Instituto de Estudos do Comércio e Negociações Internacionais
Institute for International Trade Negotiations

THE FALLACY OF THE DUTCH DISEASE IN BRAZIL

WORKING PAPER

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I. Introduction

The boom in exports, followed by a significant net trade surplus, has been largely recognized for its key contribution to the country's balanced current accounts. However, many economists are cautious about the growing trade surplus because of the exchange rate appreciation it has generated, and its effects, in particular on the local industry.

These discussions refer to a phenomenon detected in the Netherlands in the 1970s, when the discovery of large natural gas deposits produced a significant impact on the country´s economy: if on the one hand exports allowed for an increase in wealth, on the other the appreciation of the Dutch guilder – because of higher foreign currency inflows as a result of energy commodity sales – eventually made the exports of other products less competitive. In other words, the scenario for the so-called "resource curse" or "Dutch disease" was now in place in Brazil.[4]

In the academic arena, the debate around the existence of Dutch disease and the possibility that it could lead to deindustrialization has motivated scholars to conduct specific research on the subject.[5]

In Brazil, Dutch disease has been largely discussed among experts and in the media. In a recent article, Affonso Celso Pastore and Maria Cristina Pinotti argue that it is "tempting" to draw an analogy between the Brazilian situation and events in the Netherlands,"[6] while Bresser Pereira stated "there is a structural reason for the appreciation of the exchange rate in Brazil: the 'resource curse' (…) or Dutch disease that contaminates the country caused by the artificial appreciation of the exchange rate due to the low costs of exports that rely on cheap natural resources."[7] Professor Yoshiaki Nakano warns about the emergence of "Dutch disease" in Brazil as a consequence of the appreciation of exports of basic goods, suggesting that the federal administration should solve the problem by promoting cuts in real interest rates, without generating inflation, while eliminating the nominal deficit.[8] Luiz Carlos Mendonça de Barros also emphasizes a framework where there

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[3] This working paper is the first of a series of studies that ICONE (www.iconebrasil.org.br) is producing about the recent dynamics of the foreign trade in Brazil and in the world. The authors are grateful for the careful reading and invaluable comments of Fernão Bracher.

[4] The term "Dutch disease" seems to have been used for the first time as a title for an article of the magazine *The Economist,* November 26, 1977: pp-82-83.

[5] Suggested readings about the theme:

- Stevens, P.; *"Resource Impact – Curse or Blessing? A Literature Survey*"], Journal of Energy Literature, Vol. 9, no. 1, pp. 1-42. Jun 2003. (the text has a good survey of the Dutch disease literature)
- Embrahim-Zadeh, C.; *"Dutch Disease: Too much wealth managed unwisely"*; Finance and Development. March 2003, V. 40, Number 1.
- Corden, W. M., Neary, J. P.; *"Booming Sector and De-Industrialization in a Small Open Economy"*, The Economic Journal, Vol. 92, No. 368 (Dec. 1982), 825-848.

[6] Affonso Celso Pastore e Maria Cristina Pinotti, "Câmbio, reservas e doença holandesa", Jornal Valor Econômico, 30/1/2006.

[7] Luiz Carlos Bresser Pereira, "Maldição dos recursos naturais", Jornal Folha de S. Paulo, 6/6/2005.

[8] Interview to Celso Ming´s column, "Crescimento Econômico", Jornal O Estado de São Paulo, 20/9/2005.

"clearly exists a modern version of what economists call the "Dutch disease".[9] The economist also claims that "an overvalued exchange rate because of financial activity or vigorous exports of primary products can be deadly for a country's industrial sector in that context. This problem will have a deep impact on Brazil in coming years. There is no question about that."

To a large degree, the current debate is motivated by a process of "deindustrialization", allegedly associated with Dutch disease. Echoing a perception that is widespread among Brazilian economists, Cambridge University professor Gabriel Palma argues that the Dutch disease phenomenon would encompass a reduction on the industrial employment level and the shift from generating trade surpluses of industrial goods towards generation of trade surpluses of primary goods or services.[10] According to Palma, while the disease has been spread out all over Latin America, Mercosur countries have experienced the highest levels of deindustrialization." On the other hand there are those like Rubens Ricupero, who disagree that the country suffers from Dutch disease at all, and argue that Brazil "is undergoing a process of deindustrialization, with mineral and agricultural commodities surpluses compensating the trade deficits of manufactured goods."[11]

José Alexandre Scheinkman has a different view. He argues that a variety of "national evils, such as the lack of suitable policies for science and technology, infrastructure deterioration or high taxes are really "the factors responsible for a process of deindustrialization", not Dutch disease. Scheinkman still questions the true effects of Dutch disease within the Netherlands itself, by stating that "the performance of Dutch industry in the 1970s and 1980s was not significantly different from what was verified in Germany or France, trade partners that shared many of the Netherlands' characteristics, but did not benefit from discoveries of natural resources. In reality, economics texts provide many examples of "candidates" for Dutch disease, but cases where the patient is actually infected are rare."[12] Delfim Netto considers that "much before being Dutch, this disease threatened Brazil's nascent industry until the late 1960s. In the beginning of the 1950s, coffee exports represented two-thirds of Brazil's total exports. Given the inelasticity between world demand and the delayed response with respect to changes in supply (four years at that time), income received in foreign currencies through coffee exports – and consequently the exchange rates (when they were allowed to float) experienced sharp instabilities."[13] In order to clarify the phenomenon, Delfim mentions the interesting aphorism Eugênio Gudin had created at that time: "coffee is exchange rate!" According to Delfim, the Dutch disease that affected Brazilian coffee was eradicated in 1973.

But, to what extent can we conclude that Brazil is suffering from Dutch disease? Could it be true that Brazil's exports are booming mainly because of higher commodity prices in international markets? What was the real growth rate of the commodity and non-commodity export sectors within Brazil's overall exports? Are changes in the makeup of the Brazilian export agenda linked to a process of deindustrialization? In order to contribute with the debate around those and other issues related to Dutch disease in Brazil, we attempted to provide empirical data that encompasses the profile and dynamics of Brazil's bilateral trade agenda. In addition to questioning the use of aggregated commodity price indices, we suggest an alternative version that covers the most relevant

[9] Luis Carlos Mendonça de Barros, "Uma encruzilhada para o Brasil", Jornal Folha de S. Paulo, 3/2/2006.
[10] Gabriel Palma. "Quatro fontes de 'desindustrialização' e um novo conceito de doença holandesa". Conferência "Industrialização, Desindustrialização e Desenvolvimento" organizada pela FIESP e IEDI em 28/8/2005.
[11] Rubens Ricupero, "A desindustrialização como projeto", Jornal Folha de S. Paulo, 2/10/2005.
[12] José Alexandre Scheinkman, "A doença holandesa e os males do Brasil", Jornal Folha de S. Paulo, 12/2/2006.
[13] Antonio Delfim Netto, "A Doença está aqui", Jornal Folha de São Paulo, 1/3/2006, A-2.

variables in the analysis of Brazil's exports. Finally, we briefly discuss the relationship between deindustrialization and Dutch disease and present our conclusions.

II. Composition and Dynamics of Brazilian Exports

The makeup of the Brazilian export agenda can be described in different ways. In the present study we have opted for two different systems of categorization, based on the division between "commodities" and "differentiated goods", and in the separation between "industrial" and "non-industrial" goods.

By definition, "commodities" are standardized and non-differentiated goods, whose prices are usually formed in stock exchanges within the country where they are produced or abroad. Once most commodity prices are set by markets (easy arbitrage in stock exchanges), an individual producer usually has little or no control upon that variable, which makes "leadership in costs" a key competitive strategy. The main factors of success for commodities producers are gains from economies of scale and scope, productivity, rationalization of production processes, access to natural resources (mineral deposits, availability of arable land, water, etc), and infrastructure and logistical conditions, among others.

