

**Working Paper 1**

**REVISITING THE LATIN AMERICAN  
DEVELOPMENT PROCESS.<sup>1</sup>**

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#### **4. Macro and Micro Impact of Natural Resource-based Growth**

The impact of natural resource-based growth constitutes an issue that has engaged economists for many years and from various perspectives. Sachs and Warner (1995) are among those who consider the availability of rich natural resources to be a ‘curse’ that could eventually stunt the process of economic growth. According to these authors, abundance of natural resources make the economy more dependent on world prices and therefore more prone to externally induced economic volatility and currency appreciation, inducing recurrent episodes of so-called Dutch Disease. The availability of extensive natural resources retards the evolution of the local production structure into more knowledge-intensive activities due to the significant productivity differentials that prevail between natural resource-processing industries and engineering-intensive sectors. Natural resource-processing industries are normally highly capital-intensive and do not create much employment. Much of this reasoning has been at the core of the work of authors such as Prebisch and Singer and has provided the foundation for a large body of literature emerging from ECLAC (Economic Commission for Latin America and the Caribbean of the United Nations) that highlighted the problem of falling terms of trade and of the benefits of technical progress in primary production being transferred from the periphery to the centre. In a classic paper about currency appreciation, Krugman wrote on Dutch Disease in Denmark that resulted from the discovery of new oil and gas reserves and the impact this has had on the competitiveness of other sectors in the economy.

On the other hand, inspired by the experience of countries such as Finland, Sweden, and Denmark, other scholars have pointed out that natural resource-processing industries provide a suitable route for the introduction of sophisticated processing technologies upstream and downstream of the resource itself. This may open ‘windows of opportunity’ for the expansion of skill-intensive activities in intermediate inputs and services (Lundvall, 2004). Biotechnologies, digitalized process control equipment, agrochemicals, vaccines, and more belong in this set of skill-intensive activities that might develop in association with the expansion of natural resource-processing sectors. In actual fact, a significant expansion of biological and genetic activities – animal cloning, genetically modified seeds, and more – has been observed in Argentina, Brazil, Chile, and Uruguay in recent years, confirming the importance of Lundvall’s findings (Bisang, 2007).

Beyond natural resources as either a ‘blessing’ or a ‘curse’, several other topics need be mentioned that so far have not received adequate attention in the literature (Katz and Iizuka, 2011). First, the relationship between natural resources and long-term environmental sustainability requires more attention. Second, natural resources frequently belong in the category of ‘commons,’ where the risk of over-exploitation – as discussed by Harding (1968) in his famous parable of the ‘Tragedy of the Commons’ – constitutes a very likely possibility. Finally, we also highlight the fact that that recent advances in genetics and biology, in immunology and health sciences, and in the understanding how DNA recombination works, has opened up a new ‘window of opportunity’ for natural resource-based new products, such as genetically modified agricultural commodities, nutraceuticals, and more. These certainly

represent new opportunities for Latin American countries to explore in the future. Let us first look at the macro aspects..

#### 4.1. The impact of Dutch Disease in Latin America.

The past decade has seen the adoption of inflation targeting macroeconomic policy regimes by many countries in Latin America, as well as their corollary, floating exchange rates. Chile, Brazil, Mexico, Colombia, and Peru can be cited as examples of this policy option, while Argentina has instead opted for a managed exchange rate regime after abandoning dollarization in 2001. How have these two macroeconomic policy regimes performed and what has their impact been on growth, on the evolving structure of the economy, and on international competitiveness?

Haber (2005) discusses the relationship between exchange rate depreciation and industrialization in the late 19<sup>th</sup> century Latin America. Looking at more recent history, Fanelli and Frenkel (1996) compare the external opening of the Brazilian and Argentine economies in the 1990s. Both countries had very similar conditions, except for the level and evolution of the real exchange rate (RER). The Brazilian Real was undervalued and stable, and the Argentine Peso was overvalued and appreciating. Brazilian exports grew faster than output, while Argentine exports remained stagnant. In more recent times, exactly the opposite has happened, and the outcome has been quite similar: Argentine manufacturing exports grew rapidly between 1993 and 2010, while Brazilian manufacturing exports continuously lost ground in world markets (Albrieu, 2011). Frenkel and Rapetti (2011) conduct a historical study of exchange rate regimes in Latin America, and conclude that they have had a significant influence on the macroeconomic performance of Latin American countries.

