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Global production shifts, the transformation of finance and Latin America´s performance in the 2000s

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Abstract
There are two main distinguishing features that characterize the performance of Latin American in the 2000s in relation to its past history. During the 2000s Latin America witnessed one of the most significant expansions of the last thirty years. At the same time, LA's recovery from the effects of the Global Financial Crisis (2007-2009), the most important crisis since the Great Depression, was V shaped. This paper argues that Latin America´s (LA) performance in the 2000s in good and bad times is explained by the way in which capitalism organizes production and finance. The focus is placed in part on the global production shifts of multinational corporations to move industries, production and employment across the globe taking advantage of cheaper production costs, expanding markets and the increasing importance of production chains. During the 2000´s decade China became a hub for developed country corporate production restructuring. Another contributing factor is the increased integration of the real and financial spheres as epitomized by the use of commodities as financial assets and collaterals. At a more general level the analysis questions the widely held perception that developed economies have lost pre-eminence at the global level and that the distribution of world economic and political power is shifting towards the developing world.

Introduction

There are two main distinguishing features of the performance of Latin American in the 2000s in relation to its past history. During the 2000s Latin America (LA) witnessed one of the most significant expansions of the last thirty years. At the same time, LA's recovery from the effects of the Global Financial Crisis (2007-2009), the most important crisis since the Great Depression, was V shaped.

This paper argues that Latin America's performance in the 2000s in good and bad times is explained by a process of global production restructuring and a greater integration between the real economy and finance. The process of global production restructuring refers to a trend of multinational corporation networks to move a wide variety of industries, production and employment across the globe taking advantage of cheaper production costs, expanding global markets and the increasing importance of global production chains. Due to its size, strategic location, favorable tax treatment and open door policy, China became a linchpin of this transformation.

The global production restructuring movement has been a key contributor to the increase in the demand for raw materials, commodities and other inputs which constitute some of the major exports of Latin American countries. The available empirical evidence shows that a significant part of Chinese imports and exports do not respond to the demands and

[1] Economic Commission for Latin America and the Caribbean. The opinions here expressed are those of the author and may not coincide with those of the institutions with whom he is affiliated. The author wishes to thank Manuel Cruz for his contributions to the ideas developed in the paper.

possibilities of the domestic Chinese economy but rather to the needs of foreign multinational corporations operating, under very favourable conditions, in China.

At the same time that the restructuring of global production intensified in the 2000s, the financial sector became intertwined with the real economy. This is illustrated by the trends observed in the commodities market in the same period. Commodities took on an increasing role as financial assets which affected their price trends and their volatility. Part of this consisted in the use of commodities as collaterals to obtain loans and liquidity.

The relation between both changes in production and finance and Latin American performance in the 2000s decade is not coincidental. During this time Latin American economies benefitted from high commodity prices and high export demand which had important positive effects on its external accounts and also its fiscal position. More to the point these softened Latin America´s external constraint. In fact, the regional performance in the period running from 2003 to 2007 is atypical in the sense that it is the first time that Latin America experienced a high growth with a surplus in its current account at the regional level. Moreover, during this time Latin America also benefitted from easy access to liquidity resulting from the increased interrelation between commodity prices and finance.

The paper is divided into five sections. The second section briefly describes Latin America´s performance during the 2000s. The third and fourth sections analyze, respectively, the restructuring of global production and the transformation of finance. The fifth section concludes.

Latin America in the 2000s: a different performance in good and bad times

During the period 2003-2007 Latin America witnessed one of the most significant expansions over the last thirty years. The regional average per capita growth rate reached 2.8 percent, surpassing not only that of the 1980s lost decade and that registered during the free market structural reform era (1991–2000; 1.3 percent), and was only surpassed by that of the 1970s (4.4 percent).

Table 1: GDP per capita growth in Latin America and the Caribbean, 1971–2013

Period	GDP per capita
1971 - 1980	4.4
1981- 1990	-0.3
1991 - 2002	1.3
2003 - 2007	2.7
2008 - 2009	-0.2 (-2.7% for 2009)
2010 - 2013	2.7

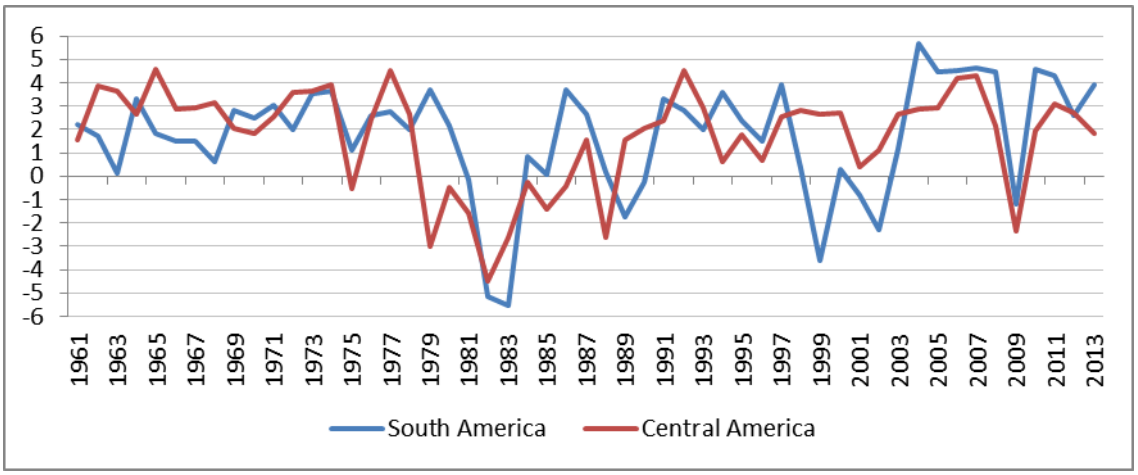
Source: World Development Indicators, World Bank (2015)

This vigorous expansion was interrupted by the Global Financial Crisis (2007-2009) whose effects did not spare the countries of Latin America. In line with the impact of the crisis worldwide, Latin American countries witnessed, on average, a decline in the regional GDP

per capita growth rate of -2.7% for 2009. At the national level 10 out of 18 (or 55% of the total) Latin American economies experienced output contractions.

From a comparative sub-regional perspective the effects of the crisis are far from homogeneous and were felt with much greater intensity in Central America than in South America. On average the rate of growth in 2009 plunged by -2.3% on average for Central America (Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua) and -1.8% if Panama and the Dominican Republic are included. South America also registered a contraction but with lesser intensity than Central America as can be seen in Figure 1.

Figure 1: Rates of growth of GDP for South and Central America 1961-2013 (Averages)



Source: World Development Indicators, World Bank (2015)

However as clearly shown in Figure 1, both sub regions were able quickly to bounce back and regain the levels in the rates of growth that had prevailed in the pre-crisis period. In fact the short duration of this last crises episode and the swift recovery distinguishes the impact of the Global Financial Crisis episode (2007-2009) from other crises including the 1980's Debt-Crisis (1980), the Mexican Crisis (1994-1995) and the Asian-Russian-Argentine crises (1998-2002).

Global shifts and the restructuring of world production

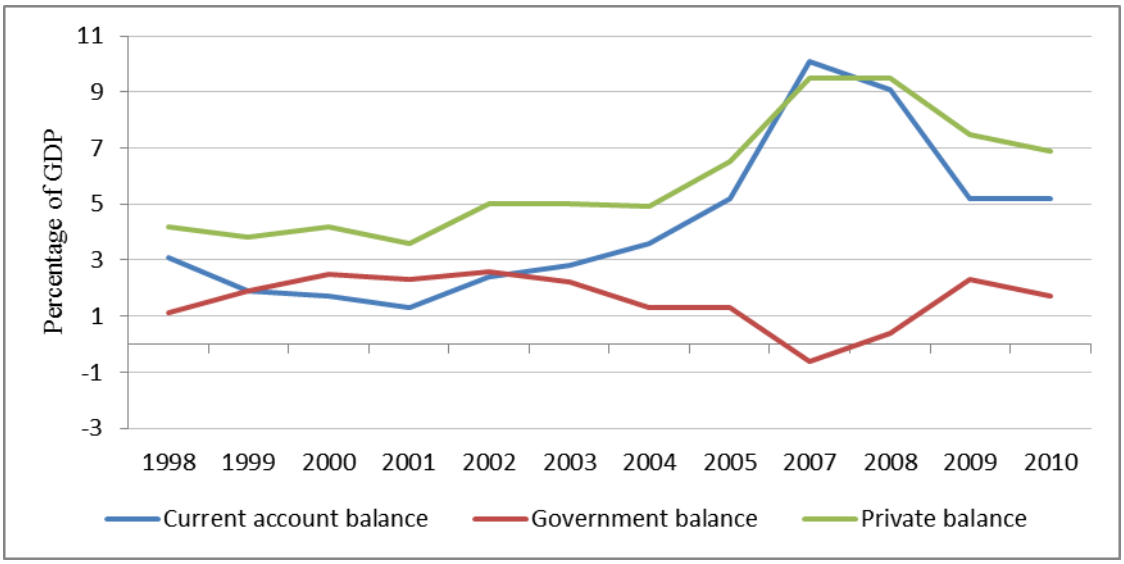
The performance of Latin American countries and in particular of commodity exporting countries during the 2000's decade responds to the increasing importance of multinational corporation (MNC) production networks and to the way countries have positioned themselves within these networks. The formation of global production chain networks stretch across a number of developed countries and developing regions as reflected by the rising importance of intermediate inputs in world trade. According to the World Forum (2012) intermediate inputs represent half of the goods imported by the OECD and three-fourths of the imports of the larger developing economies such as China which is the main trade partner of some of the countries in Latin America. In addition, for some economies intermediate inputs constitute an important share of exports. The OECD reports that the imported intermediate input content represents on average 25% of the OECDs exports and 20% of the European Union extra regional exports. In the case of the developing world China is one of the countries whose exports have one of the highest import content.