Another important aspect relates to the different types of semi-processed and processed goods from agricultural production or mining activities, also classified as commodities. As such, with the aim of evaluating the amount of industrialization involved in the production of each commodity, we divide them into basic and processed subcategories, destined to final consumers or for use among other industrial sectors.[14] Examples of basic agricultural commodities: cotton, groundnuts, cereals (rice, maize, wheat and barley), oilseeds, bananas, rubber, cocoa, coffee, hardwood and softwood, and so on. Among minerals, some basic traditional commodities are coal, natural gas, iron ores and crude oil. Processed commodities are those that include some level of industrial processing, and are destined for end users or specific industrial segments. Examples of processed commodities from agricultural and mineral sources are milled rice, brans, soybean oil, sugar, cotton lines, meat, timber, pulp and paper, orange juice, petroleum by-products, aluminum, etc.

Throughout the last decade, commodities accounted for between 30% and 40% of overall Brazilian exports, with a slight upward trend observed as of 2000, and stabilization at the 39% level from 2002 onwards, when the commodity price boom began (Figure 1).[15] In other words, while the commodities export surge has been slightly higher than exports of differentiated goods, there have been no abrupt changes in the share of overall exports accounted for by basic and processed commodities.

Figure 2 shows a drop in the share of processed commodities compared to basic commodities, which correspond to 50% to 60% of that product category, or around 20% of the country's total exports. As discussed in later sections of this study, basic commodities have prevailed over processed thanks to

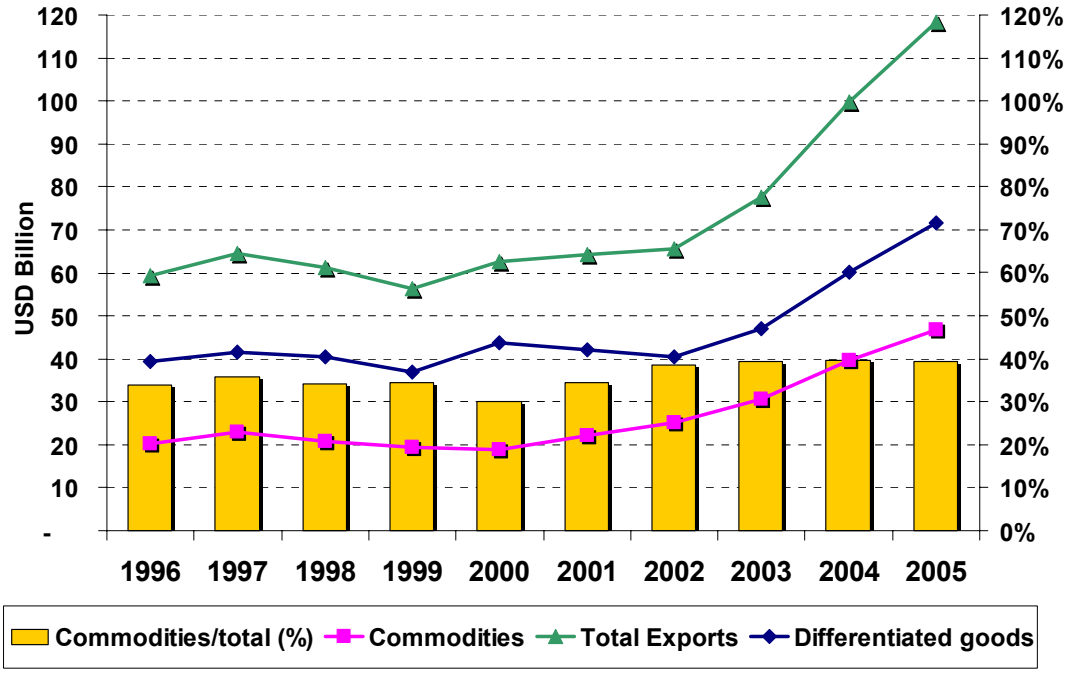
[14] In the present case, the classification was based on the qualtitative analysis of the goods under the Harmonized System (HS), which is the classification of internation merchandises that follow the same universal standard up to the 6 digit level (http://www.foreign-trade.com/reference/hscode.htm). In the USA, agricultural commodities are classified as processed if the manufacturing process corresponds to a value 50% above the total shiping declared, as stated in the "Census of Manufacturing" (http://www.census.gov/foreign-trade/www/sec2.html).

[15] Because of the criteria used by the IMF, this number is significantly lower than the figures presented in statistics than comprise sectors such as processed food, automotive parts, shoes, garments, etc.

the significant growth in exports of mineral raw materials, especially crude oil and iron ore, as well as the predominance of soybean exports at the expense of soybean meal and oil exports.

Recently, the Ministry of Development, Industry and Foreign Trade (MDIC) began publishing data on exports by industrial and non-industrial sectors, as seen on Annex 3. Under industrial sectors, four categories were selected, defined according to different levels of technology intensity (high, medium-high, medium-low and low technology), based upon OECD criteria. Accordingly, we notice that industrial goods comprised approximately 80% of Brazilian exports in 2005, with broad diversification and the presence of all four categories among the ten top export sectors[16]. Data from MDIC also shows that 40% of overall industrial exports, worth US$ 37.7 billion, belong to the high and medium-high technology groups, which include products such as airplanes, telecommunications equipment, motor vehicles, chemical products and pharmaceuticals, mechanical equipment and machinery, among others.

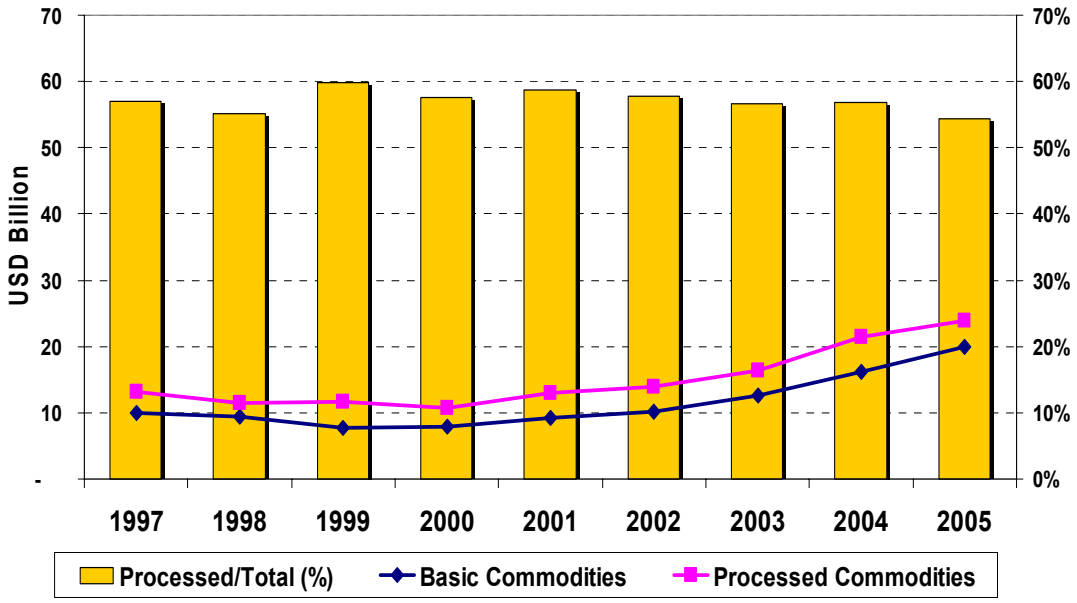
Figure 1 - Makeup of Brazilian Exports: Commodities vs. Differentiated Goods



Sources: SECEX/MDIC and IMF. Real values of 2005, deflated by US CPI-U. Elaboration: ICONE.

