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SOUTH AMERICA FOR THE CHINESE? A TRADE-BASED ANALYSIS

by

Eliana Cardoso and Márcio Holland

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PREFACE

Over the last twenty years, economic and political power has been shifting towards emerging economies. A number of developing countries have become centres of strong growth, raising their shares of global income significantly, which has made them major players in regional and global affairs. Furthermore, flows of trade, aid and investment between emerging and developing countries have all intensified.

The *Perspectives on Global Development 2010* presents the evidence which documents these changes, what we call 'Shifting Wealth'. As the world emerges from the crisis, the report clarifies this new global reality and what it means for development. Clearly, it implies that development strategies need to be rethought in the new international environment. The PGD 2010 suggests ways in which developing countries can best take advantage of the new economic landscape and supports calls for global governance to be reformed, making it more inclusive.

The *Perspectives on Global Development* has been guided by and contributed to by eminent scholars from developing and emerging countries, our Non-Residential Fellows. In this paper, Eliana Cardoso, Chief Economist for the South Asia Region at the World Bank and Professor of Economics School at the Fundação Getúlio Vargas in São Paulo, asks some highly pertinent questions for Latin America in an era of 'Shifting Wealth': Is South America cursed by its natural resources? Does China rapid penetration of the region renew the region's comparative advantage in natural resources? Does South America's trade specialisation stand in the way of regional integration? The questions are key ones for Latin America's contemporary development strategy in the face of 'Shifting Wealth', and the answers given by Professor Cardoso are full of insight.

Mario Pezzini
Director and Chief Development Economist
OECD Development Centre
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RÉSUMÉ

L'argument en faveur d'une malédiction des ressources naturelles s'appuie sur l'idée qu'en l'absence de défi, le progrès n'est pas possible. L'Amérique latine est-elle victime d'une malédiction liée à l'abondance de ses ressources naturelles ? La pénétration rapide de la Chine sur le marché régional relance-t-elle l'avantage comparatif de la région en matière de ressources naturelles ? La spécialisation commerciale de l'Amérique latine va-t-elle dans le sens de l'intégration régionale ? Ce papier tente de répondre à ces questions en suivant cinq étapes : (1) Il commence par une analyse des flux commerciaux pour montrer l'importance croissante de la Chine en Amérique latine. (2) Il constate que l'émergence de la Chine en tant que partenaire majeur de la région renforce la vocation établie d'exportateurs de matières premières et de ressources naturelles de ses pays. (3) Il insiste sur l'importance de cette spécificité puisque il existe un lien direct entre l'évolution du prix des matières premières et la performance économique de la région. (4) Il affirme que le recours à une politique fiscal contre-cyclique est la meilleure politique pour contrôler l'effet de cette relation de dépendance. (5) Enfin, le papier s'interroge sur la place du Brésil dans la région et sa capacité à jouer le rôle de contrepoids face à l'influence de la Chine. En revenant sur l'expérience du Mercosur, il conclut que cela semble improbable, en partie à cause du fait que tous les pays de la région possèdent les mêmes avantages comparatifs dans la production de matières premières et de produits agricoles.

ABSTRACT

The case for a natural resource curse is based on the argument that in the absence of challenges, there is no progress. Is South America cursed by its natural resources? Does China's rapid penetration of the region renew the region's comparative advantage in natural resources? Does South America's trade specialisation stand in the way of regional integration? This paper tries to answer these questions in five steps: (1) It begins with an analysis of trade flows to demonstrate China's growing importance in South America. (2) It verifies that China's emergence as an important partner to the region reinforces the long-established calling of its countries as natural resources and commodities exporters. (3) It argues that this vocation matters, because there is a link between the behaviour of the price of commodities and the region's economic performance. (4) It claims that to deal with this relationship, the best policy is the use of a counter cyclical fiscal policy. (5) Finally, the paper examines whether Brazil could serve as a counter weight to China's influence in the region. By examining the experience of Mercosur, it concludes that this seems improbable, in part because all countries of the region share the same comparative advantages in producing commodities and agricultural goods.

It was not chance, but the intrusion of the Devil into the universe of God that set the world into motion. Toynbee (1946) claims that the clue that leads the detective onto the right path for discovering the source of progress is hidden in a story told in legends from all four corners of the globe. The great myths contain two superhuman characters: Yahweh and the Serpent in the biblical Eden; the Lord and Satan in the book of Job; Artemis and Aphrodite in Euripides' Hippolytus; God and Mephistopheles in Goethe's Faust. In Goethe's book, God accepts the Devil's wager, in "Prologue in Heaven." Only then does Mephistopheles present himself to Faust. And so, the Devil's intervention allows the transition from static tranquility to dynamic progress, for, as the hero states:

"If e'er upon my couch, stretched at my ease, I'm found,

Then may my life that instant cease!"

The die is cast, but progress comes at a high price. Human protagonists in the universal domain of God and the Devil are made to suffer. The heroes are always the ones who have to carry the can, whether it is Adam and Eve, Hippolytus and Phaedra or Faust and Margaret. But the protagonist – the one who pays the price of the divine bet with his suffering – is also the one who points the way for the rest of humanity. For, as Bernard Shaw said, "The reasonable man adapts himself to the world. The unreasonable one persists in trying to adapt the world to him. Therefore, all progress depends on the unreasonable man."

With the help of myths, Toynbee proposes the hypothesis – which he then seeks to confirm by studying the origins of each of the 23 civilizations he identifies – that civilization arises as a response to the challenges posed by the environment. Necessity is the mother of invention. It is only after Adam and Eve are cast out from Paradise that their descendents dedicate themselves to inventing agriculture, metallurgy and musical instruments.

When the soil is fertile enough, life can be as easy as lying back in a hammock and simply enjoying the bounty of nature. However, when there are challenges to be met, the opportunity for progress arises. In the Odyssey, Ulysses' most dangerous foes were not aggressive opponents, such as the Cyclops. On the contrary, they were the ones who tried to seduce him with the good life: Circe and her hospitality that ended in the pigsty, the irresistible allure of the mermaids, Calypso (so much fairer than Penelope) and the Lotus eaters.

Civilization is born as a response to an extremely difficult challenge, when creative minorities find solutions that lend a new direction to the destiny of an entire society. Many of these challenges and responses are of a physical nature, such as in the case of the Sumerians. Through the use of large-scale drainage projects in the region that is today Southern Iraq, they were able to tame swamps that were until then deemed unusable, as pointed by Toynbee[1].

When a civilization responds to challenges, it grows and expands. Decline sets in when its leaders stop responding creatively to problems they need to face. The case for a natural resource

[1] A more recent reference than the English historian to the adaptation of human society to its environmental constraints is Jared Diamond (2005).

curse is based on the argument that in the absence of challenges, there is no progress. Humphreys, Sachs and Stiglitz (2007) argue that natural resources are different from other sources of wealth, because they do not need to be produced.

Is South America cursed by its natural resources? Does China rapid penetration of the region renew the region's comparative advantage in natural resources? Does South America's trade specialisation stand in the way of regional integration?

This paper tries to answer these questions in five steps:

(1) It begins with an analysis of trade flows to demonstrate China's growing importance in South America.

(2) It verifies that China's emergence as an important partner to the region reinforces the long-established calling of its countries as natural resources and commodities exporters.

(3) It argues that this vocation matters, because there is a link between the behaviour of the price of commodities and the region's economic performance.

(4) It claims that to deal with this relationship, the best policy is the use of a counter cyclical fiscal policy.

(5) Finally, the paper examines whether Brazil could serve as a counter weight to China's influence in the region. By examining the experience of Mercosur, it concludes that this seems improbable, in part because all countries of the region share the same comparative advantages in producing commodities and agricultural goods.

After this introduction, part I presents stylised facts on trade and specialisation to therefore examine shifting influences in the region. It begins with a study of trade flows and examines trade among the ten South American countries as well as between South America and the United States, China and the European Union during the past two decades. It shows that the growing regional importance of China confirms the region's calling as an exporter of natural resources. Part II explores the links between natural resources and growth in ten countries: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay and Venezuela. Part III analyses integration and looks into regional trade agreements. Here, the focus is on Mercosur and the future of Brazil's leadership in the region. The final section collects conclusions from the previous sections and makes some policy recommendations.

I. TEN COMMODITY-EXPORTING COUNTRIES AND THEIR TRADE FLOWS: STYLISED FACTS

Although the subjects of our analysis are emerging economies within the same region, there are many structural differences among them, especially in terms of country size. On the one hand there are small economies with Gross Domestic Product (GDP) of approximately USD10 billion, such as Bolivia and Paraguay, and, on the other, Brazil with a GDP of USD800 billion, while in between there are intermediate-size economies, such as Argentina and Venezuela, with GDPs of around USD370 billion and USD159 billion, respectively[2].

The countries of the region are lower- to upper-middle income countries, according to the World Bank's classification. Their economic growth rates are not only low but also very volatile, as shown in the Table 1, which also summarises development indicators. All of them are similar in income inequality and weak rule of law. In a nutshell, South American countries vary in size and wealth, but have similar development indicators and low growth. At first sight, they seem to be suitable candidates to the hypothesis that weak institutions are detrimental to growth.

All of them rely on natural resources for export revenues. Figure 1 shows the share of natural resources-based products in total exports. In 2005, the share of primary goods and natural resources-intensive products in total South American exports had declined (particularly in Brazil) relative to the share observed in 1975, as shown in Figure 1. Yet, for all South American countries commodities remain the principal source of export revenues. In 2005, the share of primary goods and natural resources-intensive products in total exports still was above 80 per cent in Bolivia, Chile, Ecuador, Paraguay, Peru and Venezuela. It was higher than 60 per cent in Argentina, Colombia and Uruguay. Only in Brazil was it close to 50 per cent.

These shares increased again in 2007 (Table 7 in the Statistical Annex I). But data in Figure 1 are not strictly comparable with those in table 7 because of changes in classification. Table 7 (in Annex I) shows that, in 2007, the share of exports of primary products and natural resources-intensive manufactures in total exports of South America's countries ranged between 54 per cent in Brazil and 90 per cent in Chile, 92.5 per cent in Ecuador and 95.4 per cent in Venezuela. The share of imports of primary products and natural resources-intensive manufactures in total imports is also important. It ranges from 21 per cent in Argentina to 40 per cent in Chile and 43 per cent in Uruguay. Thus, movements in the price of commodities affect the prices of both exports and imports, although with different intensity, as discussed in part II.

[2] GDP figures are for 2008 in 2000 USD.

