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Growth Convergence in South America

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Abstract:

This study analyzed the influence of structural change on GDP convergence in Argentina, Brazil and Uruguay (ABU) in the context of a Keynesian model with balance of payments constraints. Empirical evidence suggested that income and structural convergence were associated in the post-II World War period. The differences in industrial and economic policies in ABU may have contributed to explain the intensity of the process of structural change in these countries. ABU exhibited a different ability to reshape their institutions with a view to encouraging industrial transformation. The Brazilian industrial policy seems to have been more efficient in promoting structural convergence.

Keywords: growth convergence, income convergence, international trade, industrial policy, developing countries, and structural change.

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I - Introduction

There are many studies that analyze the cross-country income convergence in developing and developed countries. Many of them emphasize the role of technological, economical and institutional changes in the convergence process, whereas others consider not only such factors, but also the role of the international trade, where the international linkages are exactly what drive the convergence process. Actually, both approaches are used in this study, using a Thirlwall's North-South Model as a theoretical background.

The idea that the international specialization of a country can affect its long-term rate of growth is controversial among economists. In many studies, the impact of international specialization on growth is related to both supply-side and demand-side forces. From a supply-side perspective, some sectors offer higher technological opportunities and more external economies than others (Dosi, 1984). On the demand side, some sectors display a larger participation in total demand and higher income elasticity of demand than others (McCombie and Thirlwall, 1994). Therefore, countries specialized in these sectors will benefit from higher rates of productivity growth and/or effective demand growth.

The main goal of this study is to make some insights about the income convergence in Argentina, Brazil and Uruguay (ABU), through some stylized facts using the important linkages among these South American trade partners. The approach used here will be only an attempt to explain some important changes in the income convergence in these countries, mainly due to some structural and political changes in the period of 1963 to 1991.

The paper presents the evolution of income convergence in terms of GDP per capita and structural convergence (convergence of the industrial structure) between the ABU countries and a group of developed countries. It also discusses the influence of structural change on GDP convergence/divergence in the context of a Keynesian model with balance of payments constraints. This model suggests that structural change affects

1 The author would like to thank CAPES Foundation (Brazil) for the financial support.

growth by increasing the "non-price competitiveness" of the country, which broadens the scope for intra-industry trade and eases the balance of payments constraint on growth. Finally, the main conclusions of the work are summarized.

II - Some Important Insights

According to Stiglitz (1989), the explanation about the differences among developed and less developed countries (LDCs) is not simply due to lack of human and nonhuman capital. The explanation can be due to differences in economic organization, to how factors of production interact and to institutions that mediate these interactions, where markets are the most important of institutions. But markets are not perfect, and so they present many failures that account against the convergence between LDCs and developed countries. Then, the government intervention has an important role to play against such market failures. As Binswanger (1997) states, the government could reduce the transaction costs by providing public goods, such as impersonal rules of exchange and institutions that enforce laws.

The analysis about the causes of the income gap between LDCs and developed countries is very complex and involves many important socio-economic variables. As Stiglitz (1989) cited[2], learning and information are very critical determinants of these income gaps. The discussion becomes more complete when we add some specific distortions on the economic organization that either developed and LDCs face. The LDC's have more difficulties on the learning by doing process and also in the learning transfers from developed countries, resulting in specialization in technologies and products with lower learning potentials. The presence of the learning heterogeneity implies in imperfect markets, where the first entrants will get monopoly rents, causing increasing income differentials.

Another interesting characteristic of the income convergence among countries is the historical events that affected the development of many nations. As Stiglitz (1989) mentioned, particular historical events, such as wars, depressions, plagues, etc, have

2 Stiglitz discusses many important implications such as price effects, imperfect competition, risk, externalities, multiple equilibria, and so on.

permanent effects. It is, then, a contrast with the Solow's growth model, where the economy convergence is independent of initial conditions or historical events. Solow (1985) argued that the economic theory does not have anything to learn from economic history. But it is clear that path-dependence and historical events matter in economic theory in general, and in the growth theory in particular. Another example that stress the historical importance in the growth rate of a country is the study of Reynolds (1983), which analyzes what he called "chronology of turning points", important historical events that were important starting points for the subsequent development in many countries. Another example that history matters can be found in David (1985) and Arthur (1989), where the path-dependence was highlighted in technological development and industrial location in developed countries.

