing really opens a very wide field of research.

Our emphasis, as defined in the introduction, differs from his in some points.

In the 1995 paper quoted above, it was clearly stated that the role of the Heckscher -Ohlin model was much more decisive than to the role of technology transfers in order to explain convergence. In the same line, as it is done now, divergence was mainly explained by institutional failure (specially protectionism). However, technological change is intensively introduced in the latter papers, in order to explain the way in which “the tyranny of distance” was weakened through the transport revolution of the second half of the 19<sup>th</sup> century: a dramatic fall in freight prices and in the price spread of different products on both sides of the Atlantic economy. Moreover, globalisation is considered to be a process where the cost of trading decreases, and which can take place in spite of increasing protective barriers, a reason to say that globalisation does not necessary coincide with free trade. What is really astonishing is that technical change is only considered as long as it affects transatlantic trade, the market and transaction costs. Technical change is never considered as it affects prices of different products, nor the way it proceeds in different productive sectors and affects price formation in different markets.

From our point of view, convergence and divergence regimes are defined precisely as the interaction between different structures of production and demand, facing different dynamics of technical change and determined by several institutional factors. These institutional factors affect not only technical change but also the way its results are diffused by means of classical distributive forms or appropriated through collusive ones.

It is difficult to explain, using the Williamson approach, why the 1920s are a so decisive turning point, where institutional failure started to take place. Which were the forces driving to that sudden institutional change able to provoke a so significant slow down in relative economic performance? From our point of view, it seems that this institutional change, protectionism, was not so marked as it is shown, it was there when the divergence forces were already in action and it was more a result to be explained, than the factor explaining divergence. Many questions remain unanswered. Why did some Latin American economies converge in the late 19<sup>th</sup> century while other did not? Why did the Latin American economies converge with each other in the 20<sup>th</sup> century if the institutional failure did not promote trade, which is the convergent media par excellence?

It looks as if the increasing amount of offsetting forces introduced in the models are trying to vanish the steadily growing anomalies arising from the improved data bases in relation to the basic assertion that convergence and catching up always take place in open and free markets. From our point of view, as developed in the introduction, open and free markets may give place to convergence but they may also fuel a vicious cycle of increasing divergence.

This doesn't deny that many of these offsetting mechanisms really work and really matter. The task is to incorporate Williamson's findings and contributions into a different general approach. Let's see if we can make some progress in that direction.

## 3. The Southern Cone experience: in search for some stylised facts

### 3.1. What does the GDP per capita data tells?

During the period of reference, Brazil grew at a rate 20% higher than the Argentine and 70% higher than Uruguay. In spite of its impressive records, Brazilian *per capita* real income was in 1992 still 59% and 86% of that of Argentina and Uruguay, respectively.<sup>15</sup>

As shown in Graph 1, within ABU, and especially considering the relation between Argentina and Brazil, two different periods can be identified. Until 1913 a process of sharp divergence prevailed, in which Argentina increasingly left Brazil behind. From then until the late seventies there was a process of steady convergence that was gradually narrowing the gap.

In turn, the relations between the ABU countries and the core countries were clearly differentiated.

**Argentina** achieved a rapid process of catching up with the leaders forging ahead the European countries for more than three decades (1895-1929). Argentine relative growth lost momentum in the

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<sup>15</sup> Real per capita GDP (PPA dollars), to according *Human Development Report 1995*, p. 177.



first decade of this century. A constant and persistent decline started around 1913. By the end of the 1980s, this decline implied that the Argentine GDP *per capita* had fallen to less than 40% of that of the four most important countries of the Atlantic economy.

**Brazil** diverged from the core countries in the last decades of the nineteenth century, but started a process of slow convergence at the beginning of the twentieth century, which lasted until the late 1970s. In spite of this continuous process of convergence, Brazil hardly succeeded in raising its GDP as a percentage of the average of the four advanced countries considered. This percentage first decreased from 25% in 1870 to 12% in 1900, and subsequently increased to 32% in 1980 -a figure which was only moderately above the dismal levels of the nineteenth century-.

As Brazil, **Uruguay** diverged in 1873-1900, but it did so from GDP *per capita* levels which were similar to or even higher than those achieved by the sample of advanced countries. During the three first decades of the twentieth century, Uruguay kept pace with growth in the core. Thereafter, she followed, with minor differences, the same growth path as Argentina.

### 3.2. What does the real wage data tells?

#### 3.2.1. The data

Our data and methodology rely heavily on Williamson's contributions. However, we have made some alternative estimates.

With reference to **real wages** (Tables A1.1.-4), the Brazilian series is different for the period 1946 and on. We have tried to find series for the whole country instead of Sao Paulo and the Northeast separately, since our purpose is to compare it with the GDP growth for the whole country. The Argentine series is that of Williamson and our Uruguayan series is a slightly modified and extended to 1870 version of our own estimates reproduced in Williamson's latter paper.

With reference to the **benchmarks**, Williamson's estimates have a weak point. Purchasing power parity (PPP) benchmarks for 1913 and 1928 are a projection made by Astorga & FitzGerald<sup>16</sup> on the basis of "PPP" GDP estimates made by CEPAL for 1970.<sup>17</sup> In other words, the Argentine real wage for 1913 in relation to that of Great Britain is obtained projecting backwards the 1975 relative per capita income by both countries real GDP per capita series. While in Williamson's first attempt (that of 1995) Brazilian real wages were supposed to be similar to those of Argentina, in the latter paper the series is improved in a way which seems to be more realistic, but also with help of GDP per capita estimates of Brazil in relation to Argentina in 1913. Uruguayan wages were supposed to be similar to the Argentine in 1913. This weakness seems to be highlighted by his own argument that GDP is a "statistical artifact".

Our estimates shown in Tables A2.1-3 for Argentina and Uruguay, are not necessarily more reliable than Williamson's. Our merit is to have worked with consumer baskets which take into consideration basic consumer goods and housing. Our weak point is to have considered a relatively small consumer basket and the fact that some items are difficult to compare. With reference to Brazil, we have not yet succeeded in obtaining a reliable estimate.

Table 1 shows the differences obtained in benchmarks estimates.

**Table 1. Benchmarks estimates 1913 (GB=100)**

	Williamson	Own
Argentina 1913	93.7	77
GB 1913	100.0	100
Uruguay 1913	85.8	67

Sources: Williamson, J., "Real Wages and Relative Factor Prices in the Third World 1820-1940: Latin America", Appendix Table 7.2.; own, Table A3.1.

Another remarkable point is that according to the data used by Williamson and reproduced in our estimates, Brazilian wages in 1975 are higher than Argentine, which is difficult to accept. It may depend on the fact that the basis is the Sao Paulo region. Then, what we think we have to expect is some kind of convergence in wage rates by the 1980s.

<sup>16</sup> Astorga, V. & FitzGerald, V., "The Standard of Living in Latin America During the Twentieth Century".

<sup>17</sup> CEPAL, *Serie históricas del crecimiento de América Latina*.

### 3.2.2. The story

Graphs 2 and 3 show the relative real wage performance of Argentina and Uruguay. For 1870-1940 two alternative estimates are presented: one with and one without the USA, as it was also an immigration country.

- A first remarkable fact is the close relationship between Argentine and Uruguayan real wages. Divergence occurred only during limited periods of time: the 1870s, when the data is less reliable, and the second half of the 1890s. The sharp decline of Uruguayan real wages in the 1960s rises many doubts. Real wages actually fell, and they did it sharply. However, it seems that this fall is somewhat overestimated, which may be the result of measurement problems posed by the inflationary process which then occurred. A correction of the consumer price index may be a task for the future. If it shows to be so, the gap between Argentina and Uruguay in 1940-1970 may diminish or even disappear.
- A second and outstanding stylised fact is that it does not seem to exist a clear-cut relationship between openness, willingness to play globalisation games and convergence trends. In 1870-1900, while mass migration was supposed to equalise income levels in the direction of lowering wages in immigration countries and increasing them in emigration countries, Argentina converged in the opposite direction with leading countries. If the USA are left aside, Argentine real wages forged ahead. Moreover, in the 1930s, when institutional failure is supposed to increase, Argentine real wages lied above the level of the three European countries considered and above the levels achieved in the globalisation era. Of course, we have measurement problems. We are talking about purchasing power in terms of a basic consumer basket. Possibly, higher income levels and a more diversified consumption basket, may lead to changes in the real wage hierarchy through different relative prices in goods facing high income elasticity of demand. However, the USA may be used as a counter example: in the globalisation era real wages in the USA did not converge with those of the three considered European countries, if short run fluctuations are left aside: a similar wage premium prevailed through the period 1950-1913.
- A third outstanding stylised fact is the long run deteriorating trend in Argentina and Uruguay since the 1950s. This deteriorating trend in relative real wages was not reverted by liberalisation policies.
- A fourth remarkable fact is the slow but constant relative recovery of Brazil in 1950-1980. As it was stated, we have some doubts concerning the absolute level of Brazilian wages, which we think is overestimated as it mainly represents the Sao Paulo region. In any case, real wages grew without any doubt much faster than the Argentine and Uruguayan did. The gap with the leading countries is, nevertheless still very wide.

Let's see how these facts are related to per capita GDP performance.

### 3.3. "PPP" real wages and per capita GDP

Graphs 4-6 summarise our results in comparative terms. In the three countries and in almost all considered periods, trends in PPP real wages and per capita GDP are amazingly similar. Exceptions: Argentina 1900-1913, when wages did not grow as much as per capita GDP; Brazil in the late 1970s, when wages grew much more.

Two conclusions are worthy to be drawn:

- For each country, the GDP and wage series are build upon different sources. In a sense, both kind of series reinforce each other. That is specially stimulating in the case of the recent estimates of Argentine and Uruguayan series prior to 1930. In short, the validity of the series seems to be reinforced.
- Our conclusions concerning the long run dynamics of convergence and divergence presented earlier in this article, seem also to be reinforced. We find, as we did with reference to per capita GDP trends, different convergence and divergence regimes, difficult to be tackled using openness and willingness to play the globalisation game as the key variable:
  - **Argentina** showed a convergent cycle in 1870-1900 and a divergent one until 1920, both playing the globalisation game. Its long run divergent trend proceeded both in inward-looking environments and in periods of liberalisation.
  - **Brazil** seems to have made significant reductions of the gap in inward-looking environments and in more liberal regimes, while in liberal contexts a divergent trend is noticeable since the 1980s.