Table 1. **Development Indicators**

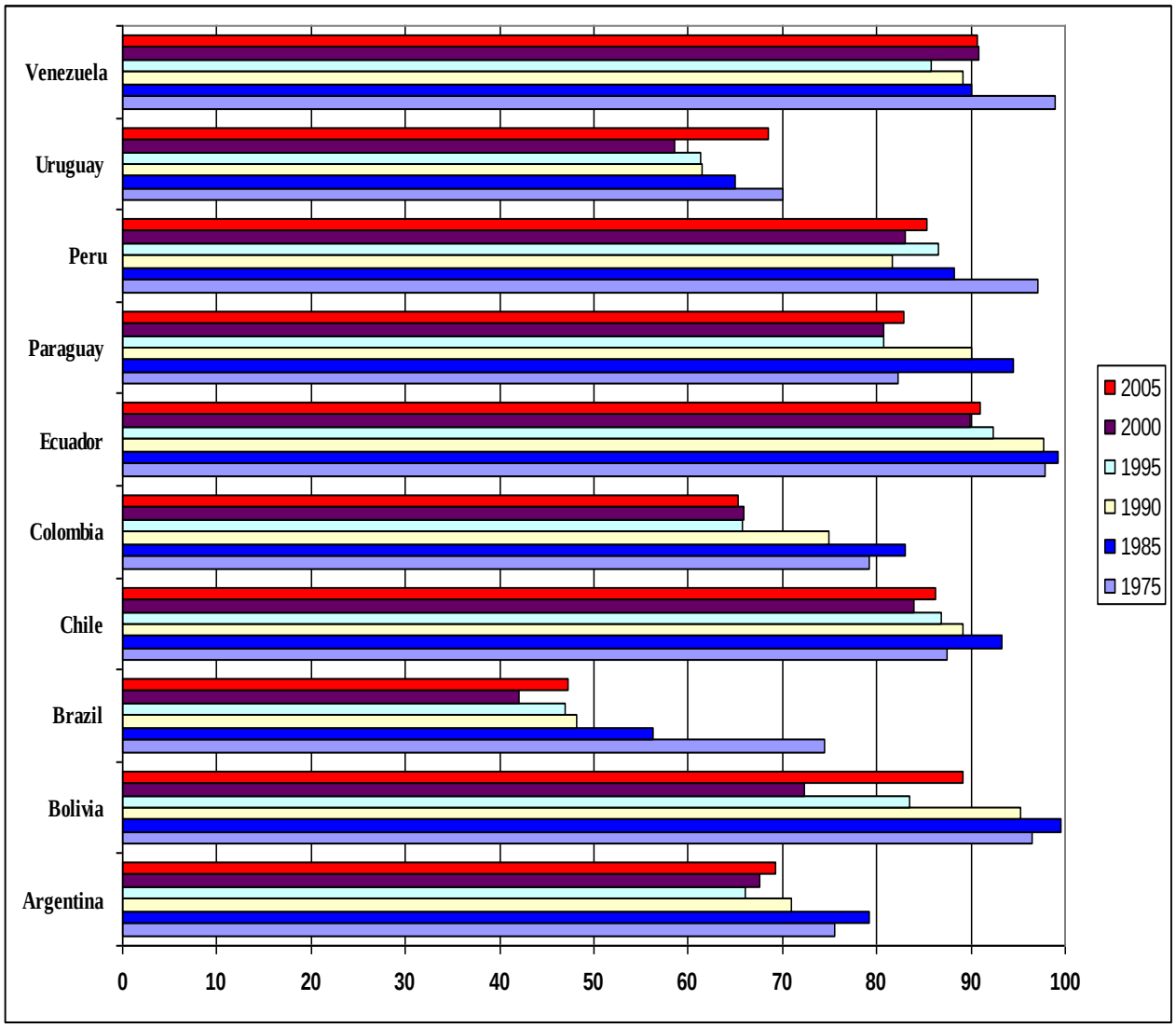
Selected countries, 2000 – 2009

Country	Income per Capita	GDP Growth (%)[1]	Gini Coefficient[2]	Rule of Law[3]		Ease of Doing Business
	***2007* (US$)**	***1980-2008***	***2007-2008***	***1990s***	***2000s***	***2009* (Ranking)**
Argentina	**6,050**	**2.35 (6.57)**	**51.3**	**58**	**39**	**113**
Bolivia	**1,260**	**2.24 (2.82)**	**60.1**	**45**	**18**	**150**
Brazil	**5,910**	**2.63 (3.42)**	**57.0**	**49**	**43**	**125**
Chile	**8,350**	**5.09 (4.4)**	**54.9**	**87**	**88**	**40**
Colombia	**3,250**	**3.45 (2.35)**	**58.6**	**29**	**36**	**66**
Ecuador	**3,080**	**2.75 (3.07)**	**53.6**	**38**	**15**	**136**
Paraguay	**1,670**	**3.03 (3.79)**	**58.4**	**37**	**16**	**115**
Peru	**3,450**	**2.73 (6.11)**	**52.0**	**32**	**27**	**62**
Uruguay	**6,380**	**2.10 (5.81)**	**44.9**	**68**	**63**	**109**
Venezuela	**7,320**	**2.17 (6.45)**	**48.2**	**28**	**3**	**174**
Memo items:						
United States	**46,040**	**2.16 (1.91)**	**40.8**	**94**	**92**	**3**
China	**2,360**	**9.90 (2.83)**	**46.9**	**47**	**42**	**83**
India	**950**	**6.10 (2.14)**	**36.8**	**62**	**56**	**122**

Notes: [1]Annual average in 1980-2008 period; standard deviation in parentheses. [2] Gini Coefficient for the last year available. [3] Rule of Law varies between 0 and 100, with higher score for better governance.
Sources: WDI on line; Governance Matters Data Set; Doing Business 2009 Dataset; and 2007/2008 Human Development Report.

Figure 1. **Exports of Natural Resources-Based Products as per centage of Total Exports**

South American Countries, 1975-2005



Source: UN COMTRADE and ECLAC. Sistema Interactivo Gráfico de Datos de Comercio Internacional (SIGCI).

Using the Herfindahl-Hirschman Index (HHI)[3] – an index of concentration that takes into account the weighted average of exported goods – OECD (2008) finds that the lowest concentrations indices in South America are observed in Argentina and Brazil, with very low

[3] HHI ranges between zero and one; the higher the index, the more exports concentrate in few products. The main drawback with this metric is due to the fact that different products exported by a country may not be actually an accurate measure of diversification in its export pattern. The products can belong to the same sector.

HHIs: 0.049 and 0.033, respectively. It also finds that the specialisation has increased throughout the region. All South American countries, except Argentina, show a higher degree of export concentration than in the beginning of this century. The trend towards greater specialisation is most marked in Venezuela (with a HHI equal to 0.776), followed by Ecuador, Paraguay and Chile (Table 8 in the Statistical Annex I). These are the same countries that show the highest shares of primary products and natural resources-intensive manufactures in total exports (Table 7 in Annex I).

However, it seems that in prior decades South American economies experienced a different trend, according to Bebczuk and Berrettoni (2006). The authors show that between the mid-1960s and the late 1990s, the majority of South American countries diversified their export structure in line with a worldwide trend. For some reason, this converging trend subsided recently. The phenomenon of renewed specialisation after 2005 seems to be associated with the increase in the price of commodities and China's growing importance in the world trade and in the region, as discussed in the next section.

Trade partners

Table 2 shows the share of each South-American country's trade (exports plus imports) with major partners in total trade (exports plus imports) in 1990 and 2007. For all countries in the region, the United States and the Euro Area remain important trade partners. However, they are gradually less important than trade with China and than intra-regional trade, especially with Brazil. The change in China's share of the region's trade – from close to 0 in 1990 to as much as 20 per cent in Paraguay and 13 per cent in Chile in 2007 – is particularly remarkable.

Table 2. **Most Important Trade Partners of South American Countries, 1990 and 2007**

(US Dollars and per cent)

	Brazil		**Argentina**		**Bolivia**		**Chile**		**Colombia**	
	1990	*2007*	*1990*	*2007*	*1990*	*2007*	*1990*	*2007*	*1990*	*2007*
Trade in US$ Bi	56.4	289.8	16.4	100.5	1.7	6.6	16.0	111.3	12.3	62.9
Partners (percent)										
Euro-11	22.5	20.5	25.96	14.62	11.0	6.4	24.3	17.2	19.6	11.8
United States	22.5	15.9	15.68	9.98	21.0	9.8	17.9	14.1	40.4	30.6
South America	11.5	17.8	24.55	38.25	44.8	65.8	15.5	17.2	11.3	20.6
Brazil	----	----	13.03	25.88	12.1	38.4	6.6	7.1	1.8	4.6
China	1.1	8.5	1.54	10.56	0.3	2.4	0.5	13.4	0.0	6.5
Others	42.4	37.3	19.24	0.71	23.0	15.6	35.2	31.1	28.6	30.5
Total	100.0	100.0	100.00	100.00	100.0	100.0	100.0	100.0	100.0	100.0
	Ecuador		**Paraguay**		**Peru**		**Uruguay**		**Venezuela**	
	1990	*2007*	*1990*	*2007*	*1990*	*2007*	*1990*	*2007*	*1990*	*2007*
Trade in US$ mi	9.8	27.9	2.4	9.4	6.4	47.0	3.0	12.1	24.7	133.4
Partners (percent)										
Euro-11	15.4	11.3	17.6	4.7	16.5	12.7	18.0	13.8	13.7	7.5
United States	33.9	32.9	8.6	5.7	25.0	21.0	9.9	9.4	50.2	37.1
South America	24.3	25.6	35.6	43.8	16.8	21.7	41.0	40.0	6.4	12.2
Brazil	2.4	2.7	22.5	19.3	4.5	6.2	26.5	17.6	2.5	3.6
China	1.2	4.2	0.0	20.5	0.6	9.9	2.4	7.9	0.0	4.4
Others	25.2	26.0	38.2	25.2	41.1	34.7	28.8	28.8	29.7	38.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

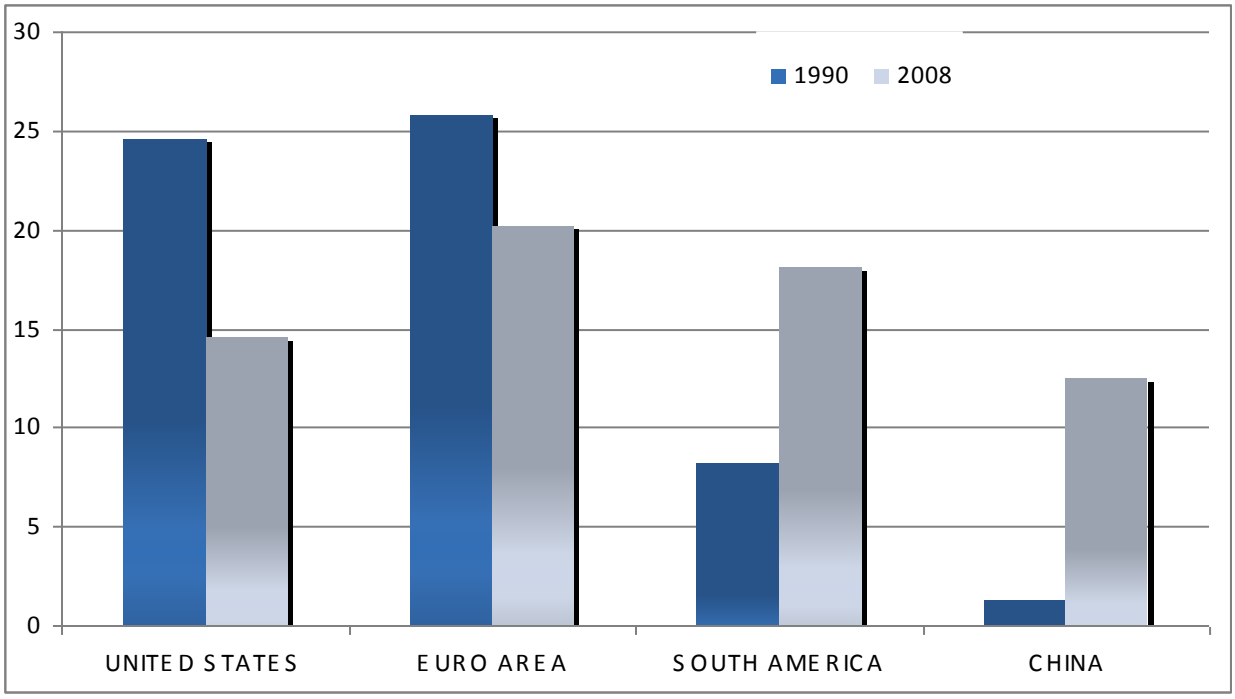
Source: IMF. Direction of Trade Statistics on line and ECLAC. Prepared by the authors.

