Macroeconomic policies and agricultural and rural development
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Eugenio Díaz Bonilla
1. Introduction

This chapter briefly discusses different aspects of macroeconomic policies and its interactions with agriculture, rural development and food security in Latin America and the Caribbean. It attempts to summarize some relevant topics that policymakers and policy analysts working on agricultural issues in developing countries should understand about macroeconomics to do their job. It considers the impact of macroeconomic conditions and policies on agriculture, but also the influence of agricultural events on the general economy. Macroeconomic policies must be considered within the broader framework of economic and social development programs. These typically consider some of the following objectives:

i. Maintaining or accelerating economic growth with sustained employment.
ii. Promoting microeconomic efficiency and correcting distortions.
iii. Avoiding unsustainable disequilibria in the balance of payments (external equilibrium).
iv. Controlling inflationary and deflationary pressures (internal equilibrium).
v. Eliminating poverty, providing for the basic needs of the population, including food security, and expanding opportunities for human development.

Growth or development programs tend to underscore the first objective along with economic efficiency (objective ii), while macroeconomic programs emphasize the external and internal equilibrium objectives (iii and iv). The final objective of economic programs (the elimination of poverty, fulfillment of social needs including food security, and offering meaningful opportunities for all to develop and apply their human abilities) depends more on the structure and distribution of aggregate demand and supply. Both longer-term growth and development policies and shorter-term macroeconomic policies can have important distributive effects, affecting the allocation of costs and benefits across social groups. Therefore, those distributive effects— and, in particular, how the poor and vulnerable fare under different policies— must be crucial concerns in policy design.

This chapter focuses mainly on macroeconomic policies linked to objectives (iii) and (iv), nevertheless recognizing that those policies may also affect the remaining objectives. When analyzing macroeconomic policies, there are four key issues:

i. The proper alignment of aggregate demand and aggregate supply. If this balance is not attained, the economy may experience recessions and unemployment (if aggregate demand is below aggregate supply) or inflationary pressures and trade deficits (if

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1 This chapter is based on Díaz-Bonilla, 2015, which develops these topics in greater depth and with a more global view about developing countries in general.
aggregate demand significantly exceeds aggregate supply). In addition, the lack or excess of aggregate demand in the present can affect potential trend growth in the future, due to underutilization or misapplication of productive resources.

ii. The level, stability, and sustainability of macro-prices, such as an overall price index, the exchange rate, the interest rate, and average wages. In particular, the exchange rate plays a central role in relation to the nominal aspects of the short-run management of aggregate demand, as well as other aspects affecting aggregate supply in the medium to longer term. Interest rates have a dual character as well: they not only influence aggregate demand in the short run, but also choices between savings and investment and, possibly, the selection of technological alternatives, thereby determining future growth prospects. Similarly, wages can affect aggregate demand during the cycle, but they also influence capital/labor ratios, technological alternatives and the decision to invest in human capital, all of which define aggregate supply trends.

iii. The avoidance of economic crises. Economic crises, with their different fiscal, financial, trade, and social components, are particularly dramatic manifestations of imbalances between aggregate demand and aggregate supply (the first macroeconomic policy problem) and/or of misalignments in macro-prices (the second macroeconomic policy problem). Crises tend to affect long-term growth prospects and increase poverty and food insecurity through various channels. For instance, higher unemployment, particularly its persistence over time, deteriorates human capital. Crises also destroy installed capital, and their recurrence increases uncertainty, thereby reducing current investment and future capital. They also tend to leave a legacy of public and private debt, weakened fiscal accounts, banking and financial systems, all of which affects growth, efficiency and equity. In addition, crises also have important negative effects on poor populations, which might find their already limited human and productive capital compromised if, for instance, physical or economic access to food is impaired; also children may have to be withdrawn from school to work for their families; and certain assets, such as small farmers’ livestock, must be sold to try to weather negative economic shocks.

iv. The potential social and microeconomic implications. Other growth, efficiency, poverty and distributive effects stem from some microeconomic aspects of macroeconomic policies, such as the structure of tax and public expenditures, monetary, financial and regulatory policies, and so on.

The initial empirical analyses of the connections between macroeconomic policies and agriculture in developing countries typically emphasized a more limited set of concerns, focusing on relative price incentives for the agricultural sector compared to other sectors (Krueger, Schiff and Valdés, 1988; Schiff and Valdés, 1992). Those studies used two main indicators: the real exchange rate, an index of relative prices of tradable (Pt), to non-tradable products (Pnt); that is \( \frac{Pt}{Pnt} \); and the relative price ratio between the agricultural (Pa) and nonagricultural sectors (Pna) (for example, the internal terms of trade, \( \frac{Pa}{Pna} \)).

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2 The real exchange rate (Pt/Pnt) is different from the domestic terms of trade between the agricultural and non agricultural sectors (Pa/Pna) (see the discussion in Díaz-Bonilla, 2015). Therefore, changes in Pt/Pnt do not translate one-to-one to changes in the relative profitability of the agricultural sector with respect to the rest of the economy (Pa/Pna).
However, the impacts on agriculture, rural development, and food security – given the vast array of macroeconomic policies and conditions – involve a larger number of variables and channels and not only relative price effects. This is a widely known fact in empirical studies of industrialized countries. In addition to the importance of the exchange rate for agriculture (Schuh, 1976), macroeconomic analyses of developed countries have factored in other considerations such as income and demand effects, interest rates, and the effects of other monetary and macroeconomic variables impacting directly or indirectly on the agricultural sector (Paarlberg and Chambers, 1988; Orden, 1986).