- In the case of **Uruguay**, divergence seems to have been a constant trend, if we consider the USA in the whole period. However, the period of extremely inward-looking growth was accompanied by a significant increase in relative real wages. On the other side, since the middle of the 1970s, in liberalising environments, real wage divergence was even more pronounced than per capita GDP divergence.

#### **4. Searching for explanations**

The growing set of empirical evidence has provided an increasing amount of anomalies, which traditional neo-classical convergence theory cannot tackle down. Thus, an increasing amount of factors are mobilised to explain why things look differently than they should.

As posed earlier, rather than focusing on searching for factors counteracting the factor price equalisation law, we will try to combine diverse elements, as patterns of specialisation, institutional arrangements affecting distribution in different factor markets and structural change.

However, we are not in a position to provide a well-articulated set of explanations of real wage convergence and divergence trends. What follows is an attempt to focus on different possible lines for future research trying to answer the following interrelated questions:

- a. What determines differences in absolute wage levels?
- b. How was the structure of income distribution across countries and how can these differences be explained?
- c. What determines movements in real wages?
- d. How did income distribution evolved and why?

#### **4.1. Patterns of specialisation, real wages and income distribution in the first globalisation boom**

##### 4.1.1. Wage levels and income distribution

Even if we could not provide a PPP estimate for Brazilian real wages, all sources point to the fact that Brazilian real wages were, by the turn of the century, much lower than Argentine and Uruguayan ones.

Geography and the commodity lottery were, without doubt, significant facts. Argentina and Uruguay were an extension of the European frontier, a fact so often remarked. Wool, meat, leather, wheat, were products incorporated in the basic consumption basket of the European population. As the transport revolution advanced, two contradictory price movements took place: the price spread on both sides of the Atlantic was reduced, and differences in production costs (transportation included) were increased in favour of peripheral regions.

Excepting for limited regions, the wide Brazilian territory was not suited for the production of that kind of goods, so dynamically demanded. Differences were huge also in relation to human resources, social structure and political settings. While Brazil was relatively more populated and its population was more spread in rural areas, Argentina and Uruguay were more scarcely populated. Besides, the Brazilian labour market was still at the end of the 19<sup>th</sup> Century facing the problems posed by the abolition of slavery. Argentina and Uruguay were countries where the labour market was formed early and where free labour dominated. With reference to the process of State building, both Argentina and Uruguay were more integrated than Brazil and the Argentine unitary model differed significantly from the more autarchycal federalist Brazilian way.<sup>18</sup>

On the light of the mentioned increasing differences in production costs, production expanded, immigration was attracted and wages were kept at levels similar to the more advanced European countries and much higher than those paid in the European periphery. However, the wage premium for workers in the advanced European countries was too small. As it was creatively and ably argued by Williamson, and as it is possible to conclude from Graphs 2a-c, the population which was attracted to the Southern Cone was that of countries with real wages significantly lower than those paid at the Southern Cone, i.e., Italy, Portugal and Spain. In other works different explanations were advanced for why Italians and Spaniards did not come in higher quantities to countries where wages were still higher: the USA and Canada.<sup>19</sup> However, a question which seems to be at least as interesting to

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<sup>18</sup> For a recent discussion, see Peres Costa, W., *Primary Export Economy and Patterns of State Building in Argentina and Brazil*.

<sup>19</sup> Hatton, T. & Williamson, J., "Latecomers to mass emigration: the Latin experience".

answer, is why wages in the Southern Cone were not as high as they were in North America, if at that time the globalisation game was played by Argentina and Uruguay as well.

Labour markets were segmented and of course rural workers were not always able to compete with immigrants in the urban economy. Nevertheless, it seems that the pattern of distribution of land-ownership and the extremely uneven income distribution in the rural areas, put a ceiling on real wages in Latin America.

One should not ignore the abundant literature concerned with the "oligarchic" pattern of land-ownership and development in Latin America. The reaction against the concentration of wealth in the era of globalisation, which often was met with dreams of autarchy, was nevertheless well grounded in the evidence of a structure of land-ownership which seems to have hampered development.

Furthermore, recent works on the field have shown that this pattern of land-ownership, and particularly the Argentine and the Brazilian, were not mainly a colonial heritage, but a set of power relations that consolidated in the second half of the 19<sup>th</sup> Century in close interaction with the integration to the emerging economic order.<sup>20</sup>

Adelman, in his comparison of the Canadian prairies and the Argentine *pampas*, concludes that the interrelation between property relation regimes and individual strategies produced unforeseeable consequences in the long run: "by buttressing property relations based on owner-occupation of the means of production, individuals undermined the financial stability of the regional economy of the prairies; and by enhancing the *estancia*-dominated pampas, individuals inhibited the development of technology or the forces of production."<sup>21</sup> With respect to the labour markets, in Canada the prevailing strategy was to settle down in own farmers. Thus, to sell their labour or hire themselves out as tenants would have postponed advancement. This strategy depleted the labour force reserve. On the contrary, labour supply to the Argentine labour market was more abundant and elastic.<sup>22</sup>

Tylecote stressed the role played by income distribution in the way in which the different technological styles were extended to peripheral regions of the world economy.<sup>23</sup> Tylecote and Lingärde points to income distribution and the related high education levels of the population as one of the main determinants of the more rapid way in which the steel and electricity technological style was diffused in the Scandinavian countries in relation to those of the Southern Cone. This fast transition was, in turn, the basis of the Nordic countries' success in joining the technological core later on.<sup>24</sup>

Thorp recently summarised the problem in precise terms. During the primary products based export-led growth period, free labour was scarce in Latin America. Immigration could not completely solve the problem. Nevertheless, scarcity did not led to fair structures of income distribution and to high income for labour. On the contrary, institutions repressing and controlling the labour force were strengthened. Labour supply increased by means of the expropriation of peasant land and by the introduction of different forms of forced work, thus lowering the wage levels.<sup>25</sup>

It is well known that the Argentine and Uruguayan case were featured by free labour to a much greater extent than other Latin American countries. However, it is hardly acceptable to talk about scarcity and to avoid the consideration of property distribution, at least since the period of intensive land fencing during the second half of the 19<sup>th</sup> Century.<sup>26</sup> Regarding the Argentine case, seasonal fluctuations were decisive in the formation of a labour market close linked to rural activities.

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<sup>20</sup> Osorio Silva, L. & Secreto, M.V., "Elements for a Comparative History of Private Occupation of Public Land in Argentina and Brazil".

<sup>21</sup> Adelman, J., *Frontier Development*, p. 260.

<sup>22</sup> Adelman, J., *Frontier Development*, p. 261.

<sup>23</sup> Tylecote, A., *The Long Wave in the World Economy*.

<sup>24</sup> Lingarde S. & Tylecote A., *Resource Rich Countries in a Comparative Perspective: Nordic Countries Versus Argentina, Uruguay and Brazil*

<sup>25</sup> Thorp, R., *Progreso, pobreza y exclusión: una historia económica de América Latina en el Siglo XX*, p. 6. See also Cardoso, C.F. & Pérez Brignoli, H., *Historia Económica de América Latina*, II, Bauer, A., "Rural Spanish America, 1870-1930" and Duncan, K. & Rutledge, I. (ed) *Land and Labour in Latin America*. See also Bulmer-Thomas, V., *Latin American Economic History since Independence*, Chapter 4.

<sup>26</sup> See, for example, Jacob, R., *Las consecuencias sociales del alhambramiento* and Barrán, J.P. and Nahum, B., "Uruguayan Rural History".

Flexibility, high spatial and sector mobility as well as weak qualification of the labour force were strong features of the Argentine labour market,<sup>27</sup> and highly probable, of the Uruguayan as well. Thus, the structure of land-ownership, the process of State building, the conformation of the different labour markets and patterns of income distribution, the interrelation between the productive structure, the patterns of technical change and the education level of population, are all explanatory elements whose impact in determining convergence and divergence trends have to be adequately tested.

#### 4.1.2. Real wage changes and changes in income distribution

The idea of a perfect international labour market is difficult to accept, and the very rich tradition of studies related both to the Keynesian tradition and to the Lewis model is difficult to disregard. While Keynes concentrated on institutional factors refraining a downward adjustment of nominal wages in industrial societies, Lewis concentrated on pre-industrial societies with a large labour market reservoir.<sup>28</sup> Lewis' argument was to some extent extended by Kindleberger to industrial societies, focusing on immigration, women labour force reserve and other sources of labour.<sup>29</sup> Similarly, Prebisch combined the Keynesian and a Lewis like approach, in order to show the differences in the labour markets of the centre and the periphery. While in the centre trade unions were strong enough to retain a share of the fruits of technical progress, in the periphery abundant labour and low levels of organisation of mainly agrarian workers, made wages to remain low being a component of the deteriorating trend of the terms of trade between primary products and manufactures.<sup>30</sup> Different from Lewis, Prebisch did not recommend an outward looking strategy based on cheap labour until the labour reservoir was absorbed. On the contrary, he considered this strategy to be perverse, in the sense that continued investment in sectors facing a low income elasticity of demand, would lead to an increasing production that only could be realised at lower prices, thus enhancing the terms of trade tramp and what we nowadays call real wage divergence.

An important point made by Prebisch and re-launched by more recent development theory, was that technical progress advanced at different rates in different sectors and that the way in which the gains from technical progress were distributed was also sector specific. While Reinert<sup>31</sup> has insisted in the distinction between classical and collusive forms of income distribution, other Neo-Schumpeterians and Post-Keynesians refers to price and quality competitiveness.<sup>32</sup>

Williamson argues that the Lewis model is not validated by the data, as real wages actually grew and were not inelastic to demand growth. One can agree with Williamson in the case of Argentina and Uruguay. However, the Brazilian development after the abolition of slavery is more controversial. What concerns Prebisch's approach to peripheral growth, it neither has to be interpreted as stagnationist in relation to GDP, nor as an iron law with reference to wages. It may be interpreted as a theory on divergence from GDP and real wage levels of leading countries under given circumstances, which does not exclude growth.