The presence of asymmetric information and externalities imply market failures and necessity of government intervention[3]. Stiglitz (1989) says that imperfect and costly information problem can explain more why LDCs have a lower income level than does the endowment of factors. Therefore, the organization of the markets plays an important role in the income convergence of LDCs. Some of the ways developed countries reduce the market failures effects through nonmarket institutions, such as large firms, may be less effective in LDCs. Under Stiglitz perspective, the presence of a National planning is not enough to prevent problems with market imperfections in the capital, labor and product markets. Empirical findings such as Barro and Sala-i-Martin (1992) says that if there is technological differences across economies, than mobility of capital can create divergence of per capita output and capital stocks. Therefore, it is necessary to understand and to know the microeconomics of LDCs, focusing on the rural and industrial organizations of these countries.

III - Income and Structural Convergence and International Trade

Without lose the insights given in the previous section, now we can turn to the relationship between trade and income convergence.

3 A good reading in this topic is Stiglitz (1974).

According to Bardhan (1993), many arguments used in support of protection in developing countries gave rise to the theory of economic policy under "domestic distortions" on the international trade literature. Popular arguments for protection with a view to curbing luxury consumption of the rich in poor countries using a trade restriction is not a first-best policy action, since the first-best policy would be a consumption tax on luxuries. Another example is the reduction of income inequality, where the best policy is not the tariff on luxuries but the progressive income and wealth taxation. This viewpoint can be generalized simply saying that departures from the usual marginal conditions of Pareto-efficiency are best tackled by using policy instruments that act most directly on the relevant margin.

The import substitution policy adopted for many LDCs during the 1950s and 1960s was an important instrument used to protect the domestic markets, and to stimulate the structural changes necessary to give these countries the required conditions to industrialize and improve their economies. Bruton (1998) argues that this behavior was motivated by the view that the market kept the poor countries poor and rich countries rich. Therefore, the secular deterioration of the terms of trade of LDCs, problems with the balance of payments and the possibility of having the growth stopped or stagnated, were some of the arguments used for these countries to implement import substitution policies. Another view of the import substitution is that this policy was used in a way of replicating the high-income developed countries, producing at home what was primarily imported from rich countries. Many countries that used import substitution policy used tariffs and exchange rates as main tools to perform such policy. There were different consequences from this policy, resulting in market distortions that were not properly corrected through the right instruments, as mentioned in the previous paragraph. For instance, a common type of distortion was the tendency of wages to rise, particularly in the formal sectors. In Latin America, wages rates were raised or allowed to rise as a matter of government policy aimed to affect the distribution of income.

In general, the import substitution policies aimed to help the structural changes necessary to improve the LDCs economies were not successfully implemented. The policy created externalities and distortions that resulted in frustrated attempts to reduce their consequences. The agriculture sector, for example, was penalized in order to finance

the new manufacturing activities. We can say that the main consequences of the import substitution policy were the use of quotas, exchange controls, overvalued exchange rates that contributed to unemployment and underutilization of capital, the penalization of the exports, and a difficult wage-setting situation. The justification was that once the structure of the economy was changed, learning would occur automatically and resolve the difficulties. But as we pointed out before, learning was more difficult[4].

Looking at to some basic concepts in international trade, we can come up with an important theorem that helps to understand the role of international trade in the income convergence. This theorem is the Factor Price Equalization Theorem (FPE), which is important to explain that free trade in some goods can equalize factor prices across countries. Ben-David (1993) examined the specific role of the trade liberalization within groups of countries relating trade's impact on income convergence through the FPE. We can see that in Ben-David (1996) groups of countries that trade with each other tend to have a significant income convergence, with the FPE just corroborating the intuition of Heckscher-Ohlin that trade play an equalizing role.

Fischer and Serra (1996) found that in presence of externalities in each country (developed and less developed), trade leads to factor price equalization. Trade reduces the growth rate in the developed country, which is explained by factor prices change due to trade. Since expenditure in education enters each agent's utility function and trade raises the relative price of human capital in the rich country, less education is provided to descendants. As trade leads wealthy people to save a large proportion of total savings, and the externality causes their savings to be less productive, growth suffers. The distributional consequence is that trade reduces the rate at the inequality declines. If the poor country has no more inequality than the rich country, the poor country grows faster. These authors considered in their analysis a presence of externalities in the production of

4 Of course that the import substitution policy also caused many improvements in some LDCs, such as more variability in the exports, increase in the life expectancy at birth, increase in the growth rate, manufacturing increased as a proportion of GDP (Bruton, 1998). But the price distortions, poverty, income inequality problems and misuse of resources overcome all the improvements from the import substitution policy.

human capital and income inequality. They conclude that trade will result in inequality disappearance and income convergence in the long run[5].

