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The Brazilian Competitiveness Cliff

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Brazilian exports of goods and services have grown sharply in recent years, with sales nearly three times higher in 2010 than in 2000. However, Brazil faces considerable competitiveness challenges: its export performance depends mostly on favorable geographical and sector composition effects. Such challenges increased after the recent global economic crisis. A recent slowdown in industrial exports, production, and investments seems related to supply-side difficulties stemming from a wide range of inefficiencies and rising costs, rather than insufficient demand. Although a stronger currency is one of the factors behind the lower competitiveness of Brazil's manufacturing exports, sluggish productivity performance, lack of dynamism at the firm level, and a real wage uptrend seem to explain a significant part of the overall loss of competitiveness. This diagnostic reinforces the urgency of resuming the agenda of microeconomic reforms, increasing the investment-to-gross domestic product (GDP) ratio, and advancing toward better-skilled human capital.

It is widely recognized that the Brazilian economy is facing considerable competitiveness challenges.¹ After several years of strong expansion, the recent slowdown seems related to supply-side difficulties stemming from a wide range of inefficiencies and rising costs, rather than insufficient aggregate demand. Such inefficiencies and costs have increasingly burdened economic activity and have shown signs of worsening in recent years.

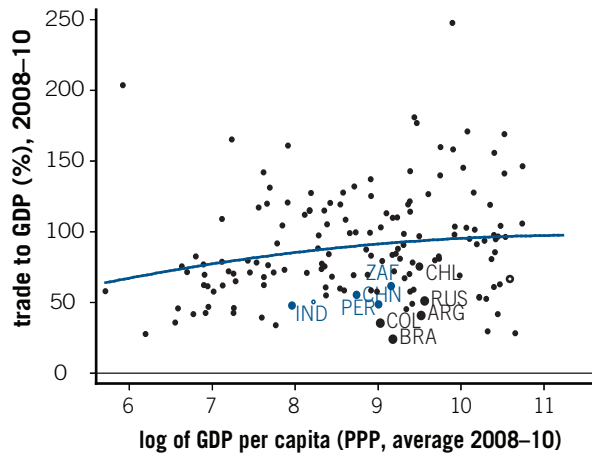
This note examines Brazilian export performance over the last 15 years, focusing not only on growth and composition, but also on different performance dimensions, including diversification, sophistication, and firm dynamics. This analysis (Reis and Farole 2012) uses international comparisons to better situate the Brazilian performance and explores different databases, including firm-level data recently published by the World Bank. The objective is to generate hypotheses to identify factors that have been inhibiting exports and industrial production expansion.

Export Performance: 1998–2011

The aggregate performance of Brazilian foreign trade has been favorable in the last decade. In the wake of strong global economic growth, expansion of international trade and favorable commodity prices, Brazilian exports of goods and services grew 262 percent between 2000 and 2010, almost twice the global average. However, this performance is less stellar when compared with other emerging countries. In fact, Brazilian export expansion was significantly below the 439 percent growth in the other BRICS countries (Brazil, the Russian Federation, India, China, and South Africa).

Trade openness in Brazil, considering the level of per capita income, is among the lowest in the world. Larger economies do tend to be more dependent on their domestic markets, and thus it should not be a surprise to see Brazil below the predicted level in figure 1. Still, when compared to other BRICS, the level of trade integration remains below the ex-

Figure 1. Trade to GDP (%)



Source: World Bank World Development Indicators.

pected line, with no recent signs of improvement. Over the past decade, trade flow (exports plus imports) to GDP in Brazil rose from 20.2 percent in 2000 to 22.8 percent in 2010, after peaking in 2005 at 29 percent.

