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The Dominican Republic ranked among the faster growing economies in Latin America and the Caribbean (LAC) in the 1990s. Early in the 1990s, macroeconomic stabilization was accompanied by trade liberalization, reforms of pricing and tax policies and the financial system, and privatization of public enterprises, all of which generated conditions for rapid economic growth. Per capita income increased at an average annual rate of 4.1 percent during 1991-2000 and at 3.5 percent in 2001-02 when most of the region slumped. Thus income per capita more than doubled over the period, reaching US\$3,250 in 2005.

In addition to preferential access to the US market —conferred by the Caribbean Basin Initiative (CBI) in 1984—the Dominican Republic enjoyed relatively open access to international markets for exports, particularly of agricultural products, as a result of becoming part of the Lomé Agreement in 1992. Preferential access to the US market will be consolidated with the implementation of the Free Trade Agreement signed with the United States and Central America (DR-CAFTA) and put into effect in March 2007.

Nonetheless, poverty remains high, and unemployment is a major issue for the Dominican Republic. The country has been an under-performer in terms of progress in poverty reduction and social indicators, especially in light of the high level of economic growth. Social indicators remain below other countries with similar incomes per capita. In late 2002 to mid-2003 the country entered a severe economic crisis in the face of major bank failures and domestic policy weaknesses. This brought about a significant rise in poverty as the population (especially the poorest) was faced with dramatically eroded real incomes.

Taking a longer-term view, the economic structure of the Dominican Republic has been transformed in the last 50 years. From a mainly farming economy, the Dominican Republic has become an economy where services and manufacturing are the main sources of employment,

foreign exchange and income earnings. Despite its abundant potential— the country is endowed with a diverse topography and abundant rainfall across most of the country, allowing year round agricultural production— agricultural production has grown slowly during the last 50 years. The agricultural sector lost importance over the period due to an array of government interventions, which introduced price distortions and reduced the sector's competitiveness.

This chapter reports on new estimates of indicators of direct and indirect assistance to (or taxation of) the agricultural sector in the Dominican Republic, with a view to assessing the performance of the agricultural sector in light of the economic reforms and the new wave of trade liberalization. The chapter is structured as follows: first, we provide a general overview of economic reform in the Dominican Republic and the performance of agricultural sector. We then examine the different government interventions through macro and sectoral policies, which influenced agriculture activities. We present a quantitative assessment of the effects of trade and price interventions for several agricultural commodities in the Dominican Republic on agricultural incentives during the past 50 years, using the approach in Anderson et al. (2008). This information is complemented by measures of non-price transfers through government expenditures to and from agricultural producers. In the final section some policy issues, relevant for an agenda for further reform of the agricultural sector in the Dominican Republic, are identified.

Growth, structural changes, and policy evolution

The Dominican Republic comprises 4.8 million hectares of land on the island of Hispaniola. It is bordered on the west by Haiti. There is great variation in topography and climatic influences, and land use differs from region to region. The country has ample natural resources upon which to build a dynamic agricultural sector, with 13 percent of its land considered suitable for intensive cropping and 32 percent considered suitable for pasture or less-intensive cropping. Rainfall is adequate but unevenly distributed, so several areas rely on irrigation for agricultural production.

During the 1950s and 1960s, farming activity represented more than 27 percent of GDP (Central Bank 2005). By 1970 the contribution of agriculture was still 23 percent but by 2000-04 its share of GDP had fallen to 11.7 percent (Figure 1).

Some of the decline was due to the poor performance of some agricultural activities. In the 1970s the sector's growth rate was almost half that in the 1960s, and in the 1980s it was close to zero. Agricultural growth recovered somewhat in the 1990s, due particularly to the significant growth of poultry and pork. And it has grown faster than the rest of the economy in the first half of the present decade (Table 1).

The contraction of the share of the farming sector in GDP has been most remarkable in the case of crop activities. Looking at the past two decades, these trends include a reduction in the share of traditional export crops in total agricultural production, an increase in the share of the production of rice, fruits, vegetables, others crops (mainly plantain, bananas, palm fruits, bulbs and roots), and the consolidation of poultry production as the most dynamic activity among livestock activities.

Domestic agricultural markets were affected by price control, duties, non-trade barriers and exchange rate misalignment, and non competitive market structures especially from Government agencies. The government put in place a policy of subsidizing urban consumers at the expense of local food producers. The heavy intervention brought about a strong distortion of relative prices and, as a consequence, a resource misallocation in the agricultural sector and in the economy as a whole. Investment in agriculture greatly decreased, which adversely affected crop production especially for export.

Along with the reduction in the farming sector's share of GDP has been a reduction in the share of economically active population occupied in farming activities. In 2006, 15 percent of the economically active occupied population was working in the farming sector, compared to 55 percent in 1970 (Banco Central 2006). The share of economically active people living in rural areas averaged 48 percent in the 1980s but by 2006 it had shrunk to 26 percent.

Macroeconomic context

Since 1950, the Dominican Republic has undergone various cycles of growth. In the 1950-58 period, real GDP grew by 6.5 percent per year, but it then slowed under the pressures of political conflict and civil war. After 1966 a favorable external environment and political stability led to an

accelerated growth rate for the next ten years. Government policy actively promoted investment with tax and tariff concessions to the private sector, which led to rising investment in import substitutions industries, construction, and selected export activities. These policies were initially effective in promoting private investment, but the effect of tax concessions soon began to fade away as public investment and other resources were channeled into sectors that were not internationally competitive (World Bank 1987).

Buoyed by expanding world trade and high prices for traditional agricultural and mining exports, the Dominican Republic economy experienced rapid economic growth during 1968-74, with GDP growing at an average annual rate of 11 percent (Development Associates 1985). Rising world sugar and coffee prices shielded the domestic economy from the drastic 1974 oil price increase: in the period 1974-79, GDP grew on average at 5 percent per annum.

A sharp increase in oil prices in 1979 and a drop in world sugar prices in 1981 brought about significant trade and fiscal imbalances for the Dominican Republic. A factor contributing to the government's fiscal deficit problem was the loss incurred by public sector enterprises. Price controls, inappropriate and unrealistic exchange rates, import substitution, unfavorable export trade policies, and other structural inefficiencies exacerbated the situation (Development Associates 1985). By 1984, the parallel market exchange rate premium increased briefly from 20 percent to 200 percent, real GDP growth declined to less than 2 percent, and the official exchange rate devalued. The subsequent abolition of the dual exchange rate and temporary surcharges, combined with food price adjustments in 1984, removed many of the pricing disincentives (World Bank 1987).

An ambitious public investment program was put in place by the new government administration in the mid-1980s, aimed at restoring economic growth. It led to a situation of high inflation and depreciation of the national currency in the late 1980s, which was the prelude to one of the worst economic crises experienced by the country in the twentieth century. In 1990, GDP fell by 6 percent, the consolidated fiscal deficit reached 5 percent of GDP, the inflation rate was 79 percent, and official and parallel market exchange rates were depreciated by 60 and 36 percent, respectively (Lizardo 2003).

A tight monetary policy that produced a drastic reduction of internal credit, along with control of the official exchange rate, allowed a significant reduction in the inflation rate after

1992. After this year, the inflation rate remained below two digits, except in 1994 and 2002 (World Bank 2005).

In late 2002 to mid-2003 the country entered into a severe economic crisis in the face of major bank failures and domestic policy weaknesses. A situation of currency depreciation, spiraling inflation, electricity blackouts, and deterioration of basic services caused a significant rise in poverty as the country sought to cope with dramatically eroded real incomes. Since 2004, economic stability has improved. However, changes in the external environment, particularly high oil prices and a free trade agreement with the United States, pose mid-to-long term challenges and opportunities.

Trade and price policies

Reform of the Dominican Republic's agricultural price and trade policies has been taking place against a backdrop of significant declines in the profitability of agriculture. Prior to 1990 the trade regime of the Dominican Republic was characterized by high tariff levels. It was also common to find policy instruments such as levies, quotas licenses and import/export prohibitions based on laws, presidential decrees, administrative measures, and rules and regulations. In most cases, some of the administrative measures overruled current Laws. Trade policies taxed agricultural exports heavily (both explicitly and implicitly through the exchange rate system) and pricing policy kept urban consumer prices low through a network of controls and subsidies.

In the first half of the 1990s and early 2000, the share of international trade taxes in total tax revenues in the Dominican Republic was high not only by regional standards but globally. The share of total tax revenues coming from international trade taxes was 46 percent in 1990-94, but by 2003-05 it had fallen to 25 percent (Central Bank 2005). In the years 2004 and 2005, government revenues generated from import taxes escalated to 29 and 24 percent respectively (Central Bank Bulletin, 2006). This included a foreign exchange surcharge on imports, which was minor in the 1990s but was raised in 2003 and again in 2005 when it accounted for 13 percent of total fiscal revenues before it was eliminated in 2006.¹

¹ In 1991 the Monetary Board issued a Resolution establishing a transitory exchange rate surcharge of 1.5%. Later in 1998 it was increased to 1.75% and then to 5% in October 1999. In September 2001 the Monetary Board decided to dismantle gradually the exchange rate surcharge and established a 0.25% reduction. However, in October 2003 the exchange rate surcharge is increased to 10% and in January 2005 it was raised to 13%. Finally, and to comply with WTO and DR-CAFTA mandate, the exchange rate surcharge was eliminated in June 2006.

Trade reform was initiated in 1990 and the country' took on further liberalization commitments in 1994 at the conclusion of the Uruguay Round's Multilateral Trade Agreement, moving towards tariffication by eliminating quantitative restrictions and removing export taxes and quotas. The new regime introduced By-Law 14-93, which set nine tariffs between 0 and 35 percent (De los Santos, 2001).

The Government introduced a technical rectification before the World Trade Organization (WTO) for eight farm commodities it considered very sensitive. They are poultry parts, powdered milk, red beans, rice, garlic, onion, corn and refined sugar. For these commodities, the country set in place a system of tariff rate quotas and set different bound tariff rates. The technical rectification was proposed for 10 years (1995-2004), although it did not enter into effect until 1999.

There have been numerous reductions in import duties since 1990. In 1995 import surcharges were removed, which lowered average duties on imports. In June 1997 the government enacted a law (Law No. 150-97) eliminating import tariffs for most agricultural inputs and machinery.

After the Trade Reform of 1990, the average tariff for agricultural products was 23 percent, while the average tariffs for capital goods and inputs used in agriculture were initially 6 and 8 percent, respectively before being further reduced in 1997 by two percentage points. The trade reform of 2001 reduced the tariffs for all three categories of goods.

With the implementation of the Free Trade Agreement with the United States and Central America (DR-CAFTA), tariffs on goods imported from member states will be reduced even further and eventually eliminated. The phase-out period varies depending on the nature of goods. In the case of sensitive agricultural commodities such as rice, poultry and milk, the phase-out period is 20 years and Tariff Rate Quotas and special safeguards have been established. A summary of negotiations in terms of market access is presented in Appendix Table 1.

Agriculture performance and policies

Agricultural production has not shown great dynamism in the Dominican Republic: agricultural GDP grew at 2.9 percent per annum during last 35 years compared with 5 percent growth for the Dominican economy as a whole (Table 1). Agricultural imports have increased greatly while exports have been stagnant, especially in the traditional commodities such as sugar, tobacco and

cigars, cocoa, and coffee. This has been caused in part by unfavorable external market conditions, but is also due to the array of government interventions that prevented agricultural development.

The agricultural commodities that did experience increased production over the period were assisted by the government. Rice production, for example, increased significantly from 1970 to 2004. This is because the Dominican Republic had a goal of self-sufficiency in basic staple food, especially rice, and most of the government subsidies and financing from the Agricultural Bank were devoted to rice production.

Livestock activities show mixed results. Poultry production increased and had the highest growth rate in the sector during the 1990s. Pork production also experienced significant growth after 1980, when the total pig population had to be eliminated due to the presence of swine fever. On the other hand, dairy production stagnated during the period. Some domestic policies such as price controls, and subsidized imports, had negative impacts on domestic milk production.