But the use of FPE to explain income convergence has some problems, since the FPE theorem describes just the free trade equilibrium, without mention anything about the dynamics of this process. One alternative to this problem would be the dynamic analogue of the FPE theorem, called Factor-Price Convergence Theorem (FPC) by Leamer (1995), which says that when two countries eliminate the trade barriers, good price equalization eliminates factor price gaps. But this approach has problems as well. There are many assumptions that have to be satisfied to validate both theorems[6]. Then, even if the FPC theorem is leading to convergence of factor prices, income can be diverging if the endowments between two countries are too different.

The international trade could be an important cause of income convergence if we consider the international flows of technology. The problem is if we try to link the income convergence with the trade of technology, which the income depends not only on factor prices but also factor quantities.

A variation of the flows of technology could be the flows of capital goods. Capital goods trade affects a country's income through its endowments of factor quantities. But there is nothing that guarantees that factor prices across countries are converging or diverging at the same rate.

There are many other attempts to relate the income convergence with international trade. Some of them are less orthodox than others. For instance, we can consider a North-South Model[7], which is a multi-sectoral model. In a world formed by interdependent economies, balance of payments constraints can reduce growth in less competitive countries. Balance of payments constraints reflect the lack of demand for the goods produced in these countries, which are unable to keep or expand their market shares in both the domestic and international economies. The link between competitiveness and long term, demand-led growth can be formally expressed through the following equations in a North-South model:

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5 For Sala-i-Martin (1996), a cross-country analysis from 1960 to 1990 showed that poor countries have not grown faster than rich ones.

6 See Slaughter (1997) for a detailed discussion about the FPE and FPC problems.

7 See McCombie and Thirlwall (1994).

(1) $$X = \left(\frac{Ps}{Pn.E} \right)^{\psi} Z^{\tau}$$

(2) $$M = \left(\frac{Pn.E}{Ps} \right)^{\upsilon} Ys^{\pi}$$

(3) $$ps + x = pn + e + m$$

(4) $$ys^{*} = \frac{(1 + \Psi + \upsilon).(ps - pn - e) + \varepsilon.z}{\pi}$$

Where **X** and **M** stand for the South volume of exports and imports, respectively, **Z** is world income, **Y** is the South income, **Ps/Pn.E** is the relative price in the South and North (denominated in the South currency, with **E** representing the nominal exchange rate), **ψ** and **ν** are the price-elasticity of demand for exports and imports, respectively, **ε** is the income elasticity of the demand for exports, and **π** is the income elasticity of the demand for imports in the South.

If one logarithmically differentiates the demand equations for exports (1) and imports (2), and assumes that in equilibrium the rates of growth of the value of exports and imports should be equal, as stated in equation (3), the result shown in equation (4) is obtained. Small letters in equations (3), (4) and (5) represent the proportional rates of growth of the variables.

Equation (5) expresses the path of constrained growth, where **ys*** is the proportional rate of income growth in the South compatible with balance of payments equilibrium, and **ps-pn-e** is the proportional rate of change of relative prices (denominated in the domestic currency). Assuming that purchasing power parity applies, we have (**ps-pn-e**) = 0 and then equation (4) results in the following expression:

(5) $$\frac{ys^{*}}{z} = \frac{\varepsilon}{\pi}$$

This result (referred to in the literature as the "Thirlwall's Law") can be seen as a very simple model of convergence and divergence. For income convergence to occur,

ys*/z should be higher than unity (*i.e.*, income should grow in the South at higher rates than in the rest of the world), and therefore **ε** should exceed **π**. The values of **ε** and **π** depend on what McCombie and Thirlwall have called "non-price competitiveness", related to the quality of the goods produced and to the system of exports financing.

The Thirlwall's Law is consistent with the Keynesian view of growth being determined by effective demand, which in an open economy depends, in turn, on the country's international competitiveness. On the other hand, as observed by Faberberg (1988), the elasticities of demand for exports and imports remain like a "black box" in the Thirlwall's model. In particular, for being an one-sector model, it losses a key point stressed by the structuralist tradition: elasticities are related to different patterns of international specialization as much as to the quality of the goods or the credit system for exports. New opportunities and gains from trade arise with industrial diversification, which broadens the scope for intra-industry trade. This is in turn related to structural change and to the Schumpeterian process of "creative destruction" based on technological change.

In other words, Keynesian demand-led growth should be related to Schumpeterian structural change in order to explain long-term growth.

