Brazil's Changing Macroeconomic Conditions: Impacts on Agriculture

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Abstract

Brazil has attained remarkable economic progress over the past decade with parallel modernization and expansion of its agricultural sector. With continuing productivity increases and the availability of additional land suitable for farming, further growth in agricultural production and exports has become the norm. However, current domestic macroeconomic challenges, including slow income growth, a depreciating *Real*, and administered prices to control inflation, are further challenged by adverse external events, including the substantial depreciation of China's currency on prospects for soybean and beef exports. This confluence of domestic and foreign economic challenges will negatively impact the agricultural sector's ability to continue the pace of its projected growth and may significantly slow export expansion. If that should happen, world food prices may rise unless other world market suppliers such as the United States can fill the deficit. We evaluate the impact of these new developments and associated challenges on Brazil's agricultural sector and examine the response of production, trade, and market prices to changes in Brazil's macroeconomic situation.

Keywords: Brazil, agriculture, production, trade, exchange rate, devaluation, credit, interest rates, domestic support.

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Introduction

Brazilian farm output has been expanding rapidly with an annual average growth of 4.3 percent between 1970 and 2014, equivalent to a six-fold increase in gross agricultural production, and one-fifth of global food production (IBGE, 2014). The rapid expansion in agricultural supply has allowed Brazil to become the world's third largest agricultural exporter, accounting for 7 percent of global agricultural exports (GTIS, 2016). During the 1970s and 1980s, large amounts of subsidized credit served to partially offset the negative effects of an overvalued exchange rate and price controls. From the mid-1990s onwards, macroeconomic stability, higher prices for agricultural commodities in world markets, and the adoption of tropical agricultural technologies spurred growth in the sector. For the past 15 years, rising foreign direct investment and increased participation of multinationals in Brazilian agriculture has resulted in large-scale production and vertically integrated supply-chains for major commodities, particularly soybeans and beef.

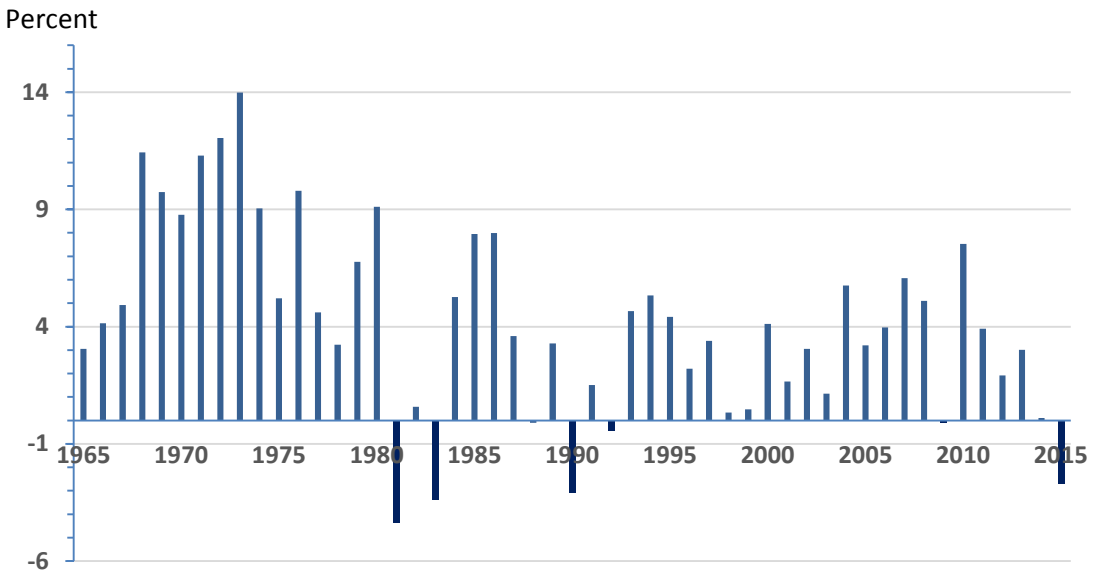
While current policies such as price supports and marketing instruments provide support to the development of the agricultural sector, an offsetting factor is the agricultural debt of Brazilian farmers which in 2014 reached $75 billion, a value nearly equivalent to agriculture's GDP (BCB, 2015). With the recent slowdown of the Brazilian economy, this debt burden makes it difficult to procure additional resources to finance the expected expansion of agriculture. At the farm level, the devaluation of Brazil's currency, the *Real*, will increase farmers' costs since over 70 percent of Brazil's fertilizer—the largest component of farm production costs—is imported, further testing the resiliency of the sector. In addition, the trade implications of the recent devaluation of the Chinese currency will be felt most keenly by Brazil's soybean sector since soybean prices have been buoyed by the influx of Chinese demand. It remains to be seen whether continued devaluation of the *Real* will offset some of that effect.

