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Commodities Boom:  
A Critical Assessment**

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# **China and the Latin America Commodities Boom: A Critical Assessment**

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## **ABSTRACT**

In this paper we analyze the extent to which Chinese demand enhanced the performance of Latin American economies in the period of economic boom that took place from the turn of the century until the run up to the financial and economic crisis of 2008-2009. It has been argued that China's rise has been a blessing for the region because Chinese demand boosted exports and in part caused a hike in commodities prices worldwide. We find that the direct impact on the region's exports was much smaller than what was touted. What's more, we find that there were signs that China demand was accentuating concerns about the "resource curse" and deindustrialization in the region. We come to these conclusions in the following manner. First, we calculate the fastest growing and largest exports in LAC in the run up to the crisis. To approximate the extent to which China demand propelled such exports, we calculate the percentage of global export growth in those LAC export growth sectors that was taken by China. We then examine bi-lateral trade with China, analyzing the total amount and sectoral composition of such trade, and the major countries involved in China LAC trade. We find that China had a significant direct and indirect impact on LAC exports, but only in a handful of countries and sectors. For those sectors, we show with the latest available projected data that despite pre-crisis projections to the contrary, the upward trend in prices clearly seems to have ended. We then address the question of whether the China-led boom and related price increases may have made these countries vulnerable to Dutch Disease, and finally whether the nations that benefited from China were equipped to fiscally reap transfer the benefits of the recent boom into diversified development for their populations. In sum, we find that China had a relatively small impact on the region except in a small handful of countries and sectors. We also find little concrete evidence for a resource curse, though this needs to be studied in more depth. We also find that contrary to past booms LAC has the mechanisms in place to transfer some of the rents from the boom period toward long run development. Unfortunately the current economic crisis will make addressing these issues even harder than before.

**Keywords: Latin American Economic Development, China trade, Commodity Boom**

## **INTRODUCTION: China trade: just what the doctor ordered?**

Before the current crisis, there is a polarization of views on China's impact in Latin America. Some argued that the future of Latin American economic development is a bright one and China was to thank for it. Others saw China as putting Latin America back into a world of primary product dependency and fiercely outperforming Latin America in global manufacturing markets. We examine these claims in this paper and conclude that the latter claim is closer to the truth but far from certain.

In a special report devoted to "China's Thirst for Resources", *The Economist* magazine argued that China's growth provides an unparalleled opportunity for Latin America (and Africa):

African and Latin American economies are growing at their fastest pace in decades, thanks in large part to heavy Chinese demand for their resources. China's burgeoning consumption has helped push the price of all manner of fuels, metals and grains to new peaks over the past year. Even the price of shipping raw materials recently reached a record. Analysts see little prospect of an end to the boom; the prices of a few commodities have fallen on the back of America's worsening economic outlook, but others, including oil, wheat and iron ore, continue to set new records. China, with about a fifth of the world's population, now consumes half of its cement, a third of its steel and over a quarter of its aluminum. Its imports of many natural resources are growing even faster than its bounding economy. Shipments of iron ore, for example, have risen by an average of 27% a year for the past four years (*The Economist* 2008: 3).

The opportunities that China's rise presents have also been highlighted in academic circles. A few examples will illustrate this point. The majority of studies on the issue of China's impacts on LAC economies have been conducted by international financial institutions. Indeed, the most comprehensive assessments have been done by the World Bank, the Organization for Economic Cooperation and Development (OECD), and the Inter-American Development Bank (IDB). These studies share the perspective that China's rise has been an important engine of Latin American growth.

For example, a World Bank report argued that "the rising correlation between the growth of the two Asian economies [China and India] and LAC economies (with the exception of Central America and the Caribbean) seems to have been mainly driven by demand externalities and higher prices for commodities where LAC's comparative advantage lies" (Lederman, Olarreaga, and Perry 2006). Similarly, Blázquez-Lidoy, Rodríguez and Santiso argue that "even when trade is concentrated in a small basket of commodities, China's strong demand for raw materials is good news for Latin America. In economic terms, this event could be considered as a positive demand shock. Even more, there is a positive impact on the region, even though direct trade with China does not rise" (Blázquez-Lidoy, Rodríguez, and Santiso 2006).

Finally, a landmark study conducted jointly by the Inter-American Development Bank and the David Rockefeller Center for Latin American Studies at Harvard University, also captured this optimistic view:

China's 1.3 billion people mean 1.3 billion potential consumers. Aggregate consumption in China is relatively low and bound to rise with growing levels of national income. Many Latin American countries are well positioned to supply the Chinese market with agricultural products, processed food, and beverages. For example, Argentina and Brazil have found an important market in China for their agro-food industries. As Chinese incomes grow, consumer tastes should also diversify, offering growth opportunities for exports such as wines, coffees, meats, fruits, and vegetables (some of which can exploit the inverted seasons of North-South temperate zones.) China's expansion has fueled strong external demand for nonagricultural raw and processed materials as well. Latin American countries are exploiting this opportunity. For example, Chile has found an important market in China for copper, ores, wood, pulp, and slag and ash, while Brazil is selling iron ore and pellets (Devlin, Estevadeordal, and Rodriguez-Clare 2006).

The other side of the coin of these optimistic assessments regarding the positive impact of China's growth in Latin America has been a concern about the fact that China is accentuating LAC's dependence on primary commodities which in turn could exacerbate long held concerns in the region over commodity dependence. These concerns are rife throughout the literature. For example, The World Bank says:

The move towards natural-resource-intensive products implies a more concentrated export bundle in LAC. This raises concerns regarding the vulnerability of LAC to future (negative) terms of trade shocks, but more importantly there is also a feeling within LAC that the gains associated with natural-resource-intensive exports are not being widely spread. The economic, but also political, sustainability of this specialization in natural-resource-intensive sectors depends on the extent to which gains are shared with owners of other factors of production (Devlin, Estevadeordal, and Rodriguez-Clare 2006).

This concern is also shared by Lall and Weiss, who argue that:

LAC faces a more serious threat over the long term: the export specialization of most of LAC is heavily biased towards resource-based primary products, with a very small share of technology-intensive products. Chinese growth may thus constrain its ability to diversify into more dynamic and technologically advanced products, with potential harm to its dynamic comparative advantage (Lall and Weiss 2005).

This paper builds on this previous work by looking deeper at both the nature of LAC exports to China and the extent to which a possible shift toward primary and resource-based products is of concern to the region.

## **ANALYSIS: LATIN AMERICAN COMMODITIES EXPORTS AND CHINA**

In this paper we analyze the extent to which Chinese demand is enhancing the performance of Latin American economies. First, we calculate the fastest growing and largest exports in LAC in recent years. To approximate the extent to which China demand has propelled such exports, we then calculate the percentage of global export growth in those LAC export growth sectors that is taken by China. We then examine bi-lateral trade with China, analyzing the total amount and sectoral composition of such trade, and the major countries involved in China LAC trade. We find that China is having a significant direct and indirect impact on LAC exports, but only in a handful of countries in sectors.

We find that:

- For almost all of LAC's top commodities exports, China is responsible for a large part of global demand and is affecting price increases and exports for LAC; yet,
- LAC exports to China were only 3.8 percent of all LAC exports. In other words, 96.2 percent of all LAC exports do not go to China;
- LAC's exports to China comprised 5.8 percent of Chinese imports, the same level of LAC exports to China in the 1980s;
- 74 percent of all LAC exports to China were in primary commodities;
- Growth in LAC exports to China was only 8 percent of all LAC export growth since the boom began in 2000;
- 10 sectors in six countries account for 74 percent of all LAC exports to China and 91 percent of all commodities exports to China;
- For the other countries in LAC the potential to trade with China is very low.

For those sectors that benefit from China trade, we show with the latest available projected data that despite pre-crisis projections to the contrary, the upward trend in prices clearly seems to have ended. We then address the question of that the China-led boom and related price increases may have made these countries vulnerable to Dutch Disease, and finally whether the nations that benefited from China were equipped to fiscally reap transfer the benefits of the recent boom into diversified development for their populations.

In sum, we find that China is having a relatively small impact on the region except in a small handful of countries and sectors. However, as of 2009 and in the wake of the financial and economic crisis that started in 2008, the prices in most of those sectors have already begun to drop, quite dramatically. We also find little concrete evidence for a resource curse, though this needs to be studied in more depth. We also find that contrary to past booms LAC has the mechanisms in place to transfer some of the rents from the recent boom toward long run development.