In the last three decades the imported input content has evolved alongside China's growth in trade, openness and consolidation as a world economic power. Currently China's economy is one the six largest economies of the world. China represents 8% of world GDP; 17% of world investment, 5% of world final consumption, and 10% of world exports (measured in constant 2005 dollars).

Since the start of economic reforms in 1979 and until very recently, China's real gross domestic product (GDP) increased at an annual average rate of 10% expanding its real GDP 14-fold. As part of the reform process which included among others the decentralization and partial deregulation of trade, and the establishment of development zones run by free market principles with the objective to import foreign direct investment (FDI) and high technology imports, China opened up its economy to external trade and finance.[2] As part of these outward oriented initiatives China joined the World Trade Organization (WTO) in 2001 which resulted in reductions in tariff and non-tariff barriers.[3]

This 'open door policy' led to a significant increase in trade and changed the country's composition of aggregate demand as well as its sources of funding. Imports and exports which represented less than 10% of GDP in 1978 amounted on average to 60% in the 2000s decade. A decomposition of aggregate demand from 1998 to 2011 in its different components shows that the external sector is the main driver of growth. Currently China is the world's second largest exporter and remains the third largest importer of goods and services.[4]

Figure 2: China. Decomposition of aggregate demand into the financial balances of the government, private sector and the current account. 1998-2010 (Percentages of GDP).



Source: On the basis of WTO (2007 and 2012)

[2] According to WTO estimates in 2003, 60% of the country's GDP is generated by private sector activity.
[3] According to the WTO the average applied NMF tariff rate was reduced from 35% in 1994 to 15.6% in 2001 and to 9.7% in 2005 and has remained around that level. Duty free tariff lines accounts for roughly 9% of more than half of all tariff lines have tariff rates above zero and below 10%.. Import quotas and trading rights were discontinued in 2004 and import prohibitions and licensing have bee reduced progressively.
[4] This excludes intra-EU trade). (WTO, 2012, p. ix)

A significant part of the growth of trade that has accompanied China's open door policy is explained by the expansion of inward processing. Inward processing is defined as "the customs procedure under certain goods can be brought into a customs territory (free trade zones or special economic areas) conditionally relieved from payment of import duties and taxes, on the basis that such goods are intended for manufacturing, processing or repair and subsequent exportations"(General Administration of Customs of the People's Republic of China, 2011).[5] The available data shows that on average inward processing exports and imports represented 54% and 40% of the total (both processing trade and ordinary (or non-processing trade)) respectively.

Table 2: China. Ordinary and inward processing exports and imports as percentage of total imports and exports. 1995 and 2000-2010.

	Ordinary exports	Ordinary imports	Inward processing exports	Inward processing imports
1995	48	33	50	44
2000	41	44	55	41
2001	42	47	55	39
2002	42	44	55	41
2003	42	45	55	39
2004	41	44	55	40
2005	41	42	55	42
2006	43	42	53	41
2007	44	45	51	38
2008	46	51	47	33
2009	44	53	49	32
2010	46	55	47	30
Average (2000-2007)	42	44	54	40
Average (2008-2010)	45	53	48	32

Source: General Administration of Customs of the People's Republic of China, 2011

The two major components of processing trade include 'process with assembly' and 'process with import materials' which for 2010 represented 22.8% and 40% of imports and exports respectively followed by *entrepot* trade by bonded area and warehousing trade (4.3% and 2.2% ; 7.8% and 2.3% of imports and exports).[6] The differences between process with assembly and import materials of trade lie in the reduced cost of the former relative to the

[5] China has different types of free trade zones: special economic zones (SEZ), economic and technological development zones (ETDZ), high technology industrial development zones (HTIDZ) and exports processing zones (EPZ). In 2010, there were 150 special economic zones. In terms of the processing of imports the most important types of zones include the EPZ and the ETDZ. Both accounted for more than 23% of the processing of imports for that year.

[6] Chinese Customs recognize 19 types of trade regimes these include: ordinary trade, international aid, donation by overseas Chinese, compensation trade, goods on consignment, border trade, equipment for processing trade, goods for foreign-contracted project, goods on lease, equipment/materials investment by foreign-invested enterprise, outward processing, barter trade, duty-free commodity, warehousing trade, entrepot trade by bonded areas, equipment imported into export processing zone. In the case of the assembly regime "Chinese companies import raw materials and parts from foreign companies free of cost, assemble or process the raw materials and parts into finished goods domestically in mainland China, and then export the finished goods to foreign companies and receive only a processing charge." In the case of processing "Chinese companies import raw materials and parts from foreign companies for value, assemble or process the raw materials and parts into finished goods domestically in mainland China, and then sell the finished goods to foreign companies."
http://www.yusen-logistics.com/china/english/law/trade/about.html

latter. The process with assembly regime does not incur raw material, intermediate costs and payment of import duties. However, the process with import materials regime has become since the 1990s the most used type of trade regime.

Processing trade is carried out mainly with both Asian and Western economies. In total terms more than half of imports for processing originate in Asian countries (17% from the Republic of Korea, 17% from Taiwan, 17% from China itself, 15% from Japan and 15% from ASEAN) and about 10% from Western countries (5% from the European Union and 6% from the United States). On the exports side, Western and Asian countries account for more than 40% of China's processing exports (22% and 20% for the European Union and the United States; 22%, 9%, 7% and 5% for Hong Kong, Japan, ASEAN and Korea).

The decomposition of China's processing imports by industry show that high technologically intensive imports such as electrical machinery and equipment, machinery and mechanical appliances, and optical photographic instruments account for the bulk total imports (64%). For its part natural resource based imports including mineral fuels, plastics, copper, iron and steel, and rubber represent 18% of the total.

Latin American economies do not represent an important trade partner for this trade regime in total terms. However, these have also contributed to the expansion of processing trade through the provision of specific products including both non-natural and natural resource based products. The former include integrated circuits, electrical capacitators, electrical machinery and parts, semi-conductors, machinery parts and accessories and textiles. The latter and by far the most important category comprises mostly commodities including soya beans, oil, nickel, zinc, tin, iron, wood, meat, textiles, wool, and copper.

Table 3: Latin America and the Caribbean: main products exported to China. Averages 2006-2008.

Country	5-product	First	Second	Third	Fourth	Fifth
	Total	product	product	product	product	product
Argentina	93%	Soya beans (55%)	Soya bean oil (24%)	Crude Oil (10%)	Leather (3%)	Poultry offal (2%)
Bolivia (Plurinational State of)	82%	Tin ores (27%)	Unwrought tin (19%)	Crude Oil (17%)	Wood (12%)	Ores, non-ferrous (7%)
Brazil	81%	Iron Ore (44%)	Soya beans (23%)	Crude Oil (6%)	Iron ore agglomerates (5%)	Chemical wood pulp (3%)
Chile	93%	Copper (50%)	Copper ores & concentr. (31%)	Chemical wood pulp (6%)	Iron Ore (3%)	Meat offal (2%)
Colombia	97%	Crude Oil (50%)	Other ferro-alloys (40%)	Non-ferrous metal waste (5%)	Leather (3%)	Lactams (0.5%)
Costa Rica	99%	Integrated Circuits (96%)	Piezoelectric crystals (1%)	Semiconductors (1%)	Electrical Resistors (0.3%)	Electr. switch apparatus (0.2%)
Cuba	100%	Nickel mattes (71%)	Unrefined Sugar (20%)	Ores, non-ferrous (7%)	Crude Oil (1%)	Non-ferrous metal waste (1%)
Ecuador	98%	Crude Oil (94%)	Non-ferrous metal waste (3%)	Wood (1%)	Smallwares & toilet articles (0.5	Meat offal (0.5%)
El Salvador	96%	Electrical capacitors (54%)	Non-ferrous metal waste (38%)	T-shirts (2%)	Coated textiles (1%)	Desperdicios plásticos (1%)
Guatemala	94%	Unrefined Sugar (42%)	Crude Oil (23%)	Zinc ores & concentr. (14%)	Non-ferrous metal waste (8%)	Desperdicios plásticos (6%)
Honduras	92%	Zinc ores & concentr. (34%)	Non-ferrous metal waste (33%)	Lead ores & concentr. (10%)	Desperdicios plásticos (8%)	T-shirts (7%)
Mexico	37%	Integrated Circuits (13%)	Copper ores & concentr. (8%)	Machine parts & access. (7%)	Electrical capacitors (5%)	Semiconductors (5%)
Nicaragua	85%	Non-ferrous metal waste (41%)	Desperdicios plásticos (19%)	Aquatic invertebrates (9%)	T-shirts (8%)	Leather (7%)
Caribbean Countries b/	89%	Alumina (65%)	Wood (9%)	Non-ferrous metal waste (7%)	Crude minerals (4%)	Ships & vessels (4%)
Panama	78%	Ships & vessels (39%)	Leather (16%)	Meat offal (13%)	Frozen fish (6%)	Desperdicios plásticos (4%)
Paraguay	81%	Cotton (31%)	Wood (26%)	Leather (24%)	Desperdicios plásticos (7%)	Non-ferrous metal waste (5%)
Peru	83%	Copper ores & concentr. (39%)	Meat offal (16%)	Crude Oil (10%)	Lead ores & concentr. (9%)	Iron ore & concentr. (8%)
Dominican Rep.	87%	Other ferro-alloys (68%)	Non-ferrous metal waste (11%)	Electric machinery & parts (8%)	Machine parts & access. (2%)	Electr. switch apparatus (2%)
Uruguay	81%	Soya beans (46%)	Chemical wood pulp (13%)	Wool (9%)	Greasy wool (8%)	Leather (5%)
Venezuela (Bolivarian Republic of)	64%	Crude Oil (51%)	Iron Ore (9%)	Iron or steel granules (2%)	Crude minerals (1%)	Artificial fibres (0.5%)