Brazil's Economic Growth and Policies

An examination of economic growth of a country that has not enjoyed high and sustained growth in recent years is necessary to gain a better understanding of what were Brazil's circumstances and agricultural policies. Some of the past economic performance can be traced to changed

global economic conditions, and some of it to an increase in Brazil's own income and changed structure of its economy (Brandão et al., 2006; Gasques et al., 2012). In Brazil, where the economic success of the 1960s and 1970s was both exceptional and significant for the agricultural sector, were followed by periods of rising inflation and recession throughout the 1980s and early 1990s, only to regain rapid growth during the 2000s and up until 2015, when Brazil's economy deteriorated dramatically (Figure 1).

Figure 1. Brazilian GDP Growth



Source: USDA, Economic Research Service using data from World Bank, World Development Indicators.

During the 1960s and 1970s, Brazilian economic growth kept up with that of Latin America and the world despite decades of import-substitution policies aimed at nurturing industrial development, often at the expense of agriculture (Williamson, 1990; World Bank, 2015). Brazil's import-substitution industrialization (ISI) policies were successful for a number of years. Brazil realized outstanding economic performance, created modern industries and companies that remain world leaders today, and for a time was described as the "Brazilian miracle." While the oil price shocks of the early 1970s increased the costs associated with the ISI approach, for a time Brazil appeared to have mastered living with high inflation and the predictable tradeoffs of

limiting competitive international trade (Dornbusch and Cline, 1997). However, as Brazil postponed the transmission of world oil price shocks to domestic markets, its international debt climbed. The 1982 onset of the Latin American debt crisis found Brazil facing both high inflation and austerity in government spending imposed by circumstances. During the 1980s, often called the "lost decade," Brazil and many other Latin American countries suffered a severe economic recession and an escalation of foreign debt. Decreased exports, combined with the appreciation of the dollar and high interest rates in the early 1980s, caused debtor countries to deplete their foreign exchange reserves (compounded by massive capital outflows) and ultimately default on their foreign loans. Latin American countries adopted various approaches to deal with the crisis, but most implemented market-oriented policy reforms, including trade reforms, privatization, and opening up to foreign investment (Williamson, 1990).

Brazil's trade policy response to the debt crisis initially emphasized intervention to encourage exportable products and limit imports. Trade policies included an expanded list of prohibited imports. Intervention remained extensive; in 1986, the Government imposed temporary export bans on beef, corn, and soybeans amid tight supplies to control inflation. By the mid-1980s, the Brazilian Government's financing ability collapsed, and agricultural credit was severely curtailed. Paralleling a worldwide shift away from ISI policies at that time, Brazil undertook a significant reorientation of its economy and agricultural sector away from this kind of intervention. Export licensing was removed in 1987 and Brazil started tariff reforms in 1988, first bringing its average most favored nation (MFN) tariff down from 57 percent in 1987 to 40 percent. Following reforms in 1989 and 1991, the average tariff was below 20 percent by 1992. The initial round of reforms left a host of nontariff barriers (NTB) in place, but in 1990 and 1991 these were largely removed (Moreira, 2009). Furthermore, restrictions on the access of foreign institutional investors to domestic stock markets were lifted in 1991, and limits on portfolio composition and minimum holding periods for investments abolished. In 1992, foreign financial institutions (mutual funds, investment companies) were authorized to operate in the options and futures markets for securities and foreign exchange (Agénor et al., 1997). With these changes, the private sector increased investment and regional development. The modernization of agriculture in Brazil can be attributed largely to the international integration begun in the 1990s (Barros, 2009).

Finally, in 1994, the "Real Plan" succeeded where a host of predecessor plans since the mid-1980s had not, bringing inflation and Brazil's fiscal standing under control for a time. In 1999, the fixed exchange rate portion of the Real Plan was abandoned in the aftermath of the Asian financial crisis, and the transformation of Brazil's economic policies was in an important sense complete. During the 1994-2004 decade, stabilization efforts were grounded in an inflation targeting regime, together with a consistent emphasis on a flexible exchange rate and fiscal discipline, under the Fiscal Responsibility Law (FRL). Passed in 2000, the FRL established limits for expenditures and indebtedness at all levels of the government, only allowed new permanent spending mandates if these were based on permanent revenue increases, and forbade debt refinancing between different levels of government.