For the majority of the calculations in this paper, we use trade data from the United Nations Statistics Division's "Commodity Trade Statistics Database" (COMTRADE). We download data at the three digit level (SITC Rev. 2) and classify it using Sanjaya Lall's "Technological Classification of Exports" developed in (Lall 2000).

Before the crisis, Latin American growth was being fueled by a commodities export boom. GDP growth in LAC has increased by almost 3.2 percent per annum for a total of 19 percent in real terms between 2000 and 2006. Much of that growth is explained by an export boom. Exports grew over 10 percent each year and total export growth during the period was 62.5 percent. We calculate that the share of commodities export growth as a percent of total export growth in the region to be 70 percent. In other words, commodities exports account for 70 percent of the growth in LAC exports since 2000.

World exports to China increased tenfold in real terms from 1985 to 2006, starting at \$34 billion and reaching \$384 billion by 2006. One of the most marked changes, especially in just over the last decade, is the fact that developing countries have become a significant factor in China trade. We calculate different regions' shares of total exports to China and the percentage point change (PPC) between different time periods, 1995 to 2006 and 2000 to 2006. Developing countries comprised only 14.3 percent of the \$83 billion of global exports to China in 1995, but by 2006 were supplying China with 50.3 percent of China's \$384 billion of imports. Whereas the developed world was once the chief exporter to China (85 percent in 1995), developed countries now supply just under half of all exports to China. Since 2000 there has been a 2.65 PPC in market share for developing countries.

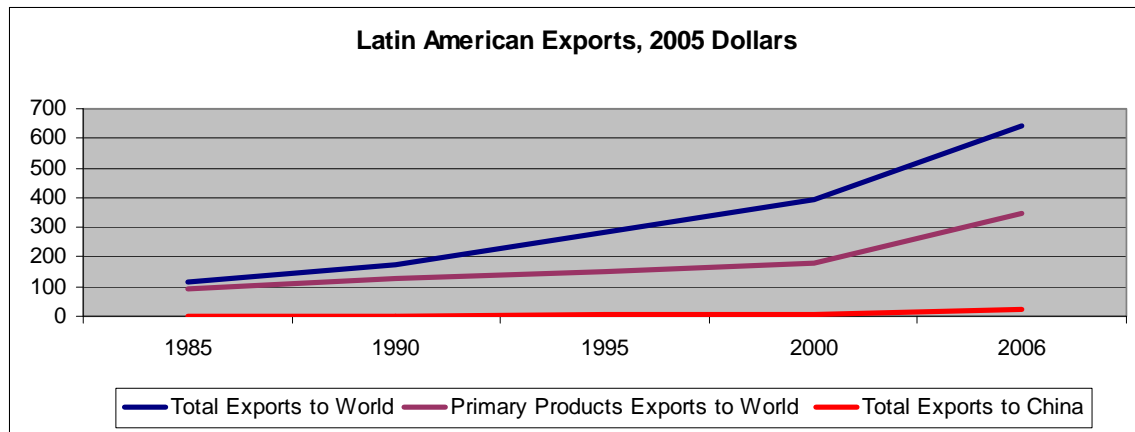
We also calculate commodities exports to China and learn that developing countries have become the largest commodities exporters to China. In 1995 developed countries supplied 68.6 percent of all commodities exports to China but only 38.8 percent in 2006. Developing countries comprised of only 31.4 percent of commodities exports to China in 1995 and by 2006 supplied 61.2 percent of those exports, a 29.7 PPC over the period. The majority of that change has been captured by countries in the Soviet sphere of influence (FS) (14.4 PPC), Sub Saharan Africa (SSA) (5.9 PPC), Latin America and the Caribbean (LAC) (5.6 PPC), and South Asia (SA) (4.9 PPC). By 2006, just over 40 percent of all commodities exports to China were from EAP, 22 percent from LAC. In the most recent period, between 2000 and 2006, LAC has captured the majority of gains.

China's unprecedented economic growth and its entry into the World Trade Organization (WTO) have had direct and indirect effects, on LAC's export and growth performances. Direct effects result from bi-lateral LAC-China trade. In-direct effects result from China's overall demand for LAC's top products and the extent to which that demand drove up prices for those products. We address each in turn.

#### *Direct Effects*

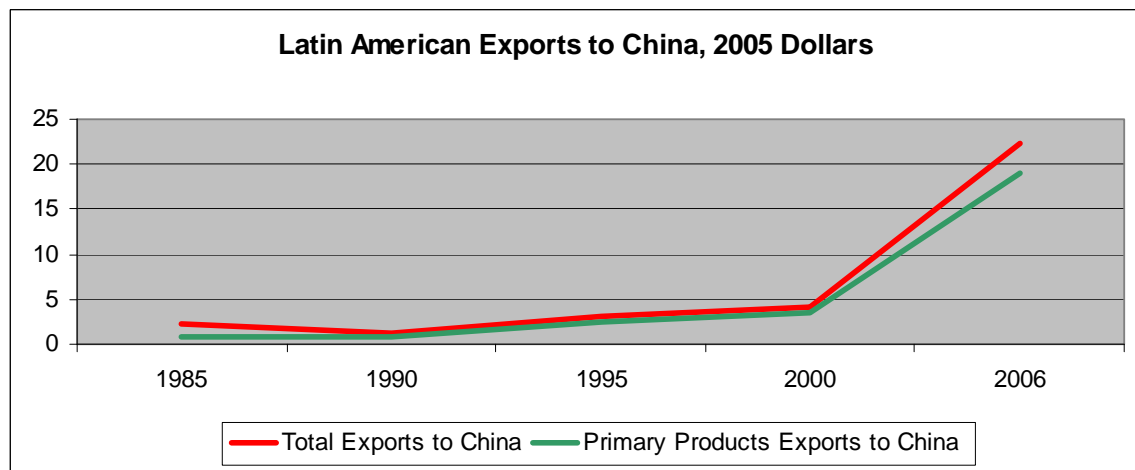
Figures 1 and 2 exhibit LAC exports to China from 1985 to 2006 in broader context. Since 2000, exports have grown by 370 percent, dwarfing the overall LAC export growth of 62.5 percent during the period. This fact and figure have fueled the optimism described earlier in the literature review, but is often not discussed in its full context. LAC exports to China were only 3.8 percent of all LAC exports. In other words, 96.2 percent of all LAC exports do not go to China; LAC's exports to China comprised 5.8 percent of Chinese imports, the same level of LAC exports to China in the 1980s. Seventy-four percent of all LAC exports to China were in primary commodities. Finally, growth in LAC exports to China was only 8 percent of all LAC export growth since the boom began in 2000;

**Figure 1**



*Source: Authors calculations based on (United Nations Statistics Division 2008)*

**Figure 2**



*Source: Authors calculations based on (United Nations Statistics Division 2008)*

There is no doubt that China had a positive effect on LAC export growth during the boom. In terms of bi-lateral trade however, the fanfare should be tempered. The large increase in LAC exports to China has barely held ground in terms of total Chinese import shares, and trade to China is a relatively small amount of total LAC exports. In addition, as we shall now see, only a small handful of countries and sectors account for almost all of the LAC export surge to China.

The benefits of LAC-China trade are highly concentrated in a few countries and sectors. Table 1 reveals that in 2006 just 10 sectors in six countries comprised 74 percent of all LAC exports to China and 91 percent of all commodities exports to China. Indeed, the



top five sectors: Ores and concentrates of base metals (largely copper ores), Soybeans, Iron, Crude petroleum, and Copper Alloys were 60 percent of all exports to China and 75 percent of commodities exports to China.