Source: Economic Commission for Latin America and the Caribbean (ECLAC), on the basis of information from the United Nations Commodity Trade Database (COMTRADE).
a/ On the basis of the data available for each country.
b/ Includes Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Saint Lucia, Suriname and Trinidad and Tobago. Product classification based on SITC revision 3 at the 4-digit level.

Latin American economies have become some of the top exporters to China for some of these commodities. In the case of copper, Chile ranks as the main exporter to China of copper ores and concentrates (36% of total imports) followed by Peru. Chile is also an important exporter of copper generated from smelting processes (blister/anodes) and of refined copper (38% of total imports).[7]

Chile and Peru as well as the other copper exporting developing countries play a significant role in the copper global supply chain and more specifically in the earlier stages of raw material extraction (mining, concentration) and processing (smelting, refining, fabrication). The secondary stages including material processing (smelting, refining, fabrication), and product manufacturing take place in China. The final stages which involve consumption and recovery (product use, recycling infrastructure, and landfill disposal) are carried out in China and through China in other regions and countries (Europe, United States and other countries in Asia).

Recent data for the case of copper for 2013 shows that 46% of copper imports are undertaken by trade modes associated with processing trade rather than ordinary trade. As expected all copper exports are classified within trade regimes other than ordinary trade.

Table 4: China. Refined copper imports and exports by trade regime (September, 2013)

	Imports	**Exports**
General trade	53.0	0.0
Storage of transit goods in bonded warehouses	21.2	38.4
Inbound and outbound goods in bonded areas	18.3	13.1
Feeding processing trade	6.5	48.5
Processing and Assembly Trade with Supplied Materials	1.0	0.0
Total	100.0	100.0

Source: Shanghai Metals Markets. Copper Monthly. 2013.

On the other side of the transaction while the importance of China as an export destination varies widely among Latin American countries, it ranks, along with the Asia-Pacific region among the main trade partners for some of the economies of South and Central America.

The firms that actually engage in this type of trading mode are not in their majority of Chinese origin. In fact more than half of the firms that process imports are foreign and 17% are joint Chinese-foreign ventures. Only 20% of the firms are purely Chinese owned (state-owned private enterprises).

[7] Other main exporters include Australia, Mongolia and Kazakhstan for ores and concentrate, Namibia and Finland in the case of blister/anode and Japan and Kazakhstan for refined copper. See Five Winds International, 2011.

Table 5: Proportion of imports by ownership of firms, 2010 (in percentage of total)

Firm type	Processing	Ordinary	Total
State-owned enterprise	12.24	41.23	28.16
Sino-foreign contractual joint venture	0.66	0.44	0.54
Sino-foreign equity joint venture	15.53	14.14	15.22
Foreign invested enterprise	58.76	20.7	37.86
Collective enterprise	1.42	3.45	2.54
Private enterprise	10.17	20	15.57
Other including foreign company's office in China	0.01	0.01	0.01

Source: Yu and Tian (2012, p.33, Table 8.13)

The establishment of foreign owned firms is not particular to China and has occurred in a number of developing countries including Mexico, China, India, and other Asian counties. It is part of a corporate restructuring strategy explained by cheaper production costs, expanding global markets and the need to increase and deepen insertion into global production chains.

The availability of data on changes in the location of production is limited and there is no monitoring system to track production shifts around the globe or even at the country level. A study commissioned by the USA-China Economic and Security Review Commission (2004) which focused on the relocation of productive activities from the United States into China with some data for other countries, shows that in 2004, the greater part of production shifts to China originated in developed countries (the United States (38%), United Kingdom (15%), Continental Europe (21%), Australia, Canada and New Zealand (4%), and Japan (15%)). The same trend is found to exist for other preferred locations of production restructuring including India, other Asian countries, Mexico, other Latin American countries and Eastern Europe. Developed economies account for more than 90% of the production shifts to these destinations.

Global production shifts are not specific to any particular industry or product line but rather occur across a wide spectrum of industries and products. This is illustrated in table 6 which shows global production shifts out of the United States by industry and destination. As can be seen from table 6 the industries or lines of production that have relocated comprise from aerospace, to chemicals to textiles and wood and paper. Note that in the particular case of the United States, the industries include those that exported products of Latin America to China including metals, wood, and textiles.

Table 6: Global production shifts out of the US by industry and destination country

	China	India	Other Asia	Mexico	Other Latin America	Eastern Europe	All Other
Aerospace	33%	0%	67%	0%	0%	0%	0%
Apparel and footwear	39%	0%	11%	33%	11%	6%	0%
Appliances	47%	0%	21%	26%	0%	5%	0%
Auto parts	17%	20%	0%	49%	2%	12%	0%
Automobiles	33%	0%	0%	33%	33%	0%	0%
Chemicals and petroleum	50%	16%	9%	9%	6%	6%	3%
Communications/Information technology	4%	39%	23%	0%	27%	0%	7%
Electronics/electrical equipment	48%	5%	24%	9%	0%	11%	3%
Finance, insurance, and real estate	6%	88%	6%	0%	0%	0%	0%
Food processing	0%	0%	38%	25%	13%	0%	25%
Household goods	33%	0%	20%	20%	13%	0%	13%
Industrial equipment and machinery	36%	7%	4%	36%	0%	10%	7%
Metal fabrication and production	44%	0%	11%	26%	11%	4%	4%
Plastics, glass and rubber	28%	0%	4%	36%	4%	16%	12%
Sporting goods and toys	89%	0%	11%	0%	0%	0%	0%
Textiles	42%	0%	0%	13%	29%	0%	17%
Wood and paper products	44%	13%	0%	33%	11%	11%	0%

Source: Bronfenbrenner and Luces (2004, Table 15, p.70).

An additional and significant piece of evidence that illustrates the importance of the restructuring of production is that for obvious reasons it involves well established multinational corporations mostly in the manufacturing sector (with some exceptions) and that United States based multinational corporations constitute a significant proportion of the total. The study cited above found that the majority of the restructuring firms have been in operation for more than two decades and in some cases closely to fifty years. U.S. based multinational corporations represent on average more than half of the total and more than 70% in the cases of production restructuring to Latin America. In the particular case of China the study found that U.S.-based multinational companies represented 60% of the total. More recent information in the case of China for 2012 shows that as a result of its 'open door policy' more than 650,000 foreign entities have been approved to operate in the country.[8]

This overall evidence clearly shows that global re-structuring has become a 'pervasive phenomenon.' China due to the sheer size of its market, and economic transformation including its outward orientation and 'open door policy' to foreign investment and incentives firm location, is an important part of this story. But as Bronfenbrenner and Luce (2004, p. 78-79) remark, it is only part of the story:

> "…it is a story of the world's largest multinational corporations buying and selling companies and pieces of companies, opening and closing plants,

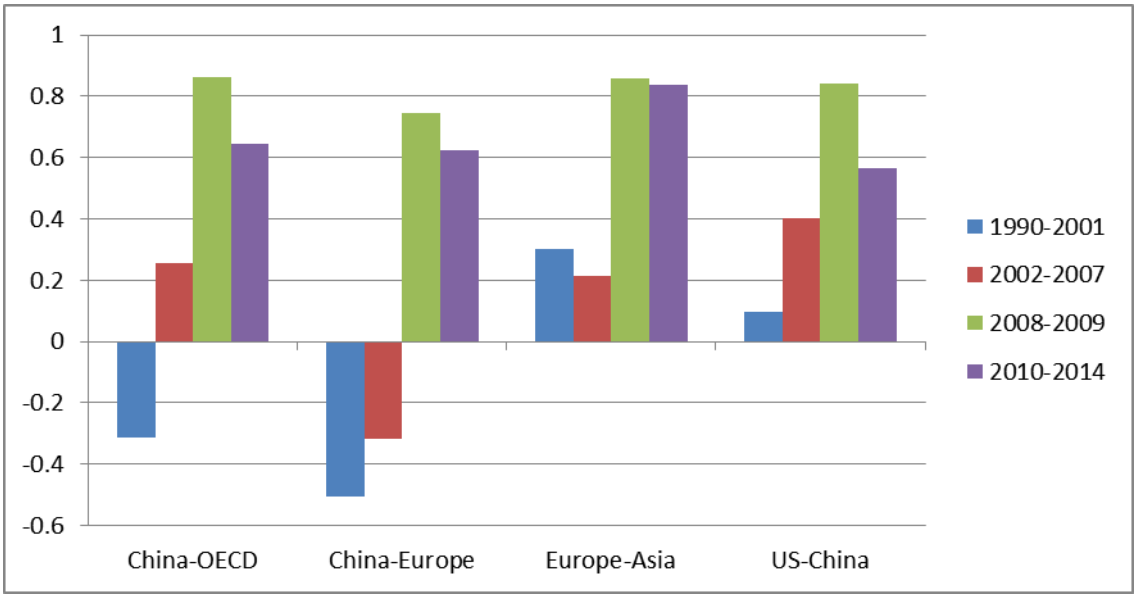
[8] PWC (2012).