An analysis of the evolution of producer prices shows that, between 1970 and 2005, all major agricultural producer prices declined in real terms. On average, the price decline for importables was larger than for exportables, which led to increased political pressure by farmers for protection of import-competing sub-sectors.

Agricultural trade

Until the mid-1980s, traditional agro-industrial goods represented more than 50 percent of total exports. However, by the late 1990s, this had changed and exports from export processing zones represented more than 80 percent of total exports. In the 1990s, traditional agro-industrial exports declined at an average rate of 5 percent per year, while non-traditional exports grew at an annual 12 percent, increasing their share of total exports outside processing zone exports from 12 percent in 1990 to 27 percent in 2001 (Lizardo 2003).

Sugar has been by far the main agricultural export commodity. The country enjoys preferential access to the United States market and it was the main beneficiary of the quota granted to Latin American countries by the United States. Prices under the quota regime are twice as high as world market prices. Exports of sugar to world market by the Dominican Republic are insignificant in global terms. In 2005, exports totaled US\$74 million, half the value of 1997 exports, the year following the Dominican Republic's sugar mill privatizations. After the

privatization, sugarcane production dropped sharply and some of the sugarcane fields were diverted to tourist resorts and other agricultural activities.

Coffee and tobacco are important agricultural commodities for export. The Dominican Republic exports tobacco to Spain, although these exports have been declining due to the new regulation applied after Spain joined the European Union. Nonetheless, the Dominican Republic has been exporting manufactured tobacco and has become the world leader for the export of cigars. In 2004 exports of tobacco and manufactures accounted for US\$218 million. Coffee export earnings declined significantly in the last decade due to a reduction in international prices of more than 50 percent, a hurricane that struck the country in 1998, and the presence of a parasite called “coffee berry borer” that negatively affected coffee plantations. Export earnings dropped from US\$68 million in 1997 to US\$8 million in 2005. However, the country has been successful in exporting organic coffee to the European market. Most of the other private investment in agriculture has been diverted to the production of non-traditional export crops such as banana, citrus, mangos, avocados, palm oil and winter vegetables.

The main market for the Dominican Republic’s exports is the United States, which in recent years has absorbed nearly 50 percent of the country's total exports. The other main markets are the European Union (17 percent), Puerto Rico (8 percent), and Korea and Japan (11 percent). The country benefits from preferential US market access through the Caribbean Basin Initiative and the US preferential sugar market scheme.

Some production has preferential market access to the European Union due to the Cotonou Agreement. By virtue of that agreement, exports of agricultural produce, especially bananas, can enter the European market free of duty. Banana production was significant in the 1990s due to the preferential access of Dominican Republic exporters to the European Union. As a consequence, banana exports increased from 4,000 tons in 1990 to 92,000 tons in 1992 and 134,000 tons in 2004, valued at US\$36 million.

Notwithstanding the Dominican Republic’s agricultural exports, the country has to import significant amounts of foodstuff to satisfy domestic demand for both animal and human consumption. In 1995 agricultural imports accounted for US\$536 million, and ten years later they were US\$826 million. The main imported foodstuffs are wheat, corn, dairy products, sorghum, milk, cooking oil, rice and red beans. Most agricultural imports come from the United States.

During the 1995-2004 period the share of agricultural imports in total imports was on average 18 percent (Appendix Tables 2 and 3).

Credit policy

The resources devoted to the agricultural sector by the banking system, as a percentage of agricultural GDP, has been diminishing since 1990. Starting in June 1993, the Dominican Authorities adopted a new approach toward banking supervision and regulation. The objective was to increase banking supervision to comply with international standards, and to improve transparency regarding prudential regulation, accounting and disclosure of information of financial institutions (IMF 1995).

The reform affected agricultural loans in two ways: First, interest rates skyrocketed. Second, due to the new norms on provisions, loans were classified according to the debtor's payment record and capacity to repay, and the quality of the collateral backing the loan. Commercial Banks were reluctant to offer credit to agriculture activities because they had to make higher provisions (a higher percentage of outstanding balances) due to the high risk of these loans. Most agricultural loans were classified in the Significant Risk and High-risk categories, which required 20 and 40 percent provision, respectively.

A significant proportion of agricultural business financing comes from moneylenders, because there are fewer prerequisites and credit is more readily available. Despite its importance, there are no assessments of the amount of money channeled to agricultural business through this outlet, because moneylenders are not included in the formal financial system. However, some economists estimate that around 40 percent of agricultural business financing comes from moneylenders. The interest rate charged by these moneylenders can be as high as 20 percent a month.

The government provides subsidized loans through Banco Agrícola (a public bank specializing in financing agricultural activities) and DEFINPRO.² This subsidized credit is oriented to finance small and medium sized farmers. It accounts for less than 20 percent of the total financing to agricultural activities. Rice is the major beneficiary of loans from the public

² DEFINPRO was a department from the Central Bank of the Dominican Republic oriented to finance development projects in several economic sectors. Public funds were allocated to finance economic activities through the private development banks. After the new monetary Law enacted in 2002, this entity was dismantled and its resources were channeled through the Banco Nacional de la Vivienda (National Housing Bank).

bank, followed by cattle, poultry, the purchase of seeds, and to a lesser extent the production of garlic, plantain, potatoes and onions. In 2004, rice financing represented 60 percent of total financing provided by the Banco Agrícola, and around one-third of this was oriented to land reform by rice producers (Banco Agrícola 2005). Animal production accounted for another 15 percent of total financing in 2004.

Government interventions in the agricultural sector

The major instruments used by the Dominican Republic authorities to support the agricultural sector have been border protection, although at a decreasing rate, public investment, subsidized and directed credit, price supports, and the provision of agricultural services.

Foreign trade measures

The trade regime in the Dominican Republic has involved an array of discretionary measures aimed at achieving certain policy objectives. Legislation for export promotion has been erratic. Up until recently, important agricultural commodities were subject to export taxes. That was the case of sugar, coffee, cocoa and tobacco during the 1980s and for part of the 1990s. Until 2003, traditional agricultural exports (sugar, cocoa, tobacco and coffee) had to surrender their foreign exchange to the Central Bank.

In June 1995 the Government eliminated the exchange rate tax it applied to imports. This levy was calculated on a CIF value basis. A further reduction of import tariff levels occurred in 1997 when tariffs on machinery and equipment, and inputs used by the agricultural sector, were eliminated. In 2001, tariffs for final agricultural goods not included in the “*Rectificación Técnica*” were further reduced to a maximum level of 20 percent, but latter tariffs were increased to 40 percent for a group of animal products.

In 1998 all non-tariff measures established by decree or administrative means were eliminated, but those established by law remained in place. In some cases these laws authorized public institutions to control prices and to intervene in agro-food markets. Currently, import licenses are needed to import red beans, poultry, garlic, onion, pork, milk, potatoes, rice, sugar,

and tomato paste. Sugar can only be imported through the quote mechanism negotiated under the WTO agreement. In the case of rice, garlic, onions, poultry and red beans there is an internal bidding mechanism to allocate import licenses among producers, traditional importers and wholesalers. There are still high levels of discretion regarding the allocation of import licenses in cases where public and private bilateral commissions are in charge of authorizing those licenses, such as the Comisión Nacional Arrocería and the Instituto Azucarero Dominicano (INAZUCAR). The Ministry of Agriculture issues import phytosanitary permits for fruit, plants, flowers and vegetables.

Domestic market interventions

During the 1970s and 1980s, there was in place a complex system of price controls and consumer subsidies that operated through four mechanisms: low official foreign exchange rates for food imports, subsidized foreign credits for food imports, financial subsidies to cover food trading losses by the state monopoly, and internal cross-subsidies among products (World Bank 1987). These distortions induced by market price interventions in the agricultural sector have been reduced since the mid-1990s. The liberalization process has led to a cutting back of the role of the Agricultural Marketing Board (INESPRE) to a minimum level.

Notwithstanding the reforms, there remain substantial differences in the way importable and exportable crops are treated. One of the most powerful marketing intervention instruments in place is the Crop Warehousing Program (mainly for rice but sometimes for beans and garlic). Through this program, producers can store their harvest in government or processors' warehouses. The government covers the financial cost of storage (up to 70 percent of the value). In 2006, the government devoted RD\$350 million to the Crop Warehousing program. Rice accounted for 85 percent of the total outlay. The system stabilizes the prices of importables and spreads the supply over time. In doing so it favors the actors in the production chain at the expense of taxpayers and consumers (World Bank 2005).

Price policies

Before the reforms of the early 1990s domestic marketing of agricultural products involved the National Marketing Board, INESPRE (Instituto Nacional de Estabilización de Precios). It established support prices for a wide variety of crops such as rice, red beans, garlic, onions and

potatoes. This official marketing agency controlled the distribution of key staple products and regulated internal consumer and producer prices.

The deregulation of the domestic market was initiated in 1990 when the government eliminated price controls on several agricultural commodities. In 1991 the Government also eliminated the consumer subsidy for wheat flour and sugar, and price controls on rice and poultry. The Price Stabilization Institute, which was in charge of price regulation, was closed down. From mid-1992 until mid-1997 INESPARE reduced its level of intervention in the domestic marketing of agricultural commodities. Instead its role became simply surveillance of some staple foods such as tomato paste, sugar, rice, sorghum and garlic.

In relation to programs that existed prior to 1998, De los Santos (2001) argues that the programs were not capable of fostering the development of farmer capacity for product marketing. The programs have also been characterized by insufficient infrastructure that does not guarantee an appropriate level of handling of the products offered, poor targeting to the poorest population, and sustainability problems due to fiscal constraints. In general it generated false expectations about prices for farmers, some of them producing on marginal and fragile lands, and it discouraged the switching of production to more competitive products. In several instances, INESPARE was not able to honor its debts with producers on time, which resulted in additional costs for producers.

At present, the Government still intervenes on a handful of crops such as rice, red beans and garlic. In the case of rice, the Government — through the National Rice Commission (composed of representatives of producers, rice mill owners and government officials) — recommends producer prices and determines the volume to be imported by the country when necessary. Similarly, the government provides price support to garlic and red bean producers by issuing import licenses to middlemen who buy local production at a previously agreed price level.

Agricultural services

There used to be several public agro enterprises operated by the Ministry of Agriculture (SEA) that provided subsidized seed, inputs and mechanization assistance to farmers. The Government provided assistance in the form of free seeds, and subsidized water and credit. To a lesser extent than in the past, the SEA also provides machinery services.

Irrigation services are provided by the Instituto Dominicano de Recursos Hidráulicos (INDRHI), which is responsible for the construction and operation of irrigation infrastructure. An irrigation flat fee per hectare is charged to water users based on the estimated annual budget for maintenance, operation and conservation of irrigation systems; type of crops being cultivated (mainly rice) and farm size (smaller and larger than ten hectares). The irrigation fee per hectare remained fixed from 1989 to 1997, when it was modified. Several studies estimate the magnitude of the water subsidy received by farmers. Associates Inc./Agroforsa (2002) estimate that, on average, only 30 percent of the cost is recovered from users. Whitaker (1999) noted that the level of subsidy per hectare/year differs among irrigation systems ranging from 72.7 to 86.2 percent.

In the late 1990s, the authorities transferred more control operation and maintenance systems to water users (Junta de Regantes) in order to improve water administration. The country is also in the process of passing a new Water Law, which will establish a pricing scheme designed to promote more efficient water use.

Land policy

Land reform was established in 1962 with the approval of the Land Reform Law and the creation of the Dominican Agrarian Institute (IAD). The overall objectives were to reduce land concentration and to make land more accessible to landless peasants. Since 1962 the Government has gathered 638,000 hectares of land — equivalent to 25 percent of total land suitable for agricultural activities — to be distributed among 95,250 landless peasants. Most of the land distributed was either Government Land (59 percent) or land bought by the Government (30 percent). The other sources of land were donations and acquisition through the Land Quota Law. The average plot was 60 tareas (3.75 hectares), to be cropped individually or collectively.