In addition to the influence of various macroeconomic conditions and policies on agriculture, the reverse causality has to be taken into account in developing countries, particularly in Latin American and Caribbean countries where agriculture represents a significant percentage of the Gross domestic product (GDP), employment, trade and even fiscal receipts linked to exports. In those cases, the performance of the agricultural sector will determine growth, inflation, balance-of-payment conditions and fiscal balances (for an early analysis of the International Monetary Fund (IMF)–supported programs in the agricultural sector, see Johnson, 1987).

Furthermore, macroeconomic and sectoral policymaking in developing countries requires a deep awareness of the state of the global economy. This is particularly the case in Latin America and the Caribbean, where countries are well integrated in world markets as shown in Table 1, which calculates the importance of export and imports as percentage of domestic production (measured both in constant 2004 to 2006 USD; they represent the annual average for 2010 to 2016).

Table 1. Exports and imports as percentage of domestic production

<table>
<thead>
<tr>
<th>Importance of Imports (% of domestic production)</th>
<th>Importance of exports (% of domestic production)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20%</td>
<td>Uruguay, Paraguay, Argentina</td>
</tr>
<tr>
<td></td>
<td>Brazil, Ecuador, Boliviana, Plurinational State</td>
</tr>
<tr>
<td>20 to 40%</td>
<td>Costa Rica</td>
</tr>
<tr>
<td></td>
<td>Peru, Mexico, Honduras, Nicaragua</td>
</tr>
<tr>
<td>&gt;40%</td>
<td>Chile, Belize</td>
</tr>
<tr>
<td></td>
<td>El Salvador, Trinidad and Tobago, Dominican</td>
</tr>
<tr>
<td></td>
<td>Republic, Suriname</td>
</tr>
<tr>
<td></td>
<td>Venezuela, Bolivarian Republic of</td>
</tr>
</tbody>
</table>

Source: author calculated from FAOSTAT (2019).

The conditions of the global economy, considering both trends and cycles, affect a country’s performance in general and that of its agricultural sector in particular. At the cycle level, it matters whether or not the global economy is growing, what are the world interest rates and world agricultural prices, the evolution of the exchange rates of major global currencies and the
level, composition and direction of international capital flows.\(^3\) In terms of trends, it is crucial to monitor the integration of the world economy through the expansion of trade, finance, labor and information flows. The impact of external shocks also interacts with domestic contextual factors, such as the urban–rural configuration and the structure of landholdings in rural areas (see Díaz–Bonilla, 2015).

In summary, an adequate analysis of specific macroeconomic policies and their impacts needs to consider a variety of channels and interactions, structural aspects of the domestic economy and society (including the heterogeneity of economic agents), and the world economic environment. Many analytical and policy mistakes come from analyzing isolated macroeconomic policies without considering the broader context outlined.

In terms of macroeconomic instruments, this chapter looks briefly at four main policy groups:

- fiscal
- monetary (and financial/banking issues)
- exchange rate
- trade

There are also other policies with important macroeconomic implications, such as labor and energy, but they will not be discussed here.

This chapter is organized as follows. First, we present the broader macroeconomic framework. Second, it follows a somewhat idiosyncratic discussion of different aspects of macroeconomic policies considered relevant for agricultural and rural development in Latin America and the Caribbean (for a more detailed discussion see Díaz–Bonilla, 2015). Third, there is a brief historical overview of agricultural growth in the region and the linkages to global and national macroeconomic conditions. Finally, a chapter outlines the main conclusions of this paper.

\(^3\) For instance, Reca and Parellada (2001) demonstrate that the important boom in dairy products (mainly nontradables) in Argentina during the early nineties was fueled by strong domestic growth linked to capital inflows. On the other hand, at the same time crop production (a tradable good) stagnated due to the appreciation of the Argentine peso generated by the capital flows (and lower world prices during that period) (see Díaz–Bonilla, 2015).
2. Macroeconomic policies and agriculture

Figure 1 shows a broader view of macroeconomic policies and their channels of influence on the agricultural and rural sectors.

**Figure 1. A Simplified Macroeconomic Framework**

![Diagram](source: Díaz-Bonilla, 2015)

Although growth models tend to focus only on the supply side, it is crucial to consider the demand side, both domestic and external. Domestic demand in general – and for agricultural products in particular – depends on the growth of the whole economy, and the related generation of employment, poverty and income distribution patterns, all factors affected by macroeconomic policies.

The importance of the domestic market compared to exports for agricultural products, and the dependence on imports for those products vary across the region. Nevertheless, even for countries with a strong export-orientation a significant percentage of demand comes from the domestic market (see Table 1).

Figure 2 shows a simple correlation measure between GDP and agricultural growth that does not control for other influences (such as climate events or world economic conditions) for a sample of countries in LAC. About 55 percent[^4] of the countries have correlations equal or larger than 0.4.

[^4]: The correlation for some of the countries in Figure 2 are rounded up to 0.4, but they are below that number. Therefore, they are not counted in the 55 percent mentioned.
First, at an aggregate level, all major downturns in the region’s GDP (i.e. the economic contractions experienced in 1982, 1983 and 2009 related to world recessions and the latest episode, in 2016 mostly linked to Brazil’s economic problems), showed parallel declines in Latin America and the Caribbean’s agricultural growth. Other episodes of negative agricultural growth in the region were basically related to adverse clime conditions.

Therefore, it is necessary that macroeconomic (and other) policies maintain a sustainable growth of aggregate demand and, given the importance of global markets for Latin America and the Caribbean’s production, facilitate trade opportunities as part of the demand for agricultural products.

Second, the level and expected variations in macroeconomic prices (such as exchange rate, interest rates and wages) define the relative incentives between agricultural and nonagricultural activities, with important implications for the growth path of the economy. The level and change in taxes or in transfers/subsidies from governments (all factors often influenced by fiscal and trade policies) contribute to determine incomes for agricultural producers and for the agents in the agro-industrial value chains.