**Table 1**

**Six Countries, Ten Sectors, Dominate LAC Trade to China**

| <b>Sector</b>                                 | <b><u>Share of PRBP exports to China (2006)</u></b> | <b><u>Share of total LAC exports</u></b> | <b><u>Country (2006)</u></b><br><i>(China Share in Total Country Exports in sector)</i> |
|---|---|--|---|
| <b>Crude petroleum</b>                        | 10.2%   | 8.3%                                     | Argentina (43%), Brazil (41%)   |
| <b>Ores and concentrates of base metals</b>   | 20.6%   | 16.7%                                    | Chile (55%), Peru (32%)   |
| <b>Soybeans and other seeds</b>               | 19.1%   | 15.6%                                    | Brazil (63%), Argentina (37%)   |
| <b>Iron ore and concentrates</b>              | 14.5%   | 11.8%                                    | Brazil (90%)  |
| <b>Copper Alloys</b>                          | 9.6%  | 7.8%                                     | Chile(89%)  |
| <b>Soybean oil and other oils</b>             | 3.9%  | 3.2%                                     | Argentina( 84%)   |
| <b>Non-ferrous base metal waste and scrap</b> | 3.6%  | 2.9%                                     | Mexico (45%), Colombia (29%)  |
| <b>Pulp and waste paper</b>                   | 3.6%  | 2.9%                                     | Brazil (53%), Chile (46%)   |
| <b>Feedstuff</b>                              | 3.2%  | 2.6%                                     | Peru (66%), Chile (26%)   |
| <b>Meat</b>                                   | 2.7%  | 2.2%                                     | Brazil (88 %)   |
| <b>Total</b>                                  | <b>90.8%</b>  | <b>73.9%</b>                             |   |

*Source: Authors calculations based on (United Nations Statistics Division 2008)*

A mere handful of countries accounted for LAC exports to China in these 10 commodities. The final column in Table 3 exhibits the share of total LAC exports to China in a particular sector by country. In other words, looking at the first row, Argentina and Brazil exported 43 and 41 percent respectively of all LAC crude petroleum exports to China (the majority of Venezuelan and Mexican oil exports are destined for the United States and do not reach China). Brazil alone exported 90 percent of all LAC exports of Iron and 88 percent of all Meat to China, Argentina exported 84 percent of all soybean oil. This table reveals that just six countries dominated the majority of LAC exports to China: Argentina, Brazil, Chile, Colombia, Mexico, and Peru. Four of the countries, Argentina, Brazil, Chile, and Peru, showed up as the most dominant exporters to China. Mexico and Colombia accounted for the majority of exports of non-ferrous metal waste and scrap metal to China, but did not make a significant contribution to China exports in any other sector. Other research that has compared the export basket of various LAC countries with the import potential of China and found that for countries and sectors other than those on this list the potential to trade with China in the future is very low (Blázquez-Lidoy, Rodríguez, and Santiso 2006).

Finally, for the four major countries and sectors in Table 2 we calculate the ratio of China exports in a sector to a country’s total exports in that sector. For some sectors China exports are very large part of a country’s total exports in a sector and a large percentage of total LAC exports in that sector.

Table 2

| <b>Share of China Exports in Selected Countries and Sectors, 2006</b> |  |   |
|---|--|---|
| <b><u>Country, Sector</u></b>   | <b><u>Exports to China in Sector</u></b> | <b><u>% Total Country Exports in Sector</u></b> |
|   | <i>(USD 2005)</i>                        |   |
| <b><u>Argentina</u></b>   |  |   |
| <i>Crude petroleum</i>  | 875,806,061                              | 37%   |
| <i>Soybeans and other seeds</i>                                       | 1,390,304,704                            | 73.7%   |
| <i>Soybean oil and other oils</i>                                     | 645,112,304                              | 18.2%   |
| <b><u>Brazil</u></b>  |  |   |
| <i>Oil</i>  | 818,654,645                              | 12%   |
| <i>Soybeans and other seeds</i>                                       | 2,381,576,901                            | 42.7%   |
| <i>Iron</i>   | 2,575,374,873                            | 37.8%   |
| <i>Pulp and Paper</i>   | 372,549,748                              | 5.5%  |
| <i>Meat</i>   | 464,630,823                              | 6.5%  |
| <b><u>Chile</u></b>   |  |   |
| <i>Copper Ores</i>  | 2,205,461,023                            | 16.2%   |
| <i>Copper Alloys</i>  | 1,692,789,989                            | 8.5%  |
| <i>Pulp and Paper</i>   | 325,269,717                              | 24.8%   |
| <i>Feedstuff</i>  | 169,337,323                              | 31.4%   |
| <b><u>Peru</u></b>  |  |   |
| <i>Copper Ores</i>  | 1,303,296,018                            | 22.4%   |
| <i>Feedstuff</i>  | 423,127,024                              | 36.3%   |

*Source: Authors calculations based on (United Nations Statistics Division 2008)*

What stands out most is that 73.7 percent of all soybeans exported from Argentina were destined for China and that 42.7 percent of all soybeans exported from Brazil went to China as well. 37.8 percent of all Brazil's Iron exports went to China. Only in the case of Brazil's pulp and paper and meat sectors and Chile's copper alloy sector were China exports less than ten percent of each country's total exports in those sectors.

It should come as no surprise then that these countries and sectors are the recipients of foreign direct investment from China. Table 3 exhibits 2006 (same year as data in Tables 2 and 3) investments in Argentina, Brazil, Chile and Peru. It is also important to note that every country in Latin America went from having a trade surplus with China in 1995 to a trade deficit in 2006—except for Argentina, Brazil, Chile, and Peru (Gallagher and Porzecanski 2008).

**Table 3: Major 2006 Chinese Investments in LAC**

**Argentina**

In February 2006, the periodical Business News Americas announced that Chinese steel trading company Sinosteel corporation was considering an undisclosed but significant investment in the Argentine iron ore miner Hiparsa with the express purpose of increasing iron ore production to meet Chinese demand. Separately, in the transportation sector, the Chinese have discussed participation in improving the Cristo Redentor and Aguas Negras passes. The passes are key chokepoints on highways used to ship Argentine products over the Andes mountains for ultimate export via Chile's Pacific ports. In the winter, snows routinely close the passes, delaying the transit of Argentine products to destinations such as China.

**Brazil**

Chinese deals and acquisition activity have focused on Brazil's iron and steel and petroleum sectors. With respect to the former, the Chinese firm Baosteel and the Brazilian firm Companhia Vale do Rio Doce (CVRD) began talks in July 2004 to construct an iron ore production facility in Brazil. CVRD was subsequently rumored to be in joint venture talks with the Chinese firm Minmetals, although no concrete deals have emerged as of the time that this article went to press. In February 2006, Metals and the Metallurgical Construction Group of China finalized a deal providing Gerdau S.A. \$235 million to increase its steelmaking capacity in Brazil. With respect to petroleum, in November 2004, the Brazilian state firm Petrobras signed a \$10 billion commitment to cooperate with the Chinese firm Sinopec in prospecting for oil, refining, and constructing pipelines in Brazil. Subsequently, in July 2005, Petrobras signed a long-term contract to sell 12 million barrels of oil per day to the PRC firm Sinochem for \$600 million. In addition to these commitments, China has proposed \$4.8 billion in investments to modernize the Brazilian railway system--facilitating Brazil's ability to get its iron ore, steel, and other products to market for export to destinations such as the PRC.

**Chile**

In February 2006, China Minmetals and China Development Bank finalized a deal providing the Chilean state copper company Codelco with up to \$2 billion in financing through advance commodity purchases so that Codelco could increase its mining capacity for export to China. Codelco is the world's largest copper supplier, while the PRC is Chile's number one export customer. The deal also included an option to sell Minmetals a 25-49% interest in the new Gaby mineral field for an additional \$900 million.

**Peru**

On February 27, 2006, the Peruvian congress approved a massive project in which the Chinese consortium Shandong Luneng would invest \$2 billion to significantly upgrade the port facility at Tacna, and another \$8 billion to build new highway and rail links connecting Tacna to the El Mutún mineral field in eastern Bolivia. Shandong Luneng is also one of the major bidders for the El Mutún concession, which has been repeatedly delayed by the Bolivian government. Securing both projects would thus give a major PRC firm an integrated supply network for extracting iron from the region. In addition to Tacna, another \$300 million in smaller PRC investment projects are also contemplated for the Peruvian mining, petroleum and fishing industries. In the hydrocarbon sector Chinese position in Peru was also bolstered by the China National Offshore Development Corporation (CNODC) purchase of a 45% interest in PlusPetrol Norte, a subsidiary of the Argentine firm PlusPetrol. The acquisition has given China a presence in the Camisea gas fields--a project that has recently come on-line and is significantly boosting Peru's natural gas output, and rapidly making Peru a significant player in the region's natural gas supply.