As posed by Bértola & Porcile, Prebisch's (as well as Harrod's, Seer's and Kaldor's) statements with reference to relative growth rates with balance of payments equilibrium as summarised by Thirlwall<sup>33</sup>, are consistent with different scenarios of relative growth, which can be summarised as follows:

- a) Convergence with increasing openness:  $\epsilon > \pi$  ;  $\pi > 1$ ;
- b) Convergence with decreasing openness:  $\epsilon > \pi$  ;  $\pi < 1$ ;
- c) Convergence and stable foreign trade coefficients:  $\epsilon > \pi$ ,  $\pi = 1$ ,

where  $\epsilon$  is the income elasticity of demand for exports and  $\pi$  is the income elasticity of demand for imports.<sup>34</sup>

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<sup>27</sup> Sábato, H., "La formación del mercado de trabajo en Buenos Aires, 1850-1880", p. 591.

<sup>28</sup> Lewis, W.A., "Economic Development with Unlimited Supplies of Labour".

<sup>29</sup> Kindleberger, C. P., *Europe's Post-war Growth: The Role of Labour Supply*.

<sup>30</sup> Prebisch, R., *The Economic Development of Latin America and its Principal Problems* and "Commercial Policy in the Underdeveloped Countries".

<sup>31</sup> Reinert, E.S., "Competitiveness and its Predecessors - a 500-year Cross-National Perspective".

<sup>32</sup> McCombie, J.S.L. & Thirlwall, A.P., *Economic Growth and the Balance of Payments Constraint*.

<sup>33</sup> Thirlwall, A.P., "Foreign Trade Elasticities in Centre-Periphery Models of Growth and Development".

<sup>34</sup> Bértola, L. & Porcile, G., "Argentina, Brazil, Uruguay and the World Economy: an approach to different convergence and divergence regimes", p. 6.

In early stages of growth, for example, increased openness may lead to convergence with leaders, if the income elasticity of demand for exports is sufficiently higher than income elasticity of demand for imports.

With reference to relative real wages, the model may be improved with new scenarios if different structures and dynamics of income distribution are introduced. As posed earlier, GDP growth may be linked to different structures of income distribution why convergence in per capita GDP may coexist with divergence in real wages.

With respect to the dynamics of income distribution, according to the Heckscher-Ohlin factor-price equalisation theorem, the globalisation game played in 1870-1913 implied that the wage-rental ratio should deteriorate in new countries relative to older European ones. Indeed, in labour scarce/land abundant countries, with originally high real wages, the globalisation game should lead to increasing land rents and deteriorating real wages. The opposite was expected to happen in emigration countries. Williamson shows how this relative price movement actually took place in Argentina<sup>35</sup> and we can add evidence for a longer period showing that such was also the case in Uruguay until 1913 (Graph 7). We have also introduced a comparison of wages to housing rents. The data is suggestive and provokes several reflections.

Trends in income distribution shown in Graph 7 are extremely powerful in favour of the land-owning classes. An important turning point is clearly noticeable in 1913-1929. From the evidence shown in Tables A2.1-3, we can obtain also an absolute idea of urban land rents in relation to European standards: while in 1913 Southern Cone PPP food prices were similar or slightly higher than Europeans, flat rents were five- or six-folded those of Europe. Mass-immigration created also a great pressure on urban housing, thus favouring urban land-owning classes relative to workers. The significant improvement in favour of wages in the post WWII period to levels which last until now, points to a very low initial wage-housing ratio.

These trends in income distribution, added to the initially uneven structure of income and land-ownership, could have contributed to the weakening dynamics shown by export-led growth. Interacting with the features of the productive structure and institutional settings affecting technical change, these aspects may have contributed to explain the weak response in later periods.

#### 4.2. Institutional failure or an exhausted world order? Some comments on the 1913 turning point

Neo-classical literature speaks about institutional failure in order to explain different phases of growth: institutional changes explain differences in economic performance. The period 1913-1945 is considered to be one of institutional failure. However, it is difficult to understand why just by 1913 this process took place.

Rather than considering the period 1913-1929 as part of the whole inter-war period, it seems more adequate to follow a similar line as that presented by Rosemary Thorp, when she stated that this period bridges the gap between the first major external shock of the 20<sup>th</sup> Century and the final breakdown of the export-led growth model that started by the 1870s.<sup>36</sup>

By 1913-1929 the effect of the transport revolution on relative price changes came to an end; world production of primary products increased more than demand growth, which created serious imbalances in the world economy, only partly blurred by WWI and by the fluent financial markets of the 1920s. The transport revolution had produced drastic changes in relative prices and in the relative productivity of land in different parts of the world if trade costs were included. However, trade *per se* creates once for all gains. What remains after that as an engine of growth is technical change and productivity growth, no matter in which phase of the production and distribution chains.

Graph 7 shows that in 1913-1929 land prices in Argentina and Uruguay stopped to increase relative to wages, which seems to reflect the decreasing profitability of cattle-breeding. This may, in turn, be related to the evolution of international prices and to the slower rate of growth of technical change in the agrarian sector. Recent estimates show how poor was the performance of the Uruguayan cattle-

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<sup>35</sup> Williamson, J., "Real Wages and Relative Factor Prices in the Third World 1820-1940: Latin America", Appendix Table 1.4.

<sup>36</sup> Thorp, R., "Latin America and the international economy from the First World War to the World Depression".

breeding sector in 1913-1929.<sup>37</sup> This poor performance is related to the incapacity to improve the feeding capacity of natural pastures and to the exhaustion of universal innovations.

With respect to wages, the constant growth of a wide range of urban activities, the increasing degrees of workers organisation, as well as the strengthen of political democracy, led to institutional arrangements which expressed a more worker friendly environment. That was specially the case in Uruguay

The trend in wage/land rents relations changed in the Uruguayan case somewhat earlier than in the Argentine. This possibly depended on the higher dynamics exhibited by the Argentine agrarian sector and by the more radical political environment in Uruguay.

It is worth to notice how urban rents remained at high relative levels until the 1940s, due to the expansion of the urban activities.

### 4.3. Patterns of specialisation, wages and income distribution since the 1930s

The development of the Latin American economies during the ISI period is an intensively discussed topic and many issues of controversy have arisen.

We want to make just a few comments to the evidence arising from the data we have worked with.

As pointed out before, the forces pushing towards divergence from the pace of growth of the industrialised countries were in action well before it was possible to speak about institutional failure in terms of industrialisation policies or reluctance to play the globalisation game. Moreover, industrialisation policies were not always well articulated and not always long sighted, but they were the result of the limits imposed to the primary products based export-led growth by: sluggish demand growth, slow productivity growth in the agrarian sector and an extremely complex set of institutional arrangements which affected Argentina's and Uruguay's share and prices in world markets. Structural change policies not only were confined to industry, but comprehended also the agrarian sector, the energy sector and, of course, welfare policies.

Industrialisation and structural change not always led to increased divergence. On the contrary, the Brazilian case is a clear one in which an important process of catching up was achieved. Uruguay, as well, succeeded in halting divergence trends in periods of strong state interventionism. With reference to real wages the Argentine and Uruguayan cases show that real wage performance in 1930-1960 was not disappointing in relation to 1913-1929. On the contrary, the Uruguayan case shows a significant improvement after WWII.

With respect to the income distribution proxies which we have been working with, 1930-1960(70) was a period in which wages grew faster than land incomes. This was specially the case of wage-housing ratios in Uruguay (and even in Argentina, according to provisional evidence). What we mistake was an extremely uneven distribution of income between wages and urban land rents, was amazingly reverted to levels not seriously altered during later liberalisation periods, as shown in Graph 7.

On the contrary, income distribution between wages and rural land reverted in a noticeable way after the liberalisation boom which started by the 1970s. Income distribution since the 1960s is not well approached by means of this index. In order to tackle this issue more seriously we should have to take into consideration a huge amount of data and indicators available for Latin America. The effects of liberalisation policies on income distribution in Latin America are rigorously discussed for example in a volume edited by Bulmer-Thomas and no simple conclusions seem to be possible to draw from this material.<sup>38</sup> Nevertheless, looking at our long-run data, we can notice a remarkable deepening of the divergence trends since the 1970s in both Argentina and Uruguay. In the case of Uruguay, liberalisation led to a much deeper divergence in terms of wages than in per capita GDP. In both cases, and in Brazil after the 1980s, liberalisation, divergence and worsened income distribution approached by relative factor price movements seems to go hand in hand.

## 5. Concluding remarks

In this paper we have presented a general approach to relative growth rates in terms of what we call convergence and divergence regimes. These regimes are conformed by specific structures of production and patterns of international specialisation in relation to the structure and dynamics of

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<sup>37</sup> Bértola, L., *El PBI uruguayo 1870-1936 y otras estimaciones*.

<sup>38</sup> Bulmer-Thomas, V. (ed.), *The New Economic Model in Latin America and its Impact on Income Distribution and Poverty*.

demand. Institutional settings affecting competition, innovation, learning and international trade are at the centre of the analysis.

The paper's main purpose was to extend the convergence debate to the field of real wages. The set of contributions made by Jeffrey Williamson were at the centre. Williamson's central argument is that real wages converge whenever globalisation advances and the different countries are willing to play the globalisation game. Patterns of income distribution and demographic factors may counteract this basic and relevant statement.

Our first step was to produce some stylised facts. We estimated new purchasing power parity benchmarks for Argentina and Uruguay on the basis of limited consumer baskets composed by foodstuffs and housing rents. Our benchmark estimates were lower than those obtained by Williamson, whose estimates were based on GDP projections taking as a benchmark PPP GDP estimates for 1970.