> downsizing and expanding operations, and shifting employment from one community to another, all around the world. With no particular loyalty to country, industry, community of product, what our data suggest is that this global race to the bottom is driven by several unifying factors: the search for ever cheaper production costs, accessibility to expanding global markets, and the flexibility that comes from diverse supply chains in an ever more volatile global economic and political climate."

In the same way, the United States and the restructuring of Corporate America have played a key and leading role in this transformation but there are other developed countries that are following a similar strategy around the globe.

Bronfenbrenner and Luce (2004) and other authors indicate that major changes in the restructuring of production took place in the 2000s which coincide precisely with a period within which different countries, including Latin American ones, developed and developing alike, increased their degree of co-movement and synchronicity across time (see Figure 3).

Figure 3: Moving average correlation coefficient (5 year window) of the normalized GDP for China-OECD, China-Europe, Europe-Asia and US-China. 1990-january to 2014-may (monthly data)



Source: Authors own on the basis of OECD (2015)

An analysis of the synchronicity of the Latin America business cycle with that of the United States, Europe and China yields the same results. The synchronicity between one country/region (say region i) and a reference region (say States, Europe and/or China) (region r) is computed as (Mink, Jacobs, de Hahn, 2012),

$$(1)\varphi(t) = \frac{1}{n}\sum_{i=1}^{n}\frac{g_i(t)\,g_r(t)}{|g_i(t)\,g_r(t)|}$$

Where, $g_i(t)$ and $g_r(t)$ represent the rates of growth of country/region i and that of the reference country/region r. The synchronicity indicator $(\varphi(t))$ measures the fraction of the time during a given period that country/region i is in the same cycle phase as country/region r.

The available data for the period 1990-2012 show that Latin America and the Caribbean, and all of its sub regions degree of synchronicity with all reference regions considered (United States, Euro Zone and China) tends to rise over time and in particular staring in the 2000's decade. Between 1990 and 2002, the degree of LA's and of its sub regions cycles is synchronous with that of the United States and Europe more than 70% of the time on average. But during the 2003-2007 period the degree of synchronicity between LA and the United States increases to 89% and similar increases are recorded for LA and Europe (89%) and LA and China (87%).

Table 7. Synchronicity between the business cycle Latin America and the Caribbean and its sub-regions (and Mexico) with that of the United States, the Euro Zone and China (1990-2012)

	Latin America and the Caribbean	South America	Central America	Mexico
United States				
1990-1994	74	68	85	80
1995-2002	73	72	78	75
2003-2007	**89**	**99**	**80**	**100**
2008-2009	57	45	73	75
2010-2012	83	92	80	100
Average	75	75	79	86
Euro Zone				
1990-1994	…	…	…	…
1995-2002	73	72	78	75
2003-2007	**89**	**99**	**80**	**100**
2008-2009	64	58	80	88
2010-2012	68	74	67	70
Average	74	76	76	83
China				
1990-1994	…	…	…	…
1995-2002	69	64	77	77
2003-2007	**87**	**87**	**86**	**90**
2008-2009	64	68	60	50
2010-2012	75	76	71	78
Average	74	74	74	74

Source: Pérez Caldentey and Titelman (2014)

Overall the available evidence thus shows that far from decoupling from the business cycle of developed and developing countries such as China countries, Latin America remains very much coupled to their fluctuations of economic activity. In this sense it is an indication of the degree to which Latin American performance is tied to the phenomenon of global shifts and the global restructuring of production.

The transformation of finance

Concomitantly with the restructuring of global production of the 2000s, another change that took place within the global economy during this time, and that has had a significant impact for Latin America's development, is the increased interrelation and interdependence between

the real and the financial spheres of economic activity. This is exemplified by the recent trends observed in the commodities market.

In the case of Latin America and more precisely, South America, commodities are, on the one hand, an important component of real activity. Commodities are a major export (more than 50% of the total in several countries). These contribute substantially not only to balance of payments stability but are also a main source of government revenue. In some cases the government revenue earned from commodities far surpasses that of other sources of public income. In addition, the evolution of the price of commodities is also tied to the gross formation of fixed capital Finally, the sectors of economic activity that depend on commodities explain a large share of the generation of output and income, and of FDI inflows.

On the other hand, commodities have taken on an increasing role as financial assets in the sense that prices respond to changes in expectations about future demand conditions rather than to actual supply and demand market conditions. Some of the manifestations of the growing role of commodities as financial assets include the growth in activity in commodity future markets including commodity derivatives, the strengthening of the co-movement among different commodity prices and between commodities and stock markets, and the use of commodities as collaterals for loans and credit.

Between 1995 and 2012 the number of outstanding contracts on commodity exchanges increased from 36.6 to 182 million for futures, and from 373.6 million to 2.1 billion for options. Similarly between 1998 and 2014, the volume of over-the-counter (OTC) commodity derivative contracts expanded from US$ 4.3 billion to $2.2 trillion (notional amounts outstanding). Currently commodity derivatives represent less than 0.3% of the total across all asset classes and exchange commodity futures and options represent roughly 14% of their total sum (FCA, 2014).

The growing role of commodities as financial assets is also illustrated by the fact that commodities show over time a higher degree of association (correlation) with traditional financial assets such as equities. Table 7, below, shows the cross-correlations between the returns and volatilities of and between different commodity indices (agriculture, energy, industrial metals, livestock, precious metals and non-energy), the Dow Jones AIG and Standard and Poor Commodity Indices (DJAIG, GSCI), and with equity indices,

including the Dow Jones Industrial Average (DJIA), Standard and Poor's 500 (S&P500). The correlations were computed for the period 1991-2000, 2001-2007, 2008-2009 and 2010-2014 on a monthly basis. The results show that both in the case of returns and volatilities the percentage of statistically significant correlations (at 1%, 5% and 10% levels) increases over time.[9]

For the first period considered (1991 to 2000) the percentage of statistically significant correlations and volatilities reached 37.8% and 20%. For the second period, these increased to represent 55.6% and 28.9% of the total. In the last period analyzed the proportion of significant correlations and volatilities is even higher, 75% and 66.7% of the total respectively.

[9] Following Buyuksahin, Haigh and Robe (2010a), 'the rate of return on the Ith investable index in period t is equal to $r_t^I = 100Log(\frac{P_t^I}{P_{t-1}^I})$ where P_t^I is the value of the index I at time t. The volatility of an index in period t is $(r_t^I - \bar{X})^2$, where $\bar{X}$ is the mean value of r_t^I over the sample period.'

Table 8: Monthy Cross correlation between returns and volatilities of commodity and equity indices (1991-2000, 2001-2007, 2008-2009 and 2010-2014)

Monthly Returns Correlations, Jan 1991 to Dec 2000

	DJIA	S&P500	DJAIG	GSCI	Agriculture	Energy	Ind. Metals	Livestock	Prec. Metals	Non-Energy
DJIA	1.00									
S&P500	0.91***	1.00								
DJAIG	0.10	0.06	1.00							
GSCI	0.02	0.02	0.86***	1.00						
Agriculture	0.12	0.12	0.46***	0.26***	1.00					
Energy	-0.01	0.01	0.74***	0.96***	0.04	1.00				
Ind. Metals	0.13	0.05	0.39***	0.19**	0.08	0.10	1.00			
Livestock	0.06	0.01	0.23**	0.19**	0.12	0.05	0.04	1.00		
Prec. Metals	-0.02	-0.07	0.27***	0.11	0.00	0.05	0.20**	0.04	1.00	
NonEnergy	0.14	0.09	0.58***	0.35***	0.80***	0.09	0.34***	0.59***	0.14	1.00

Monthly Returns Correlations, Jan 2001 to Dec 2007

	DJIA	S&P500	DJAIG	GSCI	Agriculture	Energy	Ind. Metals	Livestock	Prec. Metals	Non-Energy
DJIA	1.00									
S&P500	0.94***	1.00								
DJAIG	0.14	0.16	1.00							
GSCI	-0.05	-0.03	0.86***	1.00						
Agriculture	0.23**	0.20*	0.37***	0.12	1.00					
Energy	-0.11	-0.08	0.79***	0.98***	0.00	1.00				
Ind. Metals	0.44***	0.45***	0.50***	0.30***	0.10	0.21*	1.00			
Livestock	-0.03	-0.05	0.04	-0.03	0.03	-0.10	0.07	1.00		
Prec. Metals	0.03	0.07	0.51***	0.35***	0.20*	0.30***	0.37***	-0.07	1.00	
NonEnergy	0.34***	0.31***	0.56***	0.26**	0.79***	0.10	0.59***	0.35***	0.41***	1.00