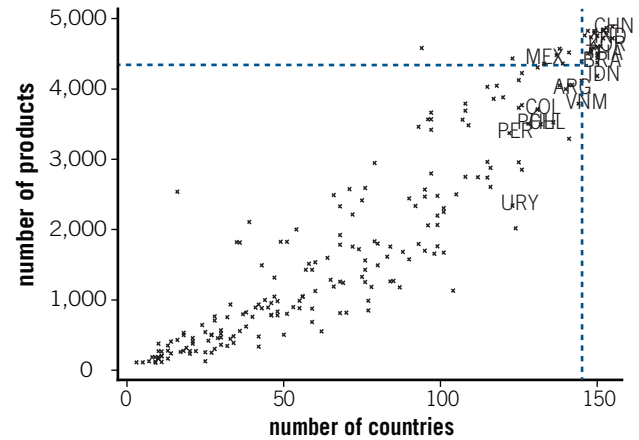
The economic benefits of greater engagement in international trade have a long-established theoretical basis—gains to trade are as much derived from imports as from exports. Increased exports bring both static efficiency gains derived from the exploitation of comparative advantages and dynamic gains in the export sector, given productivity gains generated by increased competition, economies of scale, better capacity utilization, knowledge dissemination, and uptake of technological progress. Therefore, pursuing greater global integration of the Brazilian economy remains a challenge that, if overcome, should provide significant benefits in the medium and long terms.

Diversification of Exports

The recent global economic crisis has highlighted the importance of diversification (products, markets, and firms) in reducing risks associated with growth volatility. On the other hand, recently intensified globalization has contributed to a resurgence of specialization in diverse economies. Although predicted by trade theory, the degree of vertical specialization, which emerged from increasing fragmentation of trade in global supply chains, has surprised many with its intensity. Consequently, economic diversification is now a high priority on the policy agenda for most developing countries.

Brazil is a global trader, endowed with a wide range of natural resources along with a well-diversified industrial structure. This translates into an impressive level of export diversification, not only in terms of number of destinations, but also of products. When compared with other countries (figure 2), the Brazilian economy has been able to sell a large number of products in many markets. This suggests there is considerable potential to be realized in terms of export

Figure 2. Products and Markets (2008–10)



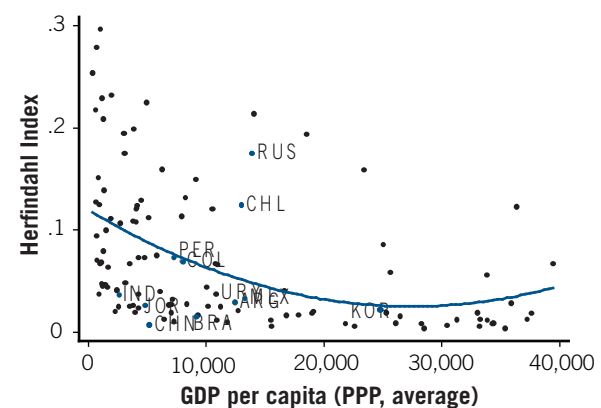
Source: World Integrated Trade Solution.

growth, since the initial fixed costs to start new markets have been largely overcome (Melitz 2003).

Canuto, Cavallari, and Reis (2013) calculated the Herfindahl Index for a group of countries—the lower the index, the less concentrated the export basket, the greater the level of diversification. In terms of markets, the index showed a reduction in the degree of concentration. Most of the included countries were able to increase diversification to access different markets. China's performance stands out because of the significant number of new destinations.

In terms of products, the picture is not so favorable. As in many countries, Brazilian exports showed increased concentration for products in recent years; commodity products gained significant relevance. Other commodity exporters, such as Chile and Russia, performed similarly, with nonnegligible increases in the degree of concentration. China experienced a slight deterioration, but from a low level of concentration. Nevertheless, as shown in figure 3, despite some worsening in recent years, Brazil still shows low levels of concentration when considering the level of GDP per capita.

Figure 3. Herfindahl Index and GDP per Capita (2008–10)



Source: World Development Indicators.

Given the recent trend toward more concentration, a key question concerns how Brazil is dealing with international competition. Canuto, Cavallari, and Reis (2013) showed that of the top 20 products exported between 2006 and 2011, Brazil is losing international market share in only 2 of them (oil exclusive crude and automobiles)—a very positive result, which reflects the strong competitiveness of Brazil's commodity products.

In parallel, Brazil increased its participation in 11 major markets, representing 58.7 percent of the total, with exception of the United States, Chile, and Argentina. Thus, it can be argued that Brazil gained presence in most markets, as well as in more relevant products. Interestingly, Brazil's export growth to China more than doubled that of other countries' expansion in the recent period 2006–11. This performance has a direct connection with the increasing Chinese demand for commodities.