The prevalence of provisional land titles prevents land reform farmers from participating in private formal credit markets. The titling process in areas out of the Land Reform has also been costly and lengthy, which means high transaction costs continue. The Program of Modernization of Land Jurisdiction, established in the late 1990s, is oriented to the modernization of the land titling legal framework and the administrative procedure.

Public investment

Public expenditure on agricultural related activities has been decreasing as a proportion of GDP. Based on a consolidation of the agriculture and rural public budget done by Gómez (2001), the share of the national budget devoted to agriculture and the rural sector decreased from 15.5 percent in 1985 to 12.1 percent in 1995 and to 11.3 percent in 2000.

The main activities sponsored by the public sector were irrigation programs, credit programs, land reform and the promotion of production and marketing. A significant proportion of agriculture and rural public expenditure is oriented to the payment of personal services and other operating expenditure. During the 1990s, operating expenditure absorbed 51 percent of total agricultural and rural budget, while real investment accounted for 38 percent (Gómez 2001). Government expenditures devoted to the provision of subsidies and other private goods accounted for two-thirds of the total, with only one-third going to public goods (Lopez 2005, World Bank 2005).

During the 1990s, the government executed several projects intended to foster rural development, increase food production, and preserve the natural resource base. These projects were focused on poor areas that lacked basic infrastructure and that had fragile environmental conditions. As part of the strategy to protect watersheds, an effort was made to train farmers in the adoption of sustainable agricultural practices, the construction and rehabilitation of irrigation infrastructure, the construction of sanitary facilities in rural houses, and the distribution of land title to improve access to private financial resources.

Agricultural research received significant support after the establishment of the National Research Agricultural System (SINIAP) in 2000/2001. This included the start-up of the Dominican Institute of Agricultural and Forestry Research (IDIAF) as the executing arm of the agricultural technology policy. It also included the creation of the National Council for Agricultural and Forestry Research (CONIAF) as a mixed public-private umbrella for the promotion of technology. Likewise, the Center for Agriculture and Forestry Development (CEDAF), devoted to human capacity building, was strengthened. A competitive fund also operates in CONIAF to carry out technology adoption projects based on producers' demands. These three institutions are almost entirely financed by budget resources, although IDIAF receives small contributions from specialized international agencies and CEDAF self-finances some of its services (World Bank 2005).

Estimating direct and indirect distortions to agricultural incentives

The pattern of government interventions affecting farmer incentives in the Dominican Republic prior to the reforms was very similar to that in other developing countries at the time. They were summarized by Krueger, Schiff and Valdés (1988) as having three key elements: encouraging the growth of non-farm activities through policies of protection against imports competing with domestic production; overvaluing the exchange rates through exchange-control regimes and import licensing mechanisms; and suppressing producer prices of agricultural commodities through government procurement policies and export restrictions/taxation.

Schiff and Valdés (1992, Table 2-3) summarize their project's empirical estimates of the income transfers from direct and indirect intervention in agricultural markets for the Dominican Republic. Their estimate of direct intervention is the percentage by which the domestic producer price diverged from that that would have prevailed in a well-functioning market at free trade, under the actual exchange rate and the degree of industrial protection. This measure is equivalent to the nominal rate of protection (NRP). The authors find that importables tended to be protected (NPRs of 23 percent in 1966-72 and 38 percent in 1976-85) while exportables tended to be taxed (NPRs of -33 percent in 1966-72 and -26 percent in 1976-85). Their total direct NPR estimate for all agriculture was -24 percent in 1966-72 and -17 percent in 1976-85. Their indirect estimates include the effect of trade and macroeconomic policies on the real exchange rate and the extent of protection afforded to nonagricultural commodities. They find that the negative impact of indirect interventions on producer incentives was even slightly stronger than the impact of direct incentives for the Dominican Republic. As a result, their estimates of the total negative impact on DR agriculture (direct plus indirect) are huge: -50 percent in 1966-72, and -36 percent in 1976-85.

In this section we present alternative estimates of distortions in agricultural incentives in the Dominican Republic for a much longer time period: the past 50 years (1955 to 2005). The present project's methodology also focuses on government-imposed distortions that create a gap between domestic prices and what they would be under free markets, generating estimates of the

effects of direct agricultural policy measures, but it includes distortions in the foreign exchange market as they affect those producers directly. And it also generates estimates of distortions in non-agricultural sectors for comparative evaluation, but again including distortions in the foreign exchange market as they affect those nonfarm producers of tradables directly. Specifically, the main indicators used in this project are the Nominal Rate of Assistance (NRA) to an industry or sector, and the Relative Rate of Assistance (RRA) to agricultural as compared with non-agricultural tradables (see Anderson et al. 2008). The RRA is indicating similar effects as the total (direct and indirect) measure reported by Schiff and Valdés.

Ten commodities are included in the analysis, characterized as importables (rice, garlic, onions, red beans and poultry), exportables (sugar, coffee, banana and tomatoes), and nontradables (cassava). The selected commodities account for around 40 percent of total agricultural value added, 40 percent of total exports, and 20 percent of total agricultural imports. These products are the ones in whose markets the government most frequently and significantly intervenes. Their shares in the value of agricultural production are shown in Table 2.

The estimated NRAs for the 13 covered products are summarized in Table 3. Those covered products account for about two-fifths of the country's gross value of production at undistorted prices. For most products during most years, farmers producing exportables faced negative rates of assistance. By contrast, import-competing agriculture experienced positive rates of assistance. For the farm sector overall, Figure 2 shows the average NRA was negative in most periods but it has become slightly positive in the past decade.

Non-covered farm products also have been affected by government policies. In the absence of adequate information on them, we have assumed their NRA in aggregate is the same as the average NRA for the covered products. Non-product-specific assistance to the industry also is not available, so it is ignored. That means the estimates of the NRA for the sector as a whole is the same as that for covered products. It is slightly different for the tradables part of the farm sector, because cassava is a nontradable. Because the NRA for import-competing farm products was always well above that for exportables, there has been a strong anti-trade bias that has not reduced very much despite the reforms (row 6 of Table 4).

The NRA for agriculture contrasts with the NRA for non-agricultural tradables. The latter has been estimated by again dividing up each of the non-farm sectors into exportable, nontradable

and import-competing sub-sectors. Those sectors include non-agricultural primary products, highly processed food, non-food manufactures, and the service sector. Their average NRA is estimated directly from information on import tariffs in the case of import-competing tradables. Prices of exportables and nontradables in non-farm sectors are assumed to be undistorted, including for the whole of the service sector. Those NRAs are summarized in row 8 of Table 3. The average rate of assistance to all non-agricultural tradables averaged around 10 percent in the 1970s and 1980s but it has gradually fallen since the reforms began and is now only 4 percent and in the present decade to date. This is illustrated in Figure 3, together with the trend in the average NRA for agricultural tradables and the relative rate of assistance (RRA, derived from those two NRAs, as described in footnote b of Table 3). It shows that, relative to other sectors, the taxing of agriculture peaked at around 40 percent in the 1980s,³ but during the past ten years the RRA has become slightly positive with the NRA for agriculture exceeding that for non-agricultural tradables.

Sugar and coffee were the main beneficiaries of the reduction in government price and market distortions. In the case of sugar, after the privatization of public sugar mills, domestic production decreased considerably and all sugar exports were sold only in the preferential US market receiving an export price higher than the world market. The elimination of the foreign exchange surcharge for traditional export crops, and of the need to surrender foreign exchange to the Central Bank, greatly reduced all government intervention in those commodity markets.

Prospects

According to these RRA estimates, the Government has made considerable progress in leveling the playing field for agriculture as a whole. The INESPRES quasi monopoly power on imported agricultural commodities has been greatly downsized. Similarly the country has initiated a Free Trade Agreement with Central America and the United States, which will further reduce

³ The average of the RRA for the period 1976-1985 was -32 percent, very close to the estimate of the total (direct and indirect) measure reported by Schiff and Valdés (1992, Table 2-3) of -36 percent.

distortions and improve resource allocation in agriculture. However, the country still has a strong anti-trade policy bias within the agricultural sector, so plenty of scope remains for further reductions in distortions by opening the market for import-competing farm products.

In addition to the challenges of increasing the country's integration with the global economy, there is much scope for improving the quality and quantity of public expenditures in order to provide adequate public goods that foster agricultural and rural development.

It seems that assistance has been allocated with the objective of ensuring food security, but also because of political pressure from interest groups who engage in rent-seeking activities. Although the Dominican Republic government spends a significant amount of resources on the agricultural and rural sector, the allocation and effectiveness of this expenditure is poor. Innovative approaches to government expenditures in the agricultural sector are needed if the process of agricultural modernization is to accelerate. More emphasis should be on the provision of public goods to help build human capital and to invest in the protection of natural resources and the environment. Further, with the implementation of DR-CAFTA, the opportunity to increase market access for agricultural commodities will depend on the ability to meet sanitary and phytosanitary requirements. It is also important to strengthen the national capacity for the provision of services for certification on Good Agricultural Practices and Organic production.

With the DR-CAFTA in place there is a need to identify a set of policies aimed at increasing production and exports of agricultural goods, while still providing the necessary incentives for agricultural diversification in the medium and long run. The new more open environment also puts pressure on import competing producers who fear that they will not be able to compete. They are already asking for compensation programs to provide a transitional cushion. These programs could comprise activities such as technical support to small farmers to shift to new activities and/or to adopt more productive technologies, practices and varieties. A program of income transfers such as Procampo in Mexico has been suggested by some producer associations. This initiative has been questioned by other sectors, however, who argue that an income transfer scheme would be a 'refined' version of new distortions that would impose a budgetary burden for the government with no increase on agricultural efficiency.

More effort is needed to strengthen linkages within domestic markets and the value chain: linking agricultural production to other income generating activities such as agri- and rural tourism. The country is now in the process of implementing a National Competitiveness Plan

emphasizing the development of agribusiness clusters and the provision of a better business climate for investment in the agricultural sector. If well implemented, this could provide a boost to much-needed investment in the sector.

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Table 1: Growth in gross domestic product, Dominican Republic, 1971 to 2005

(percent per year)

	Crops	Livestock	ALL AGRICULTURE	ALL SECTORS
1971-80	2.6	5.0	3.5	7.2
1981-90	-0.8	2.1	0.4	2.4
1991-2000	2.6	5.9	4.2	6.0
2001-05 ^a	0.1	5.2	3.7	3.5
1970-2005	1.3	4.5	2.9	5.0

^a Preliminary

Source: Authors' compilation from Central Bank data.

Table 2: Shares of selected products in the gross value of agricultural production, Dominican Republic, 2001-05

(percent at distorted prices)

	2001-05
Paddy rice	10
Sugar cane	5
Coffee (green)	5
Red beans	1
Onions	1
Cassava	1
Garlic	0
Bananas	2
Tomatoes	3
Poultry	10
Other crops	32
Other livestock	27
Other	3
TOTAL	100

Source: Central Bank.

Table 3: Nominal rates of assistance to covered products, Dominican Republic, 1955 to 2005

(percent)

	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-04
Exportables^a	-39.6	-30.5	-10.9	-27.5	-36.1	-51.7	-61.0	-44.6	-13.4	-26.6
Bananas	-26.7	-26.9	-31.4	6.8	5.5	-53.4	-49.9	-52.4	-30.7	-66.6
Coffee	-67.8	-39.8	-33.8	-49.7	-49.2	-51.1	-54.5	-22.7	-20.9	-24.4
Sugar	-30.2	-28.4	8.4	-18.0	-2.3	-50.9	-68.4	-53.8	5.5	15.1
Tomatoes	-22.1	-3.2	40.6	75.5	123.4	46.4	81.1	95.5	32.2	-14.4
Import-competing products^a	100.2	107.6	40.8	14.7	15.9	20.2	6.7	69.8	48.5	49.6
Beans	32.7	46.5	53.3	24.5	54.1	66.4	41.6	144.6	84.0	99.1
Garlic	232.6	312.7	165.6	35.9	84.9	100.5	139.3	227.7	209.9	352.1
Onion	188.9	169.2	159.9	37.0	79.2	101.7	127.9	197.1	112.0	107.1
Poultry	168.6	152.0	63.2	83.6	6.9	1.0	-26.3	-18.7	11.9	6.1
Rice	84.0	95.9	25.9	5.2	8.8	12.9	14.0	150.4	67.7	86.1
Nontradables^a	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cassava	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total of covered products^a	-11.0	-5.4	5.0	-17.5	-21.2	-30.7	-36.4	-1.0	9.2	6.6
Dispersion of covered products ^b	135.0	140.7	86.5	64.0	89.3	83.0	102.3	137.1	92.6	134.1
% coverage (at undistorted prices)	40	40	40	40	40	40	40	40	40	40

^a Weighted averages, with weights based on the unassisted value of production.