Thus, the empirical literature shows that the real exchange rate affects the growth rate of the economy, as well as the evolution of its structure and exports (Katz and Goya, 2011). Overvaluation of the local currency has been shown to have negative effects on long-term growth. Moreover, if the real exchange rate appreciation persists for some time, it might even have an irreversible negative impact on the structure of the economy as well as on international competitiveness, as investment in new production capacity and in innovation may be postponed or be biased against knowledge-intensive sectors. In contrast, a stable and competitive real exchange rate – SCRER – has been identified as inducing more dynamic and outward-oriented behavior from firms. It also positively affects output diversification, which constitutes yet another source of growth and export competitiveness (Katz and Goya, 2011; Saviotti and Pika, 2004).

Open economies macroeconomic management confronts us with the so-called ‘trilemma,’ or ‘impossible trinity’ (Nassif et al., 2011), that governments face in choosing between different degrees of autonomy in monetary policy, foreign exchange intervention, and capital mobility. The logic of the Mundell Fleming model indicates that the choice of the exchange rate regime affects the way in which domestic prices and the balance of payments are maintained in equilibrium. As Nassif et al. (2011) argue,

[...] in an ideal world with free capital mobility it is assumed that a floating exchange rate regime can absorb external shocks without affecting the level of international reserves making the country less vulnerable to exchange rate crisis and speculative attacks. (Op.Cit. p. 8).

With an open capital account and a floating exchange rate regime, the authorities can stabilize the domestic price level through monetary policy by manipulating the interest rate and aggregate demand, but they cannot simultaneously control the exchange rate. If the RER appreciates, it might end up affecting the structure of the economy by diminishing the relative competitiveness of more knowledge-intensive activities, which we can reasonably assume to be further away from the international productivity frontier.

The perception that the appreciation of the real exchange rate might have a stronger negative impact on industries that lag further behind the international productivity frontier, making them less competitive in world markets, has led Brazilian economist Luiz Carlos Bresser Pereira to argue that there are two equilibrium real exchange rates, rather than one, as mainstream economics considers. The second exchange rate is what Pereira regards as an 'industrial equilibrium' exchange rate, which would facilitate faster growth and simultaneous catch up with the international technological frontier in more knowledge-intensive activities.<sup>2</sup> (Bresser Pereira, 2010).

We can further extend Bresser Pereira's argument by saying that industries could be characterized as being natural resource-based, labour intensive, and medium or high tech intensive. It seems reasonable to assume that industries in the first group, and some in the second group, would be closer to the international productivity frontier, while most of the third group would be further away. If this were the case, the industrial equilibrium real exchange rate should be made to reflect relative productivity differentials of different industries vis-à-vis the international productivity frontier.

Put differently, a SCRER might not be enough to induce firms in more knowledge-intensive industries – which lag further behind the international technological frontier – to undertake the efforts, and to absorb the uncertainties, associated with catching up with the international state of the art. However, as mentioned before, not all that we observe in the economy is the result of price signals, and a SCRER is just that, a price signal that we assume has the capacity to induce firms into more dynamic investment and technological behaviour. But, if a SCRER is not sufficient to achieve this (i.e. to induce industries that are relatively more backward vis a vis the frontier to make the effort to catch up), the government can resort to sector-specific instruments in support of such a goal. The history of the Korean or Taiwanese 'catch up' describes a situation of that sort (Rasiah, 2007). Sector-specific subsidies and incentives were used in addition to a SCRER to induce firms to undertake abnormally risky and uncertain innovative decisions (Keun Lee, 2011; Katz and Goya, 2012). Latin American governments have been reluctant to adopt this view during the present – orthodox - phase of macroeconomic policymaking, and have resorted instead to the use of 'neutral' price incentives, including tax reductions on R&D expenditures or