### Indirect Effects

Indirectly, during the boom increases in Chinese demand tightened supplies and raised global prices for many commodities, leading to a rise in exports. More directly of course, China's appetite for commodities has increased bi-lateral trade between LAC and China. This drove up prices and increased overall demand for LAC goods (IMF, 2008).

Table 4 lists LAC's top 17 commodities exports by their total exports (in dollars) in 2006. These top exports were just shy of half of all LAC's exports during the period and grew on average of 110 percent over the period. Far and away the largest export was crude oil, which alone accounted for more than 18 percent of all LAC's exports.

**Table 4**

#### Latin America's Top Commodities Exports in Context

| <u>Sector</u>                    | <u>2000</u>          | <u>2006</u>           | <u>00-06 Growth</u> | <u>Chinese Import Growth/Total World ExportGrowth</u> |
|----------------------------------|----------------------|-----------------------|---------------------|---|
|                                  | <u>(2005USD)</u>     |                       |                     |   |
| Crude oil                        | 48,987,186,770       | 112,575,599,155       | 129.8%              | 5.5%  |
| <b>Base Metals</b>               | <b>7,211,709,637</b> | <b>26,183,980,627</b> | <b>263.1%</b>       | <b>19.7%</b>  |
| <b>Copper</b>                    | <b>7,628,915,967</b> | <b>25,749,477,183</b> | <b>237.5%</b>       | <b>10.8%</b>  |
| Refined Petroleum                | 16,620,782,467       | 18,806,398,334        | 13.1%               | 5.2%  |
| <b>Meat</b>                      | <b>3,535,083,967</b> | <b>11,070,973,817</b> | <b>213.2%</b>       | <b>-1.6%</b>  |
| <b>Iron ore and concentrates</b> | <b>3,811,562,912</b> | <b>9,425,950,165</b>  | <b>147.3%</b>       | <b>54.8%</b>  |
| <b>Feedstuff</b>                 | <b>6,413,819,994</b> | <b>9,414,473,361</b>  | <b>46.8%</b>        | <b>2.6%</b>   |
| Fruit and nuts                   | 6,609,994,529        | 9,214,179,325         | 39.4%               | 0.1%  |
| Sugar and honey                  | 3,293,727,533        | 8,358,410,784         | 153.8%              | 1.8%  |
| <b>Soybeans</b>                  | <b>4,155,155,048</b> | <b>8,209,199,475</b>  | <b>97.6%</b>        | <b>57.8%</b>  |
| Natural Gas                      | 1,422,921,528        | 8,053,331,973         | 466.0%              | 1.8%  |
| Coffee and coffee substitutes    | 6,320,846,594        | 7,400,327,391         | 17.1%               | 1.5%  |
| Vegetable oils, crude or refined | 2,413,049,966        | 5,123,976,205         | 112.3%              | 8.4%  |
| Aluminium                        | 3,211,590,964        | 4,533,157,750         | 41.1%               | 1.4%  |
| Fresh Vegetables                 | 3,322,155,825        | 4,531,071,548         | 36.4%               | 4.2%  |
| Alcoholic beverages              | 2,757,791,184        | 4,188,139,047         | 51.9%               | 2.5%  |
| Fish, fresh, chilled or frozen   | 2,551,440,823        | 3,982,054,605         | 56.1%               | 9.3%  |
| <b>Pulp and waste paper</b>      | <b>3,325,463,834</b> | <b>3,915,651,191</b>  | <b>17.7%</b>        | <b>118.9%</b>   |
| <b>Average</b>                   | <b>7,421,844,419</b> | <b>15,596,463,996</b> | <b>110%</b>         | <b>17%</b>  |

Source: Authors calculations based on (United Nations Statistics Division 2008)

The last column in Table 4 exhibits the share of Chinese import growth as a percent of world export growth in a particular sector. For instance, Chinese imports account for 5.5 percent of the growth in crude petroleum exports between 2000 and 2006. In many sectors Chinese demand accounts for well over 10 percent of total world export growth during the period and on average it accounted for 17 percent of the rise in demand for LAC's top exports. Base metals, copper, iron ore, soy, and pulp and paper are all highlighted in bold

because they are the core LAC exports to China that are discussed above. Chinese demand for global exports in these products was quite high, with 54 percent of the increase in world iron ore exports going to China, 57.8 percent of all soy, and more than 118.9 percent of pulp and paper. In other words, indirectly through demand and subsequent price increases, China was indirectly responsible for much of Latin America's commodity export boom.

The analysis conducted in this part of the paper has shown that China is having a significant impact on LAC, but not necessarily in all the ways portrayed by some. Many countries simply do not export the goods that China impacted directly through global demand and price increases or through bi-lateral trade. Other research shows that such trends may not change. In addition, only ten sectors in six countries account for the majority of China-LAC trade during the boom. For those countries and sectors that were "winners," China both propped up world prices and accounted for a large part of the export increase in those countries. Now that the boom has come to a halt, it is worth analyzing whether despite its obvious benefits, the boom also posed a development challenge to Latin America. To this question we now turn.

### **IMPLICATIONS FOR POLICY**

These findings raise a number of concerns regarding the impact that China has in Latin America that run counter to the more euphoric tone about the LAC-China relationship that could be found in the popular press and some of the literature during the boom. There are three key questions of concern that need to be addressed by researchers and policy makers. For the small handful of LAC countries that are benefiting from China trade:

1. Beyond the boom, how long can LAC depend on increasing Chinese demand for LAC commodities, and similarly, to what extent –in the long term- will prices for such commodities remain high?
2. To what extent will future China trade result in a "resource curse" problem for LAC given that China trade is largely in commodities?
3. How well are LAC governments equipped to capture increased revenues from growing commodities exports and are the revenues being used to stabilize and diversify the economy?

There are grounds for optimism on all three levels. Estimates conducted before the outset of the financial crisis concluded that for the most important export sectors to China, Chinese demand would continue its rise for some time to come. Regarding Dutch Disease, there is cause for concern but more research is needed. During the period analysed there was a slight appreciation in the currencies of the four key countries relative to others in LAC. There is also some evidence that export surges to China are taking a heavy toll on the environment. In addition, LAC manufacturing industries are indeed losing competitiveness compared with China. On the question of revenue gains, because of past crises LAC has considerably more institutions that can capture gains from commodities booms but analysts have expressed concern that the purse strings are being held tight. Nevertheless, LAC has a better opportunity than it has had in decades, even in the wake of the crisis. An opportunity that should be seized.

## *The Future of Chinese Demand and High Commodities Prices*

Before the financial crisis hit, economic growth in China was expected to continue its unprecedented expansion for at least another decade or more. Estimates of Chinese economic growth have been corrected downward in light of the economic crisis, but they remain positive nonetheless. High prices for commodities are another matter however. Most forecasts estimate that recent commodity boom was fairly unique and may last longer than those in the past—but not forever. Such projections, however, are pre-crisis and prices have been pushing downward since 2008. This means that the past and any future booms are indeed opportunities for those countries benefiting from them, but won't be if nations don't act quickly.

Forecasting future Chinese growth has become a cottage industry, but most conservative forecasts put annual growth rates for China between 7.1 and 8.6 percent to 2020 (Jianwu, Li, and Polaski 2007). In 2006 Deutsche Bank Research put together estimates of future Chinese demand in key commodities from Africa and South America. Deutsche Bank projects increased demand for all of the important sectors analyzed in the previous section. Indeed, Table 5 shows that in every sector except for soy, pre-crisis estimates of future growth will exceed 10 percent per annum.