IV - Income and Structural Convergence: The Experience of ABU, 1963-1995

In order to study the relationship between structural and income convergence in Latin America, two indexes were constructed. The first one was the Income Convergence Index (IC), defined as IC(j) = GDP(j) / GDP(four), where GDP(four) is the average real *per capita* (*p.c.*) GDP of four advanced countries (France, Germany, The United Kingdom, and The United States) and GDP(j) is the real GDP *p.c.* of the country studied, where (j) stands for Argentina, Brazil or Uruguay. The higher this index, the lower the income distance between these countries and the advanced economies. The evolution of income convergence is presented in Table 1 (Appendix).

The second index constructed was the Cross-Country Structural Change Index (CCS_{jn}), which is intended to measure the difference in the economic structure between two countries, a country "j" (which represents Argentina, Brazil or Uruguay) and a developed country "n" (which represents one of the advanced economies mentioned above). This index is defined as follows:

$$(1) \qquad CCS_{jn} = \sum_i \left| X_{ij} - X_{in} \right|$$

Where X_{ij} is the participation of industry "i" in the total value added of the manufacturing sector of country "j", and X_{in} is the participation of the same industry in the total value added of the manufacturing sector of country "n". The index is computed by summing up the difference in this participation (in absolute values) for all industries "i". It is clear that the higher the index CCS_{jn}, the higher the difference between "j" and "n" in terms of the composition of the manufacturing sector[8]. The CCS_{jn} index provides a measure of the degree of similarity in the sectoral composition of manufacturing and thus offers some idea of the quality of the investment effort[9]. The evolution of the CCS_{jn} index is presented in Tables 2, 3 and 4 in the Appendix.

The observation of the evolution through time of both indexes suggests the following "stylized facts":

(a) Brazil displayed a relatively high rate of income and structural convergence with the developed countries until 1980. Thereafter, this country tended to diverge in terms of both indexes.

(b) Argentina and Uruguay showed structural convergence until the early seventies, but this trend was rather weak and unable to check income divergence. In the late seventies and eighties, both structural and income divergence accelerated. As a

[8] The raw data for computing the CCS_{jn} index was obtained from the UNIDO Industrial Statistics Database, which presents information on the structure of the manufacturing sector at a three-digit level for 1963-1991.

[9] The quality of investment seems to play a role at least as important as its quantity in enhancing economic growth.

result, these countries exhibited income divergence for most of the period, associated with structural divergence or very slow structural convergence.

(c) The correlation matrix of these variables provides a preliminary confirmation of the existence of an association between income and structural convergence. It can be seen in tables 5, 6 and 7 that the correlation coefficients between the income gap and the structural gap for each pair of countries display high negative values in the case of Brazil and Uruguay[10]. This was true for each country individually, as well as for the sum of the CCSC indexes with respect to three advanced countries (France, Germany and the UK). However, this relationship was the opposite of what was expected in the case of Argentina and the UK. Moreover, the correlation coefficient of the income gap with the sum of the CCSC indexes between Argentina and the three advanced countries was not significant. Therefore, while the hypotheses of a positive association between structural change and income convergence found support in the experience of Brazil and Uruguay, it fails in the case of Argentina.

V - Industrial Policy and Structural Change [11]

The previous discussion addressed how factors related to the economic structure of Argentina, Brazil and Uruguay affected the long-term economic performance of these countries. Still, structural change is closely related to institutional change. It is the interaction between these two sets of variables that shapes economic performance in the long term.

The empirical evidence presented in the last section suggested that convergence in industrial structures and convergence in income levels were positively correlated in the period studied. In this section it will be argued that industrial policy in Argentina, Brazil and Uruguay played a key role in explaining the differences among these countries in terms of structural change and convergence. A very broad definition of industrial policy

[10] The value found for this correlation was yet rather low in the case of Uruguay and the UK.

[11] Part of this discussion was based on Bertola, Bittencourt and Porcile (1998).

will be used, including all governmental measures that can affect the allocation of resources across the different sectors of the economy.

The main point to be developed is that industrial policy in Brazil was much more consistent, continuous and comprehensive than in Argentina and Uruguay. This contributed to explain the higher rate of structural change in Brazil.

The late fifties witnessed the implantation of new capital-intensive industries in Argentina and Brazil, led by the metal-mechanical (especially vehicles) and the chemical industries (the so-called second phase of import-substitution, ISI-2). As shown in the previous section, the direction of structural change was similar in both countries, but the intensity of this process was rather different. This can in part be explained by the effectiveness of industrial policy. The design and implementation of industrial policy was carried out in very different political and institutional conditions in Brazil and this had an impact of industrial development[12].

As Fishlow (1990) pointed out, the import substitution policy in Brazil was compatible with accelerated industrialization and high rates of aggregate growth. Its share of regional income increased from 43 to 54 % during 1953 to 1973 period. The share of regional income going to Argentina declined from 27 to 19 %.