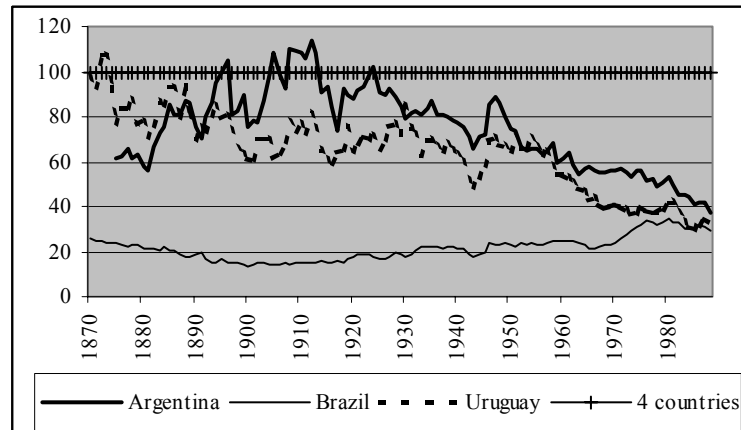
On the basis of our own benchmark estimates, we introduced our revised real wage series to the Williamson data set. Preliminarily, no clear cut relation between real wage convergence and globalisation could be found. On the contrary, a very wide set of movements could be found, which were not easy to relate to openness. Compared to our GDP PPP estimates, on which we based our convergence and divergence regimes approach, the real wage series showed similar trends, in spite of being based on completely different sources.

From our point of view, convergence and divergence regimes are defined precisely as the interaction between different structures of production and demand, facing different dynamics of technical change and determined by several institutional factors. These institutional factors affect not only technical change, but also the way in which its results are diffused by means of classical distributive forms or appropriated through collusive ones. Thus, instead of searching for forces which counteract the Heckscher-Ohlin factor price equalisation theorem, what we aim to do is to find out the basis for productivity growth and technical change in different productive sectors in leading and peripheral countries, as well as the different institutional settings affecting technology transfer, trade and price formation in different factor markets.

So long we have not proposed any articulated explanation of the described processes but merely pointed to some areas for future research.

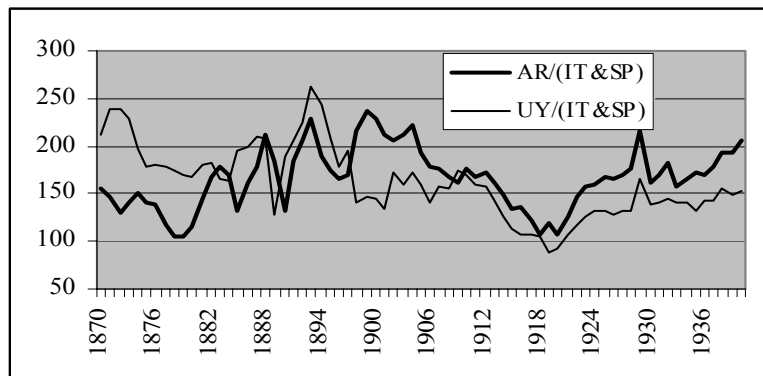
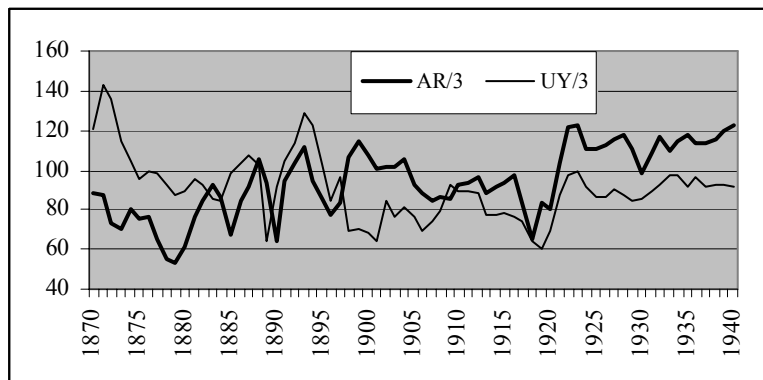
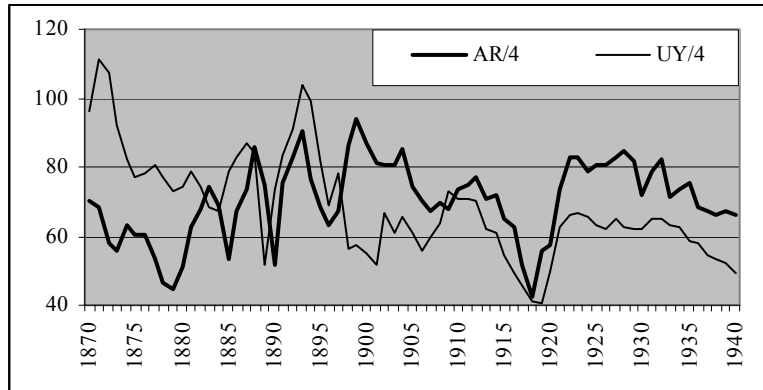


**Graph 1. Argentina, Brazil and Uruguay, 1870-1988: per capita GDP relative to the average of France, Germany, the U.K. and the U.S.A. (100)**

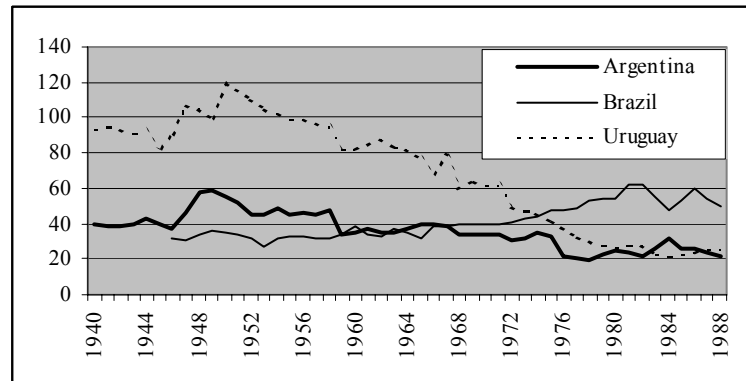


Source: Bértola, L. & Porcile, G., "Argentina, Brazil, Uruguay and the World Economy: an approach to different convergence and divergence regimes", DT 42, FCS, Montevideo 1998, Graph 1.

**Graph 2. Argentine and Uruguayan PPP real wages relative to :**  
**2a, average of France, Germany, GB and the USA = 100;**  
**2b, average of France, Germany and GB = 100;**  
**2c: average of Italy and Spain =100.**

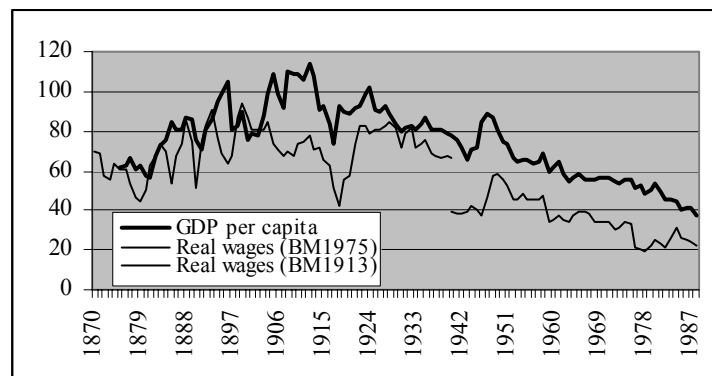


, Brazilian and Uruguayan PPP real wages relative to the average of that of a group of 4 advanced countries: France, Germany, GB and the USA = 100



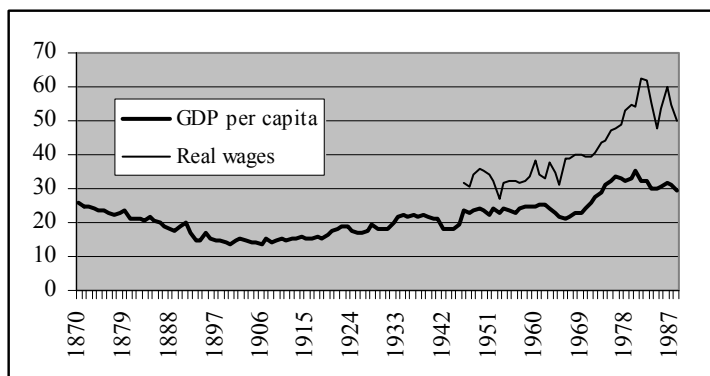
Source: Table A3.2

Graph 4. Argentina: PPP real wages and per capita GDP relative to France, Germany, GB and the USA, 1870-1988



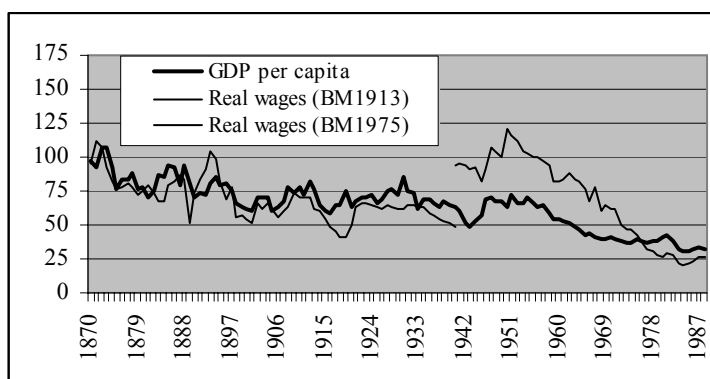
Sources: Real wages, Tables A3.1. and A3.2; per capita GDP, Bértola, L. & Porcile, G., "Argentina, Brazil, Uruguay and the World Economy: an approach to different convergence and divergence regimes", DT 42, FCS, Montevideo 1998, Statistical Appendix.

**Graph 5. Brazil: PPP real wages and per capita GDP relative to France, Germany, GB and the USA, 1870-1988**



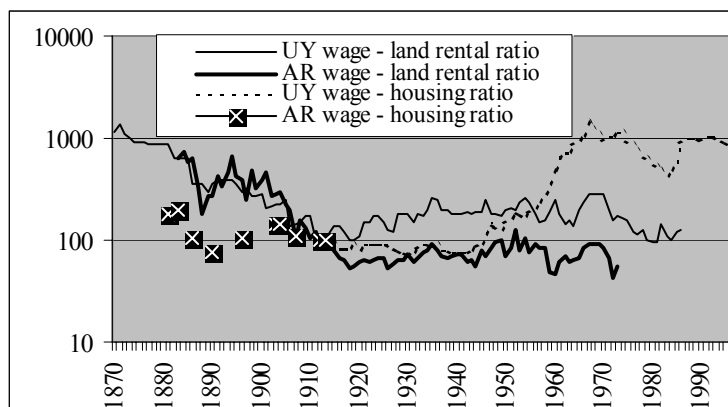
Sources: Real wages, Table A3.2; per capita GDP, Bértola, L. & Porcile, G., "Argentina, Brazil, Uruguay and the World Economy: an approach to different convergence and divergence regimes", DT 42, FCS, Montevideo 1998, Statistical Appendix.