Third, macroeconomic policies affect the prices and availability of factors or production and inputs, impacting on the supply side of primary agriculture and the operation of the value chains. For example, credit availability depends in part on monetary and financial policy. In addition, availability and prices of inputs and machinery can be determined by exchange rates and international trade policies. As noted, macro–prices influence the level and composition of investments, employment and the technological path as well.

Fourth, the operations of farmers and agricultural value chains require public productive services (such as research and extension), benefit from social services in the rural areas (such as health and education), and depend on the quality of the relevant rural and regional infrastructure (irrigation, roads, communications, and so on), all of which is affected by fiscal policies.
Furthermore, fiscal policies that allow enough decentralized resources to maintain peace and citizen security in the rural areas as well as controlling endemic diseases in the countryside (such as malaria) would be removing constraints to agricultural growth that can be as limiting as a very bad resource base (Díaz–Bonilla, Orden and Kwieciński, 2014). In general, the crucial links between agricultural supply and the domestic and external demand, which ensure that overall demand is translated into specific market opportunities for agricultural producers, are all influenced by macro–policies that shape the provision of public goods and infrastructure for the rural economy and the operation of value chains.

Finally, an important objective of macroeconomic policies is to avoid economic crises – which impact growth, poverty and food security. In particular, a high degree of macroeconomic volatility can also cause poverty traps, not only because of the negative impact that crises can have on the human capital of the poor but also because the risky environment leads the poor to engage in low–return activities. For instance, the Inter–American Development Bank (IADB) (1995) estimated that if Latin America and the Caribbean had a level of macroeconomic stability similar to industrialized countries, the poverty headcount would diminish by one quarter.

All these previous channels influence the return to agricultural activities and the agricultural component of rural incomes (Ya). However, for individuals and families in rural areas, these activities are part of a broader array of activities. Some incomes may also come from nonagricultural sources (Yna). In turn, all activities (agricultural or other) may feature exportable (Yax, Ynax), importable (Yam, Ynam), and non-tradable (Yant, Ynant) goods and services, as in the following simplified Table 2:

**Table 2. Structure of Incomes for Rural Families**

<table>
<thead>
<tr>
<th></th>
<th>Exportable (x)</th>
<th>Importable (m)</th>
<th>Nontradable (nt)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture (Ya)</td>
<td>Yax</td>
<td>Yam</td>
<td>Yant</td>
</tr>
<tr>
<td>Nonagriculture (Yna)</td>
<td>Ynax</td>
<td>Ynam</td>
<td>Ynant</td>
</tr>
</tbody>
</table>


The livelihoods of rural families in developing countries tend to combine, in different proportions, more than one of these income cells. Therefore, the effects of macroeconomic conditions and policies on those families occur through a variety of channels, with ambiguous net results. Events or policies that improve agricultural incomes (Ya) may reduce nonagricultural ones (Yna), and vice versa, with a variety of net impacts on rural families.\(^5\)

A broader analysis must consider both the static, short–term effects of policies and changes in macroeconomic scenarios and the dynamic, longer–term results, considering the agricultural and nonagricultural components of the economy. Ideally, the impact of different macroeconomic conditions and policies on agricultural activities and rural incomes are embedded in an appropriately specified macroeconomic general equilibrium model.

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\(^5\) For instance, a devaluation may help the agricultural sector (as a mostly tradable sector) while negatively impacting non–tradable sectors, such as construction, where poor rural migrants may look for temporary work.
3. Individual macroeconomic policies

3.1 Global macroeconomic balances: the discipline of accounting identities and a trade example

It has been said that macroeconomics is a collection of accounting equations plus “opinions” about the functioning of markets, agents and policies. While the opinions vary, the macroeconomic identities follow the discipline of the double-entry accounting, which cannot be ignored. They include the national income account, the balance of payment account, the fiscal account and the monetary account (see the definitions and variables in Díaz–Bonilla, 2015). Those accounting identities must balance as an accounting matter. Such balance does not say anything about whether the economy is in “equilibrium”, however defined, but economic programs or analyses based on projections or numerical assumptions of variables that do not add up to those basic macroeconomic identities, by definition, will not happen as envisioned.

Given the basic consistency framework of the main macroeconomic accounting identities, there is ample room for different opinions regarding how they may balance within the period of analysis (which may go from one quarter to one year to several years) and what are the changes in production, employment, trade and the like that bring those macroeconomic accounts into balance.

As an example, consider the basic national income equation \( GDP = C + I + G + EX - IM \) to discuss some trade policies and, in particular, proposals for food self-sufficiency and protection as a way of achieving food security (the framework may be applied to a variety of issues, including the impact of remittances).

We can rearrange that equation, dividing imports into agricultural (\( IMa \)) and non-agricultural (\( IMna \)) and doing the same for exports (\( EXa \) and \( EXna \)), and noting that usually \( C + I + G \) is called Absorption (A):

\[
GDP: (C + G + I) = GDP - A = EXa + EXna - IMa - IMna = (EXa - IMa) + (EXna - IMna)
\]

(\( EXa - IMa \)) is the net agricultural trade balance and (\( EXna - IMna \)) is the net non-agricultural trade balance. If, for instance, a country wants complete self-sufficiency, then \( IMa \) has to go to zero (by imposing an import quota of zero or a prohibitive import tax). That means that (\( EXa - IMa \)) should increase in value, which implies that the rest of equation, being an accounting identity, has to adjust as well. Mechanically, there are four basic options with combinations

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6 Where, as usual, GDP is Gross domestic product, C is private consumption, I is total investment (including public and private), G is governmental consumption, EX is exports, and IM is imports.
thereof: GDP may increase; Absorption may be reduced; EXa may be reduced; or the non-agricultural trade balance may turn negative.