Monthly Returns Correlations, Jan 2008 to Dec 2009

	DJIA	S&P500	DJAIG	GSCI	Agriculture	Energy	Ind. Metals	Livestock	Prec. Metals	Non-Energy
DJIA	1.00									
S&P500	0.98***	1.00								
DJAIG	0.39*	0.50**	1.00							
GSCI	0.47**	0.56***	0.94***	1.00						
Agriculture	0.30	0.37*	0.82***	0.66***	1.00					
Energy	0.44**	0.54***	0.89***	0.99***	0.54***	1.00				
Ind. Metals	0.55***	0.59***	0.86***	0.78***	0.61***	0.74***	1.00			
Livestock	0.37*	0.39*	0.41**	0.51**	0.18	0.51**	0.32	1.00		
Prec. Metals	0.11	0.13	0.51**	0.39*	0.57***	0.30	0.32	0.39*	1.00	
NonEnergy	0.42**	0.48**	0.91***	0.78***	0.95***	0.67***	0.80***	0.33	0.63***	1.00

Monthly Returns Correlations, Jan 2010 to Jun 2014

	DJIA	S&P500	GSCI	Agriculture	Energy	Ind. Metals	Livestock	Prec. Metals	Non-Energy
DJIA	1.00								
S&P500	0.98***	1.00							
GSCI	0.72***	0.73***	1.00						
Agriculture	0.41***	0.39***	0.57***	1.00					
Energy	0.70***	0.71***	0.97***	0.39***	1.00				
Ind. Metals	0.71***	0.75***	0.73***	0.44***	0.64***	1.00			
Livestock	-0.07	-0.04	0.07	-0.25*	0.10	0.06	1.00		
Prec. Metals	0.15	0.19	0.52***	0.36***	0.44***	0.46***	-0.03	1.00	
NonEnergy	0.55***	0.56***	0.75***	0.92***	0.57***	0.73***	-0.04	0.55***	1.00

One, two or three stars indicate that an estimate is statistically significantly different from zero at the 10%, 5% or 1% level, respectively.

Correlations of Monthly Adjusted-Return Volatilities, Jan 1991 to Dec 2000

	DJIA	S&P500	DJAIG	GSCI	Agriculture	Energy	Ind. Metals	Livestock	Prec. Metals	Non-Energy
DJIA	1.00									
S&P500	0.91***	1.00								
DJAIG	0.12	0.20**	1.00							
GSCI	0.06	0.08	0.78***	1.00						
Agriculture	-0.01	0.05	0.37***	0.11	1.00					
Energy	0.02	0.03	063***	0.94***	0.06	1.00				
Ind. Metals	-0.02	-0.12	0.05	-0.03	-0.03	0.00	1.00			
Livestock	-0.03	0.01	0.14	0.04	0.05	-0.04	-0.06	1.00		
Prec. Metals	0.09	0.05	0.05	0.06	-0.05	0.08	0.02	-0.08	1.00	
NonEnergy	0.01	0.07	0.33***	0.09	0.77***	0.03	0.09	0.29***	-0.03	1.00

Correlations of Monthly Adjusted-Return Volatilities, Jan 2001 to Dec 2007

	DJIA	S&P500	DJAIG	GSCI	Agriculture	Energy	Ind. Metals	Livestock	Prec. Metals	Non-Energy
DJIA	1.00									
S&P500	0.86***	1.00								
DJAIG	0.06	-0.07	1.00							
GSCI	0.02	-0.06	0.72***	1.00						
Agriculture	0.02	-0.02	0.28***	0.08	1.00					
Energy	0.03	-0.04	0.64***	0.97***	0.03	1.00				
Ind. Metals	0.06	0.02	0.18	0.01	-0.08	-0.01	1.00			
Livestock	0.24**	0.19*	-0.02	-0.06	-0.13	-0.02	0.01	1.00		
Prec. Metals	-0.09	-0.12	0.13	-0.01	0.01	-0.04	0.41***	-0.06	1.00	
NonEnergy	0.21*	0.11	0.42***	0.09	0.63***	0.01	0.39***	-0.06	0.32***	1.00

Correlations of Monthly Adjusted-Return Volatilities, Jan 2008 to Dec 2009

	DJIA	S&P500	DJAIG	GSCI	Agriculture	Energy	Ind. Metals	Livestock	Prec. Metals	Non-Energy
DJIA	1.00									
S&P500	0.93***	1.00								
DJAIG	0.55***	0.69***	1.00							
GSCI	0.56***	0.76***	0.93***	1.00						
Agriculture	0.34*	0.41**	0.77***	0.60***	1.00					
Energy	0.50**	0.70***	0.87***	0.99***	0.53***	1.00				
Ind. Metals	0.64***	0.83***	0.85***	0.88***	0.83***	0.83***	1.00			
Livestock	0.39*	0.55***	0.59***	0.67***	0.27	0.64***	0.67***	1.00		
Prec. Metals	0.50**	0.68***	0.74***	0.83***	0.40*	0.80***	0.81***	0.61***	1.00	
NonEnergy	0.58***	0.73***	0.94***	0.87***	0.84***	0.79***	0.87***	0.59***	0.75***	1.00

Correlations of Monthly Adjusted-Return Volatilities, Jan 2010 Jun 2014

	DJIA	S&P500	GSCI	Agriculture	Energy	Ind. Metals	Livestock	Prec. Metals	Non-Energy
DJIA	1.00								
S&P500	0.95***	1.00							
GSCI	0.72***	0.74***	1.00						
Agriculture	0.28**	0.35**	0.45***	1.00					
Energy	0.72***	0.72***	0.94***	0.21	1.00				
Ind. Metals	0.53***	0.60***	0.69***	0.69***	0.46***	1.00			
Livestock	-0.04	-0.06	0.04	0.02	0.07	-0.06	1.00		
Prec. Metals	0.14	0.20	0.26*	0.36***	0.14	0.54***	0.09	1.00	
NonEnergy	0.41***	0.48***	0.65***	0.88***	0.38***	0.89***	-0.04	0.53***	1.00

Source: Authors own on the basis of Bloomberg (2014).

One, two or three stars indicate that an estimate is statistically significantly different from zero at the 10%, 5% or 1% level, respectively.

These results throw severe doubt on the explanation that investment in commodity futures offers an opportunity to hedge equity risk. The diversification benefits of commodity futures view is based on two assumptions. The first is that commodities and stocks yield similar returns over time so that they are adequate investment substitutes. The second is that that commodities and stocks are, in terms of levels and volatilities, either not correlated or negatively correlated over time so that investing a part of the portfolio in commodities lowers its total risk.[10]

[10]This view has been advanced by Gorton and Rouwenhorst (2004) and more recently by Buyuksahin, Haigh and Robe (2010b). Gorton and Rouwenhorst find for a 45 year period running from July 1959 to the end of 2004 that 'the average annualized return to a collateral investment in commodity futures (5.23%) is comparable to the return on the SP500 (5.65%) and that both outperformed corporate bonds (2.22%)'. Also both authors sustain that commodity futures have a lower volatility that stocks (with standard deviations of 3.47 and 4.27 respectively). Finally the coefficient of correlation between commodity futures and stocks are statistically insignificant (0.05 and -0.06 on monthly and quarterly basis). These results are corroborated by Buyuksahin, Haigh and Robe for the period January 1991 to May 2008. These authors also find that there is no co-movement between the returns and volatilities of equities and commodities suggesting that 'commodities have retained their role as a portfolio

A more realistic explanation is that investment in commodities can present substantial profit opportunities. Commodity futures trading as well as the derivative industry, and in particular, the derivatives on mortgage backed securities, expanded significantly around the time of the burst of the bubble dot com and the ensuing stock market crash in the early 2000s. This may indicate the fact that commodities futures along other derivatives became a portfolio asset class, as other financial investments such as equities lost their profitability lure.

Also the highly liquid-low interest environment that prevailed before the Global Financial Crisis combined with the high rate of return of commodity futures relative to equities from 2004 to 2008 provided an incentive to invest in commodities. According to Bhardwaj (2010), between January 31, 2004 and June, 2008, commodity futures' rate of return (19.5%) more than doubled that of equity (6.0%). Finally, the commodity investment option was sanctified by Gorton and Rouwenhorst (2004) who showed that the risk of investing in commodities was lower than that of equities. Thus, investing in commodities yielded a high rate of return to investment and with a lower risk relative to other investment alternatives.[11]

Finally, another recent illustration of the consideration of commodities as a financial asset is the use of commodities as collaterals in financing deals to raise and invest liquidity. This has become a general practice for a wide range of commodities including gold, copper, iron ore, and to a lesser extent, nickel, zinc, aluminum, soybean, palm oil and rubber. Some of the most illustrative examples are available in the case of China where financing commodity deals occur in the presence of capital controls and a significant positive local to foreign interest rate differential.[12]

The most simple financing deal consists, in general terms, in a domestic company using a warrant of a commodity (a document issued by logistic companies which represent the ownership of the underlying asset, in this case a commodity) to borrow a foreign exchange short-term loan. The warrant is then sold for cash in the domestic market and the proceeds are invested in an asset yielding a higher rate of return than the interest to be paid on the foreign exchange loan (due to the significant positive local to foreign interest rate differential, i.e. the difference between a US letter of credit interest and a Chinese wealth management asset). The asset is then liquidated and the foreign loan is paid. [13]

This procedure can be made continuous to earn recurrent returns as follows: a domestic company using a warrant of a commodity (a document issued by logistic companies which represent the ownership of the underlying asset, in this case a commodity) to borrow a short-term loan in foreign exchange. The warrant is then sold (i.e., exported) by the company to an offshore subsidiary and receives the equivalent of the value of the warrant in foreign exchange. In this way foreign exchange in brought into the country circumventing any existing

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diversification tool' (p. 4). Using a longer time series (August 1959-April 2009) Bhardwaj (2010) concludes that the correlation between the US equities and commodity returns has increased over time (much in line with our results presented above). The correlation coefficient for both equals roughly 0.15 and 0.37 for the periods August 1959-April 2009 and January 2001-April 2009.