**Graph 6. Uruguay: PPP real wages and per capita GDP relative to France, Germany, GB and the USA, 1870-1988**



Sources: Real wages, Tables A3.1. and A3.2; per capita GDP, Bértola, L. & Porcile, G., "Argentina, Brazil, Uruguay and the World Economy: an approach to different convergence and divergence regimes", DT 42, FCS, Montevideo 1998, Statistical Appendix.

**Graph 7: Wage-rental ratios in Argentina (1883-1970) and Uruguay (1870-1986), and wage-housing ratios in Argentina (some years 1881-1913) and Uruguay (1912-1996), 1913=100**



Source: Table A4.

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## **STATISTICAL APPENDIX**



**Table A1.1. Argentine real wages, 1870-1996 (1913=100)**

1870	67	1902	108	1934	142	1966	255
1871	64*	1903	109	1935	145	1967	255
1872	56	1904	116	1936	136	1968	237
1873	56	1905	102	1937	138	1969	244
1874	64	1906	100	1938	137	1970	253
1875	64*	1907	98	1939	140	1971	262
1876	63	1908	97	1940	141	1972	244
1877	53	1909	95	1941	139	1973	260
1878	48	1910	104	1942	139	1974	290
1879	44	1911	103	1943	143	1975	282
1880	50	1912	106	1944	163	1976	187
1881	63	1913	100*	1945	155	1977	178
1882	73*	1914	97	1946	149	1978	173
1883	82	1915	87	1947	182	1979	201
1884	77	1916	81	1948	224	1980	223
1885	61	1917	70	1949	231	1981	208
1886	78	1918	60	1950	224	1982	190
1887	87	1919	81	1951	210	1983	238
1888	102	1920	84	1952	190	1984	287
1889	89	1921	105	1953	201	1985	242
1890	63	1922	120	1954	223	1986	244
1891	89	1923	123	1955	219	1987	231
1892	99	1924	121	1956	229	1988	215
1893	109	1925	128	1957	230	1989	
1894	93	1926	129	1958	242	1990	
1895	86	1927	136	1959	180	1991	
1896	80	1928	144	1960	192	1992	
1897	86	1929	143	1961	214	1993	
1898	112	1930	130	1962	207	1994	
1899	124	1931	140	1963	208	1995	
1900	115	1932	149	1964	233	1996	
1901	108	1933	138	1965	253		

**References:** All data taken from Williamson, J., "The Evolution of Global Labor Markets Since 1830: Background Evidence and Hypothesis", *Explorations in Economic History*, 3/95.

\*Interpolation.

Nominal wages: 1870-1883: Simple average, average monthly wages of *porteros* and *peones*. República Argentina, *Ley de Presupuesto General*, various years.

1883-1903: Average monthly wages, *peones de policía*. Cortés Conde, R., *El progreso argentino, 1880-1914*.

1903-1914: Daily wage of *peones albañiles*. República Argentina, *Boletín del Departamento Nacional del Trabajo*, Buenos Aires, 21/1912 p. 460 and 33/1916, p. 32.

1914-1940: Average nominal wage in Buenos Aires, 1929=100. República Argentina, Dirección de Estadística Social, *Investigaciones Sociales 1943-45*. Buenos Aires, 1946, p.258.

Cost of living: 1870-1890: Cost of living index, 1882=100. Cortés Conde, R., unpublished worksheets. Based on wholesale prices of 16 items with fixed weights.

1890-1910: Cost of living index, 1910=100. Cortés Conde, R., *El progreso argentino, 1880-1914*.

1910-1914: Cost of living index, 1910=100. Bunge, A. E., *Los Problemas Económicos del Presente*, vol 1, Buenos Aires, n.p., 1920, p. 269.

1914-1940: Cost of living index for Buenos Aires, 1929=100. República Argentina, Dirección de Estadística Social, *Investigaciones Sociales 1943-45*. Buenos Aires, 1946, p.258.

Real wages: 1940-1980: Average real wage in manufacturing, 1970=100. Llach, J.J. & Sánchez, C.E., "Las determinantes del salario en la Argentina. Un diagnóstico de largo plazo y propuestas de políticas", *Estudios*, año VII, n. 29/1984, p. 5.

1980-1984: Real wage in industry, 1982=100. Estudio M.A.M. Brody y Asoc., *Carta Económica*. 23/85.

1984-1988: Real wage in industry, 1982=100. Estudio M.A.M. Brody y Asoc., *Carta Económica*. 73/89.

**Table A1.2. Brazilian real wages, 1870-1930 (1913=100) and 1946-1997 (1950=100)**

	1913=100	1913=100		1955=100	1955=100		
<b>1870</b>	45	<b>1900</b>	78		<b>1970</b>	186	
<b>1871</b>	53	<b>1901</b>	91		<b>1971</b>	195	
<b>1872</b>	53	<b>1902</b>	99		<b>1972</b>	210	
<b>1873</b>	58	<b>1903</b>	102		<b>1973</b>	231	
<b>1874</b>	55	<b>1904</b>	101		<b>1974</b>	237	
<b>1875</b>	67	<b>1905</b>	109		<b>1975</b>	260	
<b>1876</b>	67	<b>1906</b>	110	<b>1946</b>	81	<b>1976</b>	269
<b>1877</b>	64	<b>1907</b>	98	<b>1947</b>	78	<b>1977</b>	277
<b>1878</b>	61	<b>1908</b>	102	<b>1948</b>	85	<b>1978</b>	311
<b>1879</b>	67	<b>1909</b>	99	<b>1949</b>	91	<b>1979</b>	319
<b>1880</b>	71	<b>1910</b>	98	<b>1950</b>	92	<b>1980</b>	311
<b>1881</b>	67	<b>1911</b>	104	<b>1951</b>	88	<b>1981</b>	361
<b>1882</b>	76	<b>1912</b>	93	<b>1952</b>	87	<b>1982</b>	359
<b>1883</b>	72	<b>1913</b>	100	<b>1953</b>	78	<b>1983</b>	326
<b>1884</b>	80	<b>1914</b>	116	<b>1954</b>	93	<b>1984</b>	285
<b>1885</b>	81	<b>1915</b>	100	<b>1955</b>	100	<b>1985</b>	323
<b>1886</b>	83	<b>1916</b>	93	<b>1956</b>	103	<b>1986</b>	369
<b>1887</b>	88	<b>1917</b>	73	<b>1957</b>	105	<b>1987</b>	342
<b>1888</b>	89	<b>1918</b>	59	<b>1958</b>	106	<b>1988</b>	316
<b>1889</b>	79	<b>1919</b>	58	<b>1959</b>	115	<b>1989</b>	317
<b>1890</b>	78	<b>1920</b>	53	<b>1960</b>	135	<b>1990</b>	294
<b>1891</b>	76	<b>1921</b>	79	<b>1961</b>	126	<b>1991</b>	301
<b>1892</b>	71	<b>1922</b>	78	<b>1962</b>	123	<b>1992</b>	362
<b>1893</b>	66	<b>1923</b>	65	<b>1963</b>	147	<b>1993</b>	359
<b>1894</b>	67	<b>1924</b>	67	<b>1964</b>	139	<b>1994</b>	352
<b>1895</b>	84	<b>1925</b>	64	<b>1965</b>	131	<b>1995</b>	350
<b>1896</b>	71	<b>1926</b>	83	<b>1966</b>	164	<b>1996</b>	354
<b>1897</b>	74	<b>1927</b>	87	<b>1967</b>	165	<b>1997</b>	333
<b>1898</b>	63	<b>1928</b>	84	<b>1968</b>	176		
<b>1899</b>	72	<b>1929</b>	87	<b>1969</b>	183		
		<b>1930</b>	101				

**1870-1930**

Nominal wages: 1870-1930. Unweighted average of monthly for laborers, carpenters, bricklayers, and porters in Rio de Janeiro. E.M.L. Lobo: *Historia de Rio de Janeiro (do capital comercial ao capital industrial e financeiro)*, Instituto Brasileiro de Mercado de Capitais (IBMEC), Rio de Janeiro, 1978, pp. 803-813, as quoted by Williamson, J., "The Evolution of Global Labor Markets Since 1830: Background Evidence and Hypothesis", *Explorations in Economic History*, 3/95.

Cost of living: 1870-1913 - Wholesale price index; Luis A. V. Catao, "A new wholesale price index for Brazil during the period 1870-1913", *Revista Brasileira de Econômia*, 46, 4 (October/December, 1992), Appendix 1, Table 1, p. 530.

1913-1930 - Global price deflator; *Estatísticas Históricas do Brasil*, IBGE, Rio de Janeiro, 1987, Vol 3, p. 159.

**1945-1975**

Nominal wages: Money wages in industry, Mitchell, B.R., *International Historical Statistics. The Americas 1750-1988*, p. 127.

Cost of living: Mitchell, B.R., *International Historical Statistics. The Americas 1750-1988*, p. 701.

**1975-1997**

Real wage index:

1975-1984, "Trabalhadores de produção, Brazil, Baer, W., *A economia brasileira*, p. 124, tabla 6.8.

1984-1988, Wages in Sao Paulo's manufacturing sector. IPEA, *Conjuntura Econômia*.

1988-1997, Industrial wages, Brazil. IBGE, *Pesquisa Industrial Mensal*.