Note: Euro-11 includes Germany, France, Italy, Austria, Belgium, Finland, Ireland, Luxembourg, the Netherlands, Portugal, and Spain.

China's importance as an active international trade player increased during the last 15 years and its impact on South America's trade is rather the rule than the exception. In this period, the share of total imports from China in total South-American imports more than doubled. It rose from 2 per cent in 1990 to 4.6 per cent in 2007, while the share of exports to China in total exports by South American countries increased from 0.30 per cent to 2.5 per cent in the same period. Figure 5 in the Statistical Annex I shows the increase of exports to China in each of the region's countries. In the some period, Brazil's trade with the region shows clear gains only with a few partners, such as Argentina (from 13 per cent to 26 per cent) and Bolivia (from 12 per cent to 38 per cent).

What happened in Brazil illustrates the shifting importance of trade partners in South America, as the United States and Europe lost importance in relative terms to both China and intra-regional trade. Figure 2 shows how much the United States have lost ground in Brazil's trade to the Euro Area, to countries in South America and to China. Even if, in 2008, China remained a less important partner than the other groups, its trade share in Brazilian trade had increased almost eightfold. By early 2009, China surpassed the United States as Brazil's most important single trade partner.

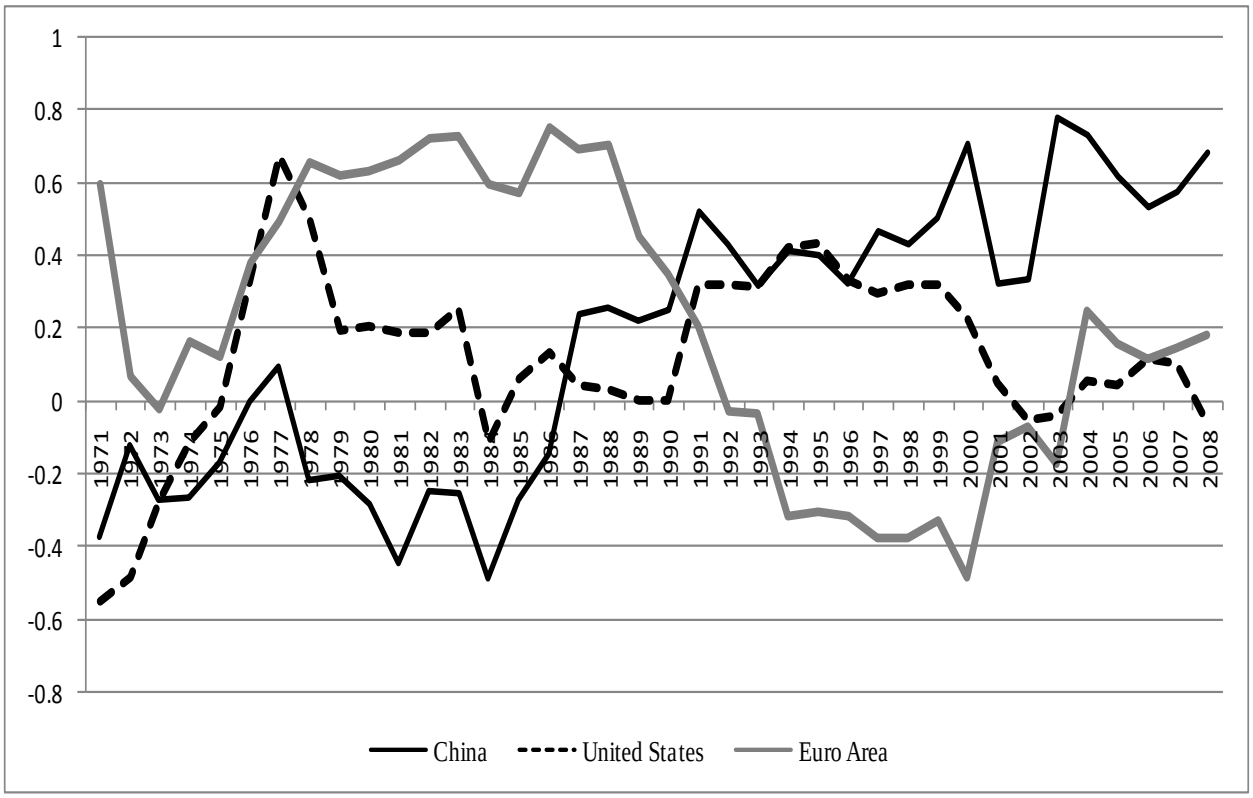
Figure 2. **Brazil's Trade Partners**
1990-2008
(Percent of total Brazilian exports)



Source: IMF. *Directions of Trade Statistics on line.* Authors' calculations.

At the same time, while the output co-movement between Brazil and the United States has been declining, output co-movement between Brazil and China has been increasing as shown in Figure 3. Lederman, Olarreaga and Perry (2009) attribute the rising correlation of business cycles between Brazil and China to demand spillovers rather than to changes in production structure asymmetries, bilateral intra-industry trade, and inter-industry trade. The authors explain the demand spillovers by the rising correlation of business cycles in China and India with world commodity prices, in which Latin America and the Caribbean tends to have a natural comparative advantage[4].

Figure 3. **Brazil: Output Co-movement with United States, Europe and China 1970-2007**
(10-year-rolling correlations)



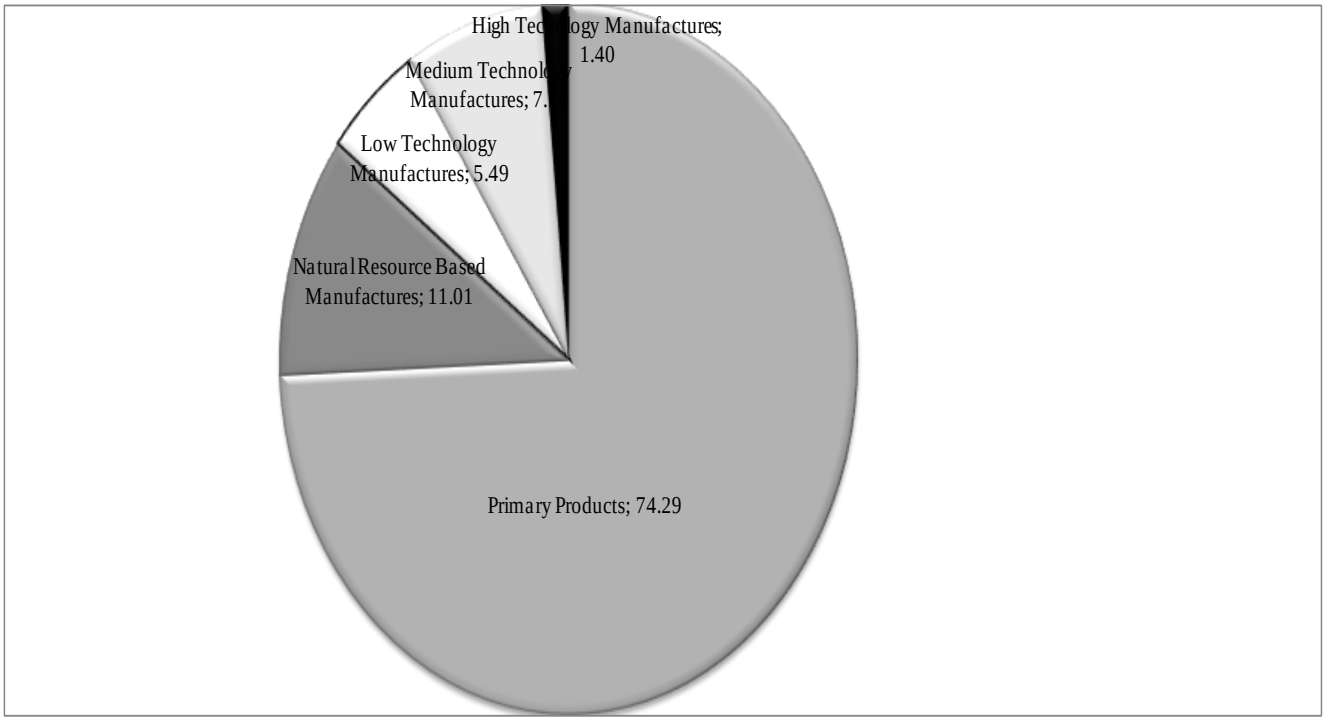
Source: World Bank. *World Development Indicators on line.* Authors' calculations.

[4] See also Jansen, Lennon and Piermartini (2009).

Increased Brazilian exports to China consisted mostly of primary products. Figure 4 shows the composition of Brazilian exports to China in 2007, with 75 per cent of exports consisting of primary products. The concentration of exports in primary exports to China from other South American countries is even more impressive than the share shown in figure 4. Primary products and natural resource-based manufactures represent more than 90 per cent of Chilean and Peruvian exports to China. China has endorsed South America's natural calling as an exporter of commodities.

In the next section we turn to an analysis of the short-term export dynamics in the region showing the role played by China.

Figure 4. **Brazil: Trade Specialisation with China**
2007 (Percent)



Source: UN COMTRADE. United Nations Commodity Trade Statistics Database, DESA/UNSD

Export Dynamics

This section uses the vector autoregression (VAR) approach. It is a useful econometric model to capture the evolution and the interdependencies between the annual growth rates of each of South American countries' exports and the annual growth rates of major trade partners' total imports from the world. The data cover the period from 1980 to 2008, across 10 South

American countries and their most important trade partners: the United States, Europe and China. The period coincides with the remarkable increase in China's trade with the rest of the world. Annex II describes the data and their sources. Annex II also summarises the VAR approach used both in this section and in section II.

To exemplify the importance of China as a growing trade partner in South America, Table 3 reports the variance decomposition, i.e. the proportion of the forecast error variance in export growth in each of the South American countries explained by innovations to import growth in selected countries, such as Brazil, the United States, Euro Area and China. Table 3 also reports variance decomposition at 1-, 2-, 5- and 10-year horizons.

The results show that the growth rate of China's total imports from the world is more important for the growth rate of exports in each country of the region than the growth rate of the United States' and the Euro Zone's total imports from the world. Changes in the growth rate of Chinese imports accounts for a proportion between 30 and 74 per cent of the change in the growth rate of exports in the majority of South-American countries. Changes in the growth rate of US imports account for less than 10 per cent of the change in the growth rate of exports of each South American country on average. The importance of the growth rate of Brazilian imports for the dynamics of exports in the rest of the region is comparable to the importance of the United States in most cases and is more than twice that of the Euro Zone. Its importance is much smaller than that of China, except in the case of Uruguay.

In the case of Brazil, in addition to the growth rates of total imports from the world by the United States, the Euro Zone and China, estimations also used the total imports by the rest of the region. Changes in the growth rate of Chinese imports remain the most important variable, accounting for more than 40 per cent of the change in the growth rate of exports in Brazil, followed by the changes in the growth rate of US imports. Both China and the United States are more important for the dynamics of Brazilian exports than shocks in the growth rates of imports of the Euro Zone and the South American countries.

The fast growth in the Chinese international trade has had significant impact on the region's trade. Since the beginning of 2009, China has become the most important partner of Brazil, the largest South-American economy. The United States and Europe are still very important trade partners to the entire region. But they have lost importance to the acceleration of trade in relation to China. The increased trade with China reinforces Brazil's standing as an exporter of natural resources based products, as it does confirm South America's position as a commodities exporting region.