In Brazil, industrial deepening was carried out in the framework of Kubitschek's *Plano de Metas* (Targets Plan) that during five years provided consistent support for industrial development, including subsidies and closed markets for new industries[13]. The domestic political environment was always favourable to the "developmentalist" project, which was pushed forward even when mounting disequilibria in the domestic and

12 For a comparison of the institutional and political environment in Argentina and Brazil in this period, see Sikkink (1991)

13 The implementation of the Targets Plan was in charge of the so-called "Executive Groups", *ad hoc* bodies that managed specific areas in development planning, like autos, agricultural machinery, naval construction, heavy machinery, transportation and railways. These Executive Groups operated with considerable autonomy and were quite effective in overcoming bureaucratic resistance, as they were formed by representatives from the various governmental agencies. An especially important role was played by the GEIA (Executive Group of the Automobile Industry), which offered significant benefits (exchange rate and tariff exemptions for imports of inputs and machinery, tax rebates and subsidized official credits by the Bank of Brazil and the National Development Bank) in exchange of a certain level of "nationalization" of the components of the car. The National Development Bank (BNDES), in turn, was an important player in the coordination of the investment efforts in the public and private sector (Leopoldi, 1991).

external front became evident. There was a broad consensus in Brazil as regards the need of rapid industrial growth, which sustained the "developmentalist" coalition[14].

Conversely, in Argentina ISI-2 was conflictive and traumatic, haunted by political instability. President Frondizi himself believed that he had at most a couple of years to advance his industrial projects[15]. By mid-1959 the Frondizi administration had already been checked by domestic political opposition. He then adopted a severe stabilization plan that led to a sharp contraction of the economy and halted the "developmentalist" bias of his government[16]. Two years later, Frondizi was deposed by a military rebellion, resulting in growing political conflict and economic downfall.

These differences in the institutional environment in which ISI-2 took place in Argentina and Brazil were not inconsequential. Their effects were clearly reflected in the average rate of investment in 1956-61, significantly higher in Brazil than in Argentina[17].

According to Taylor (1992), external dependence on foreign capital was also crucial in Argentina, because of the scarcity of domestic capital, which resulted in large part from demographic constraints on domestic savings. A high dependency rate, driven by a fast-growing population and substantial immigration, gave rise to an age structure with a large share of young consumers. The shortfall in available resources to be invested had to be made by capita inflows.

It should be observed that it is not being suggested that the industrial policy then adopted by Brazil was "ideal" in any sense. Other policy alternatives could have avoided so high levels of protection and macroeconomic instability. But given the policy strategy that both countries adopted - the deepening of ISI - it is clear that Brazil pursuit this objective in a more consistent manner. And this had an impact on the relative success of the strategy in each country. Once again, the path-dependence matters.

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[14] On the political conditions of the Targets Plan see Benevides (1976).

[15] See Szusterman (1993).

[16] See Petrecolla (1989).

[17] A qualitative effect whose importance for industrial policy in subsequent years is difficult to assess has to do with the perception that both countries held about the value and significance of the concentrated industrialization effort of the late fifties. While in Brazil the Kubitschek's period is looked at proudly, as a phase of "heroic" industrialization and stable democracy, in Argentina the Frondizi's period has been haunted by controversy and criticism. See on this Sikkink (1991).

The case of Uruguay was different from that of her two big neighbours. Clearly, in this case, there was no place for industrial policies of the kind adopted in Brazil. Uruguay's rather narrow domestic market did not allow for a strategy of deepening import-substituting industrialization. The advance of ISI would have implied a much higher cost in terms of inefficiency than in Argentina and Brazil. Therefore, the only avenue opened for Uruguay was to diversify her exports in order to enter more dynamic international markets, in sectors with higher value added.

In the forties and fifties, the export structure of Uruguay was reoriented towards wool products and some agricultural products exported. A system of multiple exchange rates was adopted in order to encourage the industrialization of primary goods, including wool. But this strategy was challenged by the persistence of protectionist barriers on temperate agricultural goods in the USA and Europe and by the US tax applied on the Uruguayan exports of wool products[18]. Thus, Uruguay's competitive advantage remained in sectors facing increasing barriers in the international economy, which lessened the income elasticity of her exports. Moreover, domestic policies discouraged exports. The overvaluation of the exchange rate and high industrial protection during the "neo-batllista" period compromised the growth of exports. Only in the mid-seventies would Uruguay implement a new and more successful drive towards export diversification.

The divergence in industrial policy between Argentina and Brazil became especially apparent in the second half of the seventies. While in the fifties Argentina and Brazil moved in the same direction (although with a different degree of success), in the second half of the seventies they moved in completely opposite directions.