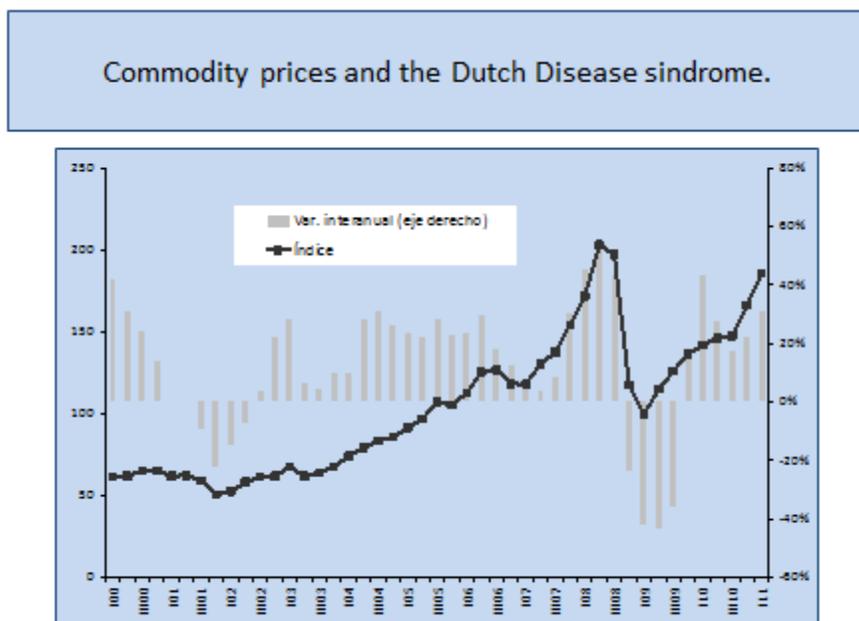
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<sup>2</sup> In the 1970s Argentine economist Marcelo Diamant presented a similar idea after observing the extreme productivity differentials he found between the Argentine agricultural and manufacturing sectors. See: M. Diamant, *La estructura productiva desequilibrada y el tipo de cambio* (1972).

grants for human capital upgrading. Unfortunately, there is little evidence suggesting that these neutral interventions have successfully induced Latin American firms to invest more in R&D and innovation. To a large extent, the difficulty Argentina, Brazil, and Chile currently face in achieving further advances in more knowledge-intensive activities ,reflects in our view the fact that governments have been reluctant to break away from the prevailing Washington Consensus orthodoxy.

At this point of the argument we should perhaps note that, for well over a decade now commodity prices have been experiencing a steady upward trend. The trend is stronger in gas and petroleum, followed next by minerals, and lastly by grains and foodstuffs (Jenkins, 2011). Although the upward trend was negatively affected by the 2009 financial crisis, it soon picked up strength again, as Figure 7 shows. Associated with this upward trend in commodity prices, terms of trade have improved and foreign exchange reserves have accumulated in many of Latin American scenarios.

Figure 7. The recent evolution of commodity prices



Source: G.Bernat and J.Katz (2011)

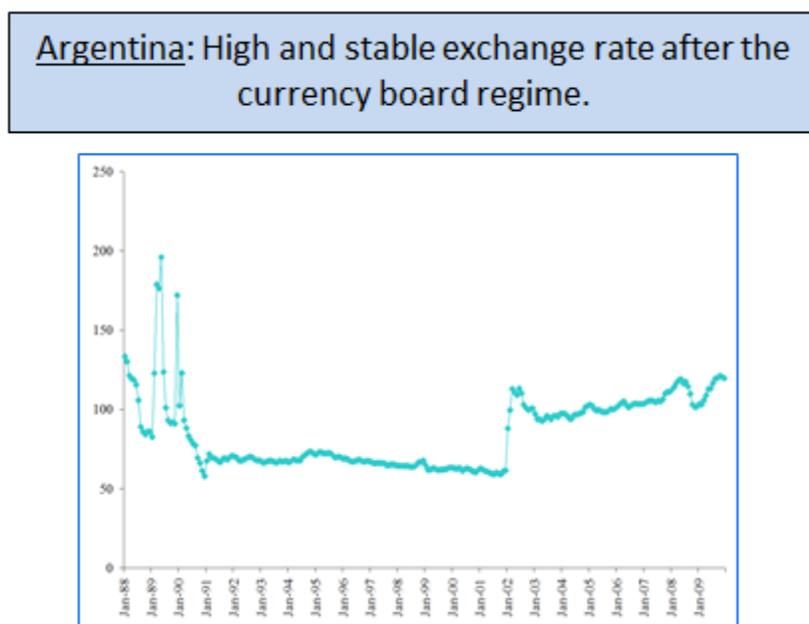
During the inward-oriented period of growth of the immediate postwar years, Latin American governments intervened in response to situations of this sort neutralizing the domestic impact of increasing commodity prices by increasing taxes on primary exports, introducing special