[16] Industrial products represented 20% of total exports.

Figure 2: Makeup of Brazilian Exports: Basic vs. Processed



Sources: SECEX/MDIC and IMF. Real values of 2005, deflated by US CPI-U. Elaboration: ICONE.

III. Main Factors Impacting Brazilian Exports

Table 1 shows Brazilian exports divided into commodities (basic and processed) and differentiated products. Numerous commodities have actually experienced significant growth over the last five years, such as sugar, coffee, cotton, meat (beef, pork, and chicken), hides, soybeans, timber, iron ores and crude oil. Others, however, have had lower increases, such as soybean meal and orange juice.

Nevertheless, the table clearly shows that the export boom was not restricted to commodities. Automotive vehicles, mechanical equipments and machines, chemical products, airplanes, telecommunication equipment, electric machinery and shipbuilding also experienced expressive annual growths, with rates above 12% per annum. On the other hand, if we move back one decade and disregard those products whose exports start from extremely low levels (cotton, pork meat, oil), we see that the set of goods that present significant growth in the medium run end up being more restricted and include beef and chicken meat, soybeans, airplanes and telecommunication equipment.

There is no question that increased demand, mainly from developing countries, largely explains the results registered for most of the commodities and even some differentiated goods. [17] However, demand from China, Russia and other emerging markets is not the sole explanatory variable for the performance of Brazilian exports in those segments.

[17] For an analysis of the destinations of the Brazilian agricultural commodities exports, see Jales, M. *Inserção do Brasil no Comércio Internacional Agrícola e Expansão dos Fluxos Comerciais Sul-Sul.* Instituto de Estudos do Comércio e das Negociações Internacionais (ICONE).

Table 2 shows the growth of exported quantities based on respective volumes and average growth rates for each commodity. Over the period between 1996 and 2005 we see a sharp increase, above world average rates for 11 of the 14 commodities surveyed. Products such as soybean meal, cotton and meat (beef, pork and chicken) were the items that, in relative terms, experienced the largest market share gains. In other words, commodity exports have not only occurred because of an increase in international demand but also as a result of market share gains in different niches, such as the ones cited above.

A very good example is beef, whose exports, in terms of overall value, grew 22.6% per annum over the last decade. Undoubtedly, one explanation for this positive performance is investments on tropical technology (industrial crossovers, pasture improvements, farm management, confinement, etc.), which considerably expanded the production capabilities of Brazilian cattle. However, there is a second factor that explains the exceptional export dynamics of that sector: the successive outbreaks of foot-and-mouth and mad cow (BSE) diseases in Europe and North America, which negatively impacted Brazilian competitors. The United States and Canada considerably reduced their exports after the mad cow crisis, whereas Europe saw its cattle farming sector shrink significantly, making the old continent increasingly dependent on beef imports. Between 1996 and 2005, the volume of Brazilian beef exports increased 31% per annum, compared to an average annual growth of 3% globally (in other words, Brazilian beef exports grew 10 times faster than the world average growth for that ten year period). The same ratio is roughly repeated between 2001 and 2005.

With respect to chicken meat, the US and China have considerably reduced exports as a result of increased domestic demand, while the European Union has maintained its present market position, providing room for Brazilian exports to grow. From 1996 to 2005, Brazil's export volumes grew around 21.5% per annum, compared to a world average rate of 5.5%, a ratio that was maintained between 2001 and 2005.

As far as soybeans, there was a large supply expansion within the Southern Cone (Argentina, Brazil, Paraguay, Uruguay and Chile) because of Asian demand (between 1996 and 2005, Brazil's sales volumes grew at twice the world rate), however, difficulties associated with taxation (like tax credit recovery), tariff escalation by main importers (which eased tariffs for the purchase of beans while increasing taxation for processed soybean byproducts), differentiated taxation of exports applied in Argentina, and problems with logistics limited the profitability of the soybean milling industry. Brazil has indeed grown significantly in the production and export of soybeans, but has lost profitability and market share in the soybean meal and oil markets. In cotton, Brazil has grown 10 times faster than the world rate, in volume, over the last decade. Once again, in both soybeans and cotton production, higher volumes are far more significant than price effects. [18]

[18] Although Brazil should play an ever increasing prominent role in the world agribusiness, thanks to the abundance of natural resources (fertile lands, water, etc) and the investments in cost reduction technologies, one should not solely count on external crises in order for the country to reach its growth targets. The surge foot-and-mouth disease foci in the states of Mato Grosso do Sul and Parana, by the end of 2005, and the demand crisis resulting from the fear of a pandemic spread of the bird flu shows that the leadership the country reached in the meats markets is not "assured". If Brazil does not improve its sanitary surveillance and the logistics of products shipments, there will certainly be a fall of exports in those sectors.

The Influence of International Prices

A recurring argument used to justify the increase in commodities exports is the rise in international market prices. In order to analyze the impact of the variable "price", we understand that it would be necessary to start with the evolution of the Index of Primary Commodity Prices (IPCP), an indicator published regularly by the IMF and commonly introduced as the main international reference for the booming prices in that category of products.[19] The index is built upon a weighted average of the main commodities traded internationally, using the 1995-97 period as a base for calculations.

The IMF's Index of Primary Commodity Prices (IPCP) shows an impressive real price increase, totaling about 70% between 2002 and 2005. The increase, the highest in more than 20 years, was caused mainly by oil spikes, with prices quoted at double the average for the entire period. However, despite its relevance, the IPCP may generate misleading conclusions about the role of prices in the dynamics of exports, for the following reasons: 1) the disproportionate weight attributed to energy products in the composition of the index, which represent 47.8% of the total weighted for the period under consideration, with oil alone accounting for 40% of the weight in the commodities index, while answering for less than 3% of total Brazilian exports; and 2) the greater relevance in Brazil's export agenda of agricultural products, such as soybeans, meats and sugar, whose importance is not adequately captured by the aggregation at world level.

[19] Annex 1 lists the set of commodities that constitute the IMF index (Source: http://www.imf.org/external/np/res/commod/index.asp).

Table 1: Growth of Commodities Exports and Differentiated Products –Value: US$ Million and Average Annual Growth

Product		Brazil		1996-2005		2001-2005	
		Annual Values (USD million)		Annual Average Growth		Annual Average Growth	
		1996	2005	Brazil	World	Brazil	World
Commodities	Iron ores	2,695	7,297	7.0%	7.9%	22.4%	18.4%
	Soybeans	1,018	5,345	15.6%	23.7%	18.3%	2.9%
	Oil crude	13	4,165	136.0%	14.5%	44.3%	-1.9%
	Sugar	2,002	3,919	5.1%	4.8%	11.3%	-14.5%
	Chicken	849	3,509	16.0%	5.6%	26.0%	-0.7%
	Timber	1,110	3,032	11.0%	1.6%	18.8%	6.7%
	Beef	438	3,015	22.6%	1.9%	31.4%	5.1%
	Coffee	2,658	2,919	-5.1%	-5.9%	17.3%	6.4%
	Soybean meal	2,731	2,865	1.9%	7.8%	8.4%	4.0%
	Cellulose Paste	1,244	2,034	5.1%	2.5%	11.9%	7.2%
	Tobacco	1,236	1,598	1.7%	-2.3%	13.9%	1.3%
	Hides	678	1,400	7.7%	-0.1%	10.3%	-3.3%
	Soybean oil	713	1,267	7.4%	8.9%	24.2%	4.1%
	Pork	142	1,163	25.9%	5.6%	28.2%	3.8%
	Orange juice	1,739	1,110	-4.0%	3.3%	3.2%	4.3%
	Ethanol	119	766	28.6%	6.2%	66.0%	27.1%
	Cotton	85	519	30.1%	-1.2%	33.1%	-8.7%
	Total Commodities (A)	**19,470**	**45,922**	**8.5%**	**9.4%**	**19.6%**	**1.0%**
Differentiated	Automotive vehicles	4,006	11,803	8.6%	n.d.	31.2%	n.d.
	Machines and mechanical equip.	4,439	8,174	5.4%	n.d.	29.2%	n.d.
	Chemical products	4,172	7,605	5.4%	n.d.	24.8%	n.d.
	Airplanes	690	3,699	16.9%	n.d.	10.8%	n.d.
	Radio, TV and telecommunications	708	3,150	15.8%	n.d.	12.9%	n.d.
	Electric machines	1,093	1,933	5.4%	n.d.	23.4%	n.d.
	Shipbuilding	233	197	-1.5%	n.d.	268.9%	n.d.
	Other products	24,621	35,826	8.0%	n.d.	18.1%	n.d.
	Total Differentiated (A)	39,962	72,386	5.6%	n.d.	15.8%	n.d.
Total (B)		59,432	118,308	**6.8%**	n.d.	**17.9%**	n.d.
Commodities/Total (A/B)		**32.8%**	**38.8%**				