A cross-country gravity model can be used to evaluate Brazil's pairwise export relationships with its trading partners. The model uses bilateral export values between 2005 and 2010.² Based on a theory-grounded model, this exercise allows pairwise comparison of export relationships with the predicted value from the gravity equation. Figure 4 shows all bilateral trade relationships in the data set of 181 countries (light grey dots). Brazil's bilateral exports are colored in blue, and key trading partners are labeled according to their three-digit ISO (International Organization for Standardization) code in red.

If an observation is above (below) the 45 degree line, the observed export relationship in the period is more (less) than what the gravity model predicts and the exporter is said to be overtrading (undertrading) with its trading partner. Controlling for size of trading partners, trade frictions, sample selection and firm heterogeneity, this analysis suggests that the country is trading above the predicted level with China and Russia. Interestingly, although the gap between actual and

predicted exports with Russia is shrinking over time, the gap with China seems to have increased lately. On the other hand, Brazil trades less than what the model predicts with the United States, with actual exports lagging predicted exports by about 5 percent over most of this period.

Sophistication and Technological Content of Exports

A widely discussed issue in recent literature is whether what a country produces and exports has relevance for economic development. Rodrik (2007) and Hausman, Hwang, and Rodrik (2007) are among those who argue that certain sectors generate greater opportunities for growth due to increased potential for vertical upgrade within the sector/product and from benefits associated with knowledge spillovers.

Using Lall classification to assess the technological content of the Brazilian exports, there is a clear reduction in the share of high-technology products in recent years. At the same time, primary and resources-based products gained significant importance between 2000 and 2010. The share of the latter increased from 45.7 percent in 2000 to 62.9 percent 10 years later. On the other hand, the share of high-technology products decreased from 10.4 to 5 percent in the same period. Low-technology product exports also declined in shares, moving from 13.4 to 9.9 percent between 2000 and 2010.

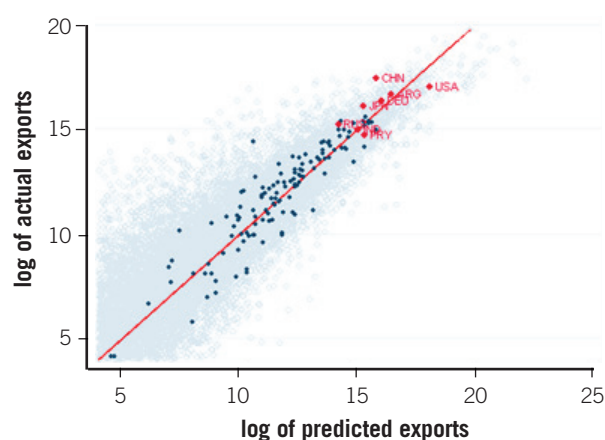
The decrease in the share of high-technology product exports could be the result of the excellent performance of commodity products in Brazil. However, this does not seem to be the case: when focusing only on the performance of high-technology international sales, there is only very modest growth. Between 2000 and 2010, Brazilian high-technology product exports expanded by 36 percent, a much lower growth rate than one of the groups linked to natural capital endowments. If this performance is compared with other BRICS, Brazil is among the weakest, along with Russia. In the same 10 years, China and India increased exports of those products by 873 and 389 percent, respectively.

The EXPY index (Hausman, Hwang, and Rodrik 2007) can also be used to evaluate the export sophistication. This measure considers the income level of the countries that produce any particular good to estimate the sophistication of that specific product. Brazil showed no gains in sophistication in recent past, as seen in figure 5. The same behavior can be observed in other Latin American countries.