incentives for non-traditional exports, or using multiple exchange rates. In the transition to an open and deregulated macroeconomic policy regime, these instruments have been phased out, leaving the management of the external sector of the economy to depend solely on fiscal, monetary and exchange rate policies. This is where the 'trilemma' or 'impossible trinity' enters the current Latin American debate. Most countries opted for an inflation targeting regime, aimed at keeping inflation at bay and, simultaneously, maintaining an open capital account. This involved accepting a floating exchange rate as part of the macroeconomic policy package. As a result, countries lost the freedom to manage aggregate demand and monetary policy.

After devaluing its currency, Argentina opted instead for an administrative exchange rate regime, maintaining more degrees of freedom in terms of monetary and fiscal policy. We have here an interesting laboratory in which to examine how these two macroeconomic policy regimes performed in the 2000s. In presenting the argument that follows, we make extensive use of the results we obtained in a joint piece of research with Gonzalo Bernat from the University of Buenos Aires (Katz and Bernat, 2011).

On leaving the currency board regime, Argentina opted for a SCRER (Stable and Competitive Real Exchange Rate), which favored the growth of GDP, exports, and employment, as well as the accumulation of foreign reserves. Figure 8 shows the evolution of the exchange rate in Argentina, after abandoning the currency board regime.

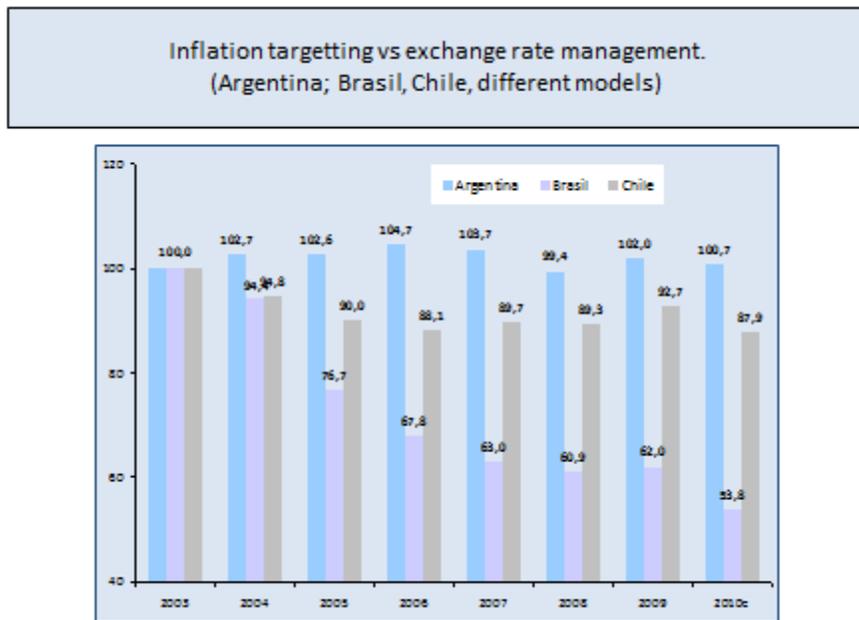
Figure 8. Evolution of the exchange rate in Argentina.



Source: G.Bernat and J.katz (2011).

In contrast to Argentina, Brazil and Chile allowed their currencies to float. Both currencies appreciated, more so in the case of Brazil than in Chile, as we notice in Figure 9.

Figure 9. Argentina, Brazil, and Chile, alternative macroeconomic management regimes.



Source: G.Bernat and J.Katz (2011)

The above differences in exchange rate management brought about different consequences for the global functioning of the economy in these three countries.

Manufacturing exports increased faster in Argentina than in Brazil and Chile, as Figure 10 indicates. “The accumulated growth of exports between 2003 and 2010 was notably higher for Argentina (59.4%) than for Brazil (34.6%) and Chile (25.4%) (Katz and Bernat, 2011). We also note that, in line with a priori expectations concerning the impact of Dutch Disease, both Brazil and Chile show negative export figures in 2007-2010 (4.9% and 5.8% respectively), while Argentina maintained a high and positive growth rate (15.4%) over the same period. In terms of the composition of industrial exports, the SCRER regime affects most manufacturing activities.