In 1974, Brazil adopted a specially ambitious program of industrial development, the II PND (*Plano Nacional de Desenvolvimento*), aimed at implementing a new set of capital (and technology) intensive industries, mainly in the intermediate and capital goods sectors[19]. This move was prompted by the 1973 oil crisis and sought to "complete" the industrial matrix through a new wave of import-substituting industrialization. In addition, Brazil attempted to diversify her export structure by increasing manufactured exports,

[18] The USA argued that the Uruguayan system of multiple exchange rates represented an implicit subsidy for wool exports to the US market.

[19] See Barros de Castro e Souza (1985).

especially to other Third-World countries. As a result, the import coefficient of the economy was further reduced, while the export coefficient increased.

In order to achieve this objective, a comprehensive array of policy measures was adopted, which included financial subsidies for the new industries, stricter import restrictions (based largely on non-tariff barriers, managed by the CACEX in Brazil) and subsidies to manufactured exports, combined with an active diplomacy towards developing countries in Africa, the Middle-East and Latin America[20]. The abundance of foreign capital was then instrumental in broadening the degree of autonomy that Brazil needed to finance his new industrial projects. As already discussed, this industrialization drive of Brazil succeeded in promoting the convergence of his industrial structure with respect to that of the industrialized countries.

As Brazil, Argentina used the relative abundance of foreign loans to set forward an ambitious programme for industrial restructuring. But its direction was the opposite to that of Brazil. Argentina sought to regain competitiveness by dismounting her system of industrial protection and by increasing exports based on static comparative advantages[21]. In addition, the exchange rate was managed in accordance with the so-called "monetary approach to the balance of payments", with devaluation occurring at a pre-announced declining rate. This led to a combination of overvaluation of the exchange rate with trade openness that severely affected the competitive capacity of the Argentine industry[22]. The experience ended in a deep recession.

The drastic contraction of the metal-mechanical industries halted the previous process of slow cumulative industrial learning. Except for a few cases, which comprised industries intensive in energy and natural resources, no industry received special support, as the policy was explicitly aimed at providing a neutral environment from the point of view of factors allocation[23]. At the same time, no new export-oriented sector came up to

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[20] However, trade relations with Argentina were restrained as a result of an enduring diplomatic conflict related to geopolitical rivalry and the construction of the Itaipu dam. In addition, Brazil strengthened its diplomatic and economic links with Europe, especially with Germany, in order to set forward its nuclear project.

[21] See Katz and Kosacoff (1989).

[22] See Kosacoff (1992).

[23] See Aspiazu (1989).

play the leading role in economic growth that the metal-mechanical industries had formerly played.

The contrasting experiences in industrial transformation of Argentina and Brazil ended with the 1982 debt crisis. Both countries had followed policies that compromised (for different reasons) competitiveness and external equilibrium. In the case of Brazil, the array of subsidies provided by the ISI-2 represented an additional source of tension as the government faced a growing fiscal deficit. Moreover, both policies had been sustained on the basis of the external debt. The increase of the international interest rates in the early eighties launched a financial crisis, put an end to the policies of the seventies and opened up "the lost decade", which was characterized by large resource transfers, high real interest rates, large deficits financed by internal debts, accelerating inflation and economic stagnation.

VI - Conclusions

This work analyzed the impact of structural change on economic growth in Argentina, Brazil and Uruguay. We presented empirical evidence suggesting that income convergence and structural convergence were associated in the post-II World War period, although this evidence was not conclusive in the case of Argentina.

Finally, the differences in industrial and economic policies in Argentina, Brazil and Uruguay may have contributed to explain the intensity of the process of structural change in these countries. Institutional and structural changes occurred together. In this respect, the ABU countries exhibited a different ability to reshape their institutions with a view to encouraging industrial transformation. The Brazilian industrial policy seems to have been more efficient in promoting structural convergence than her neighbors, and this was reflected in the different performance achieved by these countries in the international economy.

The discussion about a higher degree of state intervention and/or liberalization in these countries is still being debated. The deficit problems in Latin America and its consequences permit no easy solution. The debt crises of the 1980s have underlined the fragility of the state and its inability to respond to the less favorable external

environment. According to Fishlow (1990), the issue is not merely debt reduction but redesigning the Latin American state. Macroeconomic equilibrium, as recently has been achieved in Brazil since 1994's Real Plan, once achieved, will not by itself guarantee economic development.