^b Dispersion is a simple 5-year average of the annual standard deviation around the weighted mean of NRAs of covered products.

Source: Author's spreadsheet

Table 4: Nominal rates of assistance to agricultural relative to non-agricultural industries, Dominican Republic, 1955 to 2005

(percent)

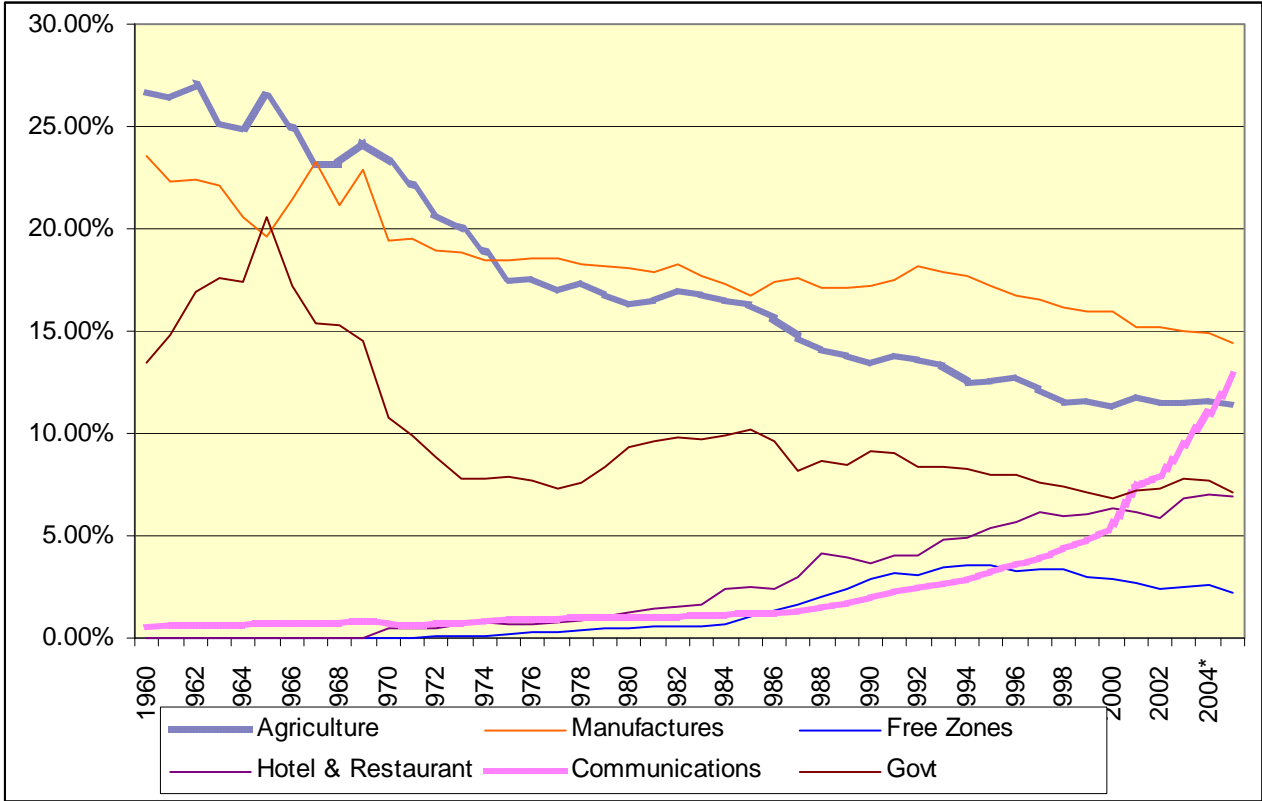
	1955-59	1960-64	1965-69	1970-74	1975-79	1980-84	1985-89	1990-94	1995-99	2000-0
Covered products	-11.0	-5.4	5.0	-17.5	-21.2	-30.7	-36.4	-1.0	9.2	6.
Non-covered products	-11.0	-5.4	5.0	-17.5	-21.2	-30.7	-36.4	-1.0	9.2	6.
All agricultural products	-11.0	-5.4	5.0	-17.5	-21.2	-30.7	-36.4	-1.0	9.2	6.
Non-product-specific (NPS) assistance ^b	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total agricultural NRA (inc. NPS)	-11.0	-5.4	5.0	-17.5	-21.2	-30.7	-36.4	-1.0	9.2	6.
Trade bias index ^a	-0.69	-0.66	-0.37	-0.36	-0.44	-0.59	-0.61	-0.67	-0.42	-0.5
<i>Assistance to just tradables:</i>										
All agricultural tradables	-11.8	-5.7	5.3	-18.2	-22.2	-31.4	-37.3	-1.0	9.7	7.
All non-agricultural tradables	7.6	7.9	9.1	8.7	10.2	10.4	10.2	9.3	5.8	4.
Relative rate of assistance, RRA^b	-18.1	-12.6	-3.5	-24.8	-29.5	-37.9	-43.0	-9.4	3.6	3.

^a Trade Bias Index is $TBI = (1 + NRA_{ag_x}/100)/(1 + NRA_{ag_m}/100) - 1$, where NRA_{ag_m} and NRA_{ag_x} are the average percentage NRAs for the import-competing and exportable parts of the agricultural sector.

^b The RRA is defined as $100 * [(100 + NRA_{ag}^t)/(100 + NRA_{nonag}^t) - 1]$, where NRA_{ag}^t and NRA_{nonag}^t are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

Source: Author's spreadsheet

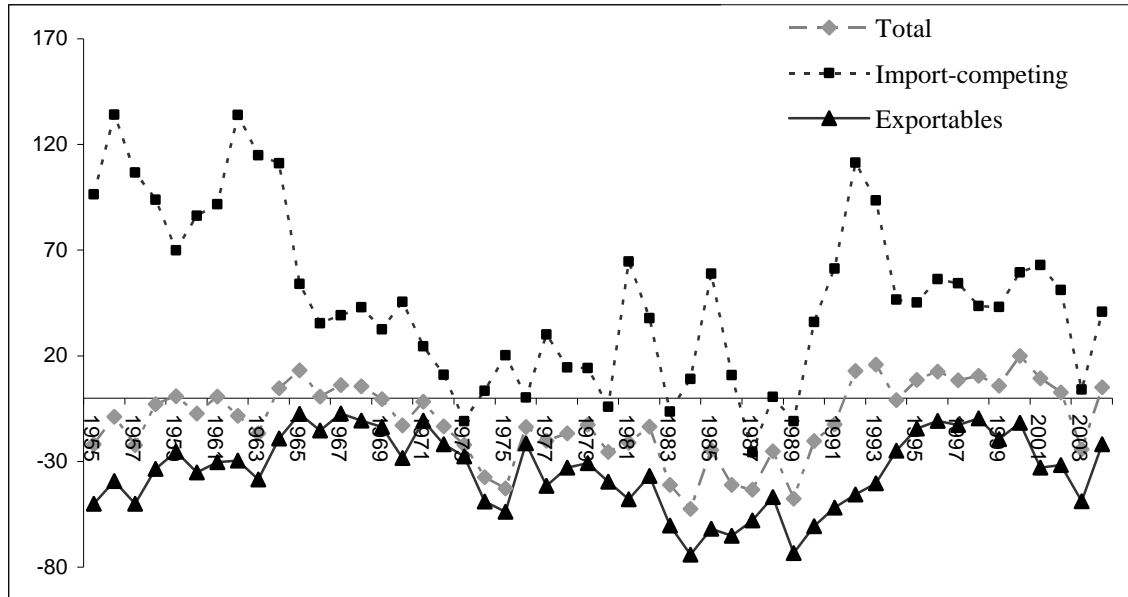
Figure 1: GDP Shares by economic sector, Dominican Republic, 1960 to 2004



Source: Central Bank

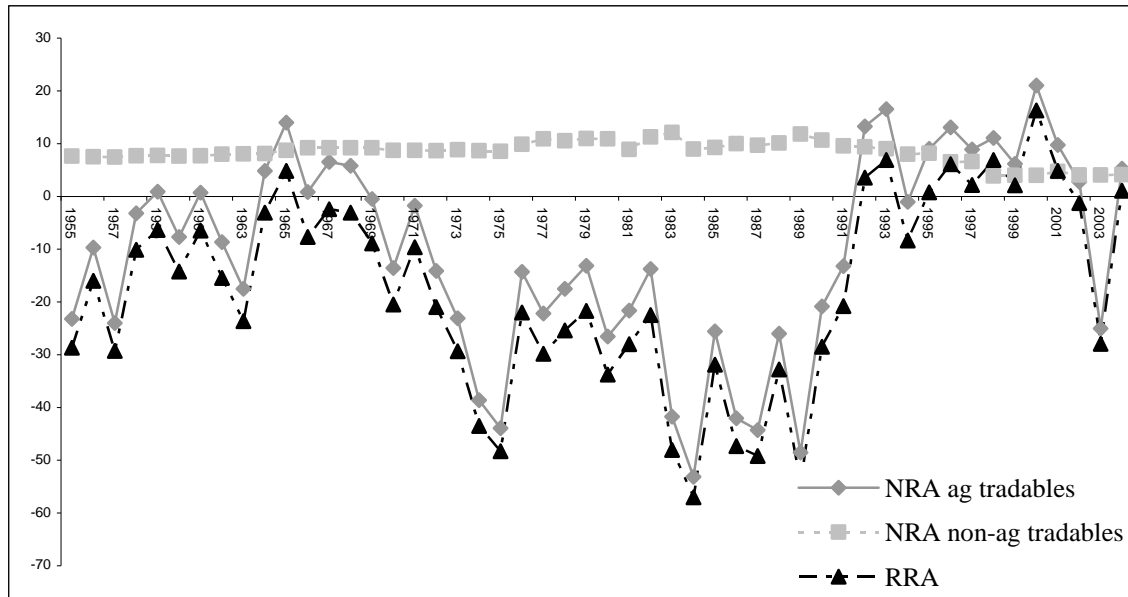
Figure 2: Nominal rates of assistance to exportable, import-competing and all^a covered products, Dominican Republic, 1955 to 2004

(percent)



Source: Author's spreadsheet

Figure 3: Nominal rates of assistance to all non-agricultural tradables, all agricultural tradable industries, and relative rates of assistance^a, Dominican Republic, 1955 to 2004
(percent)



^a The RRA is defined as $100 * [(100 + \text{NRA}_{\text{ag}}^t) / (100 + \text{NRA}_{\text{non-ag}}^t) - 1]$, where NRA_{ag}^t and $\text{NRA}_{\text{non-ag}}^t$ are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

Source: Author's spreadsheet

Appendix: Data sources and annual NRA estimates

Data on area harvested, production and yield per hectare are from the SEA and the Central Bank. To obtain border prices, CIF prices are used for imported crops. These data are from the Dominican Custom office, and were also compared to prices from the USDA-FATUS and statistics from the Central Bank. In some cases it was necessary to account for quality differences. For garlic, we differentiate seed material from garlic for human consumption. For sugar the relevant border price was the USA preferential market because the Dominican Republic does not export to the world market. Border prices for fertilizers are from the custom office, la Asociación de Fabricantes e Importadores de Productos Agroquímicos (AFIPA) and the IMF bulletin on international prices. Export FOB prices are from the Center for Export and Investment (CEI-RD) and the Central Bank Economic Bulletin. Export Prices prior to 1969 were obtained from the “República Dominicana en Cifras” bulletin from The National Statistical Office (Oficina Nacional de Estadísticas).