Examining the ‘technological content’ of exports, it is interesting to note that in all three countries, medium tech industries performed better than low-tech sectors. This would suggest

that Latin American firms could not maintain competitiveness in areas where Chinese firms were entering world markets in a very aggressive way, almost independently of the exchange rate policy the country followed.

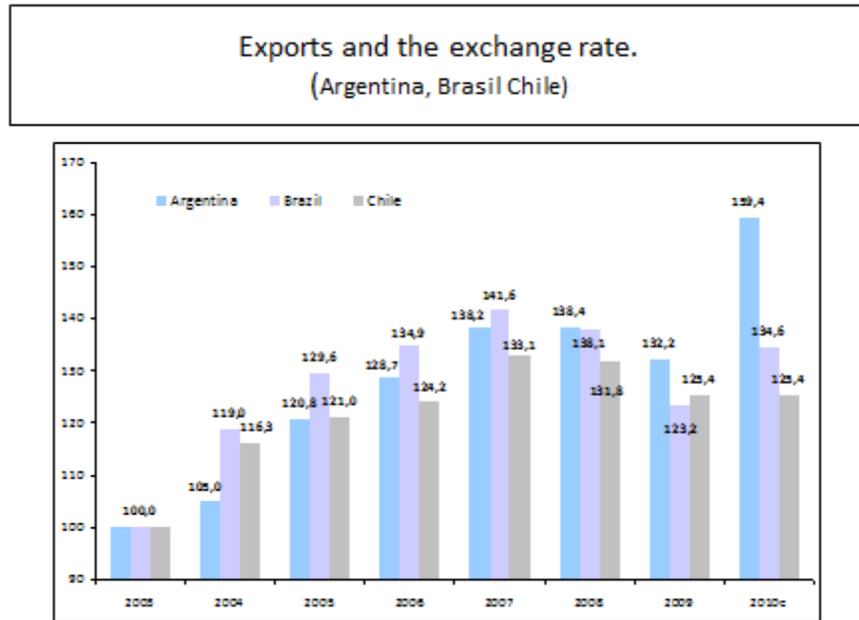
The falling competitiveness of Brazilian and Chilean exports and the displacement of domestically produced goods by imported Chinese substitutes affected the growth performance of industry. In effect, the industrial sector posted an 8.1% annual growth rate in Argentina between 2004 and 2008, while the comparable figure for both Brazil and Chile was 3.8% over the same period. In addition, the expansion of manufacturing production was more evenly distributed across industries in Argentina, while this was not the case in Brazil and Chile. Only a few medium-tech sectors and the vehicle industry – whose performance can not be considered to reflect free market processes – expanded in Brazil, while much of manufacturing production remained stagnant. Low-tech sectors, such as shoes and garments, previously quite significant in Brazilian exports, could not withstand the simultaneous impact of the appreciation of the real exchange rate and Chinese competition in world markets, and exports fell quite significantly. Katz and Bernat, (2011).<sup>3</sup>

On the other hand, public sector expenditure and wages continued to expand rapidly in Argentina, introducing inflationary pressure in the economy. The GDP growth bonanza of 2002-2008 did not induce more pro-active investment and innovation among domestic entrepreneurs – nor did the government try to lure local firms into using the higher profit margins they were capturing as a result of the devaluation of the local currency to build more modern and internationally competitive production facilities. In this sense, it can be said that a SCRER was not enough to encourage domestic firms to perform more R&D activities and undertake innovative efforts that might have allowed them to approach the international productivity frontier. It can also be added that the government did not adopt a more pro-active strategy to encourage firms to go in that direction, as the Korean government did in the 1980's, for example, trying to close the productivity gap in more knowledge intensive activities..

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<sup>3</sup> It is important to mention that some of the larger Brazilian shoemaking companies moved their manufacturing activities to China, but keeping the product design in Brazil. An interesting piece of research on this topic is presently being carried out by Cintia Kulzer at the University of Oxford as part of her doctoral dissertation.

Figure 10. Exports and exchange rate management.