[11] Besides the hedging hypothesis investment in commodities is rationalized in terms of the search for yield which refers to choosing riskier assets when the return on safe assets is low. In the case of commodities however Gorton and Rouwenhorst (2004) along with other research provided the intellectual foundation for showing that the search for yield did not apply to commodities. In a low interest rate environment the rate of return on some 'safe assets' such as commodities can be very high relative to other investment alternatives.

[12] See Credit Suisse (2014a, 2014b), Goldman Sachs (2014), Morgan Stanley (2014) and Tang and Zhu (2014).

[13] According to Goldman Sachs (2014, p. 13) "the commodity- related outstanding FX borrowings are roughly 31% of China's short-term FX loans (duration less than a 1 year)."

capital controls. The foreign exchange is then converted to local money and invested in asset yielding a higher rate of return than the interest to be paid on the foreign exchange loan (due to the significant positive local to foreign interest rate differential). The company then obtains a new foreign exchange loan and buys a warrant from the offshore subsidiary and then sells the warrant again bringing in foreign exchange. With the proceeds the company pays the first loan but in this case does not need to liquidate the investment. The process of buying and selling warrants between the domestic company and the offshore subsidiary is repeated to pay back the second foreign exchange loan.[14]

The profits that can be made through these financial deals depend on the velocity of circulation, the volume of the commodity in inventory, and the spot unit price of the commodity. The velocity of circulation refers to the frequency of rolling the trade forward and depends on the excess benefit or cost of owning the asset, i.e., on the roll yield. The volume of the commodity in inventory depends on the demand for commodity as collateral. Finally, the spot price of the commodity depends on the conditions of demand (or more precisely excess demand) in the market for that particular commodity.

These effects of these variables and their interrelationships on profits and returns can be ascertained by expressing the real return on a commodity (or risk premium) as a function of the collateral return, the spot return and the roll return. That is,

$$(2) R_{rcr} = R_c + R_{spot} + R_r$$

Where, R_{rcr}= real commodity return, R_c=collateral return, R_{spot} =spot return, and R_r= roll return.

The collateral return refers to the interest income earned on the investment of the value of the collateral needed to purchase the commodity or in the above case the commodity warrant.

Traditionally the collateral return is equated with the yield on a short-term US treasury bill since the normal practice is to avoid high levels of risk, invest in a highly liquid asset and preserve the capital value of the investment. However, in the particular where commodities themselves are used as collaterals for loans, the collateral return is equal to the domestic-foreign currency interest rate differential. That is,

$$(3)\ R_c = \alpha(r_d - r_f)$$

Where,

[14] More complicated financing deals involve more than one loan per unit of copper with staggered due dates (Credit Suisse, 2014a and 2014b). Goldman Sachs (2014, p.11) explains the commodity collateral financing deal as follows: “While commodity financing [round tripping] deals are very complicated, the general idea is that arbitrageurs borrow short-term FX loans from onshore banks in the form of LC (letter of credit) to import commodities and then re-export the warrants (a document issued by logistic companies which represent the ownership of the underlying asset) to bring in the low cost foreign capital (hot money) and then circulate the whole process several times per year. As a result, the total outstanding FX loans associated with these commodity financing deals is determined by: the volume of physical inventories that is involved, commodity prices and the number of circulations. Our understanding is that the commodities that are involved in the financing deals include gold, copper, iron ore, and to a lesser extent, nickel, zinc, aluminum, soybean, palm oil and rubber.”

r_d = return on domestic assets; r_f = interest on foreign denominated loans and α>0.

The spot return is the difference between the expected spot price of a commodity in the future at time t+i (S_{t+i}) and the price of the same commodity in the present (at time t) (S_t).

$$(4) R_{spot} = \frac{S_{t+i} - S_t}{S_t}$$

The spot return depends on the demand and supply of the stocks of a commodity. As the supply stock of a commodity is fully inelastic, the spot return depends on the expected change in the demand for that given commodity (Davidson, 1978, 2008; Choski, 1984). As a result the spot return can be expressed as function of (expected) excess demand in the commodity market (EXD^e).

$$(5) R_{spot} = \beta EXD^e, \text{ where ß>0.}$$

The roll return captures the differences in prices along a commodity term structure and is in fact the carry return for holding a commodity contract. It can be simply be defined as the difference between the price for commodity contract in the 'nearby future at time t+i (F_{t+i}) and the current or most recent future at time t (F_t)' (Hannan, 2015). That is,

$$(6) R_r = \frac{1}{T}\left(\frac{F_{t+i} - F_t}{F_t}\right)$$

Where T = time horizon. For analytical purposes T=1.[15]

Contrary to the spot price, the future price of a commodity contract reflects flow-supply considerations. As a result the elasticity of the future price to changes in demand is much lower than that of the spot price (Choski, 1984; Davidson, 1978, 2008).

Equations (4) and (6) also allow seeing the effects of backwardation and contango on the real commodity returns. Other things being equal, backwardation ($S_v > F_v$) leads to positive returns ($R_{rcr} > 0$) and increases in the spot price over and above its future price translate into an increase in returns ΔR_{rcr}>0. A situation of contango ($S_v < F_v$) has the opposite effect, $R_{rcr} < 0$ and ΔR_{rcr}<0. Under this scenario positive returns require that the interest rate differential and/or excess commodity demand must offset the negative effect of contango.

Substitution of (5), (4) and (3) into (2) yields,

$$(7) R_{rcr} = \alpha \Delta r_{diff} + \beta EXD^e + \frac{F_{t+i} - F_t}{F_t}$$

Equation (7) states that commodity real returns under the scheme of financing involving commodities as collateral for loans, depends on the domestic-foreign interest rate differential (Δr_{diff}), on the (expected) excess demand for the commodity and on the commodity term structure.

[15] According to Hannan, F_{t+i} converges towards the expected spot price S_{t+i} so that $\frac{F_{t+i}-F_t}{F_t}$ converges towards $\frac{S_{t+i}-F_t}{F_t}$, which is the definition for the risk premium found in Gorton and Rowenhorst (2004) in the absence of the return on collateral.

$$(8)\Delta R_{rcr} = \frac{\delta f}{\delta \Delta r_{diff}} \Delta\left(\Delta r_{diff}\right) + \frac{\delta f}{\delta\left(\frac{F_{t+i} - F_t}{F_t}\right)} \Delta\left(\frac{F_{t+i} - F_t}{F_t}\right) + \frac{\delta f}{\Delta EXD^e} \Delta EXD^e$$

Where $f = \left(\Delta r_{diff},\ F_{t+i}, EXD^e\right)$

Assuming backwardation as the norm and that the relationship between F_{t+i} *and* F_t remains stable over time, equation (7) can be expressed as,

$$(9)\Delta R_{rcr} = \frac{\delta f}{\delta \Delta r_{diff}} \Delta\left(\Delta r_{diff}\right) + \frac{\delta f}{\Delta EXD^e} \Delta EXD^e$$

Equation (9) shows that rising real commodity returns depend on the increase in the interest rate differential and increased excess demand in the commodity market.

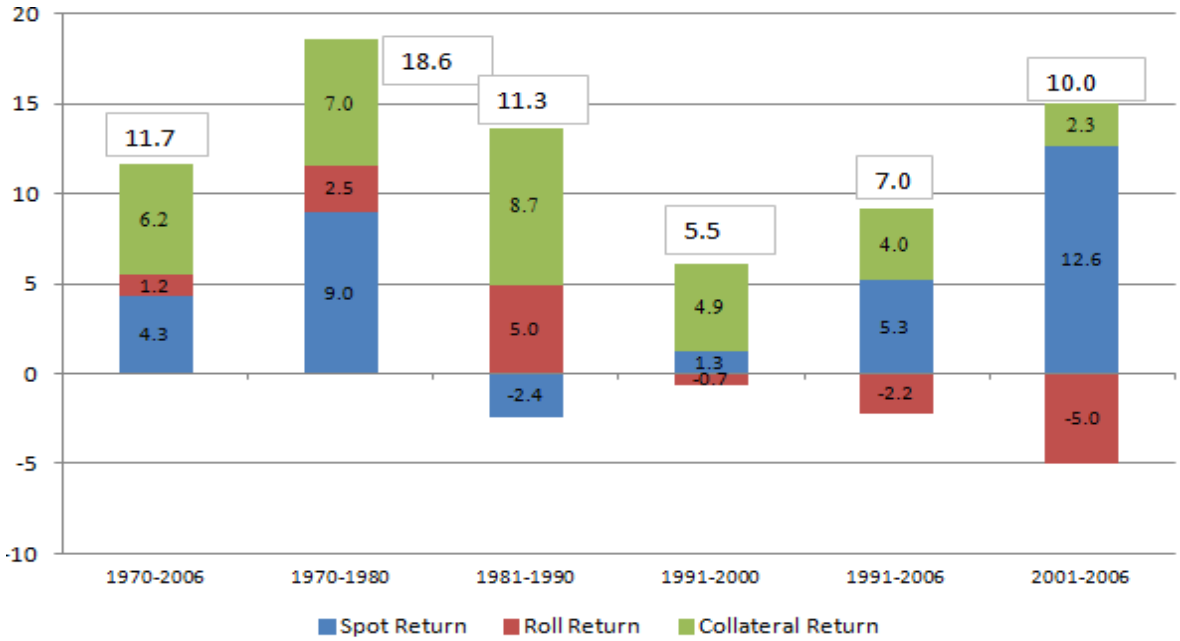
For any given spot price level of a commodity i, an increase in commodity inventories or what is the same thing an increase in the demand for commodity collateral can increase the revenues from interest rate differential provided the domestic return and the foreign rate of interest do not change. A higher value of the collateral translates into a higher volume of investment and hence into a higher revenue stream. A similar effect occurs if positions are rolled more frequently over time (i.e., if the velocity increases).