**Table 5**

### **Projections for China's Commodity Import Demand**

| <b>Commodity</b>       | <b><u>Annual Demand</u></b>           |                    | <b><u>Percent Change, 2006-2020</u></b> |                      |
|------------------------|---------------------------------------|--------------------|---|----------------------|
|                        | <b><u>2006</u></b><br><i>(m tons)</i> | <b><u>2020</u></b> | <b><u>Total</u></b>                     | <b><u>Annual</u></b> |
| <b>Oil</b>             | 91                                    | 1860               | 1940                                    | 20                   |
| <b>Iron</b>            | 148                                   | 710                | 380                                     | 10                   |
| <b>Soy</b>             | 26                                    | 50                 | 80                                      | 4                    |
| <b>Copper</b>          | 3                                     | 20                 | 600                                     | 10                   |
| <b>Meat</b>            | 0.3                                   | 4                  | 1260                                    | 20                   |
| <b>Pulp and Paper*</b> | 34                                    | 150                | 330                                     | 10                   |

\*m cubic meters

*Source: (Deutsche Bank Research 2006)*

The Deutsche Bank Research team argues that soy demand will not be as significant as in other sectors:

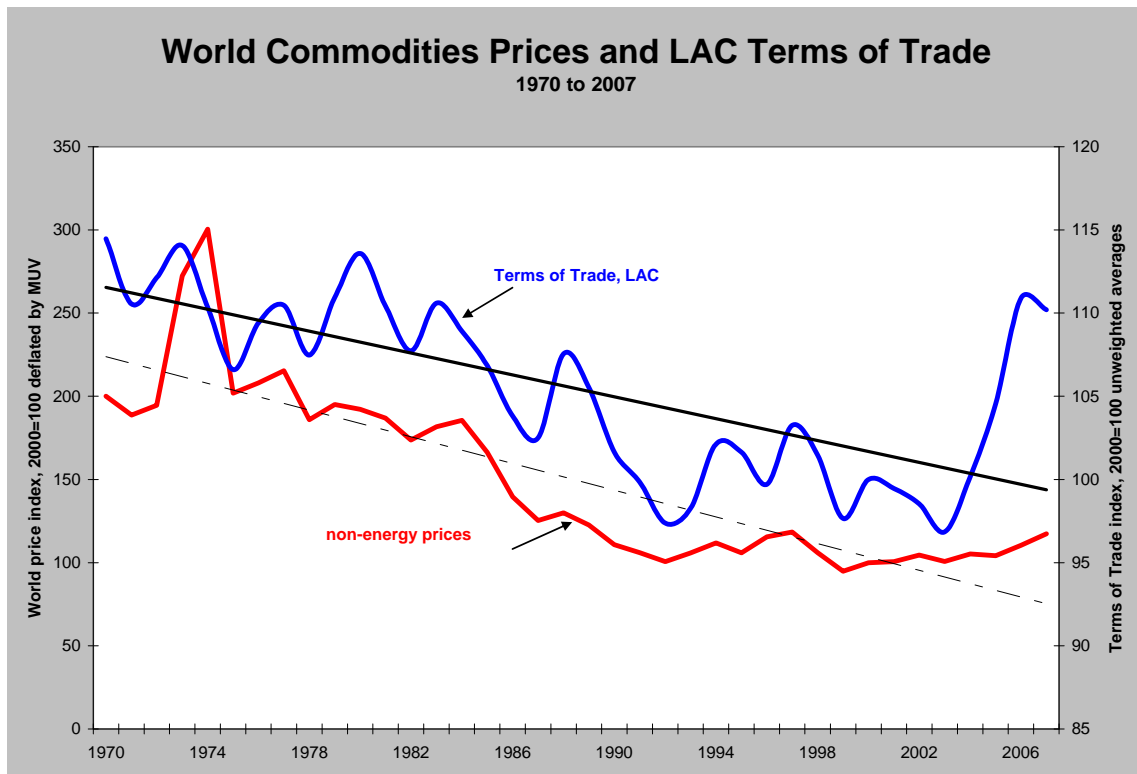
“Soy imports have risen steadily as domestic production struggles to fulfill rising demand. Growth in soybean demand has been mainly driven by increased consumption of soybean oil and soybean meal (both outputs of the crushing process). Especially demand for soybean meal which is used to feed livestock and is thus driven by demand for meat—was a major driver of Chinese soybean import

growth. This makes future Chinese demand for soybeans difficult to predict. While human consumption of soybeans and soybean oil is likely to increase further, demand growth for soybean meal could decrease as livestock cultivation faces limits and imports of meats and other animal products gain ground. Therefore, overall demand growth for soybeans is likely to lag behind other commodities.” (Deutsche Bank Research 2006: 5).

Although soy demand is predicted to grow the relatively slow—Table 7 shows it is still predicted to almost double by 2020. Doubling is quite large but seems smaller given that other commodities such as meat, crude oil and others are expected to grow by a factor of three or more.

Chinese growth may continue for the foreseeable future but high prices for commodities in general may not. The International Monetary Fund (IMF) reminds us that although the prices for commodities are currently high they remain below their historical levels, are highly volatile, and over the long term are predicted to continue their downward trend. Since 1957 commodity prices have fallen relative to consumer prices at a rate of about 1.6 percent annually. However, volatility is more the norm than price decline—one standard deviation of annual price changes is close to 11 percent, compared to the 1.6 percent annual decline. The IMF attributes such falls to productivity gains in agricultural and metals parts of the economy relative to others (International Monetary Fund 2006).

Figure 3



Source: (International Monetary Fund 2008)

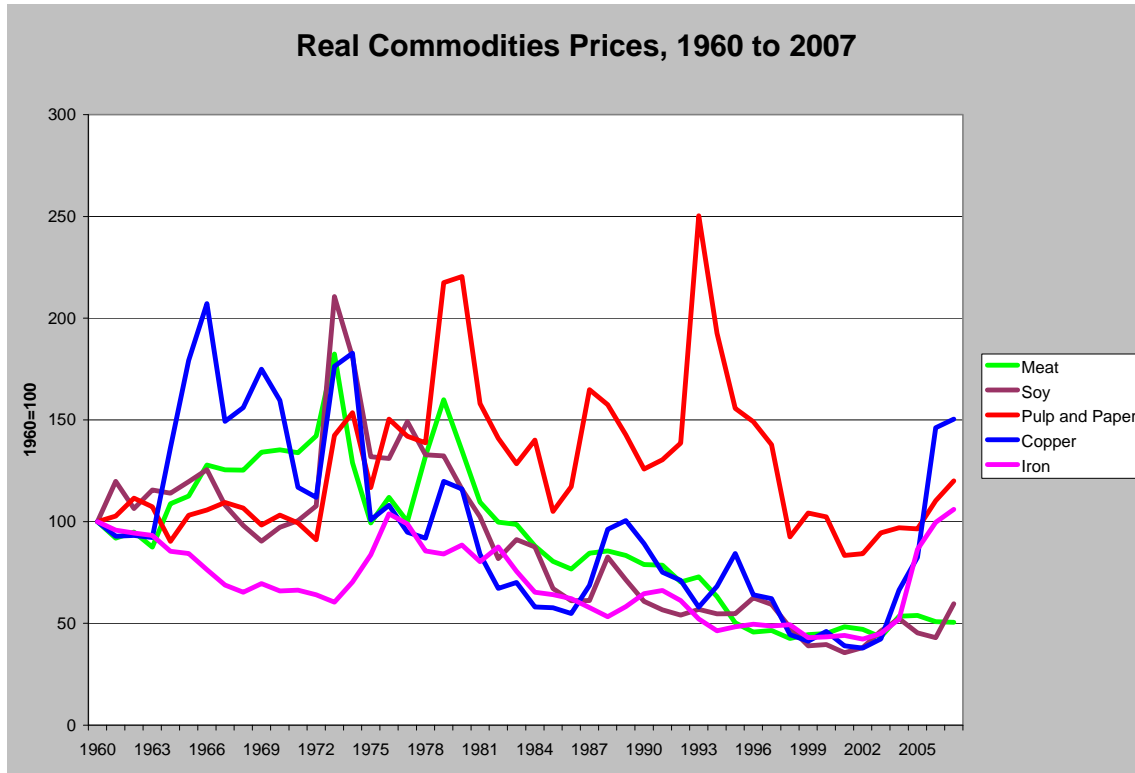
Figure 3 exhibits declining non-energy prices (on the first vertical axis) with the downward trend line in jagged black. Terms of trade in Latin America are scaled to the second vertical axis and are also declining over the long term. This long-term deterioration of the terms of trade for commodities has been thoroughly documented for a longer period of time (see Ocampo and Parra 2003 for an analysis for the whole twentieth century) and has been a core concern for long term development in Latin America since the formulation of the Prebisch-Singer hypothesis (Prébisich 1951).