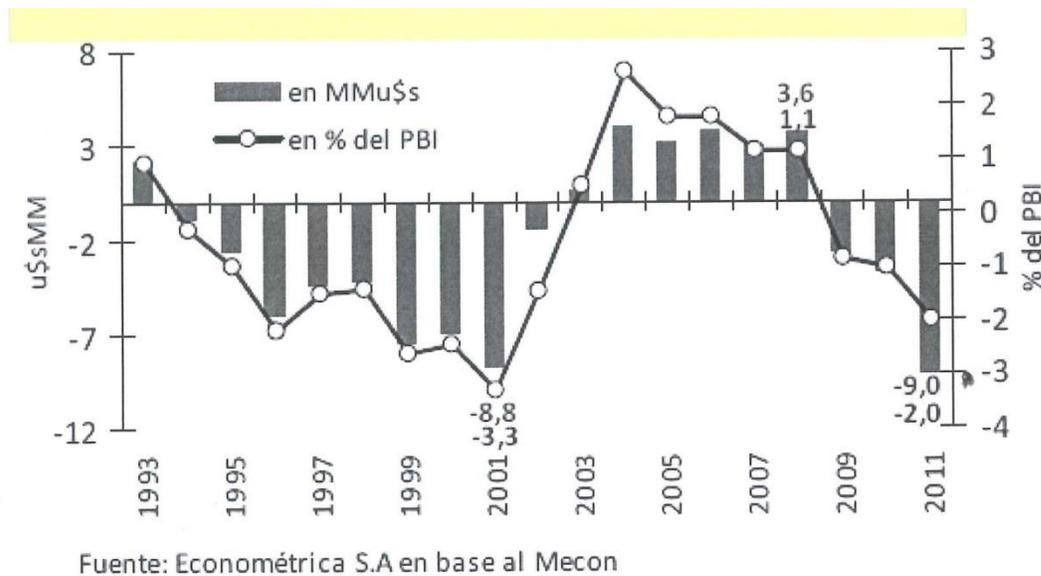


Source: G.Bernat and J.Katz (2011).

As can be seen in Figure 11 the 2008-2009 international financial crisis affected the Argentine external balance. To avoid losing international reserves the government called upon the Central Bank to finance the (still expanding) public expenditure and the service of the debt. In other words, the government opted for an inflationary tax trying not to lose international reserves. In so doing it abandoned the SCRER regime that brought rapid expansion of GDP, employment, and exports between 2002-2008.

As the SCRER regime came to an end, Argentina moved back to a traditional scenario of foreign exchange constraints that has prevailed all through the inward-oriented period of industrialization. The appreciation of the real exchange became significant in 2011 and 2012 (Castineira, 2012).

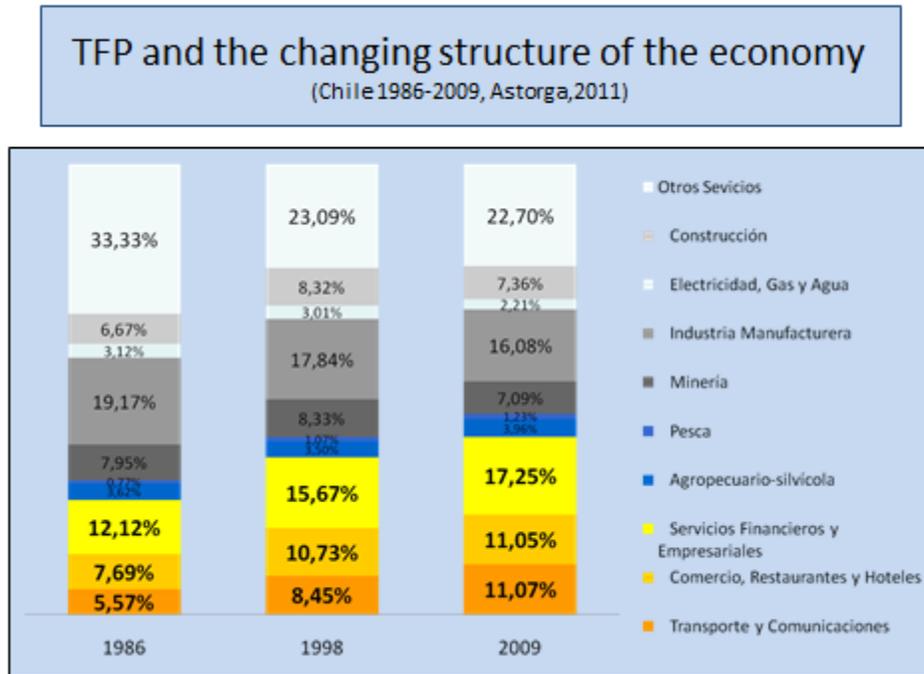
Figure 11. The deterioration of the financial environment in Argentina, 2008-2011.