Brazil's trade and investment policy reforms coincided with similar reforms around the world and Brazil reclaimed a prominent export role in agricultural markets. Economic reform opened Brazilian agriculture to world competition, investment, and inputs. The macroeconomic reforms reduced relative land prices as investment was no longer focused on just physical assets but also flowed to financial instruments (OECD, 2005). The removal of tariff and nontariff barriers to imports of inputs and machinery was also an important reform. These changes enabled Brazilian farmers to mobilize land with international investment, inputs, and technology. Without these changes, Brazil's expansion in agriculture would almost certainly have not occurred over the relatively short timeframe between 1995 and 2004. Brazil's endowment of arable land in the *Cerrados* is the ultimate source of Brazil's surge in agricultural production, but only with the reforms of the 1990s has its potential begun to be realized.

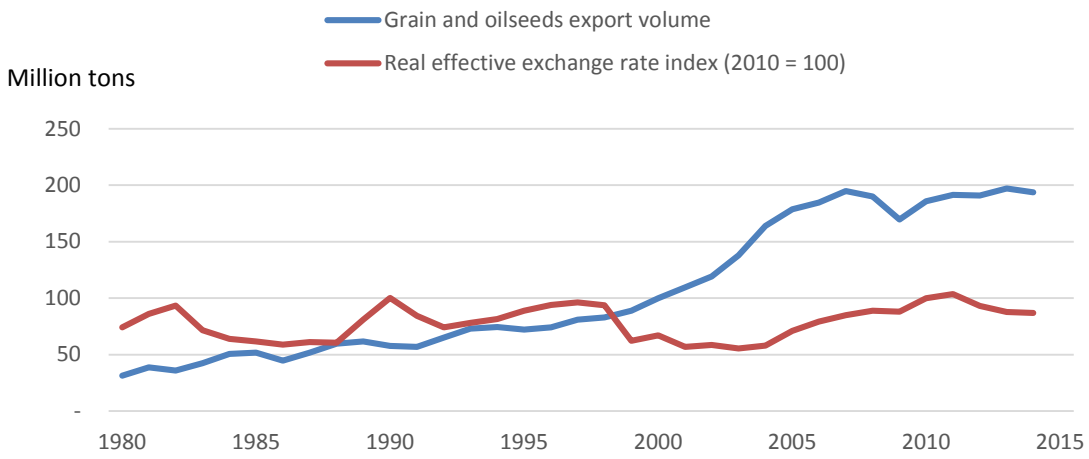
The 2004-2014 period Brazil reaped the growth benefits of more than a decade of sound macro policies and a favorable external environment. During 2004-2014, annual GDP growth averaged 4.4 percent, compared to 1.9 percent in the previous seven years (Figure 1). However, during this period, counter-cyclical fiscal measures adopted during the 2008-2009 global financial crisis raised the net public sector debt-to-GDP ratio from 28 percent in 2004 to 43 percent in 2009. Following the global economic crisis, the incoming government continued with a combined injection of liquidity into the banking system, a reduction in interest rates, and an expansionary fiscal policy, against the FRL, which ultimately led to the May 2016 impeachment of the

Brazilian President. By the end of 2015 Brazil's economy had deteriorated dramatically with Brazil's GDP contracting by 3.8 percent in 2015, while annual inflation reached 10.7 percent. A devaluation of 32 percent boosted local currency export revenues.

Trends in Exports and Imports

Between 1960 and 1990, Brazil was a large and consistent net exporter of various agricultural products. In more recent years, Brazil's trade position has undergone large swings. Net exports were positive and relatively steady between 1980 and 1990 (GTIS, 2016). Macroeconomic reforms, open trade, flexible exchange rate regimes, and the development of new tropical varieties suitable to Brazil's *Cerrados* area have helped Brazil become one of the world's top producers and exporters of soybeans, corn, cotton, and meats (Barros, 2009). Exchange rates were a significant factor in the year-to-year shifts in Brazilian agricultural trade. During the latter half of the 1990s, Brazil fought inflationary expectations by pegging its currency to the U.S. dollar (Barros, 2009). As a result, the value of the *real* on foreign exchange markets was high relative to earlier years, and by some measures the currency was overvalued. After the Asian financial crisis of 1997-98, Brazil relinquished the peg with the dollar in January 1999, and the *real*/dollar exchange rate depreciated significantly (Barros, 2009). The U.S. dollar strengthened against a number of other currencies during this time as well, and Brazil's net exports rose. The newly favorable exchange rate helped Brazil reap the benefits of the policy reforms of the previous 15 years and increase agricultural exports significantly (Brandão et al., 2009). Between 2004 and 2014, the *Real* strengthened significantly (Figure 2), which had both positive and negative implications for agricultural exports. While this raised the cost of Brazilian products on world markets, it reduced the cost of imported inputs and reduced shipping costs for Brazilian exporters by increasing the availability of shipping containers. Partly in response to the strengthening exchange rate, the Government moved to increase support to Brazilian agriculture with price supports and large amounts of subsidized credit during the 2004-14 period (BCB, 2015). The share of production eligible for price support has been increased, rising to 74 percent in 2014. The result has increased government funds flowing to agricultural producers, primarily corn and cotton producers, sustaining Brazilian production and exports at higher levels (BCB, 2015).