Table 3. **Cholesky Decomposition: Export Dynamics in South America**

Argentina

Period	*Export Growth Argentina*	*Import Growth Brazil*	*Import Growth United States*	*Import Growth Euro Area*	*Import Growth China*
1	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**
2	**81.41**	**5.26**	**3.59**	**4.12**	**5.59**
5	**41.76**	**7.39**	**4.91**	**4.30**	**41.60**
10	**27.76**	**8.34**	**2.64**	**5.43**	**55.81**

Bolivia

Period	*Export Growth Bolivia*	*Import Growth Brazil*	*Import Growth United States*	*Import Growth Euro Area*	*Import Growth China*
1	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**
2	**76.75**	**11.87**	**0.18**	**7.02**	**4.16**
5	**40.54**	**7.79**	**11.32**	**3.88**	**36.44**
10	**39.99**	**6.42**	**10.63**	**1.88**	**41.05**

Brazil

Period	*Export Growth Brazil*	*Import Growth South America*	*Import Growth United States*	*Import Growth Euro Area*	*Import Growth China*
1	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**
2	**57.19**	**1.18**	**0.00**	**2.78**	**38.83**
5	**31.56**	**4.48**	**4.19**	**7.31**	**52.44**
10	**27.03**	**9.82**	**2.55**	**12.99**	**47.58**

Chile

Period	*Export Growth Chile*	*Import Growth Brazil*	*Import Growth United States*	*Import Growth Euro Area*	*Import Growth China*
1	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**
2	**81.94**	**9.00**	**0.05**	**3.03**	**5.95**
5	**45.02**	**6.21**	**8.94**	**2.20**	**37.61**
10	**36.97**	**5.35**	**8.51**	**1.30**	**47.85**

Colombia

Period	*Export Growth Colombia*	*Import Growth Brazil*	*Import Growth United States*	*Import Growth Euro Area*	*Import Growth China*
1	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**
2	**63.78**	**4.38**	**0.02**	**1.65**	**30.15**
5	**21.43**	**6.99**	**5.44**	**3.60**	**62.51**
10	**8.43**	**8.21**	**5.03**	**4.94**	**73.36**

Ecuador

Period	*Export Growth Ecuador*	*Import Growth Brazil*	*Import Growth United States*	*Import Growth Euro Area*	*Import Growth China*
1	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**
2	**77.17**	**8.00**	**0.70**	**4.08**	**10.03**
5	**47.17**	**4.91**	**8.69**	**2.69**	**36.51**
10	**42.30**	**4.17**	**8.21**	**1.86**	**43.44**

Paraguay

Period	*Export Growth Paraguay*	*Import Growth Brazil*	*Import Growth United States*	*Import Growth Euro Area*	*Import Growth China*
1	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**
2	**81.24**	**7.04**	**3.47**	**7.70**	**0.53**
5	**54.20**	**9.63**	**6.53**	**7.45**	**22.17**
10	**32.58**	**13.50**	**3.95**	**7.06**	**42.88**

Peru

Period	*Export Growth Peru*	*Import Growth Brazil*	*Import Growth United States*	*Import Growth Euro Area*	*Import Growth China*
1	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**
2	**76.64**	**9.26**	**0.03**	**3.14**	**10.91**
5	**41.74**	**4.57**	**8.83**	**1.92**	**42.91**
10	**37.65**	**3.32**	**9.13**	**0.71**	**49.17**

Uruguay

Period	*Export Growth Uruguay*	*Import Growth Brazil*	*Import Growth United States*	*Import Growth Euro Area*	*Import Growth China*
1	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**
2	**71.33**	**2.20**	**0.57**	**10.83**	**15.04**
5	**29.34**	**20.24**	**6.49**	**8.89**	**35.01**
10	**13.93**	**30.33**	**4.22**	**13.07**	**38.43**

Venezuela

Period	*Export Growth Venezuela*	*Import Growth Brazil*	*Import Growth United States*	*Import Growth Euro Area*	*Import Growth China*
1	**100.00**	**0.00**	**0.00**	**0.00**	**0.00**
2	**79.96**	**4.69**	**6.46**	**1.07**	**7.80**
5	**52.63**	**11.10**	**4.29**	**1.71**	**30.26**
10	**31.75**	**16.29**	**3.29**	**2.52**	**46.13**

II. NATURAL RESOURCES AND ECONOMIC PERFORMANCE IN SOUTH AMERICA

Since the region is so dependent on commodities exports, it is natural to ask whether South America is a victim of the natural resource curse, a long-standing hypothesis. The economist's case for a negative impact of natural resources on growth includes arguments such as:

1. The "Dutch disease".

A rise in the value of natural resource exports induces a real exchange rate appreciation which makes exporting other goods more difficult. If the manufacturing sector is a source of sustainable growth (through human capital creation, for instance), the impact on growth will be adverse. See, for instance, Sachs and Warner (2001).

2. Insufficient investment in education.

When a country's income depends on investment in manufacturing and sophisticated service activities, human investment is an essential part of wealth creation. Leamer *et al.* (1999) has shown (using the three-factor, n-good model) that countries rich in natural resources can have a path of development that is very unlike the paths taken by resource-poor countries. They can delay the greater equality engendered by manufacturing and the accumulation of human capital it requires, with an adverse effect on growth.

3. Weak unaccountable states.

One can also hypothesize that unearned riches are a curse because governments get fat on revenue from primary activities and do not have to tackle the far more difficult task of creating a framework of laws and institutions that generate sustained growth and stable tax revenues. See, for instance, Sala-i-Martin and Subramanian (2003). A massive inflow of natural resource revenues produces perverse political effects such as corruption and clientelism. Manzano and Rigobon (2007) find that the curse operates through debt-overhang and their finding supports the perverse voracity effect of natural resources on economic performance.

As pointed by Dunning (2008), there are many "channels through which resources might affect productivity. Resources may shape rent seeking, but they could also influence the extent of taxation, the nature of spending on public goods, and other fiscal policies." But the nature of these effects may, in turn, depend on institutions, such as the political regime, or on cultural traditions.

Development is subject to the wise, or foolish, decisions society makes. Different results can come from similar situations because unexpected factors (such as good luck or

psychological variables, for instance) are impossible to measure or calculate in advance. Policy packages adopted in South America are often similar and give different results in different countries[5].

If this is the case, it is no surprise that well-being varies widely across resource-rich countries, as illustrated by the United Nation's Human Development Index. Norway, a major oil producer, ranks at the top of the index, while the lowest-ranked countries include resource abundant Nigeria and Angola. Such disparity makes empirical evidence of the curse of natural resource elusive. So much so that Lederman and Maloney (2008) claim that such curse does not exist.

Lederman and Maloney (2008) emphasize the difficulty of finding good proxies for resource abundance and point to the fact that findings are not robust. One is not surprised by the results of their analysis given the complexity of the issues involved in the conventional wisdom. But their tests are also subject to criticism (Dunning, 2008, Shelton, 2008) and the intuition behind the perception that natural resource booms cripple non-resource export sectors, create rent-seeking incentives , inhibit other forms of productive activity, and foster corruption remains strong.

In the case of South American countries, it is common to attribute their weak performance relative to other regions to instability coming from a combination of weak fiscal stance and the natural resource curse. We begin by observing that there are high and significant correlations between growth in South American countries and the price of commodities (Table 4). Of course, these correlations do not show causality, but are consistent with stories told about the dependence of South America's growth on the behaviour of commodity prices.

Commodity Prices, Terms of Trade and Real Exchange Rates

Swings in commodity prices are not reflected one for one in movements in terms of trade in South America. We showed in part A that commodities are not only an important part of South America's exports, but that primary commodities and natural resources-based manufactures also account for an important share of these countries' imports. It is important to check the impact of terms of trade, a relevant variable in several empirical studies on growth.

Astorga (2009) – intrigued by the negative association between trade openness and growth on his estimation of determinants of long-term growth in the six largest economies of Latin America over the 1900-2004 period – tests if high openness can be harmful to growth in the context of specialisation in primary products. Adjusting the openness variable to changes in export composition over the century, he finds that the export diversification index leads to mixed results: in some regressions it is not significant and its inclusion does not affect the strength of the openness coefficient; in others he obtains some evidence that the degree of export diversification influences the impact of growth on openness.

[5] See, for instance, Prichett and Woolcock (2004) and Kohli (2004).

Table 4. **Coefficient of Correlation**
Between GDP growth rates and Commodity Price Indices
South American Countries, 1980-2008

Country	Coefficient of Correlation with the Non-Fuel Commodity Price Index	Coefficient of Correlation with a Selected Commodity Price Index ‡
Argentina	0.33*	0.27* [Soya beans]
Bolivia	0.47**	0.20* [Petroleum]
Brazil	0.11	0.07 [Agricultural Raw Materials]
Chile	0.20	0.16 [Copper]
Colombia	0.60**	0.39** [Petroleum]
Ecuador	0.18	0.16 [Petroleum]
Paraguay	0.49**	0.44** [Soya beans]
Peru	0.17	0.21* [Copper]
Uruguay	0.40**	0.27* [Food]
Venezuela	0.43**	0.35** [Petroleum]

Notes: *, **, and *** significant at 1%, 5%, and 10%, respectively.
‡ Commodities selected according to theirs predominance in country's exports of goods.
Source: ECLAC (Cepalstat) and IMF (IFS on line).

To capture some of the consequences of resource windfalls on growth (through its "Dutch disease" effect) Astorga tests for the impact of the real effective exchange rate (with a rise meaning real depreciation) and finds a significant positive link between the two variables.

Loyaza, Fajnzylber and Calderón (2005) also find that negative terms-of-trade shocks have the effect of slowing down the growth rate of Latin-American and Caribbean economies and that overvalued real exchange rates are also detrimental to growth.

Real exchange rate overvaluation is an important variable related to external imbalances and the risk of balance-of-payments crises. But increases in commodity prices are not the only source of real exchange rate overvaluation in South America. As observed in Loyaza, Fajnzylber and Calderón (2005), real exchange rate overvaluation also "captures the impact of monetary and exchange rate policies." This origin of overvaluation is related to the continent's openness to capital flows, which obliges monetary authorities to face conflicting goals when fiscal policy is expansionary. To guarantee stability, monetary authorities keep interest rates high and the exchange rate appreciates. Real exchange rate overvaluation distorts the allocation of resources between the exporting and domestic sectors. This misallocation leads to large external imbalances, whose correction is frequently accompanied by balance-of-payments crises and followed by sharp recessions.

This section does not use growth equations as found in Astorga (2009) or in Loyaza, Fajnzylber and Calderón (2005). But using the VAR approach, it tests the relative importance for

growth in South American countries between 1980 and 2007 of shifts in commodity prices, terms of trade, and the real exchange rate.

The variance decompositions do not provide indication of the direction of the effects of price variables. But impulse response functions were run and they generally indicate that a shock to price variables initially produces a positive impact on GDP growth as expected. All three price variables have the expected sign: an increase in the commodity price index, an improvement in the terms of trade and a real devaluation increase the GDP growth rate. This impact remains significant for two periods and then becomes insignificant. These findings are available upon request.

Table 5 shows the results of the VAR models of GDP growth and a commodity price index, the terms of trade of the country (measured as the ratio between the dollar price of its exports and the dollar price of its imports) and the real effective exchange rate of the country in relation to major partners.