However it is quite clear that both prices and the terms of trade for Latin America increased 2000 until before the crisis. The IMF does acknowledge that the recent boom was one of the longest and largest in recorded history. For the average country the boom lasted over four years and caused an improvement in the terms of trade by 9 percent, while past booms lasted on average two years and changed terms of trade by 3 percent (International Monetary Fund 2008). Before the crisis, some analysts forecasted price increases through 2015. The International Food Policy Research Institute predicted that soy and soy oils would see significant increases until that year (International Food Policy Research Institute 2008). As Figure 5 shows, these prices have started to slide below their 2000 levels.

A closer look at the specific sectors benefiting from China trade shows a slightly different pattern. The long term trend for the agricultural commodities slopes downward but the trend for non-renewable natural resources was on the rise until the crisis. Figure 4 shows these commodities from 1960 to 2007. Indeed the bump up since 2002 in Figure 2 seems to be in large part a function of Copper, Iron, and Pulp and Paper prices, not agricultural ones.

#### **Figure 4**

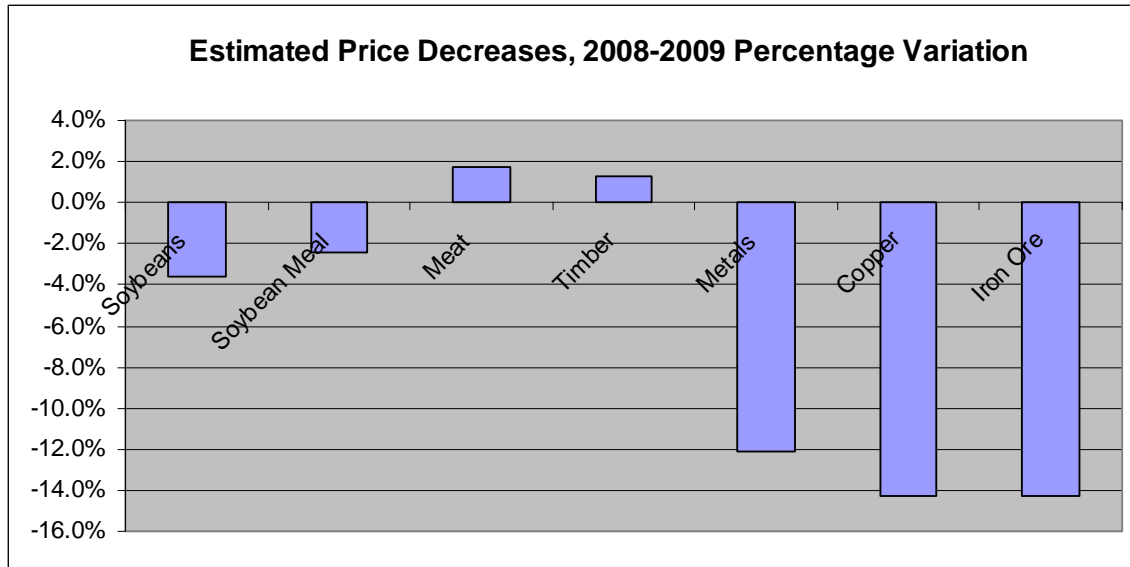




Source: author's calculations based on World Bank, 2008

What remains to be seen is to be seen is how long the increase in commodity prices and the resulting improvement of terms of trade will actually last, and whether these improvements will reverse the downward trend observed since the beginning of the twentieth century (Ocampo and Parra 2003). In fact, while the small range of estimates available quibble regarding how long price increases will last, even before the crisis there was consensus over the fact that they would eventually decline and that the commodity boom would not put LAC on the verge of long-term economic growth with current account surpluses. (International Monetary Fund 2006; Ocampo 2007). Moreover, despite the long term trends shown in the figure above, post-crisis estimates have begun to show a downward trend in 2009.

Figure 5



Source: (International Monetary Fund 2009)

### ***LAC, China, and the Resource Curse***

If many “ifs” materialize China’s presence in Latin American export baskets may be grounds for concern over the extent to which Chinese and global demand for LAC commodities will inflict LAC with “Dutch Disease,” or the “Resource Curse.”

If future demand from China and the indirect effect that China demand may have on higher commodities prices in general rebounds, it is possible that some Latin American countries will have larger shares of primary and resource based products in their export baskets. This raises concerns over Dutch Disease: resource dependent countries do not develop strongly because they are victims of a “resource curse.” Nations overly dependent on commodities have been shown to de-industrialize because discoveries of such resources raise the value of a nation's currency and make manufactured and agricultural goods as well as services less competitive, eventually increasing imports, decreasing exports, creating balance of payments problems, and leading to poor economic performance (Sachs and Warner 1995).

Thus far there is only slight (if any) evidence toward the signs of a resource curse. If we were to observe Dutch Disease we would expect to see appreciating exchange rates and declining shares of manufacturing as a percent of GDP.

**Table 6**

| <b>Percentage Changes in Exchange Rate<br/>(Local currency per dollar)</b> |                         |                         |
|--|-------------------------|-------------------------|
|  | <b><i>2000-2007</i></b> | <b><i>2002-2007</i></b> |
| Mexico   | 1.1                     | 5.9                     |
| Argentina  | 85.7                    | -27.8                   |
| Brazil   | -20.2                   | -44.6                   |
| Chile  | -3.8                    | -23.5                   |
| Colombia   | -25.5                   | -31.7                   |
| Ecuador  | -35.2                   | -4.1                    |
| Peru   | -4.4                    | -7.2                    |

Source: (World Bank 2008, accessed May 5, 2008)

Table 6 exhibits real exchange rates for the six countries identified as those with significant China trade from 2000 to 2007, and then again for 2002 to 2007 because 2002 is often seen as the beginning of the commodities boom. During the entire period, Mexico, and Argentina see depreciation of the currency, though Argentina's is clearly a recovery from its crisis. In the boom period, 2002-2007, in all countries there has been a significant appreciation of the currency except for in the relatively more manufacturing centered nations of Mexico.

Figures for industrial structure reveal that at present there has been no significant change—except for the case of Chile. In Brazil and Peru the percent of GDP in manufactures has remain unchanged between 1995 and 2007, and in Argentina there has been an increase by almost 5 percentage points. In Chile however, manufactures were 18.1 percent of GDP in 1995 and 15.7 percent of GDP in 2007. Of course, whether looking at exchange rate changes or changes in industrial structure, these trends may be in no way related to China whatsoever. Such analyses are beyond the scope of this paper but should be examined in detail for future research. The point here is that presently there are no noticeable changes that would make one cry resource curse, but theoretically the possibility remains.

Barbier (2004) extends the resource curse analysis for Latin America and shows that this problem has plagued Latin America in the past and that because of LAC's skewed distribution of wealth and poor has also exacerbated environmental degradation and social inequity during commodity booms. Barbier shows how LAC has often growth through "frontier land expansion" but that in the end such expansion did not generate rents substantial enough to be reinvested in other productive activities nor does it generate enough linkages and productivity spillovers to achieve broad-based, sustainable growth. How and why does this happen? LAC attracts investors in commercial agriculture, mining, timber extraction, and these investors tended to be among the more wealthy people in the country or across the globe. Such intensive extractive activity and actors in the "frontier," along with the accompanying pressure from population increases and water use, leads to excessive resource conversion.