**Table A1.3. Uruguay. Nominal wages, 1870-1996 (\$)**

	1	2	3	4	5	6	7	8	9
	yearly	daily	1900=100	daily	1913=100	daily	monthly	monthly	1913=100
1870	240								84
1871	288								100
1872	288								100
1873	263								92
1874	240								84
1875	240								84
1876	240								84
1877	240								84
1878	240								84
1879	240								84
1880	240								84
1881	240								84
1882	240								84
1883	240								84
1884	240								84
1885	245								85
1886	245	1,10							85
1887		1,10							85
1888		1,10							85
1889		0,90							70
1890		1,10							85
1891		1,10							85
1892		1,09							85
1893		1,10							85
1894		1,10							85
1895		1,00							78
1896		0,90							70
1897		1,00							78
1898		0,83							65
1899		0,81							63
1900		0,87	100						67
1901			102						68
1902			107						71
1903			111						74
1904			111						74
1905			120						80
1906			120						80
1907			125	1,00					83
1908				1,04					87
1909				1,20					100
1910				1,20					100
1911				1,20					100
1912				1,20					100
1913				1,20	100,0				100
1914				1,20	100,9				100
1915				1,15	101,8				96
1916				1,00	99,4				83
1917				1,00	97,0				83
1918				1,00	94,7				83
1919				1,10	94,5				92
1920				1,59	94,4				132
1921				1,80	94,2				150
1922				1,80	94,0				150
1923				1,80	93,8				150
1924				1,80	93,7				150
1925				1,80	93,0				150
1926				1,80	92,4	1,93			150
1927						1,96			152
1928						1,99			155



	1	2	3	4	5	6	7	8	9
	yearly	daily	1900=100	daily	1913=100	daily	monthly	monthly	1913=100
1930						2,17			<b>168</b>
1931						2,23			<b>173</b>
1932						2,23			<b>173</b>
1933						2,19			<b>170</b>
1934						2,16			<b>168</b>
1935						2,08			<b>161</b>
1936						2,12	77,6		<b>165</b>
1937							76,8		<b>163</b>
1938							76,1		<b>162</b>
1939							78,0		<b>166</b>
1940							79,4		<b>168</b>
1941							81,0		<b>172</b>
1942							82,6		<b>175</b>
1943							86,6		<b>184</b>
1944							94,7		<b>201</b>
1945							96,3		<b>204</b>
1946							119,8		<b>254</b>
1947							151,7		<b>322</b>
1948							159,2		<b>338</b>
1949							161,4		<b>343</b>
1950							191,0		<b>406</b>
1951							211,9		<b>450</b>
1952							239,3		<b>508</b>
1953							254,7		<b>541</b>
1954							289,8		<b>615</b>
1955							319,5		<b>678</b>
1956							354,3		<b>752</b>
1957							404,8		<b>859</b>
1958							465,9		<b>989</b>
1959							584,7		<b>1241</b>
1960							836,5		<b>1776</b>
1961							1097,4		<b>2330</b>
1962							1292,5		<b>2744</b>
1963							1544,4		<b>3279</b>
1964							2231,4		<b>4737</b>
1965							3378,0		<b>7172</b>
1966							5198,4		<b>11037</b>
1967							11513,7		<b>24445</b>
1968							20785,4	25955	<b>44129</b>
1969								34899	<b>59336</b>
1970								40637	<b>69091</b>
1971								52577	<b>89392</b>
1972								77126	<b>131131</b>
1973								150325	<b>255585</b>
1974								265132	<b>450779</b>
1975								443123	<b>753401</b>
1976								617586	<b>1050026</b>
1977								850075	<b>1445305</b>
1978								1180884	<b>2007750</b>
1979								1780227	<b>3026757</b>
1980								2752301	<b>4679486</b>
1981								3978518	<b>6764311</b>

	1	2	3	4	5	6	7	8	9
	yearly	daily	1900=100	daily	1913=100	daily	monthly	monthly	1913=100
<b>1982</b>								4686748	<b>7968450</b>
<b>1983</b>								5624357	<b>9562581</b>
<b>1984</b>								8296471	<b>14105734</b>
<b>1985</b>								16577777	<b>28185683</b>
<b>1986</b>								31362739	<b>53323205</b>
<b>1987</b>								55459500	<b>94292731</b>
<b>1988</b>								91608000	<b>155752730</b>
<b>1989</b>								169090667	<b>287489443</b>
<b>1990</b>								334077917	<b>568002220</b>
<b>1991</b>								723904250	<b>1230788390</b>
<b>1992</b>								1265527750	<b>2151661441</b>
<b>1993</b>								2013028917	<b>3422569517</b>
<b>1994</b>								2942064167	<b>5002123443</b>
<b>1995</b>								4054540333	<b>6893565232</b>
<b>1996</b>								5211070150	<b>8859907426</b>

References:

1. Unskilled public building worker, according to *Presupuesto General de la Nación*, several years (interpolation in italics).
2. Unskilled building worker, according to the archives of Frigorífico Anglo (slaughterhouse).
3. Building sector labor cost index. *Economía*, N. 3/1.
4. Unskilled building worker, according to Bértola, L., Calicchio, L. & Schonebohm, D. *El modelo del Primer Batllismo y su crisis: una reconsideración desde los salarios y el gasto público*, Programa de Historia Económica y Social, Facultad de Ciencias Sociales, Universidad de la República with information of *Boletín de Estadística Municipal*.
5. Index of daily worked hours. Bértola, L., Calicchio, L. & Schonebohm, D. *El modelo del Primer Batllismo y su crisis: una reconsideración desde los salarios y el gasto público*, Programa de Historia Económica y Social, Facultad de Ciencias Sociales, Universidad de la República.
6. Based on information of *Anuarios Estadísticos*.
7. Based on information of Dirección General de Asuntos Económicos, Ministerio de Industrias and Instituto de Economía *Estudios y Coyuntura* 3, Facultad de Ciencias Económicas y Administración, Universidad de la República.
8. Instituto Nacional de Estadística.
9. Constructed by splicing the different series. The index of daily worked hours 1913-1926 will be used in order to “correct” the real wage series in Table A1.2.

**Table A2.1. Purchasing Power Parities and Real Wages, Argentina (1914) and GB (1905)**

	Prices		Cost of the consumer Quantities by item basket			
	AR (1914) \$	GB (1905) d	AR (1914) \$	GB (1905) D	AR (1914)	GB (1905)
Tea & Coffee (lb)	0.95	18.000	11.40	951.54	12	24
Sugar (lb)	0.18	2.000	8.32	207.05	47	47
Bacon & Sausage (lb)	0.73	8.000	0.00	1409.69		80
Beef & veal (lb)	0.18	8.000	53.70	969.16	300	55
Pork (lb)	0.26	8.000	0.00	969.16		55
Lamb & Mutton (lb)	0.11	8.250	0.00	999.45		55
Cheese (lb)	0.41	7.000	0.00	848.02		55
Butter & Margarine (lb)	0.65	13.000	11.70	343.61	18	12
Potatoes (7lb)	0.35	3.000	105.00	283.20	300	300
Flour and Meal (7lb)	0.51	9.000	28.00	155.76	55	55
Bread (4lb)	0.36	5.000	165.98	1255.51	456	456
Milk (qt)	0.16	3.500	58.40	1120.61	365	365
Eggs (doz)	0.81	12.000	19.44	288.00	24	24
Yerba (kg)	0.38		4.52	0.00	12	
<i>Total</i>	8.97	188.5	466.46	9800.8		
<i>Rent</i> (3 rooms/week)	6.94	23.3				
<i>Total</i>	15.91	211.7				
<i>Exchange rates (per L)</i>						
E	11.45	1				
PPP	18.03	1				
<i>Price Levels</i>						
PF	100	100				
PR	626	100				
P	157	100				
<i>Nominal wages</i>						
Unskilled building	\$/day 2.83	s/wk 25.64				
<i>PPP- Real Wage Index</i>						
Unskilled	73.4	100				

**Notes and definitions:**

E: Official exchange rate.

PPP: Purchasing power parity based on food and rent prices.

PF: Relative price of food converting via E.

PR: Relative rent converting via E.

P: Weighted relative price of food and rent.

**AR:** The consumer basket was adapted to that of GB. Prices were taken from Williamson (1995), Table A3.2, wages from Table A3.2, and rents from Yujnovsky, O., "Políticas de vivienda en la ciudad de Buenos Aires, 1880-1914", *Desarrollo Económico* 54/74, p. 358 (one room monthly, adjusted according to price differences in GB according to Williamson (1995), Table A3.3).

**GB:** 1 pound sterling (L)= 20 shilling (s) = 240 pennies (d).

Basket, prices and wages for GB were taken from Williamson (1995), Table A3.1 and A3.2, in turn based on Board of Trade, "Report of an enquiry by the Board Of Trade into working Class Rents, Housing and Retail Prices together with the Standard Rates of Wages prevailing in certain occupations in the principal Industrial Towns of the United Kingdom", *Parliamentary Papers*, 1908, *Accounts and Papers* (46), cd. 3864, vol. CVII, and "Report of an enquiry by the Board Of Trade into working Class Rents, Housing and Retail Prices with the Rates of Wages in certain Occupations in Industrial Towns of the United Kingdom in 1912", *Parliamentary Papers*, 1913, *Accounts and Papers* (26), cd. 6955, vol. LXVI.

**Table A2.2. Purchasing Power Parities and Real Wages, Argentina (1938) and GB (1927)**

Year	Prices		Cost of the consumer Quantities by item basket			
	AR 1938	GB 1927	AR 1938	GB 1927	AR 1938	GB 1927
Foodstuffs	\$	d	\$	d		
Bread (kg)	0.32	5	145.92	2280.0	456	456
Flour (kg)	0.19	6.0	10.45	330.0	55	55
Rice (kg)	0.46	6.4	8.28	115.2	18	18
Beef (kg)	0.40	41.5	120.00	8300.0	300	200
Bacon (kg)	0.75	36.4		5460.0		150
Milk (liter)	0.15	6.1	54.00	2196.0	360	360
Cheese (kg)	0.89	29.1	5.34	174.6	6	6
Eggs (each)	0.05	2.3	14.40	662.4	288	288
Potatoes (kg)	0.14	2.4	42.00	720.0	300	300
Sugar (kg)	0.42	7.9	19.74	371.3	47	47
Coffee (kg)	1.14	61.7	13.68	1480.8	12	24
Yerba (kg)	0.71		8.52		12	
<i>Total Food (month)</i>	36.86	1840.9				
<i>Rent</i>	\$	£				
3 rooms/month	20.60	2.5				
<i>Total (month)</i>	57.46	10.2				
	\$	£				
<i>Exchange Rates</i>						
E	20.55	1.00				
PPP	5.6	1.00				
<i>Price Levels</i>						
PF	23.4	100.0				
PR	40.1	100.0				
P	27.5	100.0				
	\$	£				
<i>Nominal Wages/hr</i>						
Unskilled Building	0.63	0.07				
<i>Real Wage Index</i>	159.3	100.0				

Notes and definitions:

E: Official exchange rate.