Note: The annual average growth rate was calculated with the logarithmic projection over the period considered. The world data refer to the periods 1996 to 2004 and 2001 to 2004.
Sources: SECEX/MDIC and IMF. Real values of 2005, deflated by US CPI-U. Elaboration: ICONE.

Table 2: Brazilian Exports Commodities Growth - Quantity

Product		Brazil		1996-2005		2001-2005	
		Annual Quantity (1.000 T)		Average Annual Growth		Average Annual Growth	
		1996-97	2004-05	Brasil	Mundo	Brasil	Mundo
Commodities	Sugar	6,708	15,608	13.1%	3.2%	11.8%	1.0%
	Cotton	16	387	55.6%	5.0%	43.6%	10.6%
	Coffee	937	1,459	6.7%	1.1%	-3.1%	-1.2%
	Beef	162	1,109	30.8%	3.0%	30.4%	3.4%
	Pork	82	542	32.4%	6.8%	8.3%	10.5%
	Hides	217	307	5.2%	-0.5%	12.7%	0.2%
	Soybean meal	10,574	14.17	4.2%	5.3%	5.0%	3.7%
	Chicken	613	2,425	21.5%	5.5%	21.1%	6.3%
	Soybeans	7,091	20,524	18.5%	7.3%	10.4%	4.1%
	Timber	3,351	6,526	9.8%	11.2%	10.4%	2.8%
	Iron ores	137,764	205,852	6.0%	7.3%	11.8%	-8.7%
	Soybean oil	17,736	2,567	10.2%	5.8%	10.6%	1.0%
	Crude oil	76	21,653	134.1%	3.6%	7.5%	6.9%
	Orange juice	1,204	1,651	4.5%	0.7%	9.1%	-0.1%

Note: The annual average growth rate was calculated with the logarithmic projection over the period considered. The world data refer to the periods 1996 to 2004 and 2001 to 2004.
Sources: SECEX/MDIC and IMF. Real values of 2005, deflated by US CPI-U. Elaboration: ICONE.

The IPCP reflects with more accuracy the reality of countries that typically export oil (or energy) – like Venezuela, Nigeria, Russia or Saudi Arabia – or even countries with a strong concentration on exports in a single commodity (like Chile with copper), but should be used with caution in the analyses of Brazilian exports.

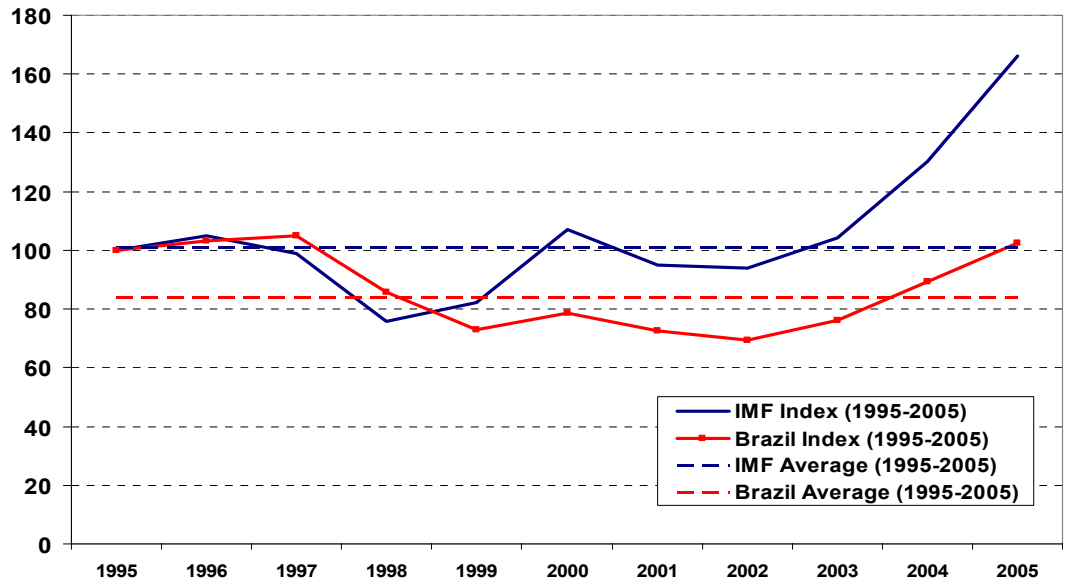
As such, we have opted for the elaboration of an index that reflects more precisely the historical composition of the "basket" of commodities exported by Brazil. This indicator, which we call "Brazilian Commodities Price Index", or BCPI, was calculated through the weighed average of prices for the most exported commodities during the period between 1996 and 2005. [20]

[20] Annex 2 describes the methodology used.

Figures 3 and 4 compare the IMF's "Index of Primary Commodities Prices" (IPCP) with the "Brazilian Commodities Price Index" (BCPI). Explanation for the differences between the two indexes are in Table 3, where the separated data allowed us to identify the components responsible for the differences in the series. [21] In particular, we notice two clear trends: while the price of agricultural commodities has fallen or stood still, the prices of iron ores and oil show strong growth over in recent years. Although energy commodities account for a significant portion of Brazilian exports, their overall effect is relatively low as a consequence of the diversity of goods sold abroad by Brazil. The comparison between the two indexes shows a much larger price increase in the IMF mix than the one found in the basket of prices of Brazilian commodities.

Figure 4 still shows the well-documented long-term decline in prices of agricultural products, in real terms. It is important not to confuse a small increase in short-term nominal prices with long-term fluctuations in real prices. Table 3 also shows that current prices for agricultural products are close to or below their historical averages. The increase in agricultural product prices between 2002 and 2005, while important, does not significantly differ from the periodic oscillations in international prices of the main agricultural products exported by Brazil. In other words, the BCPI clearly shows that the price increase in 2005 is similar to the increases of 1996-97 and the end of the 1980s, and much lower, in real terms, than the expressive spikes that followed the oil shocks in 1973 and 1979.