Domestic prices are from the Economic Department of SEA (Planes Operativos) and the Central Bank. Farmgate prices are calculated using an average of the relevant months where harvest occurred for some seasonal crops such as garlic, red beans, and rice. Domestic prices for inputs are from AFIPA, SEA and commercial stores.

Wholesale prices are from the SEA (Planes Operativos) and compared to those from the Central Bank. In two cases (rice and red beans), wholesale prices reported by SEA were lower than farmgate prices due to some government interventions through INESPRES. In this case we estimate a wholesale-farmgate margin. Retail prices are collected from the Central Bank quarterly bulletins and “República Dominicana en Cifras” bulletins.

To convert border prices into local currency, we require an equilibrium exchange rate. This is estimated using the official exchange rate reported by the Central Bank together with the parallel market rate from International Currency Analysis (1993 and earlier years), as reproduced as premia in Easterly (2006), to estimate an equilibrium exchange rate as outlined in Anderson et al. (2008).

Trade data are from the Central Bank, Custom Office, SEA and CEI-RD. We compare agricultural import data with that reported by USDA-FATUS. Export data from CEI-RD is the main source and this is compared with those from the Central Bank. Trade taxes are from the custom office and the Central Bank. Data on other taxes and on government spending are from the

National Budget Office (ONAPRES, Ejecución del Presupuesto) and the Central Bank.

Import/export tariff rates are from the General Custom Office.

To equate border prices to an equivalent farmgate price, some conversion factors are used. The technical coefficient for the different crops and poultry are estimated from the crops budgets prepared by the SEA Economic Department, the Agricultural Bank and Junta Agroempresarial (JAD) and verified by interviewing producers.

The resulting domestic and border prices are shown in Appendix Tables 4 and 5, and the exchange rates in Appendix Table 6, from which the NRAs were calculated. Also in this appendix are supportive data on trade flows and trade policies

Appendix Table 1: Principal elements of negotiation by the Dominican Republic for sensitive agricultural products, WTO and DR-CAFTA,

Product	Production 2002 / MT	Import 2002 (US\$)	Import Quota 2005 WTO /MT	Import Quota DR-CAFTA 2005	Tariff Quota outside DR-CAFTA	Out of Quota Tariff DR-CAFTA A	Import Quota DR-CAFTA 2010	Import Quota DR-CAFTA 2015
Rice – unpolished	475,955	228,670	15,261	2,140	20%	99%	2,700	3,400
Rice – polished				8,560	20%	99%	10,800	13,600
Garlic	7,000	2,726,334	4,500		25%	99%		
Sugar	4,651,045	3,444,627	30,000	1,320	15%	85%	1,800	2,400
Chicken – thighs	185,182	1,851,495	11,500	550	25%	99%	750	1,000
Chicken – deboned meat				440	25%		600	
Turkey – meat		2,836,698			20%	40%	5,250	7,000
Onions	42,727	174,283	3,750		25%	97%		
Beans	29,409	14,218,991	18,000	8,560	25%	89%	10,800	13,600
Milk – liquid	505 m. liters	12,946,040	32,200	220	20%	20%	300	
Milk – powder				2,970	20%	56%	4,050	5,400
Butter		463,743		220	20%	20%	300	
Cheese – mozzarella				138	20%	20%	188	250
Cheese – Cheddar				138	20%	20%	188	250
Cheeses – other		10,192,611		138	20%	20%	188	
Ice Cream		839,993		165	20%	20%	225	300
Yogurt		324,806		110	20%	20%	150	200
Pork (cuts)	64,000	618,855		3,465	25%	25%	5,000	7,500
Pork (trimming)		626,927		220	25%	25%	300	400
Pork (Bacon)		54,786		220	4%	40%	300	400
Pork – fat				550	8%	8%	750	1,000
Beef (prime and choice)	71,864			1,100	40%	40%	1,500	2,000
Beef (trimming)		8,544		220	25%	40%	300	400

Source: World Bank (2005a)

Appendix Table 2: Agricultural exports, Dominican Republic, 1995 to 2004

CHAPTER HS	PRODUCTO	1995 %		1996 %		1997 %		1998 %		1999 %	
001	Animales Vivos	0.034067	0.01	0.117386	0.02	0.208875	0.02	0.136384	0.02	0.19	0.03
002	Carnes y Despojos comestibles	4.535822	0.83	0.00665	0.00	0.0000665	0.00	0.000012	0.00	0.00	-
003	Pescados, crustaceos, moluscos y otros invertebrados acuaticos	2.961342	0.54	0.61379	0.09	2.057574	0.23	1.159899	0.14	0.73	0.13
004	Leches y Productos Lacteos, huevos de aves, miel natural y productos comestibles de origen animal, no expresados ni comprendidos en otras partidas	0.275659	0.05	0.211646	0.03	0.252304	0.03	0.154797	0.02	0.09	0.02
005	Los demas productos de origen animal no expresados ni comprendidos en otras partidas	0.051936	0.01	0.076564	0.01	0.076753	0.01	0.049242	0.01	0.00	0.00
006	Plantas vivas productos de la floricultura	4.382286	0.80	5.380687	0.81	5.294273	0.60	7.67	0.95	4.08	0.72
007	Legumbres y hortalizas, plantas, raices y tuberculos alimenticios	17.94155	3.27	22.877597	3.43	25.694597	2.93	28.703374	3.57	24.57	4.33
008	Frutos comestibles, cortezas de agrios o de melones	80.521282	14.66	90.77719	13.61	78.411282	8.94	72.940189	9.07	71.06	12.52
009	Café, te, yerba mate y especias	85.634106	15.60	73.342928	11.00	69.561129	7.93	77.119901	9.59	26.10	4.60
010	Cereales	0.000362	0.00	0.000777	0.00	0.001799	0.00	0.549891	0.07	0.00	-
011	Productos de la molienda, malta, almidon y feculas, inulina, gluten de trigo	0.101486	0.02	0.242353	0.04	0.198857	0.02	0.180517	0.02	0.23	0.04
012	Semillas y frutos oleaginosos, semillas y frutos diversos	0.126892	0.02	0.167918	0.03	0.18	0.02	0.16398	0.02	0.19	0.03
013	Gomas resinas y demas jugos y extractos vegetales	1.818691	0.33	2.063097	0.31	2.282789	0.26	2.493627	0.31	4.69	0.83
014	Materias trenzables y demas productos de origen vegetal, no expresados ni comprendidos en otras partidas	0.584484	0.11	0.440216	0.07	0.481996	0.05	0.41154	0.05	0.10	0.02
015	Grasas y aceites animales o vegetales, productos y su desdoblamiento, grasa alimenticias elaboradas, cera de origen animal o vegetal	1.776641	0.32	0.533795	0.08	0.804283	0.09	1.497712	0.19	0.63	0.11
016	Preparaciones de carne, de pescado, de crustaceos, de moluscos o de otros invertebrados acuaticos	2.761365	0.50	2.381658	0.36	2.16	0.25	0.207962	0.03	0.01	0.00
017	Azucares y articulos de confiterias	131.061397	23.87	170.177968	25.52	219.308217	25.00	131.159659	16.31	80.25	14.14
018	Cacao y sus preparaciones	73.799547	13.44	69.91628	10.49	66.90	7.63	94.893578	11.80	30.56	5.38
019	Preparaciones a base de cereales, de harina, de almidon, de fecula o de leche, productos de pasteleria	1.829645	0.33	1.947951	0.29	2.458269	0.28	2.132037	0.27	2.37	0.42
020	Preparaciones de legumbres y de hortalizas, de frutos o de otras partes de plantas	28.40	5.17	28.968404	4.34	27.526779	3.14	29.022244	3.61	24.39	4.30
021	Preparaciones alimenticias diversas	13.200792	2.40	14.389377	2.16	12.297571	1.40	15.043452	1.87	16.32	2.88
022	Bebidas, liquidos alcoholicos y vinagres	5.626493	1.02	15.194944	2.28	22.2175	2.53	19.652582	2.44	19.33	3.41
023	Residuos y desperdicios de las industrias alimenticias, alimentos preparados para animales	0.022757	0.00	0.06	0.01	8.293296	0.95	0.773461	0.10	0.16	0.03
024	Tabacos y sucedaneos de tabaco elaborado	91.62252	16.69	166.922151	25.03	330.595095	37.68	318.088008	39.55	261.48	46.07
	TOTAL AGRICULTURAL EXPORTS	549.071291	100.00	666.810108	100.00	877.263985	100.00	804.203292	100.00	567.52	100.00
	EXPORTACIONES TOTALES	3,844.67		4,032.96		4,830.74		4,879.12		4,678.13	
	EXPORTACIONES Agrícolas como % del total de EXPORTACIONES	14.28		16.53		18.16		16.48		12.13	

Fuente: Elaborado con datos de Aduanas en Cifras Boletín Estadístico Y CEIRD

Appendix Table 2 (continued): Agricultural exports, Dominican Republic, 1995 to 2004

CHAPTER HS	PRODUCTO	2000%		2001%		2002%		2003%		2004%	
001	Animales Vivos	0.07	0.01	0.24	0.04	0.44	0.06	0.15	0.02	0.17	0.03
002	Carnes y Despojos comestibles	0.00	-	0.19	0.03	0.50	0.07	0.47	0.06	0.47	0.09
003	Pescados, crustaceos, moluscos y otros invertebrados acuaticos	1.01	0.17	1.46	0.24	2.54	0.37	3.01	0.41	2.64	0.49
004	Leches y Productos Lacteos, huevos de aves, miel natural y productos comestibles de origen animal, no expresados ni comprendidos en otras partidas	0.16	0.03	0.31	0.05	0.25	0.04	0.59	0.08	0.56	0.11
005	Los demas productos de origen animal no expresados ni comprendidos en otras partidas	0.03	0.00	0.08	0.01	0.15	0.02	0.20	0.03	0.16	0.03
006	Plantas vivas productos de la floricultura	3.95	0.68	3.85	0.62	4.10	0.60	3.59	0.49	2.38	0.45
007	Legumbres y hortalizas, plantas, raices y tuberculos alimenticios	26.39	4.57	29.13	4.68	27.67	4.05	27.50	3.77	18.21	3.41
008	Frutos comestibles, cortezas de agrios o de melones	73.77	12.78	91.52	14.70	108.72	15.92	122.99	16.87	41.01	7.68
009	Café, te, yerba mate y especias	23.18	4.01	12.87	2.07	14.04	2.06	17.15	2.35	12.30	2.30
010	Cereales	0.00	0.00	0.02	0.00	0.00	0.00	5.48	0.75	0.00	0.00
011	Productos de la molienda, malta, almidon y feculas, inulina, gluten de trigo	1.247253	0.22	0.57	0.09	0.33	0.05	0.25	0.03	3.48	0.65
012	Semillas y frutos oleginosos, semillas y frutos diversos	0.30	0.05	0.29	0.05	0.74	0.11	0.57	0.08	0.14	0.03
013	Gomas resinas y demas jugos y extractos vegetales	6.35	1.10	8.32	1.34	8.53	1.25	7.19	0.99	7.18	1.34
014	Materias trenzables y demas productos de origen vegetal, no expresados ni comprendidos en otras partidas	0.03	0.01	0.04	0.01	0.01	0.00	0.04	0.01	0.00	0.00
015	Grasas y aceites animales o vegetales, productos y su desdoblamiento, grasa alimenticias elaboradas, cera de origen animal o vegetal	0.53	0.09	0.52	0.08	0.91	0.13	0.65	0.09	0.52	0.10
016	Preparaciones de carne, de pescado, de crustaceos, de moluscos o de otros invertebrados acuaticos	0.01	0.00	0.00	0.00	0.02	0.00	0.06	0.01	0.04	0.01
017	Azucares y articulos de confiterias	93.39	16.17	83.92	13.48	87.73	12.85	92.82	12.73	92.81	17.38
018	Cacao y sus preparaciones	28.82	4.99	51.22	8.23	70.65	10.35	87.55	12.01	64.36	12.05
019	Preparaciones a base de cereales, de harina, de almidon, de fecula o de leche, productos de pasteleria	2.64	0.46	3.69	0.59	3.69	0.54	5.67	0.78	3.74	0.70
020	Preparaciones de legumbres y de hortalizas, de frutos o de otras partes de plantas	23.33	4.04	23.62	3.79	24.71	3.62	23.10	3.17	20.49	2,049.29
021	Preparaciones alimenticias diversas	16.41	2.84	26.77	4.30	27.96	4.09	24.99	3.43	20.45	3.83
022	Bebidas, liquidos alcoholicos y vinagres	20.78	3.60	29.96	4.81	41.53	6.08	48.43	6.64	27.88	5.22
023	Residuos y desperdicios de las industrias alimenticias, alimentos preparados para animales	0.72	0.12	0.38	0.06	0.87	0.13	0.05	0.01	0.08	0.02
024	Tabacos y sucedaneos de tabaco elaborado	254.27	44.04	253.71	40.75	256.80	37.61	256.51	35.19	218.13	40.84
	TOTAL AGRICULTURAL EXPORTS	577.39	100.00	622.68	100.00	682.89	100.00	729.01	100.00	534.06	100.00
	EXPORTACIONES TOTALES	4,819.05		4,627.96		4,720.32		4,993.61		4,534.62	
	EXportaciones Agrícolas como % del total de EXportaciones	11.98		13.45		14.47		14.60		11.78	