However, most likely, if the demand for commodity collateral increases (i.e., higher inventories) and it is sufficiently important, this will not only translate into higher returns via an income effect such as that described above. It will also create excess demand for the commodity (ΔEXD^e>0) and generate higher returns($\Delta R_{rcr} > 0$) via a price effect.[16]

Figure 4 below shows the evolution of the return on the Goldman Sachs commodity index during the period 1970-2006 and of its components. The figure shows that, for the most part, roll returns play a minor part in the explanation of the total return. The roll return explains only 10% of the total return on average for the whole period. And it is negative in the 1990's and in the first half of the 2000's during the 'commodities boom.' [17]

[16] As put by Credit Suisse (2014a, p.6) in the case of copper: "Financing deals have increased apparent demand (domestic production plus imports less exports) for the red metal (not necessarily real industrial use) and consequently lend support to the copper price."
[17] This fact has also been noted by Kemp (January, 2015) in "What went wrong with the Great Commodity Boom?".

Figure 4: Components on the total return on the Goldman Sachs Commodity Index, 1970-2006



Source: Demidova-Henzel & Heidorn (2007)

As a result, in line with our analysis above, the total return on commodities seems to be driven mainly by spot and collateral returns. For the entire period spot and collateral returns account for 53% and 67% of the total return on average. Moreover, the evidence shows that the spot return was the greater part of the total return in the periods 1970-1980 and 2001-2006. The former period coincides with the oil shocks and oil price hikes of 1973 and 1979.[18] The latter period 2001-2006 coincides with the commodity boom.[19]

In the aftermath of the Global Financial Crisis (2007-2009), as the dynamism of spot prices slowed in relation to the first half of the 2000s, and given the recent history of negative roll yields, focusing on collateral returns to maintain high total returns is simply a reasonable 'capitalist' business strategy. Heightening the importance of the collateral return requires accumulating inventories of commodities. And in fact this constitutes one of the main stylized facts that characterizes commodity markets in the aftermath of the Global Financial Crisis. Also the available evidence indicates that the accumulation of inventories is carried out by the financial sector and more precisely by some of the former investment banks of the United States, including Goldman Sachs, JP Morgan, and Morgan Stanley. As noted by the United States Senate Permanent Subcommittee on Investigations in their report on Wall Street Bank involvement with Physical Commodities (November, 2014, p.3):

[18] Bhardawj also mentions the fall of the Breton Woods monetary management system. Gorton, Hayashi and Rouwenhorst (2012) argue that inventory shortages in a number of commodities created greater uncertainty in the market and led to higher risk premiums, and that as a result the increase in spot prices responded to 'fundamentals.' See Choski (1984) for a different interpretation of the increase in spot prices in the 1970's attributing it to speculation.

[19] Similar results obtain using the Dow Jones-AIG Commodity Index for the period 1991-2006 (Demidova-Menzel and Heidorn, 2007). Between 2001-2006 the spot , roll, and collateral return yielded 14.5%, -.5.5% and 11.3% respectively. The roll return is also negative for the three sub-periods analyzed (1991-2000, 1991-2006 and 2001-2006).

> "Until recently, Morgan Stanley controlled over 55 million barrels of oil storage capacity, 100 oil tankers, and 6,000 miles of pipeline. JPMorgan built a copper inventory that peaked at $2.7 billion, and, at one point, included at least 213,000 metric tons of copper, comprising nearly 60% of the available physical copper on the world's premier copper trading exchange, the LME. In 2012, Goldman owned 1.5 million metric tons of aluminum worth $3 billion, about 25% of the entire U.S. annual consumption. Goldman also owned warehouses which, in 2014, controlled 85% of the LME aluminum storage business in the United States. Those large holdings illustrate the significant increase in participation and power of the financial holding companies active in physical commodity markets"[20]

Following this reasoning it would not be uncommon to observe a positive association between the demand for commodities as collateral (and higher levels of inventories) and the cost of storage net of the convenience yield (measured as the spread between spot and future prices divided by spot prices, i.e., the rate of return) can be observed in the market for commodities. To put it another way, within this context, higher levels of inventories need not be accompanied by a lower price spread as the standard theory suggests.

In fact the positive association between volume and the cost of storage net of the convenience yield is a characteristic feature displayed by some commodities markets during at least the last decade. We illustrate this with the case of copper and oil in Figure 5-6 below.

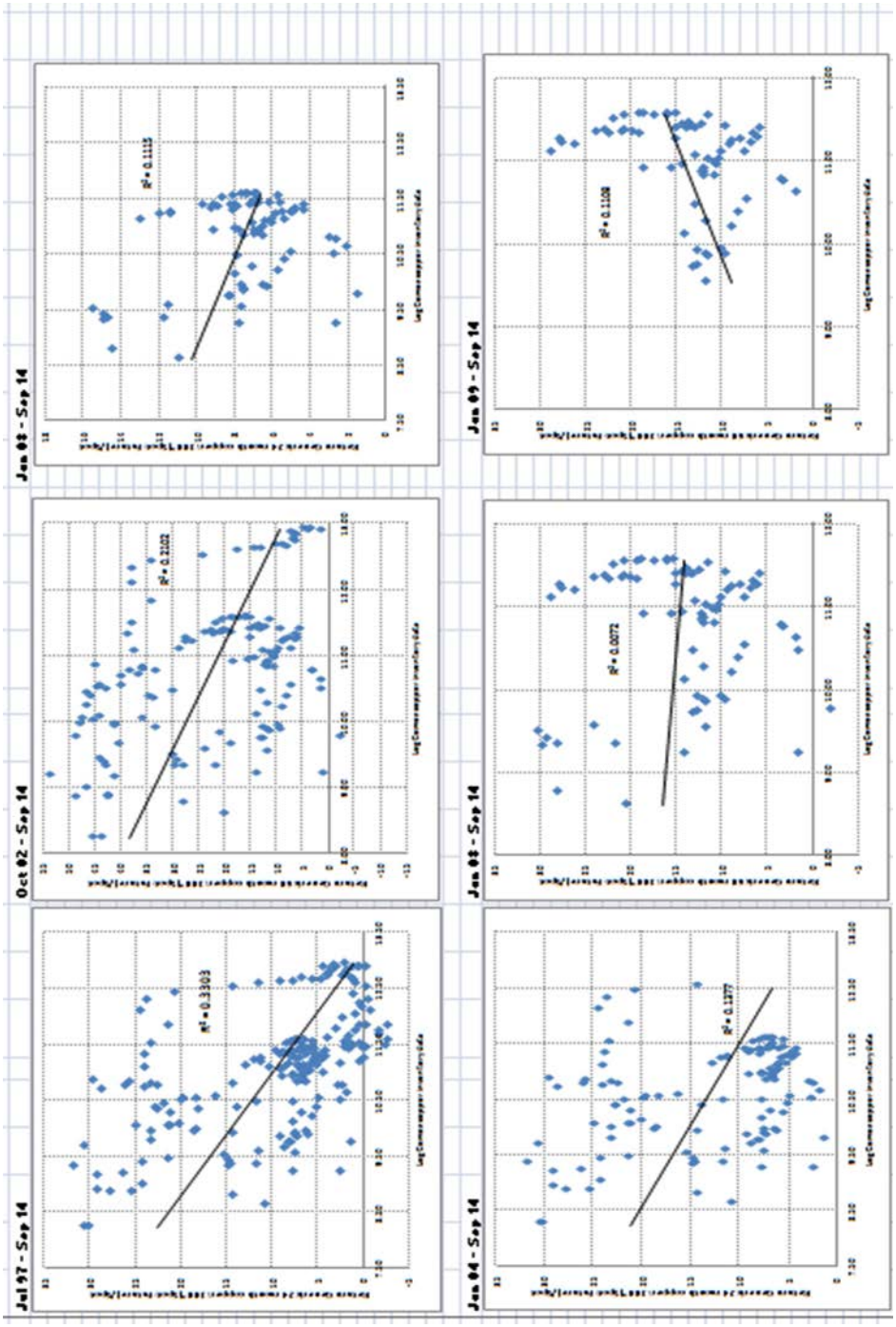
These figures show a scatter plot between quarterly data of the cost of storage net of the convenience yield (measured as the spread between spot and future prices divided by spot prices, i.e., the rate of return) on a commodity and its inventory level for several sub periods between January 1995 for crude oil, and July 1997 for copper, to September 2014 for both of these commodities.