Firm-Level Dynamics of Exports

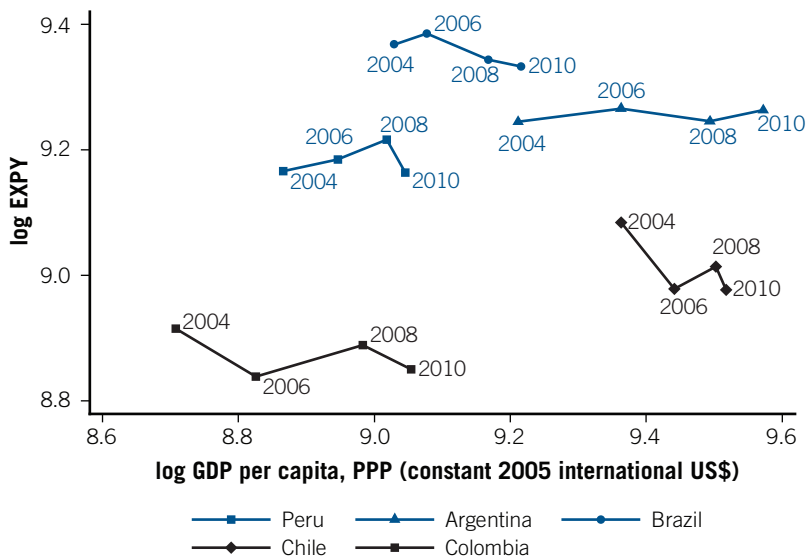
The recent public availability of World Bank microdata—from the Exporter Dynamics Database—allows an evaluation of additional dimensions of export performance, that is, the entry, exit, and survival dynamics of firms in global markets.

Figure 4. Gravity Model: Actual versus Predicted Exports, 2010



Source: Authors' calculation.

Figure 5. Brazil and Latin America (2004–10): EXPY Index



Source: Authors' calculation.

Note: The choice of countries in this case is limited by availability of information in the World Bank database.

Export survival sustainability—first addressed by the seminal work of Besedes and Prusa (2006)—is a key dimension to understanding export performance, and has become an important factor for policy makers to consider when designing policy to promote exports.

The survival rate of exporters in Brazil stood at very high levels during 2003–9 (figure 6), only lower than levels observed in Turkey. While this result can be considered positive,

it reflects a small and decreasing entry rate of firms into foreign trade. The entry rate of exporters was already low in Brazil, and dropped further to 22 percent, much lower than the values observed in countries chosen for comparison (around 35 percent).³

Several studies, such as Clerides, Lach, and Tybout (1998) for Colombia, Mexico and Morocco, or Bernard and Jensen (1999) for the United States, present convincing evidence that new exporters are on average more efficient than non-exporters. Low and decreasing entry rates can be associated with low productivity at the firm level and/or high costs to export. In any case, this is a point that requires more detailed diagnosis to guide policy actions.

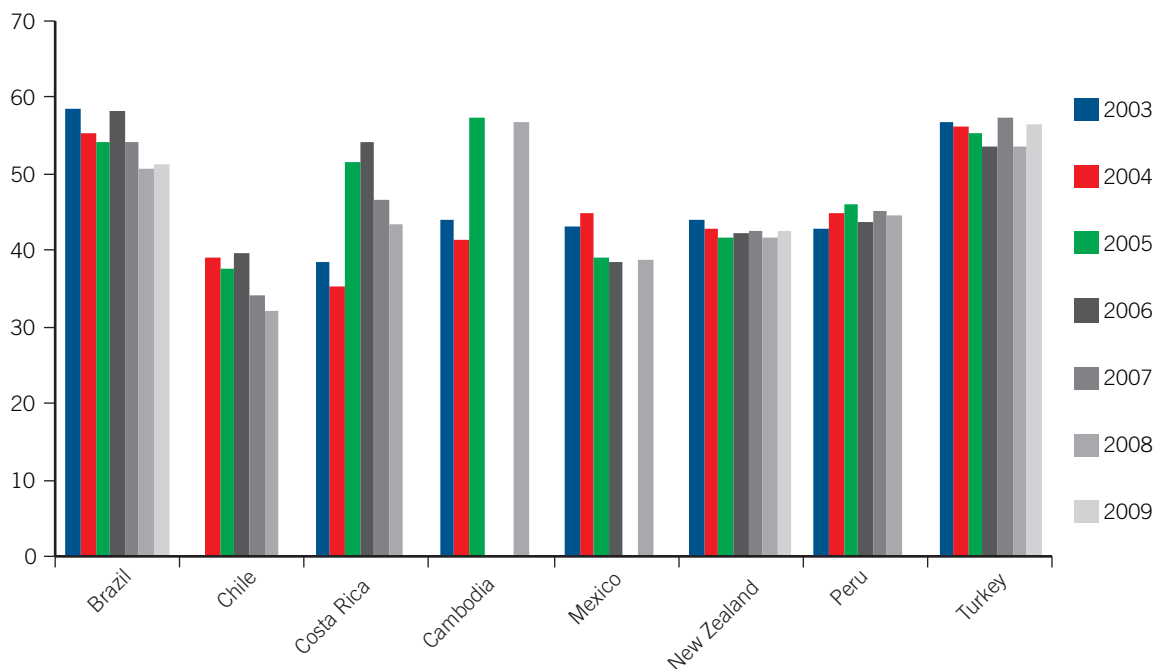
Lack of integration into global value chains may explain the low levels of dynamism in the export sector. The emergence of global production networks has changed the world trade landscape, and this has been a driving force behind emergent trade powerhouses, many of them located in Asia.