Fuente: Elaborado con datos de Aduanas en Cifras Boletín Estadístico Y CEI-RD

Appendix Table 3: Agricultural imports, Dominican Republic, 1995 to 2004

CHAPTER HS	PRODUCTO	1995%		1996%		1997%		1998%		2003%		2004%	
001	Animales Vivos	3.34	0.62	3.6	0.62	3.26	0.57	7.08	1.00	1.03	0.16	3.28	0.40
002	Carnes y Despojos comestibles	2.51	0.47	2.23	0.38	11.51	2.02	44.63	6.29	12.14	1.84	8.35	1.01
003	Pescados, crustaceos, moluscos y otros invertebrados acuaticos	32.02	5.97	32.61	5.58	38.46	6.76	42.29	5.96	45.31	6.87	37.18	4.50
004	Leches y Productos Lacteos, huevos de aves, miel natural y productos comestibles de origen animal, no expresados ni comprendidos en otras partidas	82.27	15.34	87.71	15.02	105.67	18.56	103.64	14.60	84.76	12.85	80.28	9.71
005	Los demas productos de origen animal no expresados ni comprendidos en otras partidas	0.17	0.03	0.35	0.06	0.46	0.08	1.23	0.17	0.74	0.11	1.21	0.15
006	Plantas vivas productos de la floricultura	0.55	0.10	0.89	0.15	0.77	0.14	1.50	0.21	0.88	0.13	1.45	0.18
007	Legumbres y hortalizas, plantas, raices y tuberculos alimenticios	16.45	3.07	15.54	2.66	31.25	5.49	42.48	5.98	25.08	3.80	18.52	2.24
008	Frutos comestibles, cortezas de agrios o de melones	7.59	1.41	10.53	1.80	10.88	1.91	13.74	1.94	15.26	2.31	10.58	1.28
009	Café, te, yerba mate y especias	1.79	0.33	2.36	0.40	1.99	0.35	2.72	0.38	2.87	0.44	3.67	0.44
010	Cereales	104.51	19.48	127.83	21.88	84.59	14.86	124.76	17.57	109.50	16.60	164.72	19.92
011	Productos de la molienda, malta, almidon y feculas, inulina, gluten de trigo	24.33	4.54	27.89	4.77	29.06	5.10	22.44	3.16	22.93	3.48	8.98	1.09
012	Semillas y frutos oleinosos, semillas y frutos diversos	61.25	11.42	59.08	10.11	39.90	7.01	50.06	7.05	73.35	11.12	4.39	0.53
013	Gomas resinas y demas jugos y extractos vegetales	1.94	0.36	1.36	0.23	1.62	0.28	1.85	0.26	1.93	0.29	3.26	0.39
014	Materias trenzables y demas productos de origen vegetal, no expresados ni comprendidos en otras partidas	1.11	0.21	0.89	0.15	0.95	0.17	0.99	0.14	1.05	0.16	0.98	0.12
015	Grasas y aceites animales o vegetales, productos y su desdoblamiento, grasa alimenticias elaboradas, cera de origen animal o vegetal	82.83	15.44	87.96	15.06	83.15	14.61	84.51	11.90	62.355	9.45	83.49	10.10
016	Preparaciones de carne, de pescado, de crustaceos, de moluscos o de otros invertebrados acuaticos	8.77	1.63	10.61	1.82	13.50	2.37	20.76	2.92	18.00	2.73	18.10	2.19
017	Azucares y articulos de confiterias	25.82	4.81	33.37	5.71	12.57	2.21	26.48	3.73	25.30	3.73	17.04	2.06
018	Cacao y sus preparaciones	2.11	0.39	2.09	0.36	2.20	0.39	2.39	0.34	4.84	0.73	5.69	0.69
019	Preparaciones a base de cereales, de harina, de almidon, de fecula o de leche, productos de pasteleria	18.64	3.47	18.73	3.21	21.83	3.83	23.83	3.36	39.94	6.06	36.34	4.39
020	Preparaciones de legumbres y de hortalizas, de frutos o de otras partes de plantas	11.00	2.05	11.41	1.95	13.34	2.34	19.68	2.77	21.28	3.23	21.50	2.60
021	Preparaciones alimenticias diversas	14.95	2.79	13.24	2.27	19.74	3.47	26.17	3.69	34.73	5.27	50.74	6.14
022	Bebidas, liquidos alcoholicos y vinagres	23.78	4.43	24.01	4.11	30.88	5.42	32.28	4.55	32.95	5.00	61.51	7.44
023	Residuos y desperdicios de las industrias alimenticias, alimentos preparados para animales	70.9	13.22	8.00	1.37	7.87	1.38	11.37	1.60	15.00	2.27	84.88	10.27
024	Tabacos y sucedaneos de tabaco elaborado	1.59	0.30	1.75	0.30	3.83	0.67	3.18	0.45	6.16	0.93	100.67	12.18
	TOTAL IMPORTACIONES AGRICOLAS	536.42	100.00	584.12	100.00	569.25	100.00	710.06	100.00	659.52	100.00	826.79	100.00
031	Abonos	30.20		34.39		33.57		42.84		55.59		3.67	
044	Madera, Carbon Vegetal y Manufactura de madera	61.07		62.15		71.10		97.63		108.80		78.13	
		1,136.64											
	IMPORTACIONES TOTALES	2,195.35		2,536.71		2,896.90		4,314.74		5,408.65		6,659.07	
	Importaciones Agricolas como % del total de Importaciones	24.43		23.03		19.65		16.46		12.19		12.42	

Fuente: Elaborado con datos de Aduanas en Cifras Boletines Estadisticos

Appendix Table 4: Prices and NRAs for primary products, Dominican Republic, 1955 to 2005

	Banana			Cassava			Coffee			Garlic		
	Domestic price per MT	Border price per MT	NRA = DP-BP BP	Domestic price per MT	Border price per MT	NRA = DP-BP BP	Domestic price per MT	Border price per MT	NRA = DP-BP BP	Domestic price per MT	Border price per MT	NRA = DP-BP BP
1955	25.25	46.84	-0.37	36.50	47.98	0.10	186.00	1159.84	-0.69	457.60	127.74	5
1956	33.33	52.65	-0.27	56.80	46.98	0.63	215.50	1242.42	-0.65	568.00	267.32	2
1957	32.89	50.21	-0.24	55.20	49.03	0.61	178.00	1156.68	-0.69	469.60	309.60	1
1958	36.85	55.94	-0.22	49.00	51.87	0.36	144.50	1097.34	-0.71	661.80	310.89	1
1959	38.34	59.66	-0.23	33.40	43.67	0.04	127.50	799.09	-0.65	510.80	283.02	0
1960	42.35	62.09	-0.21	31.31	49.02	-0.10	130.00	772.94	-0.63	711.00	211.56	3
1961	43.34	69.51	-0.28	29.66	51.90	-0.18	187.00	681.59	-0.39	568.00	175.45	3
1962	44.00	68.90	-0.26	41.20	50.34	-0.02	210.00	679.64	-0.33	572.00	220.07	3
1963	44.00	72.00	-0.29	46.14	53.03	0.21	207.48	676.00	-0.32	580.00	254.78	2
1964	43.18	75.00	-0.31	46.14	48.79	0.32	274.05	886.00	-0.32	592.00	275.09	2
1965	41.80	71.00	-0.30	46.14	42.08	0.54	265.65	859.00	-0.32	584.00	236.95	2
1966	38.83	76.00	-0.43	60.98	56.78	0.28	255.36	829.86	-0.30	628.10	395.87	1
1967	29.15	46.00	-0.28	49.44	76.32	-0.19	237.30	767.22	-0.36	620.00	412.34	1
1968	30.25	54.00	-0.38	40.00	104.37	-0.48	235.62	762.08	-0.35	523.90	378.45	1
1969	37.73	50.00	-0.18	52.00	114.45	-0.41	236.88	768.59	-0.36	551.25	297.09	1
1970	43.51	86.00	-0.30	53.98	114.43	-0.38	250.74	993.34	-0.64	535.40	620.06	0
1971	47.41	73.16	-0.10	56.41	125.77	-0.37	270.90	875.76	-0.45	657.80	524.67	0
1972	41.58	97.22	-0.16	61.20	135.33	-0.40	295.26	955.48	-0.55	661.50	621.45	0
1973	41.09	64.83	0.39	69.89	136.62	-0.32	346.71	1120.62	-0.49	751.04	749.67	0
1974	27.78	59.66	0.51	79.09	140.84	-0.27	660.00	1379.18	-0.35	880.00	690.34	0
1975	31.08	61.55	1.09	90.53	182.82	0.05	924.00	1217.26	-0.01	880.00	775.45	-0
1976	35.97	71.27	0.21	97.65	265.89	-0.27	1012.00	1937.98	-0.41	880.00	874.34	0
1977	44.10	89.01	-0.34	131.40	222.22	-0.28	1012.00	4030.20	-0.75	2425.00	942.80	1
1978	46.10	93.24	-0.32	120.15	236.37	-0.39	1146.75	3542.79	-0.65	2204.62	875.52	1
1979	46.60	94.34	-0.36	110.23	223.67	-0.11	1281.50	3632.83	-0.64	1818.81	1061.77	0
1980	66.97	135.37	-0.54	275.58	437.86	-0.21	1364.00	2660.25	-0.47	2828.53	1152.61	1
1981	70.25	154.80	-0.53	148.59	278.42	-0.21	1452.00	2292.16	-0.25	2242.71	1032.72	2
1982	79.20	146.50	-0.49	220.02	278.00	-0.16	1892.00	2655.83	-0.44	2845.72	912.83	1
1983	79.20	137.53	-0.59	176.37	276.84	-0.51	1958.00	2869.29	-0.67	2843.96	1221.07	0
1984	178.20	125.50	-0.53	216.27	275.20	-0.61	2024.00	2746.26	-0.72	2856.09	1051.88	0
1985	198.00	113.44	-0.29	512.30	273.24	-0.23	2629.00	2807.20	-0.61	2755.78	800.00	2
1986	213.50	127.11	-0.48	413.15	534.39	-0.76	4059.00	3639.46	-0.65	4972.44	835.29	1
1987	364.32	121.95	-0.51	520.74	330.21	-0.63	5656.20	2152.99	-0.48	7359.00	1272.73	0
1988	510.84	210.00	-0.58	678.70	310.65	-0.49	8543.26	2461.93	-0.37	12912.24	1047.62	1
1989	503.39	137.62	-0.63	901.56	277.81	-0.63	8976.00	2320.33	-0.61	19800.00	666.67	1
1990	818.08	172.60	-0.67	1320.00	259.26	-0.52	10208.00	1457.68	-0.42	18436.00	1920.00	-0
1991	968.00	196.00	-0.54	2736.00	274.60	0.07	14019.26	1535.46	-0.15	25904.00	1006.70	2
1992	964.58	173.15	-0.52	1477.00	279.42	-0.45	10478.49	1153.49	-0.10	44489.00	831.40	2
1993	961.16	172.00	-0.44	2976.00	276.66	0.17	13121.99	1281.55	0.00	29023.00	832.00	2
1994	1233.96	180.00	-0.45	3606.00	282.79	0.19	17636.00	3089.73	-0.46	32701.28	916.84	2
1995	1124.44	144.00	-0.18	2639.79	283.94	-0.12	23578.86	2952.15	-0.27	39315.00	938.00	2
1996	1021.78	154.00	-0.44	2686.75	313.66	-0.14	21875.00	2295.31	-0.14	43320.00	1673.00	0
1997	1388.44	153.00	-0.15	4849.24	285.95	0.51	29802.00	3630.60	-0.30	30209.00	941.00	2
1998	1569.33	208.00	-0.35	3810.87	298.07	0.14	30532.00	3087.15	-0.19	29478.00	1514.00	0
1999	1978.04	273.17	-0.42	4618.64	390.76	0.06	26871.00	2477.49	-0.15	34325.00	571.00	3
2000	987.07	208.00	-0.61	3685.65	417.57	-0.33	22865.00	1970.81	-0.11	33637.00	462.77	5
2001	1393.33	276.91	-0.68	4186.54	444.67	-0.27	13236.00	1723.33	-0.43	36559.00	476.67	5
2002	1449.56	293.95	-0.69	3818.59	529.47	-0.58	17649.00	1879.66	-0.36	35894.00	545.60	4
2003	1558.09	268.60	-0.80	4008.62	433.11	-0.66	26407.00	1853.13	-0.41	33620.00	803.73	1
2004	3867.60	303.32	-0.65	10359.19	260.20	0.60	67532.00	2075.20	-0.02	44092.00	493.39	2
2005	3109.33	273.02	-0.57	13304.98	348.41	0.56	63041.00	3012.89	-0.13	44092.00	742.00	3