Restarting and sustaining economic growth is where the public sector has a central and critical role. To perform that role effectively requires a new coalition of political support that is founded on much reduced external finance and need for larger domestic saving, especially of the public sector itself; an expanded, but more competitive, international market in manufactured products, based upon diffusion of technology and imports of capital goods; limits on the domestic tax base; and unacceptably high income inequality throughout the region. Political transformation is very much a component of redesigning of the state; democratization is only the beginning[24].

It could be performed a formal test to assess whether a model of growth with balance of payments constraints is consistent with the ABU growth experience from 1963. In this model, we could include the effects of structural change on the basic North-South Model, described in the section III. As a future study, it would be important to empirically estimate this model trying to identify the direct influence of international trade on the income convergence, since here we have just analyzed an indirect effect of trade through the structural changes occurred in the industry.

24 See Fishlow (1990) for more details.

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APPENDIX

Table 1**:** Income per capita distance with respect to four advanced countries. *Ratio of the Index of the Real Per Capita Income: ABU / Four Advanced Countries 1900=100*

Year	Argentina	Brazil	Uruguay	Year	Argentina	Brazil	Uruguay
1960	57	163	72	1975	51	215	52
1961	59	167	69	1976	48	223	51
1962	54	167	67	1977	48	220	49
1963	50	159	63	1978	45	215	50
1964	52	152	62	1979	47	219	51
1965	54	144	56	1980	49	233	55
1966	51	142	57	1981	46	217	55
1967	51	145	54	1982	42	217	50
1968	51	153	52	1983	42	201	43
1969	52	153	53	1984	41	198	40
1970	52	162	54	1985	37	204	40
1971	52	173	53	1986	38	212	42
1972	50	182	50	1987	38	208	46
1973	49	193	48	1988	34	195	43
1974	51	208	49				

Source: Summers and Heston (1991).

Table 2: Cross-Country Index of structural change for *Argentina*

Year	AR-BR	AR-FR	AR-GER	AR-UK
1963	0.5489	0.53757	0.66539	0.68958
1964	0.55312	0.49352	0.60642	0.61744
1965	0.54553	0.48876	0.60389	0.60289
1966	0.54744	0.50432	0.60553	0.62698
1967	0.53657	0.51591	0.59718	0.63609
1968	0.50213	0.5023	0.59585	0.63082
1969	0.44835	0.48247	0.60262	0.60364
1970	0.43242	0.48687	0.60191	0.6067
1971	0.42758	0.45423	0.5854	0.581
1972	0.40732	0.44338	0.57053	0.54194
1973	0.3793	0.46006	0.56983	0.55258
1974	0.33747	0.50115	0.58701	0.52921
1975	0.34379	0.4412	0.57276	0.51361
1976	0.37201	0.47869	0.59759	0.55352
1977	0.31164	0.4297	0.56416	0.52447
1978	0.35222	0.43527	0.57818	0.54364
1979	0.33737	0.42592	0.54935	0.53119
1980	0.43912	0.48351	0.59044	0.55807
1981	0.38178	0.51288	0.62851	0.55938
1982	0.38632	0.50053	0.63564	0.56468
1983	0.31656	0.49715	0.62915	0.53398
1984	0.30189	0.45891	0.59146	0.51435
1985	0.32627	0.46843	0.63916	0.54093
1986	0.36955	0.47044	0.64185	0.52516
1987	0.34015	0.48451	0.62119	0.5013
1988	0.33969	0.51833	0.65655	0.54161
1989	0.39191	0.55749	0.7039	0.58697
1990	0.4039	0.74313	0.61657	0.63541
1991	0.38727	0.60855	0.73022	0.61371

Source: Elaborated from the UNIDO Industrial Statistics Data Bank. The Cross-Country Structural Change Index is calculated as the sum of the differences (in absolute values), for each pair of countries, in the participation of each industrial branch in the total value added of the manufacturing sector. Value added for early years calculated on the basis of the Index of Industrial Production of each industrial branch according to the UNIDO statistics, taking the value added of 1990 as the reference.

