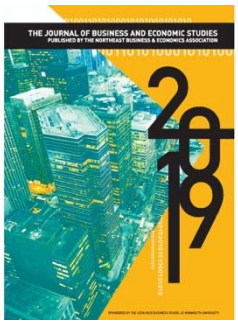

Cuban Agriculture after a Decade of Reforms

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Abstract

Reforming the agricultural sector has been one of the pillars of Cuba's efforts to "update" its economic model since 2007. So far, this process has included limited price reforms, restructuring the Agriculture and Sugar Ministries, the introduction of a new agricultural tax system, decentralization of the distribution of selected agricultural products, micro-credits to non-state agricultural producers, and, more importantly, the expansion of usufruct rights. Given the strategic importance of agriculture and its significant contributions to the Cuban economy, its transformation should remain a top-level priority as the country continues its gradual transition towards a mixed economy. Transforming this vital sector of the Cuban economy will undoubtedly require the reconceptualization of the roles and functions of the market and the state, and the political will to redefine property relations in the Cuban economy.

Keywords: Agricultural reforms, Cuba, Cuban agriculture, Cuban economy.

Introduction

The agricultural sector is one of the most strategically important sectors of the Cuban economy. It is an important contributor to the nation's food supply and food processing industry. The agricultural sector plays a key role in Cuba's import substitution program and makes valuable economic contributions through its strong linkages with other sectors of the Cuban economy, spillovers, and multiplier effect. The agricultural sector is an important source of direct and indirect employment, a leading supplier of raw materials and essential inputs for the food processing industry, as well as one of the principal sources of renewable energy for the manufacturing and light industries (Nova González, 2018).

Despite its strategic importance and economic contributions, Cuba's agricultural sector faces a wide range of challenges and limitations that limit its productive potential and economic impact. As Nova González (2013) indicates, agricultural producers lack the autonomy required to make optimal input and output decisions; the role of the market, particularly its price signaling and rationing functions, remains constrained by excessive state intervention; and despite recent efforts to gradually "liberalize" the distribution of agricultural products, the state retains its monopolistic control over this essential component of the productive cycle.

Cuba's agricultural sector is also affected by excessive regulations and bureaucratic processes, onerous taxes, and hostile state attitudes (particularly towards private farmers and usufructuaries). Restrictions on private property rights, limitations on the concentration of wealth, inefficient distribution (by the state monopoly, *Acopio*), insufficient access to essential inputs, and inadequate storage facilities, are also significant impediments. Others include a disconnected and inefficient supply chain, antiquated and insufficient transportation and telecommunications networks, and the poor state of the country's physical infrastructure.

Decreases in the area planted, falling agricultural yields (mainly due to the lack of fertilizers, fungicides, irrigation equipment, pesticides, etc.), and adverse weather conditions (e.g., hurricanes and droughts) have also affected Cuban agriculture. In addition, this vital sector of the Cuban economy has been affected by U.S. economic sanctions and domestic restrictions on foreign investment. Cuba's agricultural sector has been affected by the displacement of labor to other sectors of the economy, increases in overseas migration, and the aging of the Cuban population.

To incentivize production, improve efficiency, and substitute imports, Cuba has implemented a comprehensive package of agricultural reforms since 2007. The most important include: (1) increases in the prices paid by the state for selected agricultural products, (2) restructuring the principal state ministries responsible for agricultural policies, (3) the introduction of a new agricultural tax system, (4) the "liberalization" of the commercialization (or distribution) of selected agricultural products, (5) micro-credits (by state banks) for non-state agricultural producers, and (6) the expansion of usufruct farming.

This paper examines the agricultural reforms implemented in Cuba since 2007, and evaluates the impact of these reforms on key indicators such as the distribution of agricultural land between the state and non-state sectors, agricultural production, import substitution and food

availability. The paper also examines the principal challenges confronting Cuba's agricultural sector and presents a series of policy recommendations to improve the results and performance of this vital sector of the Cuban economy.