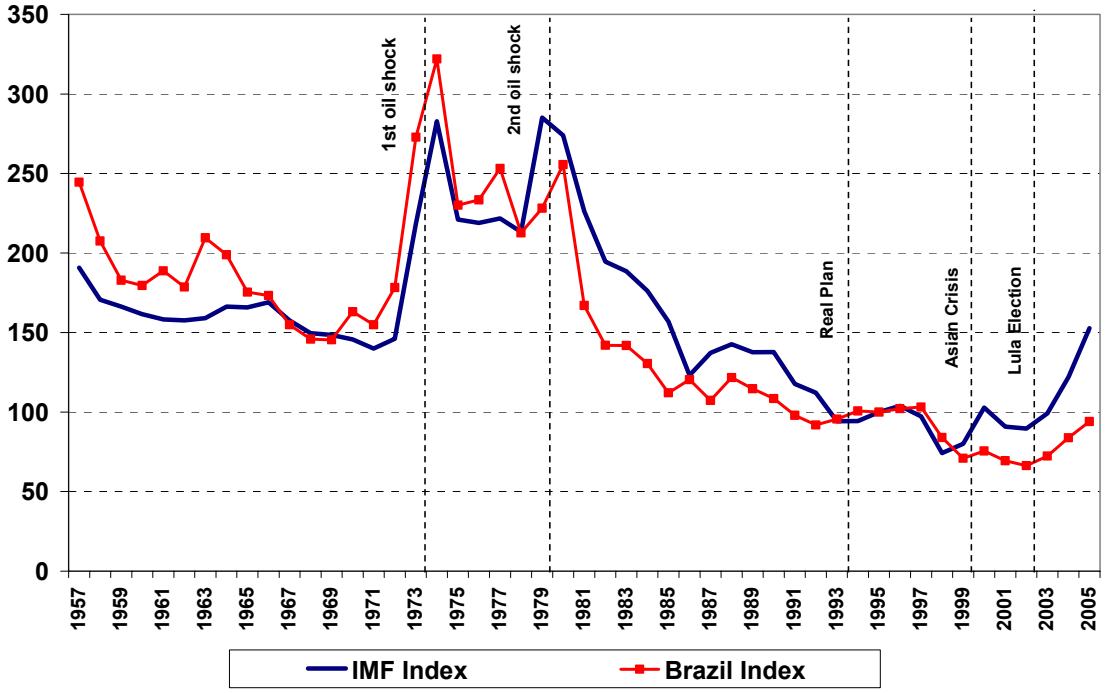
Figure 3: Commodities Prices Comparison – 1995 to 2005 (Index 1995 = 100)



Sources: FMI and NYCE. Real values of 2005, deflated by US CPI-U. Elaboration: ICONE.

[21] The international prices of chicken and beef, and coffee and sugar, recovered, respectively, in 2005 and 2006. Such increases, however, are insufficient to point out that we have been experiencing a lasting increase in prices above the historic average over the last 10 years.

Figure 4: Commodities Prices Comparison (Index 1995 = 100)



Sources: SECEX/MDIC and IMF. Real values of 2005, deflated by US CPI-U. Elaboration: ICONE.

Table 1: Price Indices of the Main Commodities Exported by Brazil (Index 1995 = 100)

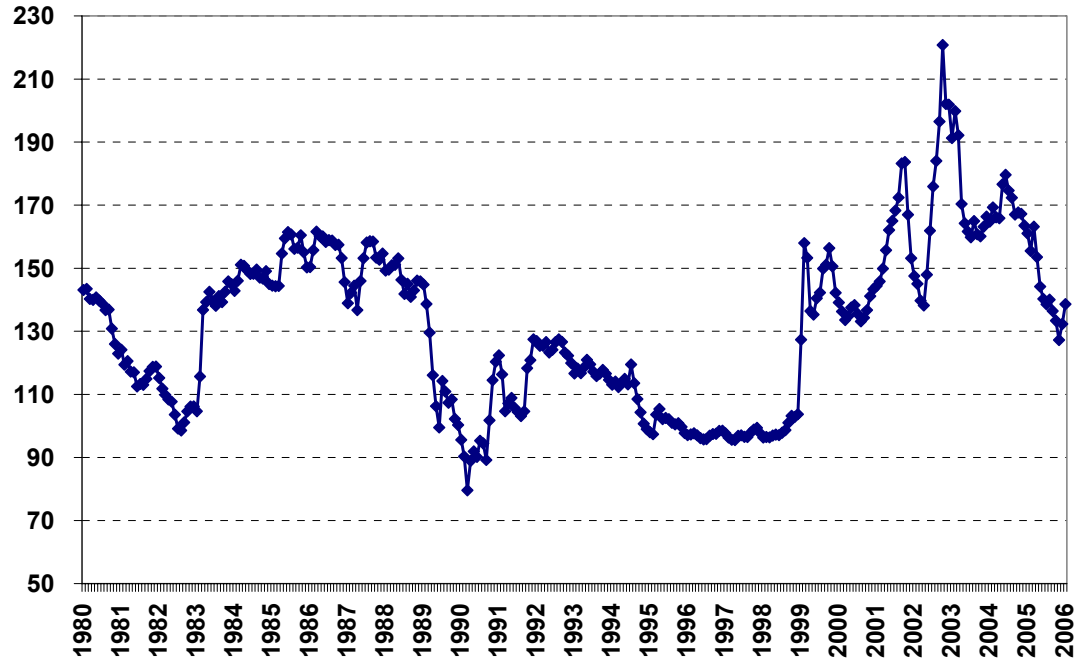
Period	Soybean meal	Soybean oil	Soybeans	Beef	Pork	Chicken (" poultry")	Sugar	Coffee	Cotton	Hides	Iron ores	Oil	Timber	Orange juice	Index of Primary Commodities Prices (IMF)	Index of Brazilian Conmodities Prices (ICONE)
1961-1965	191	178	223	197	n.d.	n.d.	168	135	147	74	286	52	n.d.	n.d.	161	190
1966-1970	184	142	201	257	n.d.	n.d.	84	122	130	68	209	45	n.d.	n.d.	154	157
1971-1975	264	221	283	273	n.d.	n.d.	344	126	168	95	186	112	n.d.	n.d.	202	232
1976-1980	236	191	254	254	n.d.	n.d.	215	285	181	121	190	257	115	n.d.	243	237
1981-1985	152	137	165	189	285	101	102	122	120	81	154	270	61	118	188	139
1986-1990	134	96	129	163	199	105	92	109	89	120	123	130	65	219	136	115
1991-1995	107	93	104	133	111	99	85	66	79	98	114	109	97	123	104	97
1996	130	90	120	91	143	109	87	79	80	96	103	115	102	102	104	102
1997	134	85	119	92	110	104	82	110	77	95	101	106	91	63	97	103
1998	82	90	93	85	68	106	63	80	62	81	102	71	77	86	74	84
1999	70	61	71	88	65	99	43	59	49	75	89	96	78	68	80	71
2000	83	53	72	90	84	95	54	52	53	81	90	145	83	56	103	76
2001	78	51	65	96	84	99	53	30	42	83	91	122	70	55	91	69
2002	78	59	71	93	64	96	40	24	40	78	88	123	64	63	90	66
2003	89	71	86	86	70	99	43	29	53	64	93	139	62	50	99	72
2004	104	81	100	106	91	110	46	37	51	61	108	177	72	41	122	84
2005 (A)	81	66	78	107	84	104	59	53	44	58	179	242	75	44	153	94
Média 1995-2005 (B)	**94**	**73**	**89**	**97**	**89**	**102**	**60**	**56**	**57**	**79**	**105**	**131**	**79**	**68**	**101**	**84**
Difference (A-B)/(B)	**-14%**	**-10%**	**-12%**	**10%**	**-6%**	**2%**	**-2%**	**-5%**	**-23%**	**-27%**	**70%**	**85%**	**-5%**	**-35%**	**51%**	**12%**

Sources: SECEX/MDIC and IMF. Real values of 2005, deflated by US CPI-U. Elaboration: ICONE.