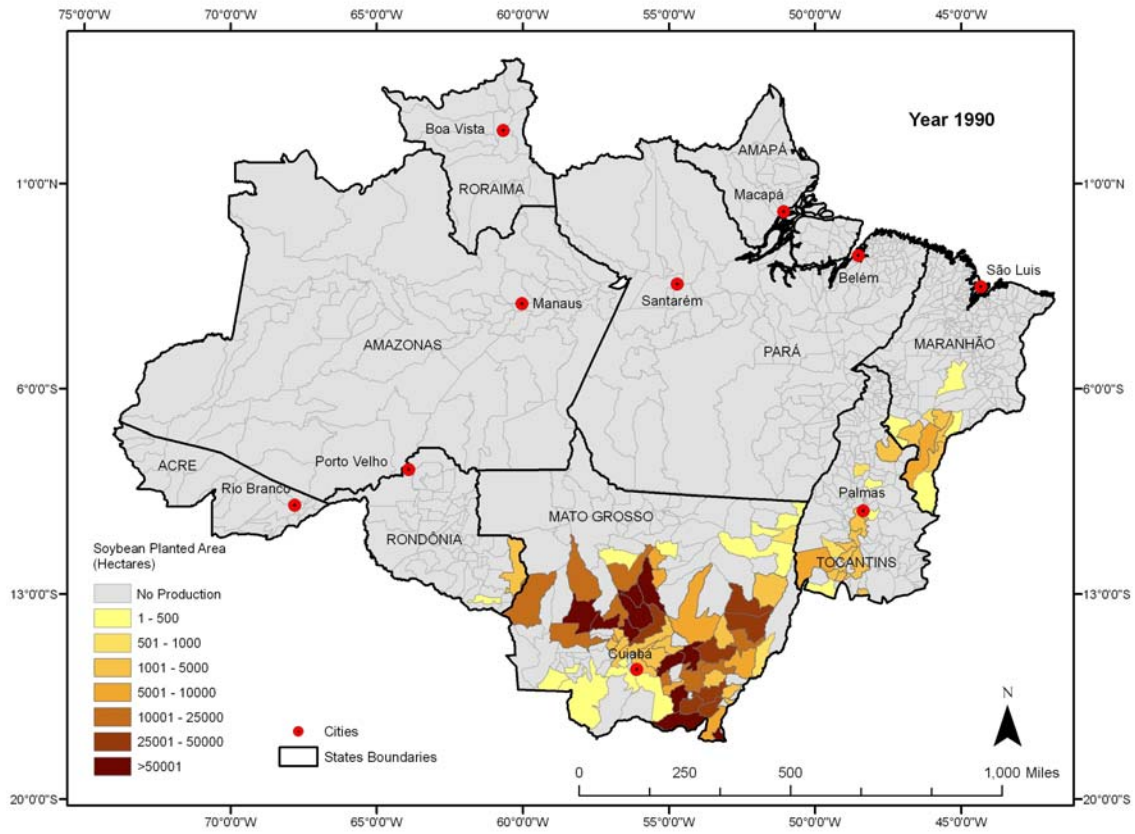
According to Barbier, significant rents did not accrue over the long run – though there are undoubtedly booms – because the resources get depleted over time and because of

government and market failures in the form of rent seeking, corruption, and open access problems. The limited rents that did accrue were seldom redistributed for more dynamic economic activity (nor to investing in natural capital or the poor) because these actors benefit from rent-seeking activities resulting from further frontier expansion. What is more, to Barbier resource based activities essentially became rural enclaves far away from centers that could form significant backward linkages or knowledge spillovers. The rents that did accrue, went to wealthy individuals, who have increased incentive for “rent-seeking” behavior that is in turn supported by policy distortions that reinforce the existing pattern of allocating and distributing natural resources.

Figures 6 and 7 exhibit how this may have occurred recently in Brazil with respect to frontier soy expansion in Brazil. Remember from Table 4 that 42.7 percent of all Brazilian soy exports (over 20 percent of total soy production) is destined for China. Figures 6 and 7 exhibit the expansion of soybean production into the environmentally sensitive Amazon region between 1990 and 2005. In 1990, 88 percent of all soy production was located in the state of Mato Grosso. However, by 2005 that figure was only 40 percent and soy production has expanded into Maranhao, Para, Acre, Roraima, and Rondonia.

Figure 6:

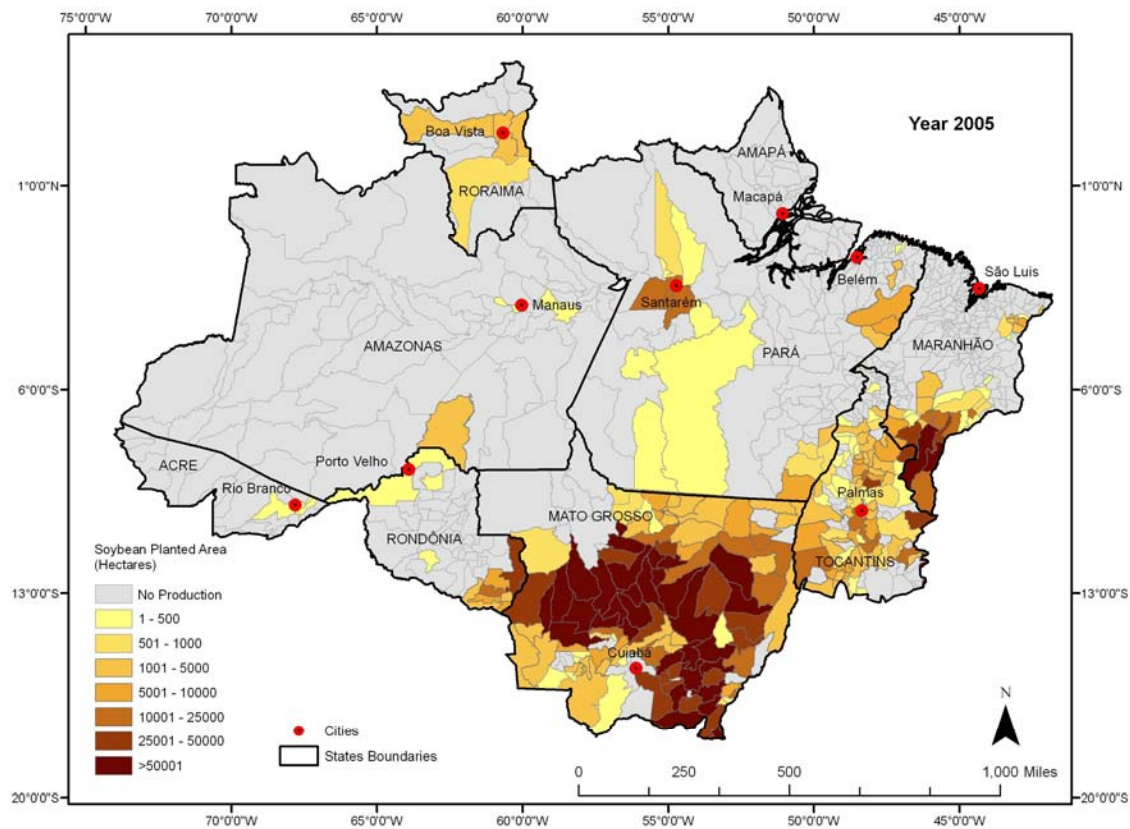
### **Soy Expansion in the Amazon, 1990**



Source: (Vera-Diaz et al. 2008)

Figure 7

### Soy Expansion in the Amazon, 2005



Source: (Vera-Diaz et al. 2008)

Alongside the possibility of exchange rate appreciation and environmental degradation, Dutch disease could also cause a lack of competitiveness for non-commodity sectors. Here a great deal of work has been conducted comparing China and LAC and the extent to which China will out-compete LAC in world markets. In other words, is China penetrating (or have the potential to penetrate) world export markets at a faster rate than firms in LAC?

Table 7 shows that China has “climbed up the manufacturing ladder” while the few LAC countries that were competitive in manufacturing are struggling to hold their ground. This table shows the share of a country’s manufactures exports as a percent of total manufacturing exports from 1980 to 2006. During the entire period only Argentina, Brazil, Peru, and Mexico were ever truly competitive on a global level.



In 1980, China was not even in the top 100 countries for most competitive manufacturing exports, by 2006 they were the most competitive (if you add China to Hong Kong). Brazil and Argentina’s competitiveness has been sliding and since China joined the WTO. Mexico has been struggling as well.

Many have argued that China is not a threat to LAC’s competitiveness, but only take a short and intermediate term view. Because LAC is not competitive in manufacturing they therefore have literally nothing to be outcompeted for. This is not necessarily good news given how important manufacturing exports are to growth.

Estimating the different determinants of LAC exports, a World Bank study finds no evidence to support the argument that Chinese exports are replacing LAC exports in the world marketplace. Rather, they find the growth in Chinese exports to third markets to lead to an increase in LAC exports to these markets equivalent to 32 percent of LAC exports in 2004, a result the authors interpret to mean that exports from China and from LAC complement rather than substitute each other in world markets. This World Bank study also finds a positive impact of Chinese exports to LAC on LAC exports to third markets, suggesting that imports of a larger variety of cheaper Chinese goods are positively affecting LAC’s competitiveness in third markets (Lederman, Olarreaga, and Perry 2006). However, a recent IDB study notes that over time the two areas’ export profiles are beginning to converge and therefore fierce competition could ensue in the future:

“As China and Latin America –and Mexico in particular- have converged toward increasingly similar export baskets, especially in manufacturing industries, direct competition has intensified” (Devlin, Estevadeordal, and Rodriguez-Clare 2006).