The implied preferred outcome of those suggesting “self-sufficiency” would be that the previously imported products are fully compensated for by more production (GDP increases in the same amount as the previous IMa) and that Absorption does not decline. However, this is only possible if, first, the country has unutilized domestic factors of production and other resources that can be mobilized to produce the previously imported goods without taking resources from other activities. Second, the increase in incomes from those previously unemployed factors that are now producing the substituted imports must be enough to maintain the absorption of goods (A) at the same level.

On the other hand, if all factors of production are employed, then overall GDP will not change, although its composition will move towards more production of the protected good, and less of other agricultural and non–agricultural goods.

Actual conditions in developing countries fall between the extremes of unemployed and readily available factors of production and resources, on the one hand, and fully employed domestic production capabilities, on the other. Therefore, although import substitution activities may grow, this expansion will probably force a decline in at least some exports and in the consumption of the more expensive domestically produced good. If this more expensive good is food, the impact on poor consumers has to be taken into account.

After the food prices spikes in 2008 and 2011 (as it happened during the price shocks of the seventies) some Latin American and Caribbean countries stepped up their efforts at self-sufficiency in some staple crops (such as wheat). Anecdotal evidence shows that, when those efforts were successful, they happened at the expense of other crops, as the previous framework would suggest (Díaz–Bonilla, 2015).

3.2 Fiscal policies

This section tries to place fiscal policies in the context of the macroeconomic program. In Díaz–Bonilla and de Salvo, 2019, there is a more detailed discussion of specific fiscal policies, such as taxes and expenditures.

Fiscal policies have multiple effects on the economy. For example, they influence the level and evolution of aggregate demand, particularly through public general expenditures and public investments, and the combination of taxes and subsidies. Fiscal policies also influence aggregate supply through the additional impact of public investments as an accumulation of public capital and of current expenditures such as those related to human capital or science and technology.

Fiscal policies also affect macro–prices (price level and inflation, interest rate, real exchange rate and wages), including the different ways of financing potential deficits. For instance, financing deficits may require borrowing from the banking and non–banking private sector (which may increase the interest rate and displace private sector borrowers); from the Central Bank (which leads to money creation and may fuel inflation); and/or from the rest of the world (which may affect the exchange rate and increase the external interest rate paid by the country as a whole).
Considering that government expenditures tend to have a larger component of non-traded goods, their expansion may increase the price of those goods, appreciating the real exchange rate and reducing the external competitiveness of the economy. There are also microeconomic effects and distributive effects of fiscal policies linked to the specific structure of taxes, subsidies, expenditures, and borrowing.

Overall, fiscal conditions were changing in Latin America and the Caribbean during the last decades. The global shocks of the eighties led to widespread deterioration of fiscal and debt conditions in the region, related to the collapse of commodity prices, the increase in interest rates and the ensuing debt crisis. During the nineties and the 2000s there were some improvements in public accounts, helped by the fiscal consolidation of previous decades, some schemes of debt relief, the resumption of global economic growth during the 2000s and the decline in world interest rates in the nineties and 2000s. That period was interrupted by the global financial crisis of 2008 and 2009. Fiscal accounts in the region have deteriorated since then, in part because of the decline of commodity prices that affected public revenues in several Latin American and Caribbean countries, as well as the implementation of expansionary fiscal policies to support economic activities in the face of the negative external shock.

The link between episodes of booms and busts in commodity prices and economic and fiscal conditions requires special consideration. Those cycles are associated with volatility in growth and other macroeconomic variables, including fiscal accounts due to pro-cyclical policies: revenues and expenditures increase in good times and fiscal adjustments take place in bad times, exactly the opposite of what the policy approach should be. This happened in the seventies in Latin America and the Caribbean (as well in other developing countries). The more recent commodity boom reactivated the interest in analyzing the links between those price cycles and the performance of several economic variables (Medina, 2010; Céspedes and Velasco, 2011; there is a more detailed analysis in Díaz–Bonilla, 2015). In particular, Céspedes and Velasco (2011), after analyzing 32 countries that have an important presence of commodities in production and exports (many of those in Latin America and the Caribbean) found that in the current episode on average countries responded more prudently than in the seventies, which also helped to avoid overvaluations of the exchange rate (although obviously with important heterogeneity across countries).

A relevant policy question is how to manage those commodity cycles. During the upward cycle, the best policy approach seems to be using the extra funds for a balanced mix of countercyclical funds, high-quality investments linked to productive infrastructure, R&D and human capital, and targeted safety nets for the poor and vulnerable (Go et al. 2013). While using the windfall to finance transfers to reduce poverty in the short and medium-term, investments in physical and human capital would help with medium and long-term growth, and a countercyclical fund will maintain macroeconomic stability (Go et al. 2013). During the downward cycle, there are not many policy options, except to let the exchange rate adjust and prudently align expenditures with revenues, trying to protect as much as possible social safety nets and investments linked to productivity and growth.
Other topics that link fiscal issues and agricultural interventions come under three main headings:

i. the use of public stocks to try to manage the level and variability of agricultural and food prices;
ii. general food subsidies to consumers; and
iii. production subsidies (including credit subsidies; the latter will be discussed in another subsection).

In general, several of those three topics had important fiscal impacts in Latin American and Caribbean countries between the sixties and eighties. For instance, regarding general food subsidies for consumers Scobie (1988) noted that the rice subsidy in 1980 accounted for 14 percent of the government deficit in Peru and between 1 and 2 percent of the GDP; and during the mid-eighties, the deficits of the public food agency (CONASUPO) represented between 3 and 9 percent of the total fiscal deficit of Mexico. However, those three types of programs do not seem to have had comparable fiscal incidence during the most recent episode of high prices: price stabilization schemes utilizing public stocks appear to have been limited; generalized food subsidies had been replaced by targeted programs and the new types of conditional cash transfers; and production subsidies were relatively modest (for a more detailed analysis of all three topics in developing countries see Díaz–Bonilla, 2015; for production subsidies in Latin America and the Caribbean see Díaz–Bonilla and De Salvo, 2019).