Table 3: Cross-Country Index of structural change for *Brazil*

Year	BR-FR	BR-GER	BR-UK
1963	0.56315	0.7133	0.59917
1964	0.5389	0.69826	0.58903
1965	0.49944	0.66437	0.55861
1966	0.42811	0.59992	0.49249
1967	0.42112	0.59236	0.50398
1968	0.37855	0.61044	0.5161
1969	0.29934	0.55104	0.44125
1970	0.29189	0.58617	0.45967
1971	0.23532	0.56782	0.44463
1972	0.21467	0.53647	0.40653
1973	0.24013	0.53133	0.39529
1974	0.28293	0.51092	0.4005
1975	0.25173	0.49774	0.40279
1976	0.2447	0.47829	0.3987
1977	0.20377	0.4734	0.38861
1978	0.19663	0.47314	0.42292
1979	0.2169	0.47356	0.41074
1980	0.24215	0.49436	0.43659
1981	0.2388	0.55411	0.44784
1982	0.2853	0.60826	0.494
1983	0.26995	0.61201	0.49538
1984	0.25582	0.58553	0.4774
1985	0.24254	0.57305	0.46148
1986	0.19103	0.52502	0.43546
1987	0.21861	0.53831	0.4335
1988	0.21329	0.53423	0.44058
1989	0.22206	0.52964	0.44231
1990	0.23763	0.56018	0.46112
1991	0.23673	0.57978	0.44212

Source: Elaborated from the UNIDO Industrial Statistics Data Bank. The Cross-Country Structural Change Index is calculated as the sum of the differences (in absolute values), for each pair of countries, in the participation of each industrial branch in the total value added of the manufacturing sector. Value added for early years calculated on the basis of the Index of Industrial Production of each industrial branch according to the UNIDO statistics, taking the value added of 1990 as the reference.

Table 4**:** Cross-Country Index of structural change for *Uruguay*

Year	UR-FR	UR-GER	UR-UK
1963	0.60388	0.83159	0.86742
1964	0.58372	0.81441	0.83192
1965	0.60454	0.83351	0.86855
1966	0.65708	0.85295	0.91995
1967	0.64091	0.7938	0.89178
1968	0.67555	0.85006	0.91498
1969	0.67328	0.86347	0.88855
1970	0.70584	0.87097	0.88073
1971	0.67396	0.83958	0.83075
1972	0.69924	0.85843	0.85347
1973	0.70516	0.85664	0.8458
1974	0.78025	0.89528	0.88404
1975	0.78413	0.91599	0.89019
1976	0.80329	0.91728	0.88247
1977	0.76669	0.9054	0.8502
1978	0.7405	0.89189	0.83621
1979	0.67669	0.83345	0.76148
1980	0.68057	0.81534	0.73839
1981	0.72887	0.88804	0.77257
1982	0.75335	0.9483	0.81925
1983	0.82797	1.03033	0.9036
1984	0.79578	0.99535	0.88479
1985	0.78175	1.00714	0.88963
1986	0.72396	0.95911	0.83129
1987	0.70102	0.89698	0.7708
1988	0.75272	0.9293	0.82565
1989	0.78542	0.95642	0.85531
1990	0.77346	0.94437	0.83126
1991	0.75714	0.94048	0.80843

Source: Elaborated from the UNIDO Industrial Statistics Data Bank. The Cross-Country Structural Change Index is calculated as the sum of the differences (in absolute values), for each pair of countries, in the participation of each industrial branch in the total value added of the manufacturing sector. Value added for early years calculated on the basis of the Index of Industrial Production of each industrial branch according to the UNIDO statistics, taking the value added of 1990 as the reference.

Table 5: Correlation matrix for Brazil

	GapB	BR-FR	BR-GER	BR-UK
GapB	1.000			
BR-FR	-0.7636	1.000		
BR-GER	-0.7182	0.8499	1.000	
BR-UK	-0.6600	0.8879	0.9491	1.000
BRM	-0.7528			

BRM = BR-FR + BR-GER + BR-UK

Table 6: Correlation matrix for Argentina

	GapA	AR-FR	AR-GER	AR-UK
GapA	1.000			
AR-FR	-0.02622	1.000		
AR-GER	-0.5252	0.7390	1.000	
AR-UK	0.5507	0.5988	0.2646	1.000
ARM	0.1108			

ARM = AR-FR + AR-GER + AR-UK

Table 7: Correlation matrix for Uruguay

	GapU	UR-FR	UR-GER	UR-UK
GapU	1.000			
UR-FR	-0.7452	1.000		
UR-GER	-0.7999	0.8392	1.000	
UR-UK	-0.04302	0.1484	0.2191	1.000
URM	-0.7178			

URM = UR-FR + UR-GER + UR-UK

Key to the variables

gap = *(per capita* GDPn) / (*per capita* GDP four advanced countries);

AR-FR, AR-GER, AR-UK, BR-FR, BR-GER, BR-UK, UR-FR, UR-GER, UR-UK: Cross Country Structural Change Index, in which the structure of the manufacturing sector of each ABU country is compared with that of an advanced country (France, Germany and the United Kingdom).

Source: Elaborated from the *Unido Industrial Statistics Data Bank*. The data for the manufacturing sector is computed at a 3-digit level of aggregation.