Lall and Weiss tackle this question using a different approach. They look at the evolution of China and LAC export shares in both the world and US markets and look for evidence of increased Chinese competition in products that show increased penetration of Chinese exports in coincidence of decrease penetration of LAC exports. More specifically, they define a category in which China's market share is rising (for either the world market or the US market) and LAC's decreasing as a category in which LAC is experiencing a "direct threat" from China. Similarly, they define a category in which both China's and LAC's shares are increasing but China's share is increasing faster as a category in which LAC is experiencing a "partial threat" from China (Lall and Weiss 2005) (Mesquita Moreira 2007). We replicate this methodology and find that 83.2 percent of LAC manufacturing exports are under threat (62 direct, 21 partial) from China. However, the majority of those exports are concentrated in Mexico, Brazil, and elsewhere.

In the short term LAC is not threatened by Chinese exports abroad because the composition (or structure) of LAC exports are strikingly different from China's. Mexico however is an exception because it has a very similar export profile to China. Mexico is losing market shares or at least growing more slowly than China in many important world markets (Gallagher, Moreno-Brid, and Porzecanski 2008). Another way of looking at this evidence however is that Mexico is under threat right now and that the rest of Latin America—given it does not yet have a significant portion of its export basket and manufactures—faces a daunting task if it were ever to focus on diversifying its economies.

### ***Revenue sharing, Stabilization, and Diversification***

Related to the promise of high prices and future demand from China is the question regarding whether Latin American nations are equipped to capture the rents from such high prices and demand and to use them for general savings and for economic diversification (Rodrik 2005; Cypher 2007).

Recent studies have conducted fairly comprehensive examinations of these questions. The results are mixed. On the one hand, all of the major commodities exporting countries to China have seen increases in revenue due to high export prices and overall increases in the volume of trade. Moreover, many of the countries have created new funds and laws that govern the use of revenue derived from price increases in commodities exports. However, at present there is little indication that such funds will be used for economic diversification and poverty alleviation. Indeed, in the wake of the crisis the majority of these funds have been used to defend currencies and bail-out banking systems.

The large price increases and increases in demand for PRBP exports in the countries analyzed above has led to a significant increase in government revenue. Because of new tax schemes and funds, the majority of countries in LAC have increased fiscal revenues by 3 percent of GDP or more (Jiménez and Tromben 2006).

In Brazil government revenues have actually become positive since 1999 and reached a maximum surplus of 4.6 percent of GDP in 2004. In Brazil's case however, fiscal revenue increases have largely been a result of economic growth, a diversified tax base, and



reductions in spending. In other words, the commodities boom contributed very little either positively or negatively to Brazil's fiscal position (Gottshalk and Prates 2006). In 2008, Argentina attempted to increase an already sizeable export tax on agricultural exports, yet such an increase was met by widespread discontent and farmer riots and forced the government to partially back down.

In the case of Chile and Peru however, the situation is different. Chile's government revenues have grown significantly and this has been chiefly due to higher copper revenues. Chile also had a fiscal surplus in 2004, of 2.2 percent of GDP. Between 1999 and 2004 copper explained 29.3 percent of total government revenue, but 59 percent for 2003 and 2004. The share of copper revenues in government revenue was 2.4 percent from 1999 to 2002, but leapt between 12.6 and 17.6 percent in 2004. The state-owned copper company CODELCO (while only 37 percent of copper production) accounted for 75 percent of government revenues from copper in 2004 (Gottshalk and Prates 2006). Chile's copper funds in part are appropriated into the Copper Compensation Fund (FCC).

Peru has also experienced a fiscal surplus. Here however the share of the copper sector in total government revenue has not changed as dramatically as in the case of Chile. Revenues from gold and copper revenues combined (separate statistics for copper are unavailable) explained 4.5 percent of the growth of central government revenue between 1999 and 2004 but rose to just 6.7 percent for 2004. In Peru, two private firms (Southern Peru Copper Corporation and Antamina) account for 74 percent of copper production. Though a 30 percent tax on profits has been the main source of government revenues, extractive industries are exempt from royalty payments and can deduct for infrastructure investments (Gottshalk and Prates 2006).

At this writing it is hard to tell whether such increases in revenue are being used for poverty alleviation or economic diversification. In all of the countries in LAC that have experienced increases in tax revenue such increases have not been matched by a proportional increase in spending. In many cases this is simply counter-cyclical—taking in funds when prices, exports, and growth are relatively strong and spending when things begin to slow down. In other cases there is evidence of new spending for social programs but they are seen as being inefficiently run and therefore have not shown up with concrete results (Clements, Faircloth, and Verhoeven 2007).

Moreover, in many of the countries' new funds are being spent to pay down debt and get to surplus status (as mentioned earlier surpluses have only recently been reached). Although the majority of countries have stabilization funds, virtually all of them have stipulations where these funds are pre-committed for macroeconomic stabilization (Jiménez and Tromben 2006). One study concluded that "as a result, the population at large and the poor in particular have not seen the benefits of the export boom, at least not through higher government expenditures as a proportion of GDP, on social and other programmes." (Gottshalk and Prates 2006: 18). Cypher (2007) has argued that the lack of forward thinking regarding the utilization of new revenues could plague LAC for decades to come unless some portion of the funds are used to diversify economic structure. Cypher depicts the present as an enormous opportunity but the result of short-sightedness, he warns, will result in a 'primarization' of LAC that could leave the region vulnerable to underdevelopment.

## Conclusion

In this paper we sought to provide a more critical analysis of China's impact on the recent Latin American commodity boom. In the recent boom, Latin American export growth, which was considerably faster than GDP growth, was being driven by a commodities boom. Indeed, 70 percent of the growth in LAC exports has been due to growth in commodities exports, and commodities exports comprised 74 percent of all LAC exports. China had both indirect and direct effects on this trend. Directly, LAC exports to China increased by 370 percent since 2000. This has been the cause of much cheer, but should be analyzed with more scrutiny. Indirectly, Chinese consumption of global commodities was making them scarcer and boosting global prices and therefore leading to more LAC exports.

LAC exports to China were only 3.8 percent of all LAC exports. In other words, 96.2 percent of all LAC exports did not go to China. LAC's exports to China comprised 5.8 percent of Chinese imports, the same level of LAC exports to China in the 1980s; 74 percent of all LAC exports to China were in primary commodities; growth in LAC exports to China was only 8 percent of all LAC export growth since the boom began in 2000; 10 sectors in six countries accounted for 74 percent of all LAC exports to China and 91 percent of all commodities exports to China; for the other countries in LAC the potential to trade with China is very low.

For the handful of countries that were "winning" the export game with China, will Chinese demand and high prices continue and will such longer term trends boomerang back to LAC in the form of Dutch Disease? By all pre-crisis accounts, the commodities boom and Chinese demand were predicted to last relatively long, even though in early 2009 estimates it was already clear that the boom had come to a halt. Pre-crisis estimates predicted that the commodities boom would be among the longest in history by lasting perhaps another 10 years. China demand for the products LAC supplies is predicted out at least 20 more years. It remains to be seen how these predictions fare in light of the recent economic and financial crisis.

Regarding Dutch Disease more research is needed to examine the independent and significance of an effect of China trade on LAC exchange rates and industrial composition. We do know that exchange rates are appreciating and that the handful of nations in LAC with manufacturing competitiveness are losing some of that competitiveness vis-à-vis China. Moreover, at least in Brazil there is evidence of a "frontier land expansion" in the environmentally sensitive Amazon in part due to China's demand for soy.

Research indicates that LAC is more equipped than in the past to capture some of the rent from the recent and potential future commodities booms and use some of those funds for poverty alleviation, environmental protection, and industrial development. Almost all the countries that benefited have some sort of institutional structure in place for such activity, though few are showing signs of putting them to proper use at present. Indeed, in the current crisis environment it is very unlikely that such funds will go toward longer-term structural concerns such as industrial diversification.

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