Among the three price variables (that supposedly have an impact on growth through their impact on external revenues and uncertainty), the VAR methodology shows that terms of trade and real effective exchange rate are as important as the commodity price index in explaining growth in South American countries.

As shown in Table 5, terms of trade explain a significant proportion of the forecast error variance in GDP growth for Brazil (25 per cent), Paraguay (32 per cent), and Venezuela (26 per cent). The commodity price index explains an important part of the changes in GDP growth in six out of ten countries in the region: Bolivia (27 per cent), Chile (17 per cent), Colombia (47 per cent), Ecuador (15 per cent), Paraguay (49 per cent), and Venezuela (18 per cent). They are the same countries with the highest concentration indices by products as measured by the Herfindahl-Hirschman Index (HHI), reported in table 8 (in Annex I).

Table 5 also shows that changes in the exchange rate explain significant portions of the forecast error variance in GDP growth at each time horizon, except for Colombia, Ecuador, Paraguay and Uruguay. Furthermore, the results are unchanged when the VAR lag length is altered. Although altering the VAR lag changes point estimates in some measure, the significance of the point estimates is unchanged when the VAR lag is altered.

Table 5. **Cholesky Decomposition: GDP Growth Dynamics**

Argentina

Period	*GDP Growth*	*Commodity Price Index*
1	93.87	6.13
2	94.21	5.79
3	94.25	5.75

Period	*GDP Growth*	*Real Effective Exchange Rate*
1	71.89	28.11
2	75.16	24.84
3	75.11	24.89

Period	*GDP Growth*	*Terms of Trade*
1	89.89	10.10
2	89.81	10.19
3	89.97	10.03

Bolivia

Period	*GDP Growth*	*Commodity Price Index*
1	98.75	1.255
2	83.53	16.47
3	72.87	27.13

Period	*GDP Growth*	*Real Effective Exchange Rate*
1	99.95	0.05
2	67.62	32.38
3	63.38	36.62

Period	*GDP Growth*	*Terms of Trade*
1	100.00	0.00
2	97.49	2.51
3	96.95	3.05

Brazil

Period	*GDP Growth*	*Commodity Price Index*
1	99.89	0.10
2	93.79	6.21
3	91.56	8.44

Period	*GDP Growth*	*Real Effective Exchange Rate*
1	73.68	26.32
2	73.37	26.63
3	69.86	30.14

Period	*GDP Growth*	*Terms of Trade*
1	75.74	24.26
2	74.43	25.57
3	74.48	25.52

Chile

Period	*GDP Growth*	*Commodity Price Index*
1	100.00	0.00
2	89.49	10.51
3	83.03	16.97

Period	*GDP Growth*	*Real Effective Exchange Rate*
1	70.54	29.46
2	74.99	25.01
3	73.82	26.18

Period	*GDP Growth*	*Terms of Trade*
1	99.49	0.51
2	90.93	9.07
3	87.87	12.13

Colombia

Period	*GDP Growth*	*Commodity Price Index*
1	68.40	31.60
2	56.19	43.81
3	53.09	46.91

Period	*GDP Growth*	*Real Effective Exchange Rate*
1	100.00	0.00

Ecuador

Period	*GDP Growth*	*Commodity Price Index*
1	100.00	0.00
2	86.64	13.36
3	84.83	15.17

Period	*GDP Growth*	*Real Effective Exchange Rate*

2	99.87	0.13
3	99.77	0.23

Period	GDP Growth	Terms of Trade
1	94.15	5.85
2	84.64	15.36
3	84.34	15.66

1	94.71	5.29
2	94.70	5.30
3	94.70	5.30

Period	GDP Growth	Terms of Trade
1	100.00	0.00
2	87.61	12.39
3	86.34	13.66

Paraguay

Period	GDP Growth	Commodity Price Index
1	100.00	0.000000
2	62.19	37.80912
3	51.08	48.91501

Period	GDP Growth	Real Effective Exchange Rate
1	100.00	0.00
2	99.94	0.06
3	99.94	0.06

Period	GDP Growth	Terms of Trade
1	72.43	27.57
2	68.08	31.92
3	67.93	32.06

Peru

Period	GDP Growth	Commodity Price Index
1	96.09	3.91
2	96.27	3.73
3	96.31	3.69

Period	GDP Growth	Real Effective Exchange Rate
1	100.00	0.00
2	86.57	13.43
3	85.31	14.69

Period	GDP Growth	Terms of Trade
1	90.20	9.80
2	91.54	8.46
3	91.76	8.24

Uruguay

Period	GDP Growth	Commodity Price Index
1	100.00	0.00
2	98.07	1.93
3	96.77	3.23

Period	GDP Growth	Real Effective Exchange Rate
1	97.32	2.68
2	96.30	3.70
3	95.83	4.18

Period	GDP Growth	Terms of Trade
1	100.00	0.00
2	96.41	3.59
3	96.30	3.70

Venezuela

Period	GDP Growth	Commodity Price Index
1	86.69	13.31
2	83.07	16.93
3	82.20	17.80

Period	GDP Growth	Real Effective Exchange Rate
1	96.30	3.70
2	81.86	18.14
3	81.87	18.14

Period	GDP Growth	Terms of Trade
1	100.00	0.00
2	74.42	25.58
3	74.04	25.96

Volatility

Commodity prices are very volatile and this implies very volatile income sources. Volatile income sources generate uncertainty which reduces investment. Furthermore, governments underinvest in public goods when beset with revenue instability, and pro-cyclical international capital flows amplify the fluctuations in income. The results are boom-bust cycles.

Blattman, Hwang and Williamson (2007) show that, between 1870 and 1939, volatility of terms of trade accounts for a substantial degree of the divergence in incomes within the sample of small, commodity dependent periphery nations as well as under-performance of the periphery as a whole relative to such nations as the United States and Western Europe. Most countries in the periphery specialised in the export of just a handful of primary products and some of these commodities have been more price volatile than others. Those with more volatility have grown more slowly relative to the industrial leaders. One channel of impact seems to be the adverse effect of volatility on foreign investment.

This section also uses a balanced panel formed by the variables of ten South American countries between 1980 and 2007 to test the importance of the volatility of the terms of trade to the economic performance of the region. The general model is described by:

$$\hat{y}_{it} = \alpha_i + \beta_1 y_{i0} + \beta_2 \hat{y}_{it-1} + \beta_3 \Delta\theta_{it} + \nu_{it} \quad (1)$$

where $\hat{y}_{it}$ is the growth rate of GDP per capita of country i in year t, α_i embodies all the observable effects and specifies an estimable conditional mean, y_{i0} is the GDP per capita of country i in 1980, and $\Delta\theta_{it}$ is the proxy for the volatility of the terms of trade of country i in year t, measured by the first difference of the terms of trade.

As our estimated models are controlled only for one explanatory variable, critics will point to the omitted variables problem. Much of the empirical literature on growth has focused on estimating cross-country regressions. This literature has been plagued, however, by severe methodological problems like the omitted variable bias (Agénor, 2004). Omitting variables causes bias in estimation. However, panel data enable corrections of this problem (see Woodridge, 2002). "Indeed, some would claim that the ability to deal with this omitted variable problem is the main attribute of panel data" (Kennedy, 2003: 302).

It is also worth observing other attributes of panel data analysis. This approach deals with heterogeneity across individuals and creates more variability through the combination of variation across individuals with variation over time, thus alleviating multicollinearity problems. Then, even though we estimate a simple analytical model, it allows the inference of the role played by the volatility of terms of trade in explaining growth performance in South America.

Although the endogeneity bias remains a problem (as it results from a failure to account for the endogenous nature of the main explanatory variable) it is possible to address this issue (and also the omitted variable bias) by the use of dynamic panel data technique, i.e. the Arellano-Bond estimator. We make use of this procedure.

Table 6 reports results for pooled regressions and for a fixed effect model[6]. The coefficient for the initial GDP per capita is small and not significant. The coefficient for $\Delta \theta_{it}$ has the expected sign. In the regressions where lagged $\Delta \theta_{it}$ is used, its coefficient is positive and statistically significant.

[6] Models used include pooled regressions and a fixed effects model. The first approach can be used when the groups to be pooled are relatively similar or homogenous. Level differences can be removed by 'mean-centering' (similar to Within-Effects Model) the data across the groups (subtracting the mean or average of each group from observations for the group). The fixed effects models measure differences in intercepts for each groups, calculated using a separate dummy variable for each group. The approach is also called "Least Squares Dummy Variable" method for this reason. This is basically an OLS model with dummy variables to control for group differences, assuming constant slopes (coefficients) for independent variables and constant variance across groups.

Table 6. **Empirical Results – Panel Data Analysis (1980-2007)**

Dependent Variable: GDP Growth

Explanatory Variables	Pooled Regression Models				Fixed Effect Models				Arellano and Bond			
	Model 1a	Model 2a	Model 1b	Model 2b	Model 3b	Model 4b	Model 3a	Model 4a	Model 1b	Model 2b	Model 3b	Model 4b
Constant	1.828** (0.310)	1.885** (0.311)	1.882** (0.311)	1.885** (0.311)	2.54 (1.89)	2.139 (1.628)	1.626** (0.524)	1.584** (0.527)	3.24** (1.02)	3.25** (1.03)	3.51 (1.09)	2.139 (1.628)
Initial Income					0.0001 (0.0001)	0.0005* (0.000)	0.001 (0.001)	0.0009 (0.001)			0.0001 (0.0001)	0.0005* (0.000)
GDP Growth_1	0.341** (0.056)	0.341** (0.057)	0.332** (0.058)	0.341** (0.057)	0.270** (0.060)	0.273** (0.062)	0.339** (0.056)	0.339** (0.057)	0.401** (0.008)	0.403** (0.057)	0.400** (0.060)	0.273** (0.062)
ΔToT	0.030 (0.211)		0.027 (0.021)		0.022 (0.021)		0.029 (0.021)		0.051 (0.04)		0.052 (0.021)	
ΔToT_1		0.051** (0.021)		0.051** (0.021)		0.043** (0.021)		0.050** (0.021)		0.058** (0.02)		0.043** (0.021)
R Squared	0.13	0.15	0.14	0.15	0.17	0.18	0.13	0.15	0.10	0.10	0.12	0.18
Adjusted R Squared	0.12	0.14	0.11	0.14	0.13	0.14	0.12	0.14	0.11	0.10	0.12	0.14
F-Statistics [Prob]	19.6[0.00]	21.8[0.00]	3.79[0.00]	21.82[0.00]	4.24[0.00]	4.42[0.00]	13.11[0.00]	14.69[0.00]				4.42[0.00]
Cross-Sections	10	10	10	10	10	10	10	10	10	10	10	10
Period Included	27	26	27	26	27	26	27	26	27	26	27	26
Total Panel Observations	270	260	270	260	270	260	270	260	270	260	270	260

Note: * and ** mean statistically significant at 1 and 5 per cent, respectively. Standard errors in parentheses.

Policy Response

Even if the volatility of commodity prices and the relative magnitude of the sector in South American countries imply huge swings in revenues, it would still be true, that if spent wisely, revenues from commodities can be a source of wealth and even innovation. But, "if spent poorly, they can lead to fiscal imbalances and a politics rife with corruption, squabbling, and clientelism, which in turn contribute to future macroeconomic mismanagement," as Shelton (2008) pointed out.

What is more important to break the deadly cycles that result from the wild swings in commodity prices and terms of trade: to diversify exports or to introduce a counter cyclical fiscal policy?