Dutch Disease and Deindustrialization

The main element in the present debate over Dutch disease is the currency appreciation in Brazil resulting from increased U.S. dollar inflows as a result of growing commodity exports and its potential negative impact over the industrial sector. In the case of Brazil, we see an appreciation of the real exchange rate starting in 2003 (Figure 5). This movement can be attributed to a number of factors, among them the increase in the real interest rates and the net trade surpluses.

Figure 5 - Evolution of the Effective Real Exchange Rate in Brazil (Index 2000 = 100)



Sources: IPEAdata, real effective exchange rate corrected with INPC – exports. Elaboration: ICONE.

Figure 6 shows a trend in trade exports where both commodities and differentiated goods from traditional industrial sectors have experienced growing surpluses (or deficit reductions) over the past decade. Experts agree that one of the most commonly used indicators to analyze deindustrialization would be the fall in the industrial level of employment[22]. Figure 7 shows a decrease in the number of job positions in industry between 1991 and 2000, but, since then, there has been a reverse trend, with significant recovery from the second half of 2004 onwards.

Indeed, the net trade surplus has happened mainly because of growth in the world economy and gains in market share for products in which Brazil has comparative advantages. Accordingly, the phenomenon could be related to the weak performance of the Brazilian economy, given the low levels of imports and limitations of the domestic

[22] Differently from Palma (op. cit), who uses as an indicator the ratio of employed personnel with respect to the total number of workers in evaluation of the industrial employment, we consider in our analysis only the changes in the level of personnel employed in that sector.

market. Rubens Penha Cysne highlights that Brazil's total trade coefficient is low, when compared to that of main emerging markets such as China and India. This would limit the impact of international trade over the structural variables impacted in the cases of Dutch disease.

Assuming that a considerable portion of primary goods belong in the commodities category, the export boom has been followed by structural changes in the trade balance marked by growing surpluses of non-commoditized sectors since 2002. In addition, as inferred from the disaggregation by processing level, more than half the commodities encompass some sort of industrialization, which makes it harder to distinguish between primary and industrial goods in those cases. As previously mentioned in this study, based on data from the International Trade Secretariat at MDIC, non-industrial products account for only 20% of exports, a percentage that has remained virtually unchanged between 2004 and 2005.

The idea that exporting commodities is somehow not an "industrial activity" is one that warrants a certain degree of care. Even if more detailed studies showing spillover effects of the production of commodities into other areas of the economy are not available, it is not difficult to verify that exporting soybeans, meats or orange juice are far more complex activities, in technological terms, than extracting oil or exploiting iron ores from mineral deposits. In order for agricultural commodities to be exported, it is necessary to set a complex set of gears into motion, involving correlated industries and supporting services: genetic improvement, fertilizers, agrochemicals, tractors, riverboat transportation and so on. We cannot compare the nature of Brazil's present day agribusiness complex, which is highly intensive in capital and technology, with the labor-intensive model that prevailed during the cycles of sugar in Pernambuco, rubber in the Amazon, gold and diamond in Minas Gerais and coffee in São Paulo. Agriculture, as an isolated part of the economic chain, has virtually disappeared within the Brazilian context.

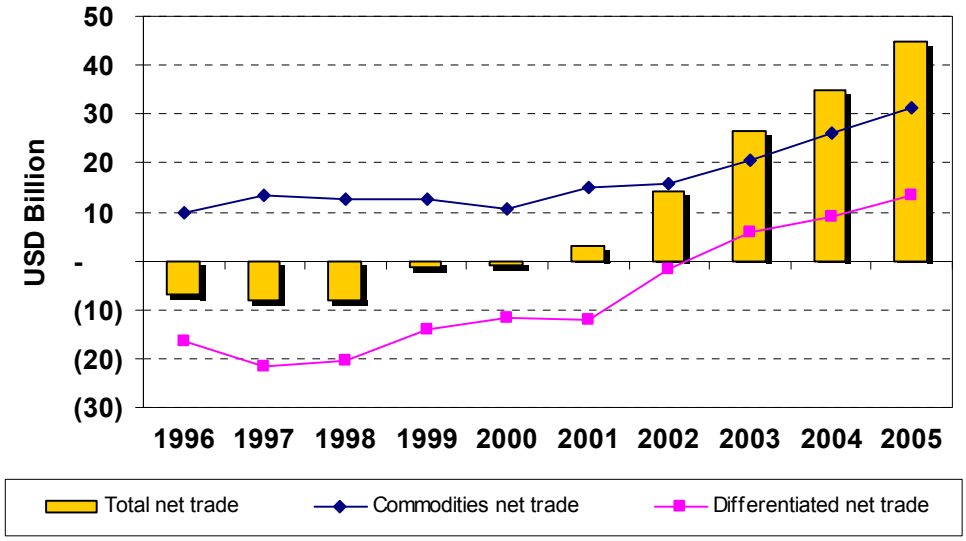
A periodic survey conducted by the Center for Research in Applied Economics of ESALQ-USP shows that the Gross Domestic Product of the agribusiness sector reached BRL 524 billion in 2004, or 31% of the national GDP. Of that total, machinery and equipment industries and the agricultural inputs sector (seeds, fertilizers, etc.) answer for 7%, the agricultural sector 30%, the food processing industry, fibers, hides and bio-energy keep 31% and distribution services end up with 32%. In other words, the industrial component of the agribusiness sector represents BRL 200 billion per year (38% of the total) and is significantly larger than the agricultural component *stricto sensu* (BRL R$160 billion). It is worth mentioning that, considering the overall figures, agriculture accounts for 35% of Brazil's jobs and 40% of exports, not to mention its contribution to the process of development of Brazil's interior. [23]

Even if there are signs of deindustrialization in the commodity exports sector, with a growing share of total exports held by basic products such as iron ore, soybeans and oil, we cannot extend that reasoning to reach the conclusion that this applies to the entire export agenda. In reality, the growing net trade surpluses of differentiated products, the recent recovery in industrial employment, and the industrial base of the agribusiness sector

[23] Maurice Costin e Marcos Jank, "Agricultura é indústria!", Jornal Valor Econômico, 10/08/2004, A-8.

suggest a trend contrary to the assumption of premature deindustrialization. Eduardo Pires de Souza, of the Brazilian National Development Bank (BNDES), states that we cannot claim the existence of a generalized deindustrialization process; but in reality, what we have seen is a process where some sectors, such as the shoe and textile industries, have lost competitiveness. And while such a phenomenon might reach some specific areas, in particular those notably more labor-intensive, we should not overextend the phenomenon to the entire industrial sector.[24]

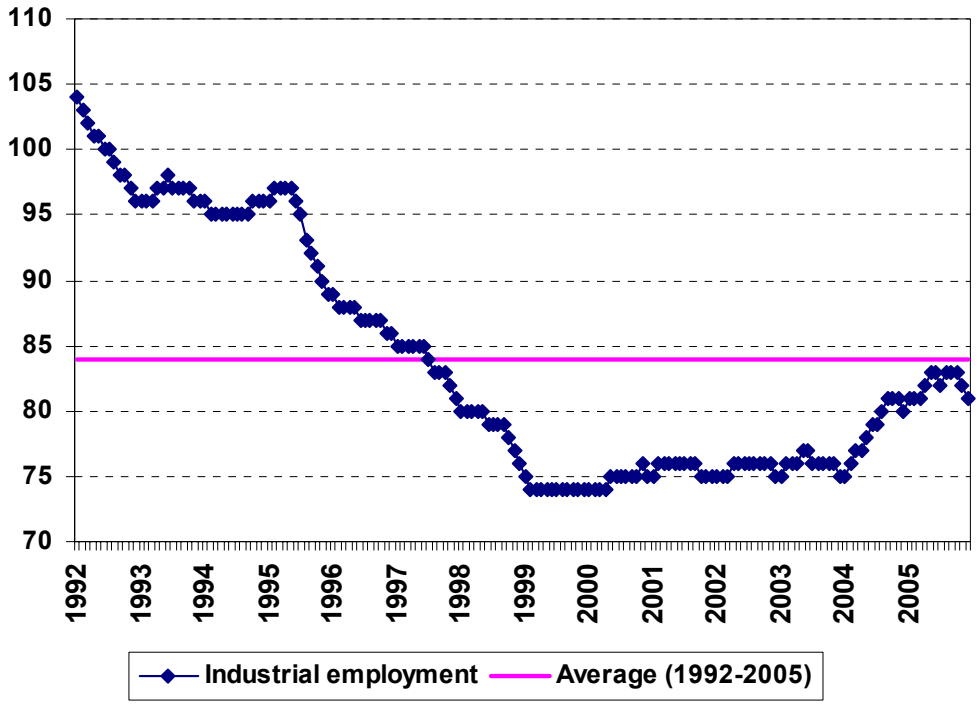
Figure 6 – Brazilian Net Trade Exports: Commodities vs Differentiated Goods



Sources: SECEX/MDIC and IMF. Real values of 2005, deflated by US CPI-U. Elaboration: ICONE.