The figures 7-8 show a clear change in the relationship between both variables over time by taking the whole period and then rolling forward the start of the period to focus on the empirical evidence of the past decade. In the case of oil the relationship starts as negative for the whole period (January 1995-September 2014). As we roll forward in time the start date maintaining constant the end date the negative relationship between becomes much weaker as can be seen by a shallower slope and a reduction in the value of the correlation coefficient. The correlation coefficient that captures the negative association between both the cost of storage net of the convenience yield on commodities and their inventory levels declines from 0.26 between January 1995 and September 2014 to 0.03 between January 2004 and September 2014. From January 2005 onwards the negative relationship changes to a positive one.

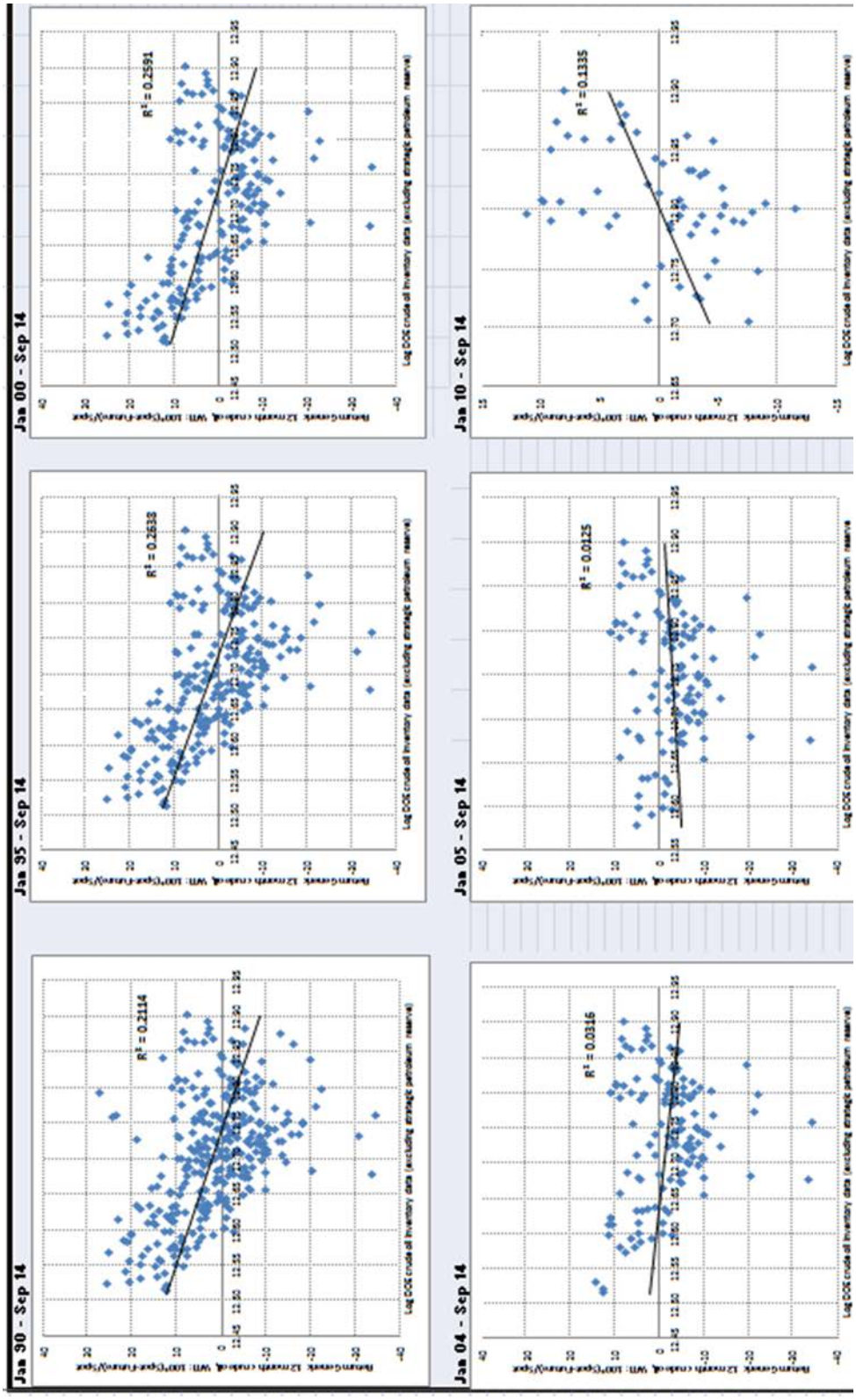
A similar story occurs in the case of copper. For the whole period spanning from July 1997 to September 2014, the relationship is negative with a correlation coefficient of -0.33, declining (in absolute value) to -0.13 and -0.11 between January 2004-September 2014 and January 2008-September 2014 respectively. Thereafter the relationship becomes positive, as in the case of crude oil, albeit at a later date.

[20] It should be noted that these former investment banks renamed commercial banks after the Crisis saw an important decline in leverage. Goldman Sachs, and Morgan Stanley saw their leverage fall from roughly 33 to 12 between 2007-2008 and 2012 (according to our calculation based on Bloomberg) and thus had to turn to other business strategies such as investment in commodities to maintain their profit levels.

Figures 5-6 Scatter plot between rate of return on copper and inventories (July 1997-September 2014)
Source: On the basis of Bloomberg (2014).



Figures 7-8 Scatter plot between rate of return crude oil and inventories (January 1990 and September 2014) (Continuation)
Source: On the basis of Bloomberg (2014).



The positive relationship between the rate of return on a commodity and its inventory level seem to defy the traditional explanation of commodities prices at different delivery dates based on the theory of storage. At a very general level, the theory of storage states that as inventory increases (a decline), spot prices tend to fall (increase) below (above) future prices (the cost of storage decreases) net of carrying costs. Nonetheless the empirical evidence positing a positive relationship between the spread between spot and future prices and inventories presented above is consistent with the concept of user costs developed by Keynes (1936).

Keynes developed the concept of user cost as a component of the supply price of a firm. He also used it in a discussion of the decision to produce raw materials and focused on the case of copper.

Keynes defined user cost as (1936, p. 70): "the reduction in the value of the equipment due to using it as compared with not using it after allowing for the cost of the maintenance and improvement which it would be worthwhile to undertake and for purchases from other entrepreneurs." Its amount is determined by 'the expected sacrifice of future benefit involved in present use'. In the particular case of copper, the marginal cost of producing, say a ton of copper today instead of tomorrow must include the future value of copper. And if the price of a ton of copper is expected to increase in the future, the cost of producing a ton of copper in the present must include the cost of the foregone profits that could have been obtained by deciding to abstain from producing copper today in order to produce tomorrow and sell at a higher price.[21]

The same reasoning and logic applies to the commodity financing deals described above whose focus is the trading commodity futures. In this particular case user costs are computed with regard to holding or not holding a commodity as inventory rather than to the decision of producing or not producing it. Also user costs can be directly related to commodity rates of return rather than to their price. If a commodity dealer trading in commodity futures decides to reduce inventory by a given volume, say by x, then, within the context described above, the user cost associated with this decision is the foregone profits (determined by the collateral return) that the dealer could have obtained by holding and using the x volume of inventory in a commodity collateral financing deal. In short, the capitalist commodity collateral business strategy can be rationalized as a means to reduce user cost to increase profits.

Conclusion

In the 2000s decade Latin America performance exhibited two unique historical features. First, the region expanded at one of the fastest pace in three decades with a current account surplus. Second, for the first time the region recovered V- shaped from a global financial crisis.

The paper argues that this unusual economic performance is due to changes in the way global capitalism organizes production and finance. The former refers to a corporate strategy using multinational corporation networks to move industries, production and employment across the globe taking advantage of cheaper production costs, expanding global markets and the increasing importance of global production chains. These production shifts occur

[21] This example is taken from Davidson (2008).

across a wide spectrum in industries of developed economies and in particular of the United States. During the 2000s decade, due to its strategic location, size and open door policies, China, along with other Asian countries became an important center of operations for this corporate strategy. At the same time there were changes in the organization of finance exemplified by the increasing integration between the real and the financial spheres and is exemplified by the way commodities were used in the 2000s decade as financial assets.

The changes in the way capitalism organizes production and finance had an important impact on Latin America´s performance. These changes are at the root of the commodity boom that softened Latin America´s external constraint, improved fiscal position and space resulting in higher levels of domestic investment and greater access to external finance. These same factors account for the current economic deceleration that is affecting all of Latin American economies.

This hypothesis questions those interpretations that place the weight of the explanation of Latin America´s performance on the improved macroeconomic management, a set of favorable and fortuitous external conditions and on the changes in the global economic geography led by the emergence of developing economies. By extension the analysis also throws doubt on the perception that developed economies have lost preeminence at the global level and that the distribution of world economic and political power is shifting towards the developing world. Moreover, the changes in production and finance have increased the complexity in the organization and workings of market economies and also the difficulty in predicting their future behavior and performance.

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