Source: Authors' spreadsheet using methodology from Anderson et al. (2006)

Appendix Table 4 (continued): Prices and NRAs for primary products, Dominican Republic, 1955 to 2005

	Onion			Beans			Tomatoes		
	Domestic price per MT	Border price per MT	NRA = $\frac{DP-BP}{BP}$	Domestic price per MT	Border price per MT	NRA = $\frac{DP-BP}{BP}$	Domestic price per MT	Border price per MT	NRA = $\frac{DP-BP}{BP}$
1955	112.00	80.32	1.59	185.00	205.35	0.14	42.70	98.34	-0.21
1956	139.00	75.34	2.60	247.00	199.35	0.57	46.60	104.23	-0.18
1957	115.00	65.72	1.97	206.00	204.35	0.28	48.00	98.35	-0.25
1958	162.00	97.06	1.93	239.00	203.99	0.48	48.00	91.82	-0.11
1959	125.00	89.38	1.36	200.00	211.05	0.17	44.10	115.69	-0.35
1960	174.00	91.56	2.46	218.00	193.14	0.39	46.30	105.35	-0.18
1961	139.00	103.67	1.61	214.00	210.25	0.28	46.60	103.97	-0.24
1962	140.00	121.36	1.27	230.00	211.00	0.37	49.00	71.08	0.17
1963	142.00	110.45	1.53	247.00	229.00	0.37	49.20	109.18	-0.24
1964	145.00	109.78	1.58	315.00	208.00	0.91	49.70	67.28	0.33
1965	143.00	107.40	1.61	319.00	290.00	0.39	53.50	71.02	0.20
1966	154.00	167.67	0.72	255.00	188.00	0.64	49.00	119.26	-0.23
1967	152.00	159.35	0.76	283.00	209.00	0.61	158.65	130.45	0.60
1968	149.67	75.95	2.15	314.00	233.00	0.55	156.13	122.01	0.86
1969	160.00	102.40	2.76	264.00	212.00	0.47	157.31	135.81	0.60
1970	160.00	189.34	0.26	270.00	153.00	1.27	166.20	126.40	1.23
1971	161.40	192.46	0.53	275.62	336.00	0.17	171.52	127.48	0.82
1972	181.91	225.56	0.20	298.77	352.00	-0.09	191.68	143.67	0.79
1973	183.82	290.56	0.70	422.74	557.00	-0.09	235.23	157.35	1.13
1974	154.00	280.67	0.16	399.96	506.00	-0.02	74.80	173.56	-0.20
1975	165.00	321.98	0.54	637.56	506.00	0.63	95.04	145.56	2.51
1976	190.30	225.56	0.12	599.94	506.00	0.50	198.00	198.34	1.91
1977	589.74	396.02	0.83	633.20	447.55	0.65	231.00	200.77	0.30
1978	429.46	323.04	0.30	634.48	494.77	0.53	167.20	209.16	0.25
1979	485.02	250.07	2.17	622.38	640.69	0.40	242.00	219.24	1.20
1980	462.97	282.25	2.09	699.30	816.28	0.28	257.40	208.35	0.58
1981	651.02	285.71	1.62	950.40	460.00	1.29	294.00	187.00	1.82
1982	447.54	254.56	0.66	1166.00	478.00	0.84	343.42	181.75	0.39
1983	464.55	274.25	0.30	880.00	453.00	0.20	220.00	164.12	-0.14
1984	617.29	250.00	0.42	1636.80	452.68	0.71	336.60	217.52	-0.33
1985	1047.64	162.50	1.80	2841.30	543.56	0.82	518.98	195.23	0.26
1986	1623.70	120.55	2.68	2441.34	570.40	0.49	588.00	321.40	0.83
1987	2836.02	333.33	0.67	3333.44	493.70	0.14	656.70	280.36	0.91
1988	5577.22	380.00	1.28	4759.48	502.00	0.54	985.16	274.76	1.19
1989	2212.10	325.00	-0.03	6293.54	562.00	0.09	1089.22	234.15	0.86
1990	9240.00	370.00	1.08	14278.00	600.00	0.65	2332.00	302.00	1.03
1991	6252.00	360.00	0.77	16246.01	653.60	1.10	2898.50	375.50	0.60
1992	10725.00	337.00	2.53	17190.99	650.00	1.32	3938.00	354.45	1.23
1993	9954.00	359.00	2.14	20286.00	541.67	2.06	4461.16	406.00	0.98
1994	12194.00	353.00	3.34	18221.00	520.50	2.10	6193.16	674.42	0.93
1995	10705.00	517.63	1.09	18842.50	579.20	1.43	8263.86	509.43	1.56
1996	11620.00	430.00	0.58	14724.00	608.70	0.97	4906.00	558.04	0.08
1997	11666.00	397.00	1.77	18269.00	693.72	0.90	5163.62	589.89	0.08
1998	11784.00	400.00	1.49	16497.00	632.28	0.83	6112.70	532.79	0.42
1999	9388.00	432.00	0.68	16357.00	1020.96	0.07	5572.16	853.66	-0.53
2000	8856.00	438.00	0.73	15820.00	596.16	0.82	3138.52	791.21	-0.38
2001	12055.00	450.00	0.98	17688.00	543.07	1.05	5645.20	548.67	-0.08
2002	9473.00	396.00	0.59	17939.00	601.03	0.69	5613.74	750.00	-0.34
2003	15786.00	511.50	0.42	21658.00	571.42	0.31	8940.80	471.77	-0.16
2004	22431.00	341.38	0.98	42286.00	548.09	1.13	16766.20	427.23	0.06
2005	16888.56	224.85	2.76	40286.00	558.17	1.97	13816.22	645.71	0.01

Source: Authors' spreadsheet using methodology from Anderson et al. (2006)

Appendix Table 5: Prices and NRAs for lightly processed foods, Dominican Republic, 1955 to 2005

	Rice			Sugar			Poultry		
	Domestic price per MT	Border price per MT	NRA = $\frac{DP-BP}{BP}$	Domestic price per MT	Border price per MT	NRA = $\frac{DP-BP}{BP}$	Domestic price per MT	Border price per MT	NRA = $\frac{DP-BP}{BP}$
1955	227.69	77.35	0.87	32.60	3.12	-0.43	597.65	398.34	1.63
1956	244.62	65.06	1.31	29.00	3.26	-0.28	626.04	405.34	1.70
1957	233.85	81.10	0.99	30.60	5.01	-0.48	603.75	407.34	1.59
1958	235.38	98.00	0.60	33.00	3.64	-0.21	630.41	396.34	1.78
1959	244.62	115.31	0.43	33.50	3.17	-0.10	642.36	412.58	1.72
1960	258.46	115.32	0.51	26.80	3.50	-0.34	948.20	423.67	1.71
1961	252.31	101.16	0.62	27.20	3.51	-0.29	948.20	412.57	1.77
1962	261.54	57.45	1.50	62.60	4.86	-0.29	948.20	453.78	1.50
1963	224.62	71.42	1.16	62.60	5.96	-0.42	948.20	464.55	1.41
1964	238.46	82.29	1.00	62.60	5.80	-0.07	948.20	482.50	1.21
1965	261.54	129.39	0.37	5.67	4.82	0.36	948.20	522.92	0.89
1966	241.54	135.34	0.11	59.20	5.35	0.06	649.00	543.56	0.91
1967	240.00	123.89	0.19	58.60	5.17	0.07	587.40	624.78	0.78
1968	240.00	108.03	0.37	63.30	6.07	-0.01	660.00	715.60	0.34
1969	243.08	118.53	0.26	63.10	6.29	-0.06	660.00	729.95	0.24
1970	243.08	115.24	0.27	67.70	6.41	-0.02	651.20	338.88	1.84
1971	243.08	120.83	0.21	67.70	6.27	0.00	600.60	691.78	0.40
1972	233.85	126.63	0.13	77.20	7.91	-0.08	633.60	851.70	0.21
1973	280.00	230.10	-0.26	84.90	10.89	-0.27	693.00	604.29	0.72
1974	356.92	237.89	-0.09	144.20	28.43	-0.53	836.00	652.56	1.01
1975	389.23	241.28	-0.04	219.30	50.25	-0.60	875.60	710.57	0.82
1976	381.54	238.03	-0.06	128.90	13.07	-0.11	814.00	821.21	-0.10
1977	413.85	166.72	0.30	94.70	6.61	0.16	880.00	887.48	-0.11
1978	424.62	216.97	0.08	109.90	7.43	0.26	902.00	946.34	-0.11
1979	440.00	199.35	0.16	94.80	7.76	0.18	946.00	1076.16	-0.16
1980	512.31	270.37	-0.13	159.60	14.36	-0.35	1034.00	1236.55	-0.19
1981	742.11	315.58	0.45	235.00	24.17	-0.53	1166.00	772.33	0.65
1982	742.11	214.05	0.41	184.90	13.79	-0.32	1254.00	959.65	-0.06
1983	742.11	209.87	-0.12	200.20	16.34	-0.58	1276.00	770.35	-0.11
1984	1143.68	220.09	0.05	252.20	29.10	-0.76	1408.00	871.97	-0.25
1985	1749.78	227.30	0.68	274.70	27.66	-0.64	2310.00	836.24	0.04
1986	1547.97	222.99	0.12	274.70	30.54	-0.68	2266.00	923.56	-0.25
1987	1663.20	237.89	-0.28	284.00	26.39	-0.69	2521.09	906.44	-0.49
1988	1617.51	267.75	-0.12	295.00	19.11	-0.58	5445.36	1000.78	-0.21
1989	3921.42	245.11	0.29	579.62	55.95	-0.82	6953.10	1097.14	-0.41
1990	7446.15	267.90	0.86	793.99	40.43	-0.74	9803.58	1079.76	-0.30
1991	6601.58	298.52	1.42	851.37	95.75	-0.74	10091.20	1053.87	-0.18
1992	6244.11	286.57	2.49	820.77	77.15	-0.66	10360.70	1055.23	-0.05
1993	5979.55	271.64	2.04	830.05	72.34	-0.64	10319.40	1202.89	-0.20
1994	6923.12	348.66	0.72	3351.10	23.19	0.09	10433.68	1216.27	-0.21
1995	7001.47	316.30	0.87	3050.00	24.51	0.07	10572.50	1220.63	-0.23
1996	7159.86	363.67	0.62	3578.00	28.27	0.02	10954.68	1370.82	0.32
1997	7159.86	396.21	0.53	4012.30	24.03	0.15	11307.06	1341.76	0.28
1998	7623.85	360.75	0.60	4001.30	25.60	0.10	15560.00	1389.43	0.14
1999	7844.98	318.27	0.77	3700.00	17.53	-0.07	13538.00	1319.23	0.08
2000	8383.25	271.87	1.15	3906.00	11.51	0.18	14325.36	1307.90	0.06
2001	7848.38	237.93	1.25	4155.60	22.14	0.06	16568.54	1399.82	0.03
2002	6980.10	221.03	0.95	3940.72	29.79	0.18	17349.26	1387.83	0.05
2003	8158.04	281.45	0.16	3940.70	13.88	-0.21	27896.00	1456.62	-0.15
2004	20855.52	368.72	0.61	6299.90	17.18	-0.03	34954.00	1666.02	0.05
2005	21797.39	369.67	1.05	7499.90	17.18	0.73	32625.00	1625.87	0.36