Results of Comparative Analysis of Brazilian Exports

Composition effects on export growth

To argue that a country is more competitive in foreign trade than other countries just because of their better export performance is obviously too simplistic. Even using relative per-

Figure 6. Exporter Survival Rate (one year, 2003–9)



Source: Export Dynamics Database; authors' calculation.

formance in terms of market participation can lead to misinterpretations. First, export growth can be associated with the existence of composition effects (pull) and also performance effects (push). Two countries may have equally competitive exporters, but export performances can be different in the short and medium terms due to different composition of exports in terms of geographical and sector composition of export baskets.

To better analyze this issue, export growth was decomposed using a methodology developed by the International Trade Department of the World Bank (Gaulier, Taglioni, and Zignago 2012). Canuto, Cavallari, and Reis (2013) compared the results from Brazil with the other BRICS, the MIST group (Mexico, Indonesia, the Republic of Korea, and Turkey), and with the United States, the European Union, and Japan for the period 2005–11, as well as for the postcrisis subperiod, 2009–11.

The main findings of the analysis were:

- (i) Between 2005 and 2011, the average annual growth of Brazilian exports reached almost 15 percent, with its world market share rising by 5.6 percentage points. This increase in market share is the second highest among the countries selected for comparison, equivalent to India and below only the performance of China.
- (ii) The composition effect is important to explain Brazilian export performance between 2005 and 2011. The sum of geographical and sector effects in Brazil (3.3 percent) is the second highest, lower only than the impact observed in Russia, where a sector composition effect (petroleum) is extremely high.
- (iii) For the same period, the geographical composition effect predominated in the Brazilian case, which has to do with the fast growth of the Chinese economy—and explains why only Korea has a geographical effect more intense than Brazil's.
- (iv) Excluding the composition effects, the growth in the share of Brazilian exports associated more directly with competitiveness is reduced to 1.8 percent on average per year—still significant, but less than China, India, Mexico, and Turkey.
- (v) Finally, excluding the composition effects, the growth of Brazilian exports after the global financial crisis that can be linked to competitiveness was only 1.1 percent, the lowest among developing countries, including Turkey, which faced strong negative composition effects in that period.

These results suggest that, despite the recent aggregate good performance, Brazilian exports were mostly benefiting from geographical and sector composition effects. Excluding these favorable environment effects, the “pure” export performance is still positive, but of much lower intensity, and smaller than some of its major emerging market competitors.

Export and import penetration

Leading up to the global financial crisis, the export share of Brazilian industrial production was on an upward trend. In 2000, the export coefficient marked 12.3 percent, reaching a peak in 2006 at 20.4 percent, and dropping to 17.5 percent in 2010.

A first possible explanation for this performance could be that Brazil lost international competitiveness in recent years, a result of a supply-side inability to deliver. A second possible reason is the impact of the lack of dynamism in the global economy, which could have reduced demand for Brazilian products. The gains from diversification into new markets could have been a reflection of lower growth in developed countries. But, since the model estimated off the composition effects, “pure competitive” growth disappointed. Third, strong internal demand could have been absorbing part of the production exported in the past. However, the share of apparent consumption had been progressively met by imports, while industrial production showed poor performance. In fact, the penetration coefficient (share of imports on apparent consumption) rose significantly, from 13.4 to 20.3 percent between 2000 and 2010.