In any case, all those interventions must consider financial sustainability, cost–effectiveness and an appropriate operational design. Overall, it is important to maintain fiscal balances that can be sustained over time. Additionally, it is necessary to define a level and structure of the tax system that avoids disincentive effects, implement an efficient and honest tax administration, define levels and composition of expenditures that allow the attainment of the growth and equity objectives, and to use efficient and transparent budgetary and implementation systems for the public programs and investments (Díaz–Bonilla, 2015).

3.3 Monetary policies, inflation and related issues

Table 3 shows averages of inflation by decades.

| Table 3. Inflation, average consumer prices (% annual) |
|---------------------------------|--------|--------|--------|--------|
| **World**                       | 1980s  | 1990s  | 2000s  | 2010s  |
| Advanced economies              | 6.5    | 2.9    | 2.0    | 1.5    |
| Emerging market and developing economies | 36.6   | 55.4   | 6.9    | 5.2    |
| Middle East and North Africa    | 11.0   | 11.0   | 6.6    | 7.7    |
| Sub-Saharan Africa              | na     | 19.7   | 10.7   | 8.6    |
| Latin America and the Caribbean | 131.9  | 150.2  | 6.2    | 5.2    |
| ASEAN-5                         | 13.9   | 10.3   | 5.8    | 3.9    |

Note: the Bolivarian Republic of Venezuela is not included in the last column (2010s)

After high levels of inflation (and episodes of hyperinflation) in the eighties and the nineties, the region has converged to lower levels. Episodes of hyperinflation or very high inflation have also been accompanied by large increases in poverty and food insecurity (Díaz–Bonilla, 2008).
On the other hand, it has been argued that lower inflation tends to benefit poor populations because they usually have nominal incomes that adjust slowly and do not have access to financial instruments that protect them from price increases.

In the region there are three countries that are fully dollarized (Panamá, El Salvador and Ecuador) and several Caribbean countries that are in joint monetary arrangements linked very rigidly to the US dollar. They do not have an independent monetary policy and depend on the US monetary policy and the evolution of the US dollar in world markets. Therefore, those countries must have greater flexibility in other policy instruments and nominal variables to accommodate shocks to their economies. While agricultural growth in Ecuador does not seem to have been affected by the switch to dollarization, in El Salvador the sector has been performing very badly since then.

The rest of the countries with independent monetary frameworks follow basically three approaches: monetary targeting (MT), exchange rate anchors (ERA) and inflation targeting (IT) (see, for instance, IMF, 2013, which also considers a fourth category of “other”). Lower-income countries in the region show up mostly in the ERA and MT categories, while higher-income countries in the region moved to the IT category (see Díaz-Bonilla, 2015).

The selected inflation target is crucial because it must provide some sense of price stability without compromising growth while avoiding overvalued exchange rates. It could be argued that a 2 percent annual inflation rate is too low for a developing country, considering that reaching that target may require high real interest rates that affect growth, increase unemployment, and could bring capital flows that appreciate the local currency. Those adverse effects may negate the positive consequences of lower inflation on agriculture, food security and poverty alleviation. But inflation in the range of 25 to 30 percent or higher would most likely have negative effects on growth and would also generate an appreciation of the domestic currency through other channels (such as a rate of devaluation lower than inflation, in part to try to control inflationary pressures). Also, high inflation levels negatively affect poverty and food security. Poor populations often cite inflation as a central concern (Easterly and Fischer, 2000) and, given the fact that poor households devote larger shares of their income to food, inflation in food products may be more relevant for food security than overall inflation.7 Currently Argentina and, particularly, the Bolivarian Republic of Venezuela are the only countries of the region experiencing high inflation rates (the Bolivarian Republic of Venezuela is at a very high hyperinflationary level, breaking the record levels suffered by Germany in the thirties and Zimbabwe in current times).

The question is, then, what monetary policy framework will align growth, inflation and competitiveness in a way that supports the whole economy, agricultural development and food security in normal times, and will, at the same time, help maintain reasonable levels of those variables when the economy and the agricultural sector suffer external or internal shocks? There is little analysis of this topic in general, and even less applied to Latin America and the Caribbean. More detailed analyses will be needed to elucidate the impact of different monetary regimes and the selected target level for inflation on agricultural performance, food security and poverty alleviation.

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7 In this regard, agricultural price stabilization schemes based on public stocks will not address the problem of high and persistent food inflation when it is generated by macroeconomic, and not sectoral, policies.
3.4 Banking and financial issues

Many developing countries during the sixties and seventies used a series of interventions in the banking and financial system to pursue developmental objectives. A common approach to financing the agricultural sector (and others) was to issue rediscounts from the Central Bank, granting preferential loans through sector-specific institutions, which subsidized interest rates and directed credit. The creation of excess liquidity through agricultural credit subsidies added to inflationary pressures and/or fueled trade deficits, which seems to have been the case of Brazil in the seventies (World Bank, 1986).

The approach was also criticized because of the negative impact on the capitalization of financial entities and their medium-term sustainability, and on fiscal accounts (due to recurrent bailouts of public banks). There were concerns as well about the impact on growth of lower savings and credit rationing and misallocation, which would exclude small and medium firms and farmers, all of which affected production, employment and equity. The combination of all those concerns led to a change in approach during the eighties and nineties. The policy proposal was to liberalize the financial system and avoid directed credit and dedicated institutions. Financial reform started earlier in Latin America and the Caribbean than in other regions, and although there were reversals during the eighties debt crisis, reforms proceeded at a faster pace since the nineties. Latin American and Caribbean countries stopped the “developmental role” of Central Banking financing and closed many of the agricultural financial institutions (De Janvry, Key and Sadoulet 1997). However, developing countries in other regions followed a different approach, maintaining Central Bank lending (usually within the limits of the overall monetary programming to avoid inflationary problems), and reforming agricultural financial institutions.