PPP: Purchasing power parity based on food and rent prices.

PF: Relative price of food converting via E.

PR: Relative rent converting via E.

P: Weighted relative price of food and rent.

**AR:** The consumer basket was adapted to that of GB. Prices were taken from Williamson (1995), Table A3.4, wages from Table A3.4, and rents were supposed to answer for a similar share in the budget as in 1914.

**GB:** 1 pound sterling (L) = 20 shilling (s) = 240 pennies (d).

Basket shares, prices and wages for GB were taken from Williamson (1995), Table A3.3 and A3.4.



**Table A2.3. Purchasing Power Parities and Real Wages, Uruguay (1914) and GB (1905)**

	Prices		Cost of the consumer Quantities by item basket			
	UY (1914) \$	GB (1905) d	UY (1914) \$	GB (1905) D	UY (1914)	GB (1905)
Tea & Coffee (lb)	0.36	18.000	4.4	951.5	12	24
Sugar (lb)	0.09	2.000	4.3	207.1	47	47
Bacon & Sausage (lb)	0.14	8.000	0	1585.9		90
Beef & veal (lb)	0.10	8.000	30.3	1233.5	300	70
Pork (lb)	0.14	8.000	0	1233.5		70
Lamb & Mutton (lb)	0.09	8.250	0	1272.0		70
Cheese (lb)	0.18	7.000	1.1	92.5	6	6
Butter & Margarine (lb)	0.12	13.000	2.1	343.6	18	12
Potatoes (7lb)	0.32	3.000	95.3	283.2	300	300
Flour and Meal (7lb)	0.35	9.000	19.2	155.8	55	55
Bread (4lb)	0.18	5.000	82.8	1255.5	456	456
Milk (qt)	0.09	3.500	33.3	1120.6	365	365
Eggs (doz)	0.20	12.000	4.8	288.0	24	24
Yerba (kg)	0.13		1.5	0.0	12	
<i>Total</i>	5.4	192.7	278.8	10022.7		
<i>Rent</i> (3 rooms/week)	2.3	23.3				
<i>Total</i>	7.7	216.0				
<i>Exchange rates (per L)</i>	\$					
E	4.7	1				
PPP	8.5	1				
<i>Price Levels</i>						
PF	142	100				
PR	507	100				
P	181	100				
<i>Nominal wages</i>	<i>\$/day</i>	<i>s/wk</i>				
Skilled building	1.90	37.69				
Unskilled building	1.20	25.64				
<i>PPP- Real Wage Index</i>						
Unskilled	65.9	100				
Skilled	71.0	100				

## Notes and definitions:

E: Official exchange rate.

PPP: Purchasing power parity based on food and rent prices.

PF: Relative price of food converting via E.

PR: Relative rent converting via E.

P: Weighted relative price of food and rent.

**GB:** 1 pound sterling (L)= 20 shilling (s) = 240 pennies (d).

Basket, prices and wages for GB were taken from Williamson (1995), Table A3.1 and A3.2, in turn based on Board of Trade, "Report of an enquiry by the Board Of Trade into working Class Rents, Housing and Retail Prices together with the Standard Rates of Wages prevailing in certain occupations in the principal Industrial Towns of the United Kingdom", Parliamentary Papers, 1908, *Accounts and Papers* (46), cd. 3864, vol. CVII, and "Report of an enquiry by the Board Of Trade into working Class Rents, Housing and Retail Prices with the Rates of Wages in certain Occupations in Industrial Towns of the United Kingdom in 1912", Parliamentary Papers, 1913, *Accounts and Papers* (26), cd. 6955, vol. LXVI.

**UY:** The consumer basket was adapted to that of GB. Prices were taken from different sources, mainly Puentes, A., *El Salario Real 1914-1926*.

**Table A2.4. Purchasing Power Parities and Real Wages, Uruguay and GB, 1927**

	Prices		Cost of the consumer Quantities by item basket			
	UY 1927	GB 1927	UY 1927	GB 1927	UY 1927	GB 1927
<i>Year</i>						
Foodstuffs	\$	d				
<i>Bread (kg)</i>	0.13	5	59.3	2280	456	456
Rye Bread (kg)		5.0	0.0	0		
Flour (kg)	0.14	6.0	7.9	330	55	55
Rice (kg)	0.22	6.4	4.0	115.2	18	18
Beef (kg)	0.31	41.5	93.0	8300	300	200
Bacon (kg)		36.4	0.0	3640		100
Milk (liter)	0.10	6.1	36.0	2196	360	360
Cheese (kg)	0.50	29.1	3.0	174.6	6	6
Eggs (each)	0.02	2.3	7.0	662.4	288	288
Potatoes (kg)	0.06	2.4	18.0	720	300	300
Sugar (kg)	0.18	7.9	8.5	371.3	47	47
Coffee (kg)	0.80	61.7	9.6	1480.8	12	24
Yerba (kg)	0.38		4.6	0	12	
<i>Total Food (month)</i>	20.89	1689.2				
<i>Rent</i>	\$	£				
3 rooms/month	29.00*	2.5				
<i>Total (month)</i>	49.9	9.5				
	\$	£				
<i>Exchange Rates</i>						
E	4.797	1.00				
PPP	5.2					
<i>Price Levels</i>						
PF	62	100				
PR	242	100				
P	109	100				
	\$	£				
<i>Nominal Wages/hr</i>						
Unskilled Building	0.225	0.07				
<i>Real Wage Index</i>	61.5	100				

Notes and definitions:

\* Year 1926.

E: Official exchange rate.

PPP: Purchasing power parity based on food and rent prices.

PF: Relative price of food converting via E.

PR: Relative rent converting via E.

P: Weighted relative price of food and rent.

**GB:** 1 pound sterling (L) = 20 shilling (s) = 240 pennies (d).

Basket shares, prices and wages for GB were taken from Williamson (1995), Table A3.3 and A3.4.

**UY:** The consumer basket was adapted to that of GB. Prices were taken from different sources, mainly *Boletín de Estadística Municipal*. Rents, which correspond in fact to the year 1926, were taken from Puentes, A., *El Salario Real 1914-1926*.

**Table A2.5. Purchasing Power Parities and Real Wages, Argentina, Brazil, Uruguay and GB, 1975**

	<b>ARG</b>	<b>BRZ</b>	<b>FR</b>	<b>GER</b>	<b>GB</b>	<b>USA</b>	<b>UY</b>
Year	1975	1975	1975	1975	1975	1975	1975
Exchange Rates(per US\$)	peso	cruz	F. Fr.	RM	£	\$	peso
<i>E</i>	36.6	8.13	4.29	2.46	0.45	1.00	0.0023
PPP	19.03	5.77	4.76	2.85	0.41	1.00	0.0012
<i>Price Level</i>							
PC	52	71	111	116	91	100	51
Nominal Wage	21.50	9.32	11.99	9.69	1.26	4.83	1706
Real Wage Index	36.75	52.58	81.99	110.46	100.00	157.14	47.36

Notes and definitions:

E: Annual average market exchange rates.

PC: Price level of consumption.

PPP: Purchasing power parity based on E and PC.

Exchange rates: International Monetary Fund, *International Financial Statistics Yearbook* 1982.

Price level of consumption, Penn World Table.

Real wages:

- Weighted average of male and female manufacturing wage rates with data from YLS 1980, taken from Williamson, J., (1995), Table A3.5.

**Table A3.1. PPP real wages (GB 1913=100) and Argentine and Uruguayan wages as % of 4 advanced, relatively 3 European advanced countries**

	PPP real wages (GB 1913=100)						Real wages as % of 4 advanced		Real wages as % of 3 European advanced	
	ARG	FR	GER	GB	USA	UY	Arg/4	Ur/4	Arg/3	Ur/3
1870	51	51	59	63	117	70	70	96	88	121
1871	49	48	58	62	119	80	68	111	88	143
1872	43	50	60	64	119	79	58	107	73	136
1873	43	52	63	67	121	70	56	92	70	115
1874	49	52	64	68	127	64	63	83	80	104
1875	49	56	68	73	129	63	60	77	75	95
1876	48	54	66	71	131	63	60	78	76	99
1877	40	54	63	67	115	61	53	81	65	98
1878	36	56	67	72	115	60	46	77	55	92
1879	34	57	65	70	115	56	44	73	53	87
1880	38	58	63	67	113	56	51	74	61	89
1881	48	59	63	67	118	61	63	79	76	96
1882	56	61	66	71	131	61	68	74	85	92
1883	63	60	69	74	135	58	74	68	92	85
1884	59	61	69	74	138	57	69	67	87	84
1885	47	62	71	76	140	69	53	79	67	99
1886	59	63	71	76	142	73	67	83	84	104
1887	66	64	73	78	141	77	74	87	91	108
1888	78	63	77	82	140	76	86	84	105	103
1889	68	63	74	79	143	46	75	51	93	64
1890	48	65	78	83	148	69	52	74	64	91
1891	68	64	74	79	146	76	75	83	94	104
1892	76	64	76	80	146	83	83	91	103	113
1893	84	65	78	83	147	97	90	104	112	129
1894	72	64	79	84	147	93	77	99	95	123
1895	66	66	80	85	154	79	68	82	86	102
1896	62	67	83	88	151	67	63	69	78	84
1897	66	69	82	87	153	76	67	78	83	96
1898	85	68	83	88	155	55	86	56	107	70
1899	95	69	87	92	157	58	94	58	115	70
1900	88	70	86	91	159	56	87	55	107	68
1901	83	70	85	90	162	53	81	52	101	64
1902	83	71	84	89	165	68	81	67	101	84
1903	83	72	85	90	167	63	80	61	101	77
1904	89	74	87	92	166	69	85	66	106	82
1905	78	77	86	91	170	65	74	61	93	77
1906	77	78	89	95	176	61	70	55	88	70
1907	74	78	91	97	174	66	68	60	84	74
1908	74	77	88	93	169	68	69	64	86	79
1909	73	78	88	93	176	79	68	73	85	92
1910	79	72	89	95	173	76	74	71	93	89
1911	78	65	90	96	169	74	75	71	94	89
1912	81	67	89	95	168	74	77	70	97	88
1913	77	67	94	100	172	67	71	62	88	77
1914	74	<b>66</b>	90	88	171	63	72	61	91	78
1915	67	57	80	77	196	56	65	55	93	78
1916	62	51	72	69	207	49	63	49	98	76
1917	54	48	74	72	222	48	52	46	83	74
1918	46	48	83	81	225	45	42	41	65	64
1919	62	51	88	85	222	45	56	41	83	60
1920	65	57	94	91	207	56	58	50	80	69
1921	80	67	85	82	203	68	74	63	103	88
1922	92	67	81	79	219	74	83	66	122	97
1923	94	68	82	80	226	76	83	67	123	99
1924	93	67	94	91	219	77	79	65	111	92
1925	98	68	101	98	220	77	80	63	110	86
1926	99	64	102	99	229	77	80	62	112	87
1927	104	59	107	104	233	81	83	65	116	91