Source: Authors' spreadsheet using methodology from Anderson et al. (2006)

Appendix Table 6: Foreign exchange rates, Dominican Republic, 1955 to 2005
(local currency per US\$)

	Official rate	Secondary/parallel market rate	Estimated equilibrium exchange rate using this study's methodology ^b
1955	1.00	1.00	1.00
1956	1.00	1.00	1.00
1957	1.00	1.00	1.00
1958	1.00	1.00	1.00
1959	1.00	1.00	1.00
1960	1.00	1.00	1.00
1961	1.00	1.00	1.00
1962	1.00	1.00	1.00
1963	1.00	1.00	1.00
1964	1.00	1.00	1.00
1965	1.00	1.00	1.00
1966	1.00	1.09	1.05
1967	1.00	1.12	1.06
1968	1.00	1.10	1.05
1969	1.00	1.12	1.06
1970	1.00	1.15	1.08
1971	1.00	1.14	1.08
1972	1.00	1.12	1.06
1973	1.00	1.13	1.07
1974	1.00	1.14	1.07
1975	1.00	1.18	1.10
1976	1.00	1.20	1.11
1977	1.00	1.42	1.24
1978	1.00	1.30	1.17
1979	1.00	1.37	1.21
1980	1.00	1.35	1.20
1981	1.00	1.09	1.06
1982	1.00	1.85	1.60
1983	1.00	3.13	2.62
1984	3.11	3.34	3.25
1985	2.90	3.12	3.03
1986	3.84	4.13	4.02
1987	6.11	6.47	6.33
1988	6.34	7.20	6.88
1989	8.53	14.47	12.39
1990	12.69	16.25	15.00
1991	12.77	13.89	13.50
1992	12.68	12.61	12.64
1993	13.16	12.54	12.80
1994	13.60	12.99	13.25
1995	13.77	13.45	13.60
1996	14.27	13.63	13.92
1997	15.27	14.14	14.70
1998	15.27	15.11	15.19
1999	15.95	15.90	15.93
2000	16.29	16.28	16.29
2001	16.85	16.82	16.84
2002	18.48	18.48	18.48
2003	30.38	30.38	30.38
2004	41.43	41.43	41.43
2005	30.07	30.07	30.07

^a See Anderson et al. (2008) on the exchange rate methodology used in this study

Appendix Table 7: Nominal rates of assistance to covered, uncovered and all^a agricultural products, to exportable^b and import-competing^b agricultural industries, and relative^c to non-agricultural industries, Dominican Republic, 1955 to 2005 (percent)

	Covered products	Non-covered products	Total ag NRA (incl NPS)	Export-ables NRA	Import-competing NRA	All ag tradables	All non-ag tradeables	RRA ^c
1955	-22	-22	-22	-50	96	-23	8	-29
1956	-9	-9	-9	-39	134	-10	8	-16
1957	-22	-22	-22	-50	107	-24	7	-29
1958	-3	-3	-3	-33	94	-3	8	-10
1959	1	1	1	-25	70	1	8	-6
1960	-7	-7	-7	-35	86	-8	8	-14
1961	1	1	1	-30	92	1	8	-6
1962	-8	-8	-8	-30	134	-9	8	-15
1963	-17	-17	-17	-39	115	-18	8	-24
1964	5	5	5	-19	111	5	8	-3
1965	13	13	13	-7	54	14	9	5
1966	1	1	1	-15	35	1	9	-8
1967	6	6	6	-7	39	7	9	-2
1968	6	6	6	-11	43	6	9	-3
1969	0	0	0	-14	33	-1	9	-9
1970	-13	-13	-13	-28	46	-14	9	-20
1971	-2	-2	-2	-11	24	-2	9	-10
1972	-13	-13	-13	-22	11	-14	9	-21
1973	-22	-22	-22	-28	-11	-23	9	-29
1974	-37	-37	-37	-49	3	-39	9	-44
1975	-43	-43	-43	-54	20	-44	9	-48
1976	-14	-14	-14	-21	0	-14	10	-22
1977	-20	-20	-20	-42	30	-22	11	-30
1978	-17	-17	-17	-33	15	-18	11	-25
1979	-13	-13	-13	-31	14	-13	11	-22
1980	-26	-26	-26	-40	-4	-27	11	-34
1981	-21	-21	-21	-48	65	-22	9	-28
1982	-14	-14	-14	-37	38	-14	11	-22
1983	-41	-41	-41	-60	-6	-42	12	-48
1984	-52	-52	-52	-74	9	-53	9	-57
1985	-25	-25	-25	-62	59	-26	9	-32
1986	-41	-41	-41	-65	11	-42	10	-47
1987	-43	-43	-43	-58	-26	-44	10	-49
1988	-25	-25	-25	-47	0	-26	10	-33
1989	-48	-48	-48	-73	-11	-49	12	-54
1990	-20	-20	-20	-61	36	-21	11	-28
1991	-12	-12	-12	-52	61	-13	10	-21
1992	13	13	13	-46	111	13	9	4
1993	16	16	16	-40	94	17	9	7
1994	-1	-1	-1	-25	47	-1	8	-8
1995	9	9	9	-14	45	9	8	1
1996	13	13	13	-11	56	13	7	6
1997	8	8	8	-13	54	9	7	2
1998	10	10	10	-10	44	11	4	7
1999	6	6	6	-19	43	6	4	2
2000	20	20	20	-12	59	21	4	16
2001	9	9	9	-33	63	10	5	5
2002	3	3	3	-32	51	3	4	-1
2003	-24	-24	-24	-49	4	-25	4	-28
2004	5	5	5	-22	41	5	4	1
2005	28	28	28	-10	81	30	4	25

^a NRAs including assistance to nontradables and non-product specific assistance. ^b NRAs including products specific input subsidies. ^c The Relative Rate of Assistance (RRA) is defined as $100 * [(100 + \text{NRA}_{\text{ag}}^t) / (100 + \text{NRA}_{\text{nonag}}^t) - 1]$, where NRA_{ag}^t and $\text{NRA}_{\text{nonag}}^t$ are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively. Source: Author's spreadsheet

Appendix Table 8: Value shares^a of primary production of covered^b and non-covered products, Dominican Republic, 1955 to 2005 (percent)

	Banana	Bean	Cassava	Coffee	Garlic	Onion	Poultry	Rice	Sugar	Tomato	Non- covered
1955	4	2	2	10	0	0	2	3	17	0	60
1956	6	1	4	9	0	0	2	3	15	0	60
1957	4	1	3	8	0	0	2	3	19	0	60
1958	6	1	3	7	0	0	2	5	15	0	60
1959	8	2	2	6	0	0	2	6	14	0	60
1960	8	1	2	5	0	0	2	5	17	0	60
1961	9	1	2	5	0	0	2	6	14	0	60
1962	5	1	2	7	0	0	2	2	22	0	60
1963	4	1	2	7	0	0	2	2	22	0	60
1964	4	1	2	11	0	0	2	3	15	0	60
1965	5	2	3	11	0	0	3	8	8	0	60
1966	4	1	3	9	0	0	2	8	12	1	60
1967	2	1	2	9	0	0	2	7	13	2	60
1968	3	1	2	9	0	0	3	7	12	2	60
1969	2	1	2	9	0	0	3	7	15	1	60
1970	3	1	2	14	0	0	1	6	13	1	60
1971	2	1	2	9	0	0	1	6	15	2	60
1972	2	2	2	11	0	0	1	5	15	2	60
1973	1	2	2	10	0	0	1	7	16	1	60
1974	0	1	1	4	0	0	1	6	26	0	60
1975	0	1	1	3	0	0	1	3	31	0	60
1976	1	1	2	10	0	0	3	8	15	0	60
1977	1	1	4	16	0	0	3	5	9	0	60
1978	0	2	2	16	0	0	3	7	9	0	60
1979	1	2	2	14	0	0	5	8	9	0	60
1980	0	2	2	10	0	0	4	8	14	0	60
1981	1	1	1	5	0	0	2	6	24	0	60
1982	1	2	1	11	0	0	3	6	15	0	60
1983	1	2	1	7	1	0	3	9	18	0	60
1984	1	1	1	5	0	0	2	6	23	0	60
1985	1	2	2	9	0	0	3	7	17	0	60
1986	1	1	1	13	0	0	4	6	13	0	60
1987	2	2	1	10	1	0	5	8	11	0	60
1988	4	2	1	11	0	1	9	5	7	0	60
1989	2	2	1	7	0	0	9	5	14	0	60
1990	3	2	1	9	0	1	7	7	11	0	60
1991	3	1	2	8	0	0	6	5	14	0	60
1992	5	2	2	7	0	0	7	5	12	0	60
1993	4	2	2	6	0	1	8	6	11	0	60
1994	4	1	2	12	0	0	6	5	9	0	60
1995	2	1	2	14	0	1	7	6	7	0	60
1996	3	1	2	11	0	1	4	7	10	0	60
1997	2	1	2	14	0	0	4	6	9	0	60
1998	1	1	2	14	0	0	7	6	8	0	60
1999	5	2	2	10	0	1	7	6	7	1	60
2000	4	1	2	9	0	1	9	7	7	0	60
2001	6	1	2	7	0	1	9	6	7	0	60
2002	7	1	2	9	0	1	8	6	6	1	60
2003	7	1	1	8	0	1	9	6	6	0	60
2004	7	1	2	9	0	1	7	8	6	0	60
2005	6	1	2	11	0	0	7	8	4	0	60

^a Each row sums to 100. ^b At farmgate undistorted prices, US\$. Source: Author's spreadsheet

Appendix Table 9: Evolution of average tariffs by product category, Dominican Republic, 1990 to 2003

(percent)

	1990-1997	1998-2000	2001-2003
Capital goods			
For farming sector	5.7	3.9	2.2
For construction sector	21.8	21.8	11.5
For transport sector	13.8	13.8	7
For manufacture	10.1	9.2	3
Raw materials and intermediate inputs			
For farming sector	8	6	1.9
For food processing industry	27.5	27.5	19
Vegetables oils (crude and semi-elaborated)	15	15	3.9
Corn	5	0	0
Crude sugar	17.5	17.5	17.5
Wood	17.2	17.2	4.2
Non processed tobacco	30	30	14
Wheat	5	5	0
Consumption goods			
Milk	24.7	24.7	17.3
Rice	20	20	20
Refined sugar	20	20	20
All merchandises simple average	18.2	16.6	8.6

Source: Based on information provided by Central Bank and General Custom Directorate.