The history of high inflation in the region meant that, notwithstanding financial liberalization, it did not reach a high level of monetization of other regions, which also limited the levels of domestic credit to the private sector as percentage of the GDP (see Table 4).

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8 India has maintained for many decades an extensive system of agricultural credit, administered at the top by the Reserve Bank of India (RBI, the central bank).
Table 4. Domestic credit to private sector (% of GDP)

<table>
<thead>
<tr>
<th>Region</th>
<th>1980s</th>
<th>1990s</th>
<th>2000s</th>
<th>2010s</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asia and Pacific</td>
<td>117.1</td>
<td>161.4</td>
<td>140.5</td>
<td>138.7</td>
</tr>
<tr>
<td>Europe and Central Asia (excluding high income)</td>
<td>17.8</td>
<td>NA</td>
<td>26.4</td>
<td>49.9</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>40.5</td>
<td>34.8</td>
<td>28.0</td>
<td>46.9</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>29.8</td>
<td>31.4</td>
<td>41.8</td>
<td>50.1</td>
</tr>
<tr>
<td>South Asia</td>
<td>23.2</td>
<td>23.6</td>
<td>36.4</td>
<td>46.8</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>30.7</td>
<td>52.8</td>
<td>51.8</td>
<td>47.5</td>
</tr>
<tr>
<td>High income</td>
<td>102.2</td>
<td>135.2</td>
<td>143.7</td>
<td>142.0</td>
</tr>
<tr>
<td>Low and middle income</td>
<td>37.3</td>
<td>48.7</td>
<td>54.7</td>
<td>84.6</td>
</tr>
<tr>
<td>World</td>
<td>88.0</td>
<td>118.8</td>
<td>124.6</td>
<td>119.3</td>
</tr>
</tbody>
</table>

Source: author based on WDI/WB (2019).

Compared to other developing regions and the world (not to mention high income countries), Latin America and the Caribbean is on the lower side of the indicator, showing a limited supply of credit. Another fact is that LAC countries tend to have higher real rates of interest than in other regions (Díaz–Bonilla, 2015), which also limits the expansion of credit in general.

Regarding the agricultural sector, Table 5 displays an indicator called agricultural orientation intensity (AOI) of credit with data from FAOSTAT. It shows the percentage of agricultural credit over total credit divided by the share of agricultural GDP in total GDP. A number smaller (greater) than one indicates that the share of credit to agriculture is less (more) than the share of agriculture in GDP.

Table 5. Agricultural Orientation Intensity (credit; average for the 2010s)

<table>
<thead>
<tr>
<th>AOI &gt;1</th>
<th>AOI 0.5-1</th>
<th>AOI &lt;0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uruguay</td>
<td>Dominican Republic</td>
<td>Trinidad and Tobago</td>
</tr>
<tr>
<td>Argentina</td>
<td>Belize</td>
<td>Guatemala</td>
</tr>
<tr>
<td>Panama</td>
<td>Nicaragua</td>
<td>Suriname</td>
</tr>
<tr>
<td>Bolivia (Plurinational State of)</td>
<td>Peru</td>
<td>Honduras</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Jamaica</td>
<td></td>
</tr>
<tr>
<td>Guyana</td>
<td>El Salvador</td>
<td></td>
</tr>
<tr>
<td>Mexico</td>
<td>Brazil</td>
<td></td>
</tr>
<tr>
<td>Costa Rica</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAC Average</td>
<td>0.76</td>
<td></td>
</tr>
<tr>
<td>LAC Median</td>
<td>0.66</td>
<td></td>
</tr>
</tbody>
</table>

Source: Author from FAOSTAT (2019).

As a reference, during the current decade, developed countries have had an AOI for credit of 1.95 (average) and 1.47 (median) (Díaz–Bonilla, 2018), compared to 0.76 (average) and 0.66 (median) in Latin America and the Caribbean.

As briefly discussed in other chapter (Díaz–Bonilla and Saravia-Matus, 2019), the banking/financial system in the region is a potentially important source of financing for the necessary
investments to reach the Sustainable Development Goals (SDGs), and in particular for the conformation of food systems that are dynamic and equitable, support healthy diets and are environmentally sustainable. Therefore, it is necessary to update the analyses of the region’s banking and financial system and its relation to agricultural and food production and rural customers. This analysis should include the consideration of how to structure the monetary program to accommodate Central Bank’s rediscounts for agricultural lending (particularly for long term investments) as part of a money supply aligned with the desired inflation and other economic objectives.

The perennial and controversial issue of interest subsidies must also be considered. To devise more adequate interventions, it is useful to understand the components of the final interest rate to farmers; a simple formula would be:

\[
\text{Final interest rate (nominal)} = \text{costs of funds} + \text{inflation} + \text{risks} + \text{administrative and transaction costs}
\]

Public policy can help with some of the components without interfering with financial markets in the setting of funding costs (that is, the market-determined interest rate). For instance, the government may try to reduce inflationary pressures (which would help reduce the nominal interest rate). The government may also offer subsidies to financial institutions to cover the relatively high administrative and transaction costs per unit of loan value that affect small farmers. Furthermore, it is possible to improve the functioning of commercial courts and of public agencies working on land titling, which also reduces transaction costs. Government investments in public goods such as agricultural R&D, small irrigation schemes, drought–resistant seeds, improved sanitation and preventive health services, and weather forecasts diminish risks and can lead to lower overall interest rates (Meyer, 2011). In some instances, the government may offer budgetary or Central Bank matching funds to help reduce funding costs, but these operations should be transparent and should not distort the market rates needed to mobilize rural savings.