Figure 2. Brazilian Net Exports and Exchange Rates



Source: USDA, Economic Research Service using data from World Bank, World Development Indicators.

Macroeconomic Crisis Scenario: Brazilian Production and Trade

We examine, simultaneously, two significant issues related to the effects of changing macroeconomic conditions on Brazilian agriculture: 1) the impact of greater devaluation of the *Real* on Brazilian agriculture and trade, and 2) the impact of rising interest rates on commodity supplies. Using a partial equilibrium model of Brazil's agriculture sector, we estimate domestic and international market supply and demand responses to a cumulative 60 percent decrease in the real value of the *Real*, lower per capita income, and higher interest rates.

As the *Real* loses value, the cost of imported crop production inputs rise, particularly fertilize and agrochemicals. Those two inputs combined account for about 60 percent of total variable costs of producing soybeans and corn (CONAB, 2015). This cost push is offset by the relative decline in world offer prices for corn and soybeans, leading to greater demand from abroad and expectation of higher output prices. Area of corn and soybeans is virtually unchanged while yields rise with more judicious use of production inputs. As a consequence, production of corn rises slightly and soybean output increases relative to reference production by an average of about 2 percent over the 2016-2026 projection period (Table 1). Corn producer prices increase 11 percent while soybean prices rise an average 7 percent.

The increase in soybean output is sufficient to ship more beans abroad and increase in domestic crushing. As a consequence, output of soybean meal and soybean oil rise about 2 percent. All of the additional soybean oil is exported. The additional soybean meal, coupled with a reduction in corn exports, is used to fuel an 8 percent—or 1.4 million metric ton—increase in poultry meat production. The bulk of that additional output is exported.

Table 1. Change in Brazil's production and exports of major commodities

		Production	
Commodity	**Reference**	**Scenario**	**Percent change**
Beef	10,504	10,705	1.9
Corn	94,292	94,699	0.4
Cotton	1,769	1,759	-0.6
Poultry meat	15,930	17,281	8.5
Rice	8,514	8,519	0.1
Soybeans	116,863	119,243	2.0
Soybean meal	35,866	36,573	1.9
Soybean oil	8,897	9,072	1.9
Wheat	6,354	6,402	0.7
		Exports	
	Reference	**Scenario**	**Percent change**
Beef	2,291	2,317	1.2
Corn	27,744	26,013	-6.3
Cotton	1,147	1,146	-0.3
Poultry meat	4,761	5,667	19.2
Rice	1,271	1,277	0.6
Soybeans	65,890	67,216	2.0
Soybean meal	16,938	16,650	-1.8
Soybean oil	1,197	1,333	11.5
Wheat	1,493	1,502	0.6

Source: USDA, Economic Research Service, research results.

Conclusion

The devaluation helps Brazil capture additional soybean market share in the international market and boost sales. A devaluation of the *Real* exerts some downward pressure on international prices of the commodities that make Brazil's most significant exports. Brazil still has untapped potential in world agricultural production and trade. Gains in output are expected as new area continues to come under cultivation. Only an estimated 25 percent of the *Cerrados* land is under cultivation, and Brazil's Ministry of Agriculture estimates that an additional 120 million hectares could come under crop production (USDA/FAS). To mitigate infrastructure bottlenecks, the Government of Brazil has taken steps to decongest roads and expedite transportation by constructing waterways to ports. At the farm level, technical change is expected as well. In recent years however, legal constraints against the use GMO seeds have been relaxed and Brazilian growers have been increasing the use GMO and of other high-yielding varieties. With its wide expanse of untapped area suitable for cultivation, Brazil's agricultural production growth is expected to outpace gains in global agricultural production and consumption (USDA, OCE, 2016). According to USDA's Baseline projections, by 2025/26, Brazil's exports are expected to grow slightly faster than those of the United States, with exports about 60 percent the size of India's and one-quarter the level of U.S. exports (USDA, OCE, 2016).

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