Elements Potentially Associated with Low Competitiveness

Low productivity gains

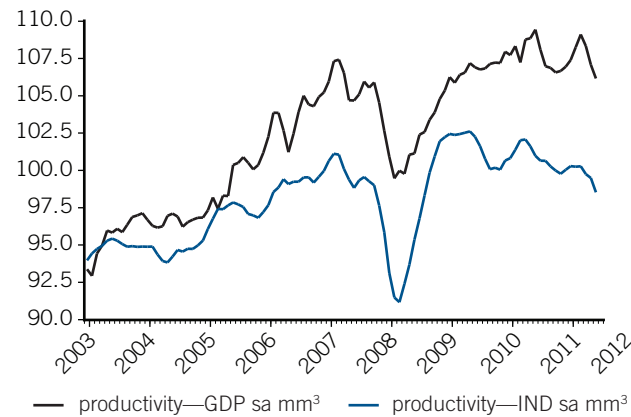
Low productivity gains in recent years have become a central issue for the low trade competitiveness of the Brazilian economy. Contrary to the pattern observed in the past, labor productivity in the industrial sector lagged behind overall economic productivity in recent years (figure 7). Additionally, overall labor productivity recently showed signs of stabilization, generating serious concerns. Improvements in the efficiency of service sectors are vital to improving the productivity of all other economic sectors.

Terms of trade and employment level

Wealth effects resulting from favorable terms of trade are among the main driving factors of Brazil's recent economic growth. The gain in terms of trade has been approximately 40 percent since 2004 and helps explain the strong dynamism in domestic consumption, along with the demographic bonus and the emergence of a new middle class stimulated by social inclusion policies.

The terms-of-trade impacts differ between tradable and nontradable sectors. Foreign competition restricts the ability of local industry to pass through increasing costs, even in an environment of strong internal demand. Conversely, because service sectors can set prices much more easily, its power to dispute production factors internally is higher. This issue is especially important as the economy approaches full employment (Corden and Neary 1982).

Figure 7. Industry and GDP: Evolution of Labor Productivity

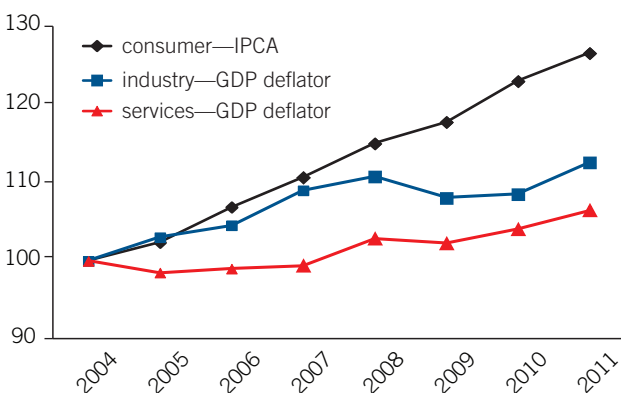


Source: National Industry Confederation; Central Bank of Brazil; authors' calculation.

One way to examine these effects is through the lens of different wage gains by consumers and producers. Accordingly, the analysis deflated nominal wages not only by the index of consumer prices (IPCA), but also by the GDP deflator for the specific sector (figure 8). On one hand, gains realized by consumers can be gauged by deflating wages by the IPCA. Clearly, the latter benefited from higher terms of trade. On the other hand, producers may take partial advantage of better prices and pay higher wages, alleviating some of cost pressures. Demand for labor can still be argued as greater than in the absence of this external shock, as the economy moves toward full employment.

For example, service sectors benefit from stronger domestic demand and can accommodate larger wage increases. From 2004 to 2011, real wage gains perceived by consumers were about four times stronger than as perceived by service sector suppliers. Thus, this sector could expand its employment above what would have been the case in the absence of the wealth shock, which helps to explain the strong momentum in employment generation and in domestic demand.

Figure 8. Real Average Wages



Source: Instituto Brasileiro de Geografia e Estatística (IBGE); authors' calculation.

The same kind of dynamic was noted on the side of industry, although a much less significant one. Because some companies are linked to commodity sectors, such as the mining industry, a few benefited from better terms of trade. However, international competition through increased imports constrained the overall industry from benefitting in the same way from wealth effects. Thus, cost pressures coming from the dispute for production factors, although spreading on all sectors, revealed to be much more intense in non-commodity-related industrial sectors.