	PPP real wages (GB 1913=100)						Real wages as % of 4 advanced		Real wages as % of 3 Euro-pean advanced	
	ARG	FR	GER	GB	USA	UY	Arg/4	Ur/4	Arg/3	Ur/3
1928	110	64	110	107	240	82	85	63	118	87
1929	110	68	116	113	241	83	82	62	111	84
1930	100	68	120	116	255	87	72	62	99	85
1931	107	68	116	113	248	89	79	65	108	90
1932	114	70	114	110	262	91	82	65	116	92
1933	105	74	109	106	302	94	71	63	110	97
1934	109	77	106	102	305	92	74	63	114	97
1935	111	79	103	100	305	86	76	59	118	91
1936	104	75	102	99	335	89	68	58	114	96
1937	106	76	103	100	350	85	67	54	113	92
1938	105	71	103	100	361	85	66	53	115	93
1939	107	69	101	98	367	82	68	52	120	92
1940	108	69	99	96	390	80	66	49	123	92

Sources:

Argentina: Tables A1.1 and A2.1.

Uruguay: Tables A1.4 and A2.3.

"Advanced" countries, Williamson (1995), Table A2.1.

**Table A3.2. PPP real wages (GB 1975=100) and ABU wages as % of 4 advanced countries**

	AR	BRZ	FR	GER	GB	USA	UY	AR/4	BRZ/4	UY/4
1940	19		23	46	37	82	44	40		94
1941	18		21	45	36	87	45	39		95
1942	18		18	44	39	89	44	38		94
1943	19		15	44	41	93	44	39		91
1944	21		21	42	42	96	46	42		92
1945	20		24	41	43	96	42	40		82
1946	20	17	23	39	47	98	47	38	32	91
1947	24	16	24	38	49	98	56	46	30	108
1948	29	17	23	37	47	97	53	58	34	105
1949	30	19	23	35	48	101	52	59	36	100
1950	29	19	24	34	49	105	64	56	35	120
1951	28	18	23	35	49	105	62	52	34	116
1952	25	18	26	37	48	109	61	45	32	111
1953	26	16	28	40	50	114	61	45	27	105
1954	29	19	31	41	53	116	62	49	31	103
1955	29	20	33	43	55	122	63	46	32	99
1956	30	21	34	46	57	125	65	46	32	100
1957	30	21	35	47	58	128	65	45	32	97
1958	32	22	35	48	58	128	64	47	32	95
1959	24	23	36	50	61	132	57	34	34	82
1960	25	27	37	54	62	134	59	35	38	82
1961	28	26	39	59	66	136	63	37	34	84
1962	27	25	42	62	65	138	67	35	33	88
1963	27	30	44	65	67	141	66	34	38	84
1964	31	28	46	68	70	143	67	37	35	82
1965	33	27	49	73	73	145	65	39	31	76
1966	34	33	50	74	72	147	58	39	39	67
1967	34	34	53	74	73	148	67	39	39	78
1968	31	36	59	77	75	151	54	34	40	60
1969	32	37	60	83	78	152	60	34	40	64
1970	33	38	63	90	84	151	60	34	39	62
1971	34	40	67	97	86	154	63	34	39	62
1972	32	43	70	100	91	160	52	30	41	50
1973	34	47	75	103	96	161	52	31	43	47
1974	38	48	78	107	98	157	51	35	44	47
1975	37	53	82	110	100	157	47	33	47	42
1976	25	55	85	112	101	161	44	21	48	38
1977	23	56	88	116	97	164	38	20	49	33
1978	23	63	91	118	103	166	37	19	53	31
1979	26	65	93	119	104	161	33	22	55	28
1980	29	63	94	120	103	154	31	25	54	27
1981	27	74	95	119	103	153	34	23	63	29
1982	25	73	98	118	105	153	33	21	62	28
1983	31	67	99	118	109	155	27	26	55	22
1984	38	58	100	118	113	154	26	31	48	21
1985	32	66	100	122	116	154	28	26	54	23
1986	32	75	101	126	121	155	30	25	60	24
1987	30	70	101	132	125	153	34	24	55	26
1988	28	64	102	135	129	151	33	22	50	26

Sources:

PPP real wages 1975 according to Table A2.5.

Real wages: Argentina, Table A1.1; Brazil, Table A1.2; Uruguay, Table A1.4; four advanced countries, Williamson (1995).

**Table A4. Argentina and Uruguay: land and housing prices and wage rental ratios (1913=100)**

	1	2	3	4	5	6	7	8
	Land price index		Urban rents index		Wage - land price ratio		Wage-housing ratio	
	AR	UY	AR	UY	AR	UY	AR	UY
1870		7				1166		
1871		7				1399		
1872		9				1091		
1873		9				996		
1874		9				909		
1875		9				909		
1876		9				909		
1877		9				879		
1878		9				879		
1879		9				879		
1880		9				879		
1881		9	19			879	181	
1882		13				627		
1883	6	13	20		633	627	194	
1884	5	13			742	627		
1885	6	13			594	641		
1886	6	24	40		634	356	105	
1887	12	24			338	356		
1888	24	24			178	356		
1889	16	24			264	291		
1890	16	24	57		269	356	76	
1891	15	22			429	383		
1892	20	22			338	380		
1893	15	22			464	383		
1894	10	22			670	383		
1895	16	22			418	348		
1896	18	23	66		387	298	103	
1897	28	23			243	330		
1898	17	23			477	275		
1899	24	23			325	266		
1900	20	23			393	287		
1901	17	32			474	208		
1902	29	32			273	218		
1903	28	32	54		282	226	145	
1904	27	32	57		302	226	142	
1905	37	32			221	244		
1906	42	58			196	136		
1907	83	58	79		103	142	108	
1908	55	58			157	147		
1909	69	58			129	170		
1910	92	58			105	170		
1911	81	100			119	100		
1912	121	100	103	98	85	100	100	102
1913	100	100	100	100	100	100	100	99
1914	106	84		100	92	120		100
1915	115	68		100	81	139		96
1916	140	60		100	67	140		83
1917	149	68		100	64	122		83
1918	196	82		100	52	102		83
1919	236	91		100	55	101		92
1920	257	120		167	62	110		80
1921	275	99		167	63	153		90
1922	272	100		167	62	151		90
1923	271	89		167	63	169		90
1924	254	89		167	67	169		90

	1	2	3	4	5	6	7	8
	Land price index		Urban rents index		Wage - land price ratio		Wage-housing ratio	
	AR	UY	AR	UY	AR	UY	AR	UY
1925	263	99		167	66	151		90
1926	325	119		167	53	126		90
1927	310	126		180	57	121		85
1928	296	88		195	63	176		79
1929	293	92		211	64	176		77
1930	239	95		228	72	177		74
1931	260	116		228	62	149		76
1932	236	98		205	66	177		85
1933	210	101		182	77	168		93
1934	196	84		182	79	200		92
1935	185	64		182	90	254		88
1936	217	68		182	80	242		90
1937	251	83		205	71	197		80
1938	271	84		205	66	193		79
1939	256	91		220	70	182		75
1940	249	95		225	73	178		75
1941	251	96		225	74	179		76
1942	322	95		225	61	184		78
1943	326	104		225	65	176		82
1944	409	106		225	56	199		89
1945	314	111		225	80	184		91
1946	442	105		225	71	242		113
1947	518	180		225	84	179		143
1948	640	186		244	94	182		138
1949	827	201		269	99	171		127
1950	1440	205		271	69	198		150
1951	1534	222		271	82	203		166
1952	1256	261		271	123	195		188
1953	2131	227		297	79	238		182
1954	1900	236		356	103	260		173
1955	2894	291		357	76	233		191
1956	2683	415		357	93	181		211
1957	3945	584		357	83	147		241
1958	5450	622		357	84	159		277
1959	16123	672		357	48	185		348
1960	21691	713		370	47	249		481
1961	21102	1298		372	60	180		627
1962	22585	1877		375	70	146		732
1963	31330	2086		443	61	157		739
1964	39686	3449		531	63	137		892
1965	49167	3616		747	67	198		960
1966	53902	4598		1066	83	240		1035
1967	63378	8487		1689	92	288		1447
1968	65153	15721		3480	93	281		1268
1969	73623	20718		5448	90	286		1089
1970	95709	24900		7099	82	278		973
1971	159834	45119		8573	67	198		1043
1972	366021	81759		12269	43	160		1069
1973	490467	148153		22393	56	172		1141
1974		268462		39928		168		1129
1975		486468		77074		155		977
1976		881510		120835		119		869
1977		1283540		192469		113		750
1978		1638561		297705		123		674
1979		3088793		473188		98		640
1980		4970303		841502		94		556



	1	2	3	4	5	6	7	8
	Land price index		Urban rents index		Wage - land price ratio		Wage-housing ratio	
	AR	UY	AR	UY	AR	UY	AR	UY
1981		6994777		1278391		97		529
1982		5642143		1673843		141		476
1983		8597970		2260873		111		423
1984		13813610		2949571		102		478
1985		23757350		4763900		119		598
1986		43324877		5715212		123		933
1987				9430776				1000
1988				15737783				990
1989				28640053				1004
1990				59012658				963
1991				118638629				1037
1992				206116624				1044
1993				333254964				1027
1994				519525297				963
1995				755295613				913
1996				1007273830				880

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### Wages Argentina

Sources according to Table A1.1.

### Wages Uruguay

Table A1.3