Unlike Brazil, which diversified her exports away from primary goods, but did not solve her fiscal imbalances, Chile's economy still relies on agricultural products, copper and other metals for more than 70 per cent of its export revenues. At a first glance, Chile appears extremely vulnerable to an inversion in the price of commodities. After all, they account for more than 70 per cent of the country's exports. Furthermore, the relationship between Chile's international reserves and GDP is one of the lowest in the region.

Chile's government, however, adopted a prudent policy. By embracing a counter-cyclical fiscal policy it turned itself into a clear economic success in contrast with other South American countries where uncertainty still prevails[7]. Chile's cumulative fiscal surplus between 2006 and 2008 was near 22 per cent of GDP. At the end of 2008, the government had 15 per cent of GDP in assets (USD20 billion in the main Economic and Social Stabilization Fund, USD2.5 billion in the Pensions Reserve Fund and USD2.8 billion in the Treasury). As argued in Cardoso (2008), thanks to counter cyclical fiscal policies, Chile appears to have attacked the underlying fragility of Latin American economies and, thus, is now able to respond to recessions that follow a reversal of terms of trade with expansionary policies.

In Brazil, as much as in the rest of the region, government debt has shown a downward trend since 2003. Calderón and Fajnzylber (2009) observe that, while this trend "has been partly due to rapidly increasing commodity prices, more sustainable fiscal policies have also been a contributing factor. However, Latin governments have continued to under-save in good times and therefore fiscal policy has remained pro-cyclical, thus weakening the ability to protect the poor and maintain infrastructure investments during bad times. Financing and institutional constraints to more counter-cyclical fiscal policies still remain in most countries." They are lowest in Chile and highest in Ecuador and Venezuela.

Unlike Chile that managed to generate and maintain a fiscal surplus in the boom years, Brazil continued to produce fiscal deficits due to the dizzying increase in public spending and despite an ever heavier tax burden. Until 2007, such fiscal policy contributed to currency

[7] Chile's Structural Fiscal Rule is based on an annual structural-surplus target. Structural balance is defined as the difference between structural fiscal revenues and observed fiscal expenditures. For details on this fiscal rule see IADB (2008).

overvaluation, as the exaggerated growth of government spending heated the economy and led to expectations of interest rate hikes, which in turn contributed to the appreciation of the currency. This combination of policies was risky as the last quarter of 2008 has proved. The reduced flow of capitals to emerging countries and the effects of a reversal in the terms of trade pushed the country into recession in 2009.

Yet, the current crisis is different from crises Brazil faced in the past. The external shock – which combined the decline in commodity prices with a credit crunch and was followed by a depreciation of the exchange rate – has not been followed by an increase of the public debt-to-GDP ratio, as used to be the case when a negative terms of trade shock occurred in the past. On the contrary, because the Central Bank accumulate reserves during the boom years and the government used the real appreciation between 2003 and 2007 to get rid of US dollar-denominated debt, the country turned into a net external creditor and the depreciation of the currency led to a decline of the debt-to-GDP ratio, improving rather than deteriorating solvency. As a consequence, the primary surplus level consistent with debt stability is now lower than it was before. At the same time, as the Central Bank reduces the basic interest rate, there is room for some fiscal expansion. And contrary to what happened in previous crises generated by external shocks, this time fiscal policy is not required to be pro-cyclical.

Yet, there are reasons for concern. Part of the increase in tax revenues observed between 2004 and 2007 reflected the economic expansion. A recession implies falling tax revenues. Moreover, most of the government expenditures are permanent in nature as they are concentrated in the public sector payroll and social security pensions. Past decisions on the minimum wage and civil servants wages should push current spending up, while tax collection is declining. As compared to temporary spending in public investment, the growing permanent expenditures of Brazil's government are an inferior tool to implement countercyclical fiscal policy. The room for fiscal expansion that resulted from the decline of the public debt is being filled by lower revenues and higher current spending. There will not be room for public investment growth. If, over the past four years, the Brazilian government had made better use of the favorable international conditions and had reduced fiscal rigidities, today it would be in a better position to respond to the external turbulence.

Without a doubt, the biggest challenge to Brazil, as well as to the rest of the region with the exception of Chile, is what was left largely unreformed in the 1990s: the State. In Ecuador and Venezuela, the situation is even more difficult than in other countries because governments overspent their oil revenues during the boom years and now face more serious constraints. They could follow Chile's example, because an unreformed state is toxic in a country dependent on export revenues of natural resources, a vocation that China's growing importance in the region has exacerbated[8].

[8] The authors believe the region can continue to exploit its comparative advantages with good results if it adopts the right fiscal policy. The authors do not share the view (advocated in Paus (2009), for instance) which recommends the adoption by Latin American countries of China's industrial policy: a deliberate promotion of specific sectors.

III. SHIFTING POWER IN THE REGION

It took the US the entire 19th century to build its hegemony in the Americas, before conquering it in the 20th century. Thomas Jefferson, President between 1801 and 1809, viewed South America simply as the continent that should be under US control. The longest-lasting principle of American diplomacy came from President James Munroe's doctrine, enunciated in 1823. He proclaimed that any interference by the Old World in the New would be considered "a direct threat to the US" and advised Europe to leave "America for the Americans." At the time, the US military might was practically insignificant, which is perhaps why the world paid scant attention to the Monroe Doctrine. However, it was met with implicit approval from England, which saw it as an extension of the Pax Britannica.

The influence of the Monroe Doctrine was strengthened by Theodore Roosevelt in blocking the threat of European intervention in Venezuela and the Dominican Republic in 1905. But, under President Calvin Coolidge, in 1928, the Clark memorandum rejected the Roosevelt Corollary and, in 1934, Franklin Roosevelt substituted military interventionism for a "good neighbour policy." American influence was maintained throughout the rest of the 20th century.

Now, this hegemony is being questioned. The wave of globalisation that began before World War I and built up strength from the 1970s onwards, accelerated until the end of the 20th century. As this wave gained momentum, geographic distances between countries began to lose importance. American dominance in the Western hemisphere, with its roots in proximity, could be coming to an end. South America's natural resources are reaching all four corners of the world in increasingly shorter times. China's presence in the region has seen dizzying growth over the last ten years.

So, what are the implications of these changes in global power for South America over the long term? There are three possible scenarios. The first one is: more of the same. Neglected by the three current superpowers (the US, China and the EU), the forgotten continent will continue to be America's backyard. This is a long established tradition that seems practically immutable.

Even if globalisation comes to suffer because of the current crisis, the second scenario is a variation of the first, with the difference lying in substitution of China for the US. Thus, the region's growth would continue to be tied to the behaviour of commodity prices.

The third, more optimistic scenario depends on the economic integration of South America's countries. United, the continent would gain greater global presence.

Is Brazil capable of playing a unifying influence in the region? Can the region play a more important role in the international arena? Or will the now challenged US hegemony just yield to China's supremacy in the region and leave current tasks unresolved?

With territorial contiguity, only two major and similar languages, and virtually no military tensions, South America should have been able to achieve greater integration than it has to date. But regional integration has proved hard to attain. Excessively volatile exchange rates have been an impediment to both macro-coordination and sustainable agreements. Within Mercosur, barriers to trade are multiplying rather than subsiding. Its member States (Argentina, Brazil, Paraguay and Uruguay) failed to adopt a common stance in the Doha talks.

In mid-December 2008, some analysts saw the possibility of Brazil leading a movement of converging Latin American interests at the Costa do Sauipe meeting that excluded the US and Canada. Brazil and Cuba united to remove Hugo Chávez from centre stage. But the meeting clearly showed that ideological distances between South American countries can be too much to bear. The proof of the divide was evident in the absence of two Heads of State: Colombia's Álvaro Uribe and Alan Garcia, from Peru. Garcia justified his absence by stating he does not sit down with dictators. Despite the efforts of both Fernando Henrique Cardoso and Lula, the South American union remains fragmented.

Mercosur

The process of approximation between Argentina, Brazil, Paraguay and Uruguay that resulted in the formalization of Mercosur 18 years ago has a long history of advances and setbacks caused by diverse political agendas, economic asymmetries and the differing characters of each of these countries as regards external trade partnerships.

The redemocratisation of Argentina and Brazil in the 1980s and the Second Montevideo Treaty (which created ALADI [the Latin American Integration Association]) brought the two countries together. Presidents Raul Alfonsín (Argentina) and José Sarney (Brazil) signed the integration Treaty in 1988. The political decision in favor of the quadrilateral format in the initial years of the Carlos Menén and Fernando Collor de Mello governments resulted, in 1990, in the Buenos Aires Act and, a year later, in the Treaty of Asunción.

Among the external factors that acted in favor of the formation of Mercosur, the following are worth noting: challenges created by the entry into force of the free trade agreement between Canada and the US, in 1989, and the perspective of its expansion to other countries in the Hemisphere; the Single European Act of 1986; and the non-conclusion of the Uruguay Round, in December of 1990.

The initial discussions involved Chile and Uruguay, although Paraguay had not yet been included. Chile decided not to join the common market project. The tariff proposals went against its profile of a single, horizontal and exclusive 11 per cent tariff, at a time when Brazil and Argentina still had average import tariffs of over 40 per cent, with peaks occasionally reaching above 100 per cent. Once Paraguay had rehabilitated itself (at least for a while) from a dictatorial past, it was incorporated into the talks because Brazil regarded its admission as a

member to be into the block as a means of regulating the illegal trade over the border between the two countries.

The Treaty of Asunción of 1991, which formally created Mercosur, preserved political reciprocity and equal rights and obligations among the member countries, despite their differences. The treaty proposed the constitution of a future common market and established ambitious deadlines for the harmonization of sectoral policies and the coordination of macroeconomic policies.

Mercosur's development underwent various phases. The transitional phase foreseen in the treaty was set to last until the end of 1994. It was followed by a phase of the institutional configuration of the customs union, begun in 1995, and regional trade grew until 1998. This was then followed by a period of many conflicts and, finally, the acceleration of trade from 2003 onwards, until mid-2008.

Intra-Mercosur trade, in its initial golden period, increased from 4 billion dollars in 1990 to 20 billion by 1998. But, in 2000, it fell to 18 billion. There was a confluence of an open political and economic crisis, with a devaluation of the Brazilian Real in January of 1999 and the threat of "Dollarization" in Argentina. The fluctuation of the Real exacerbated macroeconomic divergence among the Mercosur countries and interrupted the institutional progress of the customs zone. Trade disputes multiplied. Mercosur's agreements with the rest of the world progressed no further. Brazil and Argentina disagreed about which position to take regarding the United States, with Brazil showing disinterest in the FTAA.

In 2002, the IMF abandoned Argentina and the country's pleas to Brazil for help fell on deaf ears. Discordance regarding common external tariffs grew and Argentina's President Nestor Kichner wanted to create a safeguard mechanism that allowed for the imposition of trade barriers should a member country feel that local industry was in jeopardy. The chances of integration seemed ever more distant.

In the first half of 2003, the share of Brazilian exports in Argentina's imports climbed to 33 per cent, which the former country disliked. In July, serious symptoms of disagreement between the two countries became apparent. Cries for protectionism became increasingly frequent in Argentina. On 6th July 2004, the eve before the Puerto Iguaçu Summit meeting, Argentina announced barriers to stoves, refrigerators and washing machine imports originating from Brazil and subsequently proposed the adoption of asymmetries in the automobile trade.