[24] Interview to Jornal Valor Econômico de 15/2/2006.

Figure 7 – Level of Industrial Employment (Average 1992 = 100)



Source: IPEAdata, Personnel employed in the industry. Elaboration: ICONE.

IV. Conclusions

In recent years, the risk of Dutch disease has prompted heated debate among experts. Some have argued that the high international prices for commodities, caused in part by growing East Asian demand, have propped up Brazilian exports. This phenomenon is allegedly leading to a currency appreciation and provoking structural changes in Brazil's balance of payments (commoditization of exports, deindustrialization, etc).

Yet, many of the arguments mentioned above seem to have been based on impressions, instead of analytical data. The main conclusions of the present work are:

1. Brazilian commodity exports and differentiated products (non-commoditized) have grown, on average, 6.8% per annum since 1996, and more than twice that rate over the last five years. Commodities have grown slightly more (8.5% p.a.) when compared to differentiated goods (5.6% p.a.). Among differentiated goods, high and medium-high technology products such as airplanes, telecommunications equipment, and automotive vehicles have shown surprising export dynamism.

2. The share of commodities (basic and processed) in total Brazilian exports, in value terms, has grown slightly over the last decade, ranging from 30% to 40% of overall exports, increasing slightly from 2000 onwards, and stabilizing at the 39% level since the beginning of the alleged price boom, in 2002. Over the last three years, exports of nearly all product groups analyzed grew significantly. Clearly, Brazil was able to take advantage of the opportunities presented by world trade expansion, even if at a rate below its own potential, and inferior, in global terms, to levels reached by many emerging economies.

3. The impact of international commodity prices on Brazilian exports should be seen with caution. Measuring prices with indexes that attribute excessive weight to energy products is misleading and should be avoided. This is the case with the IMF´s "Index of Primary Commodities Prices", where oil represents 40% of the weight in the index, but only 2.8% of Brazilian exports. As such, this study proposes the measurement of international prices through an index that weighs the most important commodities encompassed in the basket of Brazilian exports between 1996 and 2005, emphasizing the role of agricultural products. The "Brazilian Commodities Prices Index" we have developed shows that the prices of goods in which Brazil has greater comparative advantage had less significant spikes than claimed by many experts. Commodity price increases observed in 2005 are not different from other fluctuations observed in the past (1996-97 and end of the 80s), with exception of the iron ores and oil, whose quotes in international markets have experienced significant increases. A conclusion, inferred from the absence of historical and lasting spikes in prices of commodities Brazil exports, is the need to steer clear from a proposal to tax exports by this segment, which certain specialists have recently defended.

4. This study shows that an increase in exported volumes has great impact on the growth of the export values of commodities. Such an increase results from the higher international demand in absolute terms, and/or because of gains in market share by national products. In volume terms, Brazilian exports have grown faster than the world

rate in 11 of 14 commodities surveyed. Soybeans, cotton and meats (Beef, pork and chicken) are the products that stand out in terms of sales volumes and market share gains.

5. The idea that there would be a process of deindustrialization in place is confronted with net exports surpluses of non-commoditized goods since 2002, the recovery of industrial employment since mid 2004, and the unencumbered idea that producing commodities would not be an "industrial activity". Behind Brazilian commodities exports there is a network of industries covering inputs, machinery and processing, as well as a range of supporting services.

V. Reflections for the Future

In closing, we would like to submit a few thoughts on the perspectives of the external sector of the Brazilian economy, pointing out certain paths that might be followed while defining public policies. These reflections obviously demand new empirical studies like, for instance, the important definition of the correct level of the exchange rate suitable for the maintenance of the continuing export-driven efforts of the 2001-2005 period.

a) The first five years of the 21st Century have been characterized by a set of outstanding favorable conditions for foreign capital attraction. The following vectors explain this phenomenon: a) absurdly high interest rates in the domestic market; b) extraordinary international liquidity resulting from investors looking for portfolio diversification opportunities; c) high credibility and a significant drop in Brazil's country risk assessment, because of sound macroeconomic management; d) relatively undervalued exchange rate, especially between 2002 and the beginning of 2005; e) strong world economic growth; f) low growth of domestic demand, which led many enterprises to look for opportunities abroad; g) growth in quantitative demand for imports originating from Brazil, while some key competitors experienced crises of supply and/or where the country has sharp comparative advantage.

b) This set of commercial and financial vectors produced an excessive appreciation of the real exchange rate in the second half of 2005. We are again in a period of transition with signs of competitiveness losses by enterprises, cuts in investments, and even a shift of production to other countries. The recent news in this direction unfortunately reminds us of the negative impact of a number of overvaluation experiences that took place in the past. Eliana Cardoso summarizes the current perception: a moderate appreciation was desirable for an economy where one might want to bring down the inflation, increase foreign reserves and reduce the dollar denominated public debt; but an overappreciation, resulting from the misleading mix of the Lula administration's macroeconomic policies, ended up turning into an enormous waste and an imbalance that may get worse. [25] She concludes that "the only way to get rid of the overvaluation is to combine constraints to government spending with cuts in the Selic[26] interest rate." We

[25] Eliana Cardoso, "Câmbio de Beato", Jornal Valor Econômico, 2/2/2006, A-2.
[26] The equivalent, in Brazil, to the US Fed funds rate.

therefore hope that such cuts will help to correct the exchange rate, that the adjustment will happen gradually and contribute to avoid a future collapse." [27] It is imperative to have a clear idea about the risks of "future collapse", as there is always a delay between the period of change in the real exchange rate (known in the finance literature as "leads and lags") and the moment of its effective impact. In other words, relevant changes in the real exchange rate take time to reverberate on trade flows. It is worth recalling that the effects of the 1999 devaluation only became clearly visible in net exports results in 2002, as it took economic agents time to effectively conquer space in world markets. Currently, figures for foreign trade still do not show the impact of the currency appreciation, but there is a common feeling among the business community that, as the exchange rate leans toward the BRL 2.00 per dollar level, or perhaps even below that, profit margins shrink. There is no time to lose, if we do not want to compromise our future.

c) In the case of commodities exported by Brazil, if new international price levels were to be introduced – higher and longer lasting, it might be plausible that commodity exporters could withstand an appreciation of the real exchange rate that would end up producing a natural selection process among them, at the expense of other export sectors. Since this price increase does not exist (except for iron ores and oil, which account for only 8% of total exports), an appreciation of the real exchange rate should hurt all exporters in varying degrees. The increase in export volumes was only possible because the exchange rate allowed for good profitability of exports between 2001 and 2005. Given that commodities producers are price-takers, if the exchange rate appreciation results in negative profit margins, exporters will not benefit from the high volume demands for imports in the international markets. In this particular, commodities are no different from other export sectors.