Furthermore, other factors such as accessibility through an extensive geographical coverage of local financial offices may be more relevant to rural borrowing, savings, and deposits in developing countries than the interest rate (Desai and Mellor, 1993). In that regard, more extensive and more efficiently used information and communication technology (particularly cellular phones) has proven to be very useful in reducing transaction costs and expanding financial services into rural areas.

Also, small farmers face constraints in other markets such as fertilizer, seeds, extension services, animal health and so on. Credit alone may not be enough to overcome those constraints. Therefore, a holistic approach is needed in which access and use of credit is just a component of a policy program in support of agriculture.

### 3.5 Exchange rate policies

Many crises in developing countries have resulted from misalignments of the exchange rate (ER), typically related to its dual role as a relative price in the “real exchange rate approach” (which emphasizes the balance between tradable and non–tradable goods and the influence of the real exchange rate on growth, production, trade and employment; Balassa, 1977, 1985) and as a financial variable in the “nominal anchor approach” (which highlights the role of the
nominal ER in the inflationary process and its relationship with interest rates and capital flows; Corden, 1990).

It would be very difficult for a government to attain the two objectives (external competitiveness, as in the real exchange approach, and low inflation, as in the nominal anchor approach) with just one instrument such as the ER. Policymakers need to have one instrument for each goal, and it is generally preferably to assign the ER to external competitiveness. Several attempts in Latin America and the Caribbean to use ER as a means to control inflation in the eighties ended badly (Calvo and Végh, 1999). The same happened in Argentina recently, in line with a long history of failed attempts at using ER as an inflationary anchor (see Díaz–Bonilla and Schamis, 2001).

More recently, the role of the ER as nominal anchor included concerns about the assets and liabilities of domestic actors in US dollars, particularly the banking system, but also the governments’ balance sheet. When governments and private sectors are increasingly indebted in foreign currency, there is a resistance to adjust the nominal value of the ER, even though the real ER may become overvalued. If the banking system has increased its share of dollar deposits and loans, a sharp devaluation may push debtors into bankruptcy and limit the possibility of banks honoring the dollar deposits, which may trigger a run on the banks and a full-fledged financial crisis. This happened in Argentina in the eighties and again in the early 2000s.

For those and other reasons (such as the costs of food that may be directly or indirectly linked to the ER) governments are reluctant to adjust the nominal parity (what has been called “fear of floating;” Calvo and Reinhart, 2000), and they resort to controls and multiple exchange rates. While these interventions last, they have a very negative effect on economic activity and lead to rent-seeking and corruption. Those mechanisms have been used extensively in the current crisis in the Bolivarian Republic of Venezuela. But those controls usually collapse, causing larger adjustments in the nominal parity of the ER and triggering a deeper economic crisis that the controlled exchange rate was supposed to avoid.

Table 6 shows the coefficient of variation (CV) of the real exchange rate (an indicator of volatility), calculated using the database of the Bank for International Settlements (BIS) that includes a sample of 61 countries.

Table 6. Coefficient of Variation of the Real Effective Exchange Rate

<table>
<thead>
<tr>
<th>1994-2018</th>
<th>CV of REER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peru</td>
<td>0.052</td>
</tr>
<tr>
<td>Chile</td>
<td>0.064</td>
</tr>
<tr>
<td>Colombia</td>
<td>0.122</td>
</tr>
<tr>
<td>Mexico</td>
<td>0.134</td>
</tr>
<tr>
<td>Brazil</td>
<td>0.186</td>
</tr>
<tr>
<td>Argentina</td>
<td>0.498</td>
</tr>
<tr>
<td>Venezuela (Bolivarian Republic of)</td>
<td>1.689</td>
</tr>
<tr>
<td><strong>Average (61 countries)</strong></td>
<td><strong>0.102</strong></td>
</tr>
<tr>
<td><strong>Median (61 countries)</strong></td>
<td><strong>0.100</strong></td>
</tr>
</tbody>
</table>

Source: author with estimates of real ER by BIS database (2019), covering 61 countries.
Only Chile and Peru, countries that stabilized their macroeconomic variables, show a volatility lower than the average and the median for the sample of 61 countries (which include developed countries as well as different upper–middle and middle–income countries). On the other extreme, Argentina has a volatility almost five times larger than the countries considered and the Bolivarian Republic of Venezuela almost 17 times larger.

The main conclusion is the need to avoid an overvaluation of the ER, which leads to abrupt and damaging adjustments in parity, and increases poverty and food insecurity. Concerns about poor and vulnerable populations should make avoiding macroeconomic crises the first policy priority. Therefore, if the ER is becoming overvalued, delaying an adjustment because of concerns about the poor and vulnerable tends to increase the imbalances and force even more damaging adjustments later. Countries would fare better in terms of growth, exports and equity with a managed ER that is allowed to depreciate with inflation (as in the real ER approach).

In particular, for the operation of the agricultural sector, which has a large component of tradable products, either as exportable or import substitutes, it is important to avoid overvaluation of the ER. This is also crucial for the whole economy because, as noted, overvalued exchange rates tend to end in widespread economic, financial and balance–of–payment crises.9

It should be noted that the equilibrium level of the real ER, defined as the one that attains both internal and external equilibrium, may change with different conditions in global markets, such as commodity prices, capital flows and monetary and exchange rate policies in systemically important countries. Therefore, it is essential to monitor the impact of Dutch disease effects linked to booming tradable sectors, capital flows (including foreign aid and remittances), the possibility of sudden reversals in those flows and the evolution of commodity prices in the case of commodity-exporting developing countries, analyzing different indicators of potential misalignments and trying to correct deviations as early as possible.