Unit labor costs

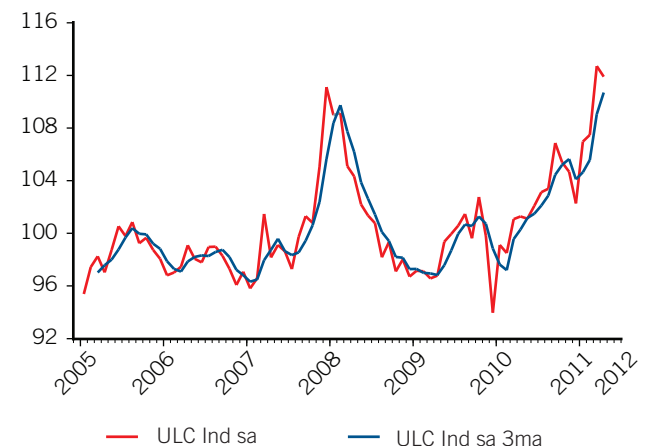
Increases in average real wages, concurrent to stagnant or falling labor productivity, have negatively affected Brazil's export competitiveness. Pastore, Gazzano, and Pinotti (2012) argued that, since 2010, higher unit labor costs represent a major source of momentum loss in industry growth. As presented earlier, both trends have been observed in Brazil after its fast recovery from the most recent global crisis.

However, this effect was not observed before 2010, excluding the recessionary period, and can be characterized as an *additional* negative shock to export performance in recent years (figure 9). As noted earlier, higher real wages from an industrial perspective were milder than those shown in figure 8, given improving terms of trade. Nonetheless, although better terms of trade mitigated the impact of higher unit labor costs, analysis shows that it alleviated this uptrend only by about one-fourth after 2010. Putting it differently, a significant increase in unit labor costs does indeed partially explain the loss in industrial competitiveness, but only for the more recent period.

Exchange rates

Many economists have highlighted exchange rate appreciation as a major factor explaining the recently disappointing export and industrial performances in Brazil. The general trend of appreciation is evident, considering the levels

Figure 9. Unit Labor Cost in Industry Sector



Source: National Industry Confederation; authors' calculation.

achieved earlier in the decade. Actually, given the significant gain in terms of trade, strengthening of the real exchange rate should be expected.

In fact, the real effective exchange rate index appreciation is certainly not negligible. Taking the average of the 2000/2001 biennium as the base, the average level throughout 2010 reached 70. Similarly, the dollar-denominated unit labor cost level reached 202 in 2010. Thus, although exchange rate appreciation seems to be one of the elements of the low competitiveness of Brazilian exports, sluggish industrial sector productivity performance and higher real wages seem to be more responsible for the current situation (Bonelli and Pinheiro 2012).

Business environment and logistics costs

The economic environment has not helped Brazil face stronger competition in global markets. The World Bank Doing Business survey evaluates various countries across diverse categories. Among the 183 countries assessed, Brazil is in the bottom half in the overall ranking. Among the 10 categories analyzed by this survey, Brazil fares relatively better in only 2 categories: obtaining electricity (51st) and protecting investors (79th). Among BRICS, the major highlight is South Africa, which features in the top half in 8 out of 10 categories, including first in obtaining credit and 10th in protecting investors.

The World Bank also compiles the Logistics Performance Index (LPI) to help policy makers and the private sector jointly identify the main challenges to entering into the global supply chain. The LPI measures on-the-ground trade logistics, factoring in: (i) border control efficiency; (ii) quality of trade and transport infrastructure; (iii) international shipment competitiveness; (iv) quality of logistics services and ability to track consignments; and (v) timeliness of deliveries. Each score was averaged to compose one index, which was used to rank 155 countries in 2007, 2010, and 2012.

Regarding the LPI, Brazil climbed 20 positions to 41st from 2007 to 2010, but lost ground to 45th in 2012. Improvements came from all pillars in the 2007–12 period, but mainly from better tracking and trace capacity. In the last two years, Brazil's position deteriorated significantly in timeliness of shipments and logistics services, and slightly in quality of trade and transport-related infrastructure. Among the BRICS, Brazil is behind South Africa (23rd) and China (26th) in all categories, just ahead of India (46th), but clearly in front of Russia (95th). Brazil holds the fourth position in BRICS in three pillars: customs, logistics competencies, and timeliness. Moreover, Brazil is 9th in the top 10 upper-middle-income countries, moving three positions down compared to 2010. The LPI results highlight that the weakest link to participation in the global supply chain for Brazil comes from low speed, lack of simplicity and low predictability of

border control agencies, resulting in a mediocre overall ranking for customs (78th).