In addition to the protectionist tendency that periodically devastates the region (and was clear in the barriers introduced by Argentina in 2004), integration difficulties also derive from the two countries' bipolar character. Populist and neo-liberal administrations regaled themselves in fiscal indiscipline and the growth of the State. But since 2004, trade within Mercosur improved relative to previous years. A variety of factors contributed to a less tense atmosphere and fewer pressures from trade conflicts including the member nations' high economic growth rates and the expanded Brazilian investments in the region. These factors favored the growth of regional trade. Thus, until June 2008, trade growth within the block reduced the conflicts.

Asymmetries

Brazil represents between 70-80 per cent of the territory, population, GDP and foreign trade of the four countries and is seen as the major beneficiary of the agreement. Since 2003, Brazilian exports to its Mercosur neighbours have been growing at a faster rate than its imports from these same countries. Between 2003 and 2007, exports from Brazil to Argentina grew by 35 per cent (compared to 23 per cent from Argentina to Brazil); 23 per cent from Brazil to Paraguay (against 7 per cent from Paraguay to Brazil); and 33 per cent from Brazil to Uruguay (against 11 per cent from Uruguay to Brazil). The subsequent growth of Brazil's trade surplus with each of its Mercosur partners is seen as a summary index of the economic asymmetries present in the scope of the block. For Uruguay and Paraguay, the deficits with Brazil serve as proof that Mercosur grants them few benefits. Argentina fears that the increasing penetration of Brazilian manufactured goods will threaten its own manufacturing sector.

The empirical evidence seems to indicate that the asymmetries Brazil's partners claim to find are as real as the protectionist measures adopted by Argentina. Moncarz, Olarreaga and Vaillant (2009) present evidence consistent with the hypothesis that Brazil has achieved industrial objectives at the cost of its Mercosur partners. Preferences approved for Brazilian exporters have led to an increase in the export of relatively sophisticated goods from Brazil to Argentina, Paraguay and Uruguay, and from a manufacturing sector in which Brazil wields no comparative advantage on a global scale. The three other member nations have paid the cost of diverted trade by replacing more efficient manufacturers with Brazilian imports, thereby subsidizing Brazil's industry. Furthermore, Brazil has enjoyed trade creation because it has increased its imports of goods from Argentina, Paraguay and Uruguay, which are actually globally competitive.

The strong acceleration of Brazil's total imports in 2007 and the first half of 2008 reduced the country's trade surplus, but not in relation to its Mercosur partners. The global financial crisis allows projecting the worsening of trade conflicts among the partners.

International Agreements

The external Mercosur schedule has presented scant progress, despite the various negotiation fronts that the block opened over the past few years. In addition to an international atmosphere that is becoming ever more unfavorable to trade liberalization movements, the block is mired with increasing difficulties of convergence of interests among its members as regards international integration projects. In 2008, Uruguay continued to plead for authorization to progress with bilateral negotiations independent of Mercosur, Argentina was unwilling to engage in new trade liberation movements, and Brazil concentrated its efforts in obtaining results at the Doha Round, garnering criticism from some business segments.

Despite the various initiatives in progress, the signing of a free trade agreement with Israel, in 2007, was the only progress recorded. Negotiations for an agreement of fixed preferences between Mercosur and the South African Customs Unions ended – without the

agreement being signed. The future of the WTO Doha Round – the top priority of the block's trade schedule in recent years – remains uncertain.

Other regional or bilateral negotiation fronts – with the EU, the Cooperation Council for the Arab States of the Gulf, India, Morocco, Egypt, Pakistan or Mexico – showed no progress. In addition to these, two new negotiation fronts for free trade agreements were begun as the result of the last Mercosur Summit: one with Jordan and the other with Turkey.

In South America region, the constitution of the Union of South American Nations (UNASUL) in May of 2008 was announced by the governments as an important step in the regional integration project. The UNASUL Constitutive Treaty is very ambitious in terms of thematic schedule, but vague as regards trade and economic integration. In the scope of ALADI, discussions for the creation of a Free Trade Area are met by resistance of various orders from the majority of its members.

Faced with the international context and the evolution of domestic macroeconomic outlooks, the Mercosur countries have been adopting diverging trade policy strategies. These differences, which were already arising in the reiterated requests from Uruguay to negotiate separate bilateral agreements with countries outside the block, also became very apparent in the WTO Mini-Ministerial Meeting held in Geneva, in July 2008, when Brazil and Argentina took conflicting positions.

Increased South American integration faces difficulties due to diverging trends in the region's countries' economic models and international insertion strategies. The collapse of the Doha Round negotiations, a central subject of the block's agenda, raises further questions regarding the need for progress in regional or bilateral agreements. Moreover, Mercosur is having trouble navigating the world of bilateral agreements.

The future

Protectionist pressures in world trade tend to increase with the failure of WTO understandings. One protectionist trend that has already manifested itself in international trade is the introduction of technical and sanitary standards and regulations for products and manufacturing processes. These trends, especially those relating to environmental issues, appear to be linked to the trade in agricultural and agroindustrial products. These measures have relevant impacts on Mercosur's trade interests, which are strongly focused on products made from natural resources.

Integration would assist progress with supranational institutions playing roles that used to belong to the sovereign governments of each country, as in the European process of integration. However, in the case of Mercosur, the disproportional power wielded by Brazil within the block makes the installation of these institutions difficult. Furthermore, Brazil and Argentina distrust supranational institutions. In the absence of organised support from civil society in favour of the integration or of a supranational structure in place to protect the

integration during lean times, any threat can serve as motivation for one of the countries to threaten to abandon its commitments.

After a lifespan currently measuring 18 years, the integration project is still riddled with contradictions. A variety of products remain under special regimes; the list of common external tariff exceptions undergoes revisions dictated by passing shocks; import tariffs are charged on products from outside the block whenever a product is re-exported within the block.

Without common objectives, the agreement is unlikely to ever arrive at a successful conclusion. Brazil sees Mercosur as a strategic platform to increase its international stature. The long term politico-economic project would be a way of making the country more attractive to direct investment, of not being left out of the international political process, and of increasing its bargaining power in negotiations with the US and the EU. Argentina, on the other hand, is concerned with short-term crises. Without common goals, Mercosur and South American integration are destined to go nowhere.

IV. CONCLUSION

Analysis of the relative importance of different trade partners of South America's countries show that during the last 15 years the growth rate of China's imports from the world has been more important for the region's growth rate of exports than the growth rate of total imports of the United States and of the Euro Zone. In the period from 1980 to 2007, changes in the growth rate of Chinese imports account for 30 to 74 per cent of changes in the growth rate of exports of South-American countries. The growth rate of US imports, on average, accounted for less than 10 per cent of the change in the growth rate of exports in each country of the region. The magnitude of the impact of the growth rate of Brazilian imports on the growth rate of exports in the region was comparable to that of the United States. Although in comparison with the Euro Zone, Brazil is twice as relevant to regional trade dynamics, she is less important for the region's growth of exports than China (except in the case of Uruguay).

The growing importance of China as trade partner has confirmed the region vocation as an exporter of primary products. In the beginning of 2009, China became Brazil's most important trade partner. Even though Brazilian exports are the most diversified in the region, 85 per cent of Brazilian exports to China consist of primary products and natural resources based manufactures.

The findings of this paper include a positive relationship between growth and an improvement in terms of trade. Results obtained by use of the VAR approach are consistent with the hypothesis that the volatility of terms of trade not only implies swings in government revenues of South American countries but also cause uncertainty and, thus, reduce investment. Such volatility could help explain why South America's economic performance is less impressive than that observed in Asia.

Despite volatility of its terms of trade, and thus of export and government revenues, it would still be true, that if spent wisely, revenues from commodities can be a source of wealth and even innovation. But, if spent poorly, they lead to fiscal imbalances and politics rife with corruption and clientelism. South America provides examples of both positive and negative experiences related to the use of its natural wealth. Chile is an example of a country that broke the deadly cycles that result from the wild swings in commodity prices and terms of trade. Venezuela represents the other opposite extreme.

Cumulative terms of trade gains from 2003 through 2008 were large. They varied from 14 per cent in Brazil to 53 per cent in Chile and 129 per cent in Venezuela, and led to cumulative trade surpluses. The drop in commodity prices and the global recession drove South American exports sharply lower at the end of 2008. But this time, many countries in the region seem to be reacting differently from what used to be the case in previous external shocks.

One of the reasons resides in strong initial conditions which provided more policy flexibility compared to the past. When the crisis hit, foreign reserves were at record highs, external debt at record lows, and fiscal accounts in better shape than during previous crisis. The public sector (in some countries of the region, such as Brazil) is now a net external creditor. This had happened because, since 2003, government debt declined in part thanks to rapidly increasing commodity prices and appreciating real exchange rates, but also to more sustainable fiscal policies.

These strong initial conditions helped avoid the need of increasing interest rates to control capital flight as used to be necessary in the past to respond to a sudden stop in capital flows. In many countries of the region, while currency depreciation may keep some components of the cost of living high, the pass-through is being overwhelmed by the drop in commodity prices. Central banks will be able to meet inflation targets in 2009. Contrary to previous crisis episodes, central banks now have room to cut interest rates in response to the external shock in Chile, Brazil and Peru.

Nonetheless, South American governments (with the exception of Chile) continued to under-save between 2003 and 2008. Therefore, fiscal policy has remained pro-cyclical, thus weakening the ability to protect the poor and maintain infrastructure investments in 2009 and beyond. Financing and institutional constraints to more counter-cyclical fiscal policies still remain in most countries of the region. They are lowest in Chile where natural resources are not a curse any longer because, by embracing a counter-cyclical fiscal policy, it turned itself into a clear economic success. Countries, such as Argentina, Ecuador and Venezuela, with revenues linked to commodity exports and lacking Chile's prudence will face the biggest challenge in 2009 with the deterioration of their fiscal accounts.

Signs of recovery in 2009 are related to China's growing importance in the region. In Brazil, for instance, while exports have dropped significantly since the third quarter of 2008, exports to China, after a sharp adjustment late in 2008, have rebounded strongly, in contrast to exports to the rest of the world. Whereas exports to China represented about 10 per cent of exports in the 12-month period between April 2008 and April 2009, they account for more than one-third of the increase in exports observed in the same period, as Chinese imports appear to be recovering from the slump of the last quarter of 2008.

The analysis of previous sessions allows some tentative answers to questions posed in this paper. Despite her diplomatic efforts, Brazil has not succeeded in promoting South America's integration. Her ambition in transforming Mercosur into a common market that would encompass all South American countries faces major obstacles. The main challenge resides in the fact that all the countries of the region have strong comparative advantages in producing commodities and agricultural goods. This limits the gains from trade among them, as observed by OECD (2008). Despite the political will of the four member countries, business cycles, different exchange systems and electoral processes impose perennial difficulties to the negotiations. Mercosur's high common external tariffs cause trade diversion detrimental to the smaller countries. And for the time being, Brazil's aspirations as a regional and international leader pale in comparison with the growing importance of China in the region.