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9 While misaligned ERs in the direction of overvaluation appear to be bad for the economy in general, it has been argued that undervalued exchange rates are associated with higher growth, particularly for developing countries (Rodrik, 2008; Berg and Miao, 2010). A discussion is in Díaz-Bonilla, 2015.
4. A brief historical perspective

Figure 3 shows the annual average growth rates for Latin America and the Caribbean’s agricultural GDP (from the World Bank) and for total agricultural production (from FAOSTAT).

**Figure 3.** Annual Growth of Agricultural GDP and Total Agricultural Production

Source: World Development Indicators (World Bank), and FAOSTAT (2019).

The sector grew in the sixties and seventies buoyed by supportive global economic conditions and sectoral agricultural policies, even though, as argued by some early analysis (see Krueger, Schiff and Valdés 1988; Schiff and Valdés, 1992), the general macroeconomic framework was working against the sector.

In the eighties and nineties many countries in the region implemented the policy reforms suggested by those early studies, through “structural adjustment programs” supported by international organizations (they included not only changes in macroeconomic policies but also, in many cases, the dismantling of the agricultural sector policies of previous decades).

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10 Those studies looked at aggregate relative price incentives resulting from direct trade policy measures (taxes and subsidies on export and imports of food products) and the indirect effect of strategy of import substitution industrialization, and the overvaluation of the exchange rate. They included several Latin American and Caribbean countries (such as Argentina, Brazil, Mexico, Costa Rica and the Bolivarian Republic of Venezuela) and calculated that the policies followed caused the domestic prices received by producers of exportable goods to be implicitly taxed with respect to free market prices, while the domestic importable goods were protected. However, adding the indirect effects of industrial protection and exchange rate overvaluation, these studies argued that the general macroeconomic framework imparted a negative bias against agricultural production thus affecting the performance of the sector. Later analyses (Jensen, Robinson and Tarp, 2002) criticized the analytical underpinnings of those studies because of their partial equilibrium nature, which missed important interactions and could not properly define the equilibrium ER (there is a longer discussion in Díaz-Bonilla and Robinson, 2010; Díaz-Bonilla, 2015; see also Bértola and Ocampo, 2012).
However, growth rates declined during that period, in part because, although the macroeconomic framework may have turned more supportive of agriculture, other factors worked against, such as the dismantling of sectoral policies and the deterioration of global conditions (with the collapse of commodity prices and the increase in interest rates, which led to the debt crises of the eighties and also the financial shocks of the mid–to late nineties) (Díaz–Bonilla and Robinson, 2010; Díaz–Bonilla, 2015).

Since the 2000s agricultural growth rates picked up again due to a more dynamic global economy, the structural changes in China and other developing countries, the decline in world interest rates and biofuels mandates, all of which led to stronger demand and higher commodity prices, peaking in 2008 and 2011. This period was interrupted by the global financial crisis of 2008 and 2009. The world has moved to a period of relative low growth since then, with indications that a new global period may be opening with retreats in economic integration and increases in geopolitical risks (Díaz–Bonilla, 2015, 2016).

Latin American and Caribbean countries have achieved, with some glaring exceptions, better calibrated macroeconomic policies. But it remains to be seen how they will fare in the more complex and uncertain world that is emerging.

5. Final thoughts

Given the importance of agricultural production and food security, developing–country governments usually adopt an array of interventions covering the farmer, the rural setting and the value chains, plus different aspects of the overall economy. Macroeconomic policies are just a component of that broader range of government interventions, but they can have significant effects on agriculture and food security, affecting in turn the achievement of policy objectives such as sustainable growth, poverty and inequality reduction, and food security and safety. This is a vast topic that was only briefly discussed here.

A macroeconomic policy appropriate for the agricultural sector (and in fact for the whole economy) is one that maintains fiscal balances and avoids the overvaluation of the exchange rate, which reduces significantly the possibility of crises and ensures that tradable products (which many agricultural products are, on the export or the import side) are not placed at a disadvantage. A monetary framework that maintains single-digit inflation levels is also needed, but it has to be flexible enough to accommodates external shocks without overreacting, and not try to force very low levels of inflation with high interest rates that lead to exchange rate overvaluation, inflows of volatile short-term capital, and dollarization of the banking system. Regarding credit, agriculture most likely needs specific credit programs, institutions and instruments with an updated vision of financial markets, that emphasize a variety of instruments and approaches for financial inclusion.

Having a properly valued exchange rate also allows the use of more neutral commercial policies, acknowledging on the one hand that excessive levels of protection on food and agricultural
items represent a tax on consumers (affecting more the poor) (see estimates of trade protection in Díaz–Bonilla and De Salvo, 2019). In the case of individual products, the best instruments are investments in human capital, infrastructure and technology. If the concern is about poor producers, then, rather than protection for a specific crop, it is better to implement safety nets, which can be expanded to support adoption of improved technologies and sustainable practices. On the other hand, a policy of complete free trade in agriculture and food production may not necessarily increase national welfare if it leads to increases in unemployment of factors of production that are not easily transferred to other activities and there are no other policy instruments available to facilitate the (probably long) transition to other employment opportunities and support incomes during that process. In general, it is important to balance the needs of consumers, on one hand, and producers and workers, on the other, taking into account the net welfare and employment consequences.

Two final points. First, policymakers should consider how macroeconomic policies interact with the country’s structural conditions (including issues like land tenure) and the state of the global economy. The same macroeconomic policy may have different effects depending on those domestic and global conditions. Second, all policies have distributive consequences. Therefore, the income distribution impacts and the political economy of macroeconomic policies need to be understood and considered in policy making.
6. References


Inter–American Development Bank (IADB). 1995. Informe del progreso económico y social en Latinoamérica y el Caribe. Washington, DC.