Cuba's Agricultural Reforms Since 2007

Price Reforms

Beginning in 2007, Cuba's state-run agricultural procurement and distribution agency, *Acopio*, increased the prices it paid agricultural producers for a selected group of agricultural products, including beef, milk, potatoes, and rice (Nova González and González-Corzo, 2015). Between 2007 and 2013, *Acopio* increased the price it paid rice producers by 226.5%, from 1,931 Cuban pesos (CUP) per ton to 6,304 CUP; similarly, the price paid (by *Acopio*) for potatoes was raised from 544 CUP to 652 CUP per ton (or almost 20%); the price paid to milk producers increased by 479.8%, from 900 CUP to 5,218 CUP per ton, and the price paid to beef producers rose by 263.3%, from 2,450 CUP to 8,900 CUP per ton during the 2007-2013 period (Spadoni, 2014).

The approval of Resolutions 238 and 239 in 2015 increased the prices paid by *Acopio* for selected agricultural products, such as beef, milk, potatoes and tomatoes. After these policy measures were approved, the price paid by *Acopio* for potatoes (collected in the field or at the producers' warehouses or storages facilities) were raised by 44.4%, from 45 CUP per *quintal* (qq)[1] to 65 CUP; the price paid for tomatoes was raised by 10%, from 100 CUP/qq to 110 CUP; the price that *Acopio* paid to beef producers increased by 84.6%, from 6.50 CUP per kilogram (kg.) to 12 CUP/kg.; the price of price of pork was raised from 9.70 CUP/kg. to 26.60 CUP/kg. (or 174.2%); and the price of milk increased by 20%, from 2 CUP per liter (L) to 2.40 CUP/L (Resolución 238; 2011, Resolución 239).

Restructuring of the Ministries of Agriculture and Sugar

The approval of Decree-Law 287 in 2011 restructured the administrative functions of the principal government ministries (or divisions) responsible for Cuba's agricultural policies. The Ministry of Agriculture (*Ministerio de la Agricultura- MINAGRI*) was placed in charge of managing the areas dedicated to sugar cane cultivation, which were previously administered by the Ministry of the Sugar Industry (*Ministerio de la Industria Azucarera – MINAZ*) (Decreto-Ley 287, 2011). Decree-Law 287 (2011) transferred the managerial (or supervisory) functions related to the production of cane sugar and its derivatives previously assigned to the *MINAZ* to the Ministry of the Economy and Planning (*Ministerio de Economía y Planificación – MEP*) (Decreto-Ley 287, 2011). It also transferred the supervision of sugar and derivatives exports from the *MINAZ* to the Ministry of Exterior Commerce and Foreign Investment (*Ministerio del Comercio Exterior y la Inversión Extranjera*); the latter was also given control over all forms of foreign direct investment (FDI) in Cuba's agricultural sector (Decreto-Ley 287, 2011).

Decree-Law 294 (2011) replaced the Ministry of the Sugar Industry (*MINAZ*) with a State-owned holding company known as *Grupo Azucarero, S.A.* (*AZCUBA*) (Decreto-Ley 294, 2011). *AZCUBA* reports directly to the Council of Ministers, and is responsible for the formulation and implementation of policies and strategies pertaining to the production of sugar and its derivatives

[1] One *quintal* (qq) is equal to 220.462 pounds (lb.).

(including electricity generation), and all related administrative, managerial, planning, regulatory and strategic functions (Decreto-Ley 294, 2011).

Introduction of a New Agricultural Tax system

Law 113, approved in 2012, introduced a new agricultural tax system in Cuba. According to Law 113 (2012), natural and legal persons that possess agricultural land, including forested areas and idle land, regardless of the type of tenure or ownership form conferred on such land, are required to pay taxes (in Cuban pesos, CUP) for the possession and utilization of such land based on its classification as stipulated in the landholder's Operating Certificate (*Certificado de Operación*) (Ley 113, 2012). In addition, agricultural land, including forested areas and idle land, classified as Level I (or top-quality agricultural land) is subject to a land utilization and possession tax of 180 CUP per hectare (ha) (Ley 113, 2012). Holders of agricultural land classified as Level II are required to pay a utilization tax of 90 CUP/ha, and those who possess Level III land (i.e., land considered to be of the worst quality – often covered by *marabú*) are required to pay a land utilization tax of 45 CUP/ha (Ley 113, 2012). Agricultural producers are also required to pay a sales tax of 5% (Ley 113, 2012).