ANNEX

Annex I: Statistical Appendix

Table 7. **Trade Specialisation**
South American Countries, 2007
(Per cent)

	Brazil		**Argentina**		**Bolivia**		**Chile**		**Colombia**	
	Exports	*Imports*	*Exports*	*Imports*	*Exports*	*Imports*	*Exports*	*Imports*	*Exports*	*Imports*
Primary Products and Natural Resources Intensive Manufactures	54.19	37.54	69.09	21.22	88.06	28.42	90.32	41.13	64.51	27.37
Low Technology Intensive Manufactures	9.15	7.12	5.77	10.97	4.90	15.86	1.41	12.99	11.35	11.93
Medium Technology Intensive Manufactures	26.44	32.84	19.40	46.10	1.92	44.67	4.84	33.22	16.95	39.02
High Technology Intensive Manufactures	7.66	21.98	2.37	19.70	2.06	9.66	0.35	11.93	2.39	20.22
Others	2.56	0.52	3.37	2.01	3.08	1.42	3.08	0.73	4.80	1.46
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
	Ecuador		**Paraguay**		**Peru**		**Uruguay**		**Venezuela**	
	Exports	*Imports*	*Exports*	*Imports*	*Exports*	*Imports*	*Exports*	*Imports*	*Exports*	*Imports*
Primary Products and Natural Resources Intensive Manufactures	92.66	36.81	85.35	25.68	74.54	37.72	70.97	43.06	95.50	16.45
Low Technology Intensive Manufactures	2.37	11.89	9.50	14.73	8.05	11.87	18.22	13.34	1.02	9.84
Medium Technology Intensive Manufactures	3.69	35.80	2.60	34.55	1.83	35.76	7.49	29.32	3.30	36.40
High Technology Intensive Manufactures	0.64	13.32	1.51	24.70	0.19	11.11	1.70	10.83	0.13	16.59
Others	0.64	2.18	1.04	0.34	15.39	3.54	1.62	3.45	0.05	20.72
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: UN COMTRADE and ECLAC. Sistema Interactivo Gráfico de Datos de Comercio Internacional (SIGCI); authors' calculation.

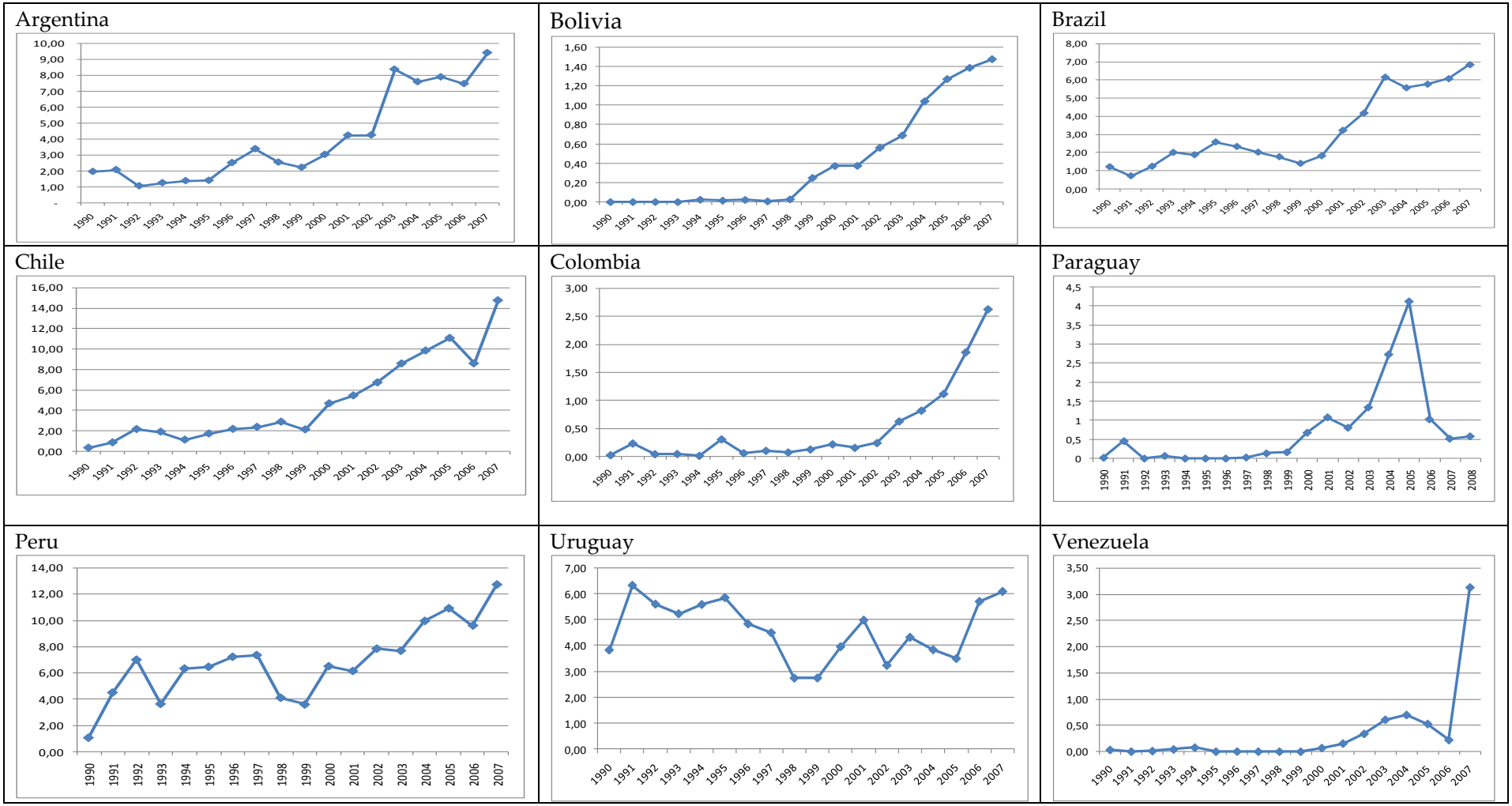
Table 8. **Herfindahl-Hirschman Index (HHI) – Concentration by Product**

10 South American Countries and Selected Regions

Country	2001	2005
Argentina	**0.0515**	**0.0493**
Bolivia	**0.0822**	**0.1605**
Brazil	**0.0256**	**0.0330**
Chile	**0.1094**	**0.1653**
Colombia	**0.0902**	**0.0936**
Ecuador	**0.2283**	**0.3782**
Paraguay	**0.1639**	**0.1660**
Peru	**0.0977**	**0.1237**
Uruguay	**0.0571**	**0.0829**
Venezuela	**0.6723**	**0.7760**
Memo items[1]*:*	1970	2000
Total Sample (56)	**0.203**	**0.123**
South America (10)	**0.354**	**0.204**
North America (3)	**0.073**	**0.070**
European Union (14)	**0.076**	**0.063**
East Asia (9)	**0.151**	**0.108**

Source: OECD (2008), and Bebczuk and Berrettoni (2006)
Notes: [1] Number of countries in parentheses as in Bebczuk and Berrettoni (2006)

Figure 5. **Share of Exports to China in Total South-American Exports. Ten Countries, 1990-2007. (Percent)**



Source: IMF. *Directions of Trade Statistics on line.* Prepared by the authors.
Note: Ecuador is not reported for convenience since its exports to China are almost nil in the relevant period. Surprisingly, in 2008, Ecuador exports to China were about 4 per cent of total exports.

Annex II: Data and Method

Table 9. **Data Description and Source**

Data	Description	Source
GDP Growth	**Gross Domestic Product Growth (% annual)**	**World Bank. World Development Indicators on line**
Exports (US$ mi)	**Exports (f.o.b.) of a country to the world by partners in US$ mi, series code 21370.DZF**	**IMF. Direction of Trade Statistics on line**
Imports (US$ mi)	**Imports (c.i.f.) from a country from the world by partners in US$ mi, series code 61271.DZF**	**IMF. Direction of Trade Statistics on line**
Trade Specialisation	**Exports and Imports by factor-intensiveness as follows: Primary Products and Natural resources-intensive Manufactures; Low Technology Intensive Manufactures; Medium Technology Intensive Manufactures; and High Technology Intensive Manufactures**	**UN COMTRADE and ECLAC. Sistema Interactivo Gráfico de Datos de Comercio Internacional (SIGCI).**
Terms of Trade	**Terms of trade index for goods (fob) measured by export price divided by import price, index number 2000 = 100**	**ECLAC. Statistical Yearbook for Latin American and the Caribbean.**
Commodity Price Index	**All commodities index, index number 2000 = 100 series code 00176ACDZF...**	**IMF. International Financial Statistics on line**
Real Effective Exchange Rate	**Based in relative CPI, index number 2000 = 100 series code 228.RECZF**	**IMF. International Financial Statistics on line**

Methodology

The paper uses the VAR (Vector Autoregressive) approach for forecasting systems of interrelated time series to analyse the dynamic impact of random disturbances on the system of variables. According to Enders (2004: 291), "A VAR can be quite helpful in examining the relationship among a set of economic variables. Moreover, the resulting estimates can be used for forecasting purposes". Consider a first-order VAR system as the following: $\mathbf{X}_t = \mathbf{A}_0 + \mathbf{A}\mathbf{X}_{t-1} + \boldsymbol{\varepsilon}_t$, where $\mathbf{X}_t$ is the set of all variables (all variables are endogenous), and $\boldsymbol{\varepsilon}_t$ is a white-noise disturbance term matrix. The VAR is used to derive variance decompositions and impulse response functions.

Because of the presence of a unit root in each of the variables, and the absence of co-integration among the variables, the VAR model is estimated in first difference. Akaike's Information Criterion (AIC) is used to determine the lag length for the VAR model. The maximum lag length considered is 5 years. The AIC is not applied blindly. The residuals from each VAR equation are required to be white noise. Q-statistics are used to determine if the residuals are White noise. The AIC and Q-statistics point to a lag length of only one year. Because policy recommendations derived from VARs can be quite sensitive to the chosen lag length, VARs are also estimated with 2-, 3-, 4- and 5-year lags.

The above calculations require orthogonalizing the VAR. There are several ways to do this. Bernanke (1986) and Blanchard and Quah (1989), among others, recommend that structural models be estimated using the residuals from various VAR equations. The restrictions in these structural models are used to produce the orthogonal residuals necessary for the variance decompositions and impulse response functions.

The main results of this paper depend rely on variance decompositions and impulse response functions[9]. The variance decomposition provides a different method of depicting the system's dynamics. It decomposes the variation of an endogenous variable into the component shocks to the VAR's endogenous variables. Variance decomposition provides information on the relative importance of each random innovation to the variables in the VAR. In other words, it indicates how much of the dependent variables' movement is due to their own shocks, versus shocks to the other variables. As the ranking of the variables is important in the decomposition, we applied different ordering and the sensibility of the results was considered.

In the first system, to deal with export dynamics in South America, we run VARs with export growth rates of one of the region's countries and the total import growth rates in Brazil, Euro Area, United States, and China.

[9] Results for the impulse response functions are not reported for convenience. All of them are in line with expected results and are available upon request.

For the analysis in section B, we next estimate VARs including the following variables: $[GDPgrowth, X]$, where X can be commodity price index, terms of trade, or real effective exchange rate, and then decompose GDP growth into variables X.

Due to the problems associated with structural VARs, this study uses a Cholesky decomposition to produce the orthogonal residuals necessary to compute variance decompositions and impulse response functions. The Cholesky decomposition requires that variables in the VAR be ordered in a particular fashion. Because of cross-equation residual correlation, when a higher-ranking variable changes, then all lower-ranked variables are assumed to change. The extent of the change depends on the degree of the residual correlation. The ranking used in this study in the first VAR system is as follows: exports growth in a country of interest; import growth rates in Brazil, except for the case of the Brazil analysis, which included the remaining South American countries' imports growth; North American; European; and Chinese import growth rates, respectively. In the second VAR system the order is GDP growth, followed by a price variable (commodity price index, real effective exchange rate, or terms of trade).

Impulse response functions offer a slightly different method for examining VAR system dynamics, mainly because this analytical tool traces out the responsiveness of the dependent variables in the VAR to shocks to each of the variables. We therefore supplement our decomposition analysis with impulse response functions to check the power and the signal of the shocks to each variable to our variable of interest.

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