Source: Castiñeira, 2012.

On the other hand, Brazil and Chile faced the impact of the Dutch Disease syndrome, with varying degree of intensity. Both countries saw their international competitiveness erode in manufacturing, and industry losing participation in GDP. In addition, non-tradable activities expanded fast, as Figure 12 shows, for the case of Chile. World prices and Chinese demand for copper, iron and steel, pulp and paper, soybean oil and more remained high, but signs of an increasing 'commoditization' of the export mix became evident. Imports of capital goods expanded rapidly, leading to a negative trade balance. Although both countries succeeded in keeping inflation at bay, they could not avoid the appreciation of the currency negatively affecting the structure of the economy and external competitiveness. They increasingly concentrated in natural resource-based commodities.

Figure 12. The growing share of non-tradable sectors in Chilean GDP.



Source: Astorga (2012)

The evidence presented so far permits us to draw some conclusions about the impact that the management of the real exchange rate has had on growth, exports, the structure of the economy, and the technological lag in Argentina, Brazil and Chile.

The SCRER regime permitted Argentina to attain rapid GDP growth between 2002 and 2008, simultaneously expanding employment and exports. The industrial sector recovered dynamism and participation in GDP, induced both by the expansion of domestic aggregate demand and by exports. Employment grew quickly, with around 4 million new jobs being created during this period. Although employment rose across manufacturing activities, it was particularly strong in vehicles, textiles, pharmaceuticals and foodstuffs production (i.e., low- and medium-tech industries). The expansion was not associated with investment in new and more modern production facilities, however, which would have permitted Argentina to gradually close the gap with the international productivity frontier. Rather, ‘old’ production facilities were revitalized after the currency devaluation. So, even in the context of an SCRER and of an expanding domestic demand entrepreneurs did not respond by erecting more technology-intensive production facilities, carrying more R&D efforts or switching to more modern product designs. They opted instead for maintaining their old manufacturing facilities and marginally upgraded them through capital goods imports. Neither did the government encourage firms to undertake stronger modernization efforts trying to close the international productivity gap. As the economy expanded more rapidly, capital goods imports increased becoming an increasingly heavy burden on the external trade balance. Even sectors that responded well in terms of expanding exports –

such as automobiles and pharmaceuticals – exhibited an increasingly negative external balance. The danger of losing foreign reserves as a consequence of the 2009 international financial crisis – see Figure 11 – brought the SCRER regime to an end and forced the government to accept inflation as a source of finance for its increasingly weak financial position. As the external constraint increased Argentina saw the 2002-2008 growth bonanza passing by without having attained much structural change and productivity improvement. It can be argued that in those years Argentina missed an excellent opportunity to implement a more dynamic technological strategy aiming at closing up the technological gap with more developed industrial countries.

In the case of Chile and Brazil the appreciation of the exchange rate resulted in a declining performance of the industrial sector favouring the increasing ‘commoditization’ of exports and the expansion of non-tradable activities. A lack of adequate anticyclical monetary and fiscal policies as well as sectoral interventions aiming to induce innovation and technological deepening negatively affected the long-term productivity performance of these two countries.

We can conclude the present section by arguing that natural resource-based growth demands adequate anticyclical monetary and fiscal policies **but also sector-specific government action inducing innovation and productivity growth and the creation of domestic technological capabilities if GDP growth is to be accompanied by structural change, innovation and technological deepening in the economy.** A SCRER is important but not enough to induce entrepreneurs in that direction.<sup>4</sup>

Adequate macro management – i.e. keeping inflation at bay – appears to be *a necessary but not sufficient* condition for putting the economy on a growth path of increasing technological sophistication and of better insertion into world markets (Ocampo, 2011). A SCRER *and* sector-specific interventions seem to be needed if the technological gap is to be closed.

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<sup>4</sup> It should be noted that natural resource-based industries offer significant opportunities, through the biotechnologies, ICTs, agrochemicals, GM products and more, to move into high value-added intermediate products and production services.