Conclusions

Brazilian exports of goods and services have grown sharply in recent years, with sales nearly three times higher in 2010 than in 2000. When compared to other countries, the Brazilian economy shows remarkable diversification, as it is able to put many different products into several markets. This suggests considerable potential to expand foreign sales, because sunk costs to reach these markets have been paid.

Despite such a recent positive performance, there are major concerns with Brazil's foreign trade, as revealed by some of the indicators presented in this note and summarized here:

- The survival rate for exporters was at fairly high levels in 2003–9, but the reality is that this indicator reflects a low and decreasing entry of firms into export markets. The entry rate was already low in Brazil, compared to selected peers, and recently dropped even more.
- Brazilian exports benefited significantly from geographical and sector composition effects. Once these effects are excluded, the pure export performance is still positive, but much less intense and lower than in some of the major emerging countries.
- The assessment of Brazilian exports in terms of sophistication suggested a clear decline in the share of products with higher technological content. Primary and resources-based products have gained significant weight between 2000 and 2010. The fallen share of high-technology products reflects its poor absolute performance, and not just the success of commodity-related exports.

This assessment confirms that there are significant cost pressures and competitiveness issues affecting the industrial sector, not only with respect to foreign trade, but also domestically. The findings here support the hypothesis that the challenges to a better export performance are more linked to the supply-side agenda, rather than to export-promotion types of policy.

Considering the elements of declining competitiveness are essential to develop policies that will increase productivity and help Brazil to better compete globally and domestically. To strengthen industry productivity, broad measures to improve the efficiency of service sectors are critical. Thus, a wide effort on the supply side will be necessary, rather than just a short-term stimulus or focused policies favoring some export sectors.

Favorable terms of trade can be cited as a key economic driver through their wealth effects. The impact of this shock helps explain the higher economic dynamism based on domestic consumption. Service sectors, as the largest beneficiaries, could accommodate larger wage increases, given their

ability to mark up prices, while maintaining/creating jobs but “exporting” cost pressures to the other sectors of the economy.

The combination of rising real average earnings and stagnant (or falling) labor productivity has harmed Brazil’s export competitiveness, particularly the industrial sector’s capacity to compete with imports. The sharp increase in unit labor costs partially explains that weakness, although only for recent quarters.

The appreciation of the real effective exchange rate was certainly not negligible in the last decade. Although a stronger currency is one of the elements behind the lower competitiveness in Brazilian exports, sluggish productivity performance and a real wage uptrend explain a significant part of the current overall loss of competitiveness.

The fact that trade openness in Brazil is among the lowest in the world, considering the level of income per capita, deserves more attention. Larger economies are usually more dependent on their domestic markets, yet when compared to the other BRICS, Brazil still shows trade flow levels that are well below the predicted value. Pursuing greater global integration of the Brazilian economy remains a challenge that, if overcome, can provide significant benefits in the medium and long terms.

The business environment has not helped Brazil contend with stronger competition in global markets. The logistics infrastructure, which is widely recognized as inefficient and costly to Brazilian exports, as well as many other factors such as a very complex and costly tax system, have taken a toll on Brazilian firms. This diagnostic reinforces the importance of resuming the agenda of microeconomic reforms, increasing the investment-to-GDP ratio, and advancing toward a better-skilled human capital base. Promoting and rewarding productivity gains in a competitive economy, including the service sector, are the only options to accelerate growth and overcome possible middle-income growth traps (Agenor and Canuto 2012).

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Notes

1. There is controversy over how to define competitiveness. Following Krugman (1996), this note identifies competitiveness as stemming mainly from total factor productivity of the economy.
2. For more details about the model, see Canuto, Cavallari, and Reis (2013).
3. Cebeci and others (2012) argued that Brazil presents the lowest entry rate among the 44 countries in the Exporter Dynamics Database.

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