d) In order to avoid a loss of competitiveness and investment shrinkage as a result of excessive appreciation of the currency, the following policies are recommended:

- Cutting government expenditures, and thus reducing the Selic interest rate, while providing fewer incentives for speculative capital inflows that provoke the overappreciation of the Brazilian real. It must be clear that the root of the problems is in the fiscal area, the main issue that has kept Brazil away from the fastest growing emerging markets over the last decade. The broad agenda of public policy reforms involves bringing balance to the social security, taxation and labor regulation issues, microeconomic reforms promoting reduction of transaction costs for business, reduction of insecurity in the legal system and corrections in numerous incomplete sequels of the 1988 Constitutional Reform. Everyone knows that the process leading to reforms is time consuming, and that we do not aways have the time that it takes; therefore the adjustments should start immediately and simultaneously, on both the fiscal and monetary fronts;

[27] Eliana Cardoso, "As Conseqüências do Futuro", Jornal Valor Economico,

- The reduction in real interest rates would ensure a significant part of the isonomic competitiveness demanded by Brazilian entrepreneurs. This would help move the country closer to expanding its commitment with additional liberalization of the Brazilian economy, a crucial element for the modernization and improvement of competitiveness for Brazil's industry. Trade barriers to imports of intermediate goods slow down export competitiveness and are anachronic in the current global trade context. The future competitiveness of Brazil's industry is directly linked to incentives for imports of capital goods and other intermediate inputs (equipments and technology), which accounted for more than 70% of Brazilian imports in 2005, totalling USD 73.5 billion. International negotiations currently under way are prime opportunities for "negotiated trade liberalizations," especially within the framework of the WTO's Doha Round. We must overcome the old import substitution mindset and realize that the main benefits from increased exports for a nation are not in generating high net trade figures and current account surpluses, but in the increase in imports directly linked to the efficiency of the entrepreneurial sector. [28] This is one of the main lessons we should learn from the recent experience of East Asian countries, characterized by strong growth of total trade (exports plus imports) and not so much by high trade surpluses. East Asian trade dynamics are thoroughly built upon a model of permanent export promotion based on a mix of appropriate pro-competitiveness public policies, whose key component is, ultimately, the rejection of import substitution policies.

São Paulo, March 6th, 2006.

[28] See Pastore e Pinotti. op. cit.

Annex 1 - Set of Commodities that constitute the IMF index

Energy (100%)			Coal (7.2%)	
			Natural gas (9.3%)	
			Crude oil (83.5%)	
Non-fuels (100%)	Fuels (47.4%)	Edibles (41.5%)	Sugar (3.6%)	
			Bananas (1.1%)	
			Meats (7.0%)	Beef (2.7%)
				Lamb (0.5%)
				Pork (1.9%)
				Poultry (1.8%)
			Cereals (11.6%)	Rice (2.2%)
				Barley (0.7%)
				Maize (3.0%)
				Wheat (5.4%)
			Oranges (1.0%)	
			Oilseeds (9.9%)	Groundnuts (0.5%)
				Palm oil (1.5%)
				Olive oil (0.4%)
				Soybean meal (2.1%)
				Soybeans (2.8%)
				Coconut oil (0.3%)
				Sunflower oil (0.6%)
				Soybean oil (1.0%)
			Fish and shrimp (7.3%)	Shrimp (2.3%)
				Fish (5.0%)
		Beverages (5.9%)	Cocoa beans (1.3%)	
			Coffee (3.9%)	
			Tea (0.7%)	
	Industrial inputs (52.6%)	Agricultural raw material (21.6%)	Cotton (2.1%)	
			Rubber (2.1%)	
			Wool (2.0%)	
			Timber (9.7%)	
		Metals (31.0%)	Aluminum (11.5%)	
			Lead (0.5%)	
			Copper (9.8%)	
			Tin (0.5%)	
			Iron ores (3.4%)	
			Nickel (2.3%)	
			Uranium (1.3%)	
			Zinc (1.8%)	

Note: Non-fuel and energy correspond, respectively, to 52.2% e 47.8% of the IMF´s Index of Primary Commodity Prices.

Annex 2 - Methodology of calculus of the "Brazilian Commodities Price Index" (BCPI)

For the BCPI calculation we used the set of the main commodities Brazil exports, given the share of each product for 1996-2005. The methodology is derived from calculation of the IMF´s Index of Primary Commodities Prices) [29]:

$$BCPI = \frac{\sum_{i=1}^{n} s_i \cdot P_i}{\sum_{i=1}^{n} s_i},$$

Where s_i = share of commodity "i"in total exports and P_i = index of price of commodity "I" according to IMF´s IPCP. [30]

For the calculation of the BCPI, the following weights and products were considered:

Brazil Weight 1996-2005 ("s_i")	**3.5%**	**1.3%**	**4.6%**	**1.8%**	**0.6%**	**2.2%**	**3.3%**	**3.2%**	**0.3%**	**1.7%**	**1.4%**	**2.7%**	**5.5%**	**2.8%**
Product	Soybean meal	Soybean oil	Soybeans	Beef	Pork	Chicken	Sugar	Coffee	Cotton	Orange juice	Hides	Timber	Iron ores	Crude oil

[29] The difference, in the case of Brazilian goods, is that the "share" takes into consideation Brazil´s total exports as a reference, whereas IMF´s index take into consideration the position of every product in the bulk of the world exports of the commodities.

[30] Except for orange juice, whose index was calculated by the authors, for the period between July 1984 and October 2005.

Annex 3 - Brazilian Exports of Industrial Sectors by Technological Intensity (USD Million. FOB)

Sectors	2005		
	Value		Part. %
TOTAL	**118,308**		**100,0**
		Part. %	
Industrial products (*)	**94,016**	**100.0**	**79.5**
High and medium-high technology industry (I+II)	**37,669**	**40.1**	**31.8**
High-technology industry (I)	**8,757**	**9.3**	**7.4**
Aeronautics and aerospace	3,699	3.9	3.1
Pharmaceuticals	725	0.8	0.6
Office equipments and computers	478	0.5	0.4
Radio,TV, and telecommunications	3,332	3.5	2.8
Precision instruments	523	0.6	0.4
Medium-high technology industry (II)	**28,912**	**30.8**	**24.4**
Electrical equipments and machines	1,953	2.1	1.7
Automotive vehicles	12,992	13.8	11.0
Chemical products (exc. pharmaceuticals)	5,984	6.4	5.1
Transport equipments	560	0.6	0.5
Mechanical equipments and machines	7,424	7.9	6.3
Medium-low technology industry (III)	**22,741**	**24.2**	**19.2**
Shipbuilding	194	0.2	0.2
Rubber and plastic products	1,709	1.8	1.4
Coal, products of refined oil, and nuclear fuel	4,914	5.2	4.2
Other non-metallic mineral products	1,775	1.9	1.5
Metallic products	14,149	15.0	12.0
Low technology industry (IV)	**33,606**	**35.7**	**28.4**
Manufactured products and recycled goods	1,516	1.6	1.3
Timber and its products. paper and cellulose	6,503	6.9	5.5
Food, beverages, tobacco	20,492	21.8	17.3
Textiles, hides, and shoes	5,095	5.4	4.3
Non-industrial products	**24,292**		**20.5**

Note: The commodities are encompassed both in industrial (processed commodities) and non-industrial (basic commodities) categories. Source: SECEX/MDIC.

For more details. we suggest consulting:
http://www.desenvolvimento.gov.br/arquivo/ascom/imprensa/20052511ExporIntenTecno.xls (acessado em 17/2/2006)