When Law 113 was initially approved in 2012, agricultural producers were given a two-year grace period during which they were exempt from paying the sales tax and the tax on the utilization (and possession) of the land. However, after the approval of Decree-Law 358 and Resolution 376 in 2018, beginning in early 2019 usufruct farmers will be required to pay taxes on the possession of land, including idle land, as stipulated in Law 113 (2012).

Decentralized commercialization of selected agricultural products

The gradual decentralization of the commercialization (distribution) of selected agricultural products was initiated with the approval of Agreement 6853 and Resolution 206 in 2010. These policy measures authorized direct sales of agricultural products at roadside kiosks (*puntos de ventas*) (Acuerdo 6853, 2010; Resolución 206, 2010). Agricultural producers operating under this modality are required to pay a 5% tax on daily sales, contribute 2% of the value of daily sales to the central state budget, and pay 25% of their gross income to the national social security system (González-Corzo, 2013).

Resolution 90, approved in 2011, authorized direct agricultural sales to tourism enterprises, and created a new entity, *FINTOUR, S.A.,* to provide credit financing to tourism enterprises (Resolución 90, 2011). Resolution 122, also approved in 2011, allows agricultural cooperatives to sell unprocessed products directly to tourism enterprises and to restaurants operating in tourist establishments (Resolución 122, 2011.)

The approval of Resolutions 37, 58, and 352 in 2013 represented another important step towards the decentralization of agricultural sales in Cuba. These policy measures authorized the direct sales of agricultural products in Cuban pesos (CUP) to tourism enterprises, without state intermediation, by all types of agricultural producers, including individual (private) farmers, and expanded the list of authorized products and services to include: fresh cut flowers, gardening services, floral arrangements, dry spices, and eggs (Resolución 37 2013; Resolución 58, 2013; Resolución 352, 2013).

Decree-Law 318 and Resolution 673 (2013) authorized the creation of non-agricultural cooperatives (*Cooperativas No-Agropecuarias – CNAs*) in some of the previous locations of the *Mercados Agropecuarios Estatales* (MAEs) (State Agricultural Markets) in *Havana, Artemisa,* and *Mayabeque* provinces on an "experimental basis". The principal objectives of these policy measures is to decentralize the commercialization of agricultural products by facilitating the creation of wholesale markets (*mercados de abastos*), where agricultural producers and or authorized intermediaries can offer their products at wholesale prices, and to facilitate the direct sale of selected agricultural products to the population (at retail prices) by all types of agricultural producers and intermediaries (Decreto-Ley 318, 2013; Resolución 673, 2013) .

Micro-credits for non-state agricultural producers

The approval of Decree-Law 289 in 2011 authorized micro-credits (or micro-loans) by state-run banks to private farmers and usufructuaries in Cuban pesos (CUP) (Decreto-Ley 289, 2011). Private farmers and usufructuaries can obtain micro-credits of 500 pesos (CUP) or more (for the purposes outlined in Decree-Law 289, 2011); in the case of private farmers and usufructuaries, payments to amortize these micro-credits are to be made from the income generated from the sale of agricultural products and other sources of income; members or associates of agricultural cooperatives can also apply for the micro-credits authorized under Decree-Law 289 (2011), as long as the cooperatives create a segregated fund (or account) to serve as collateral (or guarantee) for such micro-credits (Decreto-Ley 289, 2011).

Expansion of Usufruct Farming

The most profound agricultural reform implemented in Cuba (so far) has been the transfer of idle state-owned lands to natural persons and legal persons (i.e., cooperatives and state enterprises) in usufruct (Mesa-Lago 2014; Nova González, 2013; Nova González and González -Corzo, 2015). This process began with the approval of Decree-Law 259 in 2008. Decree-Law 259 (2008) authorized the transfer of idle state-owned land to natural persons for up to ten (10) years and to legal persons for periods of up to twenty-five (25) years (Decreto-Ley 259, 2008). Decree-Law 259 (2008) prohibited the transfer of usufruct rights to any third parties, only permitted the cancellation of usufruct cancellations under exceptional circumstances (e.g., severe illness, incapacitation of the usufructuary, or inability to work due to advanced age), and recognized that any type of land transferred in usufruct (including forested areas and idle land) would be subject to a possession and utilization tax (Decreto-Ley 259, 2008).

Decree-Law 259 (2008) capped the maximum amount of land that could be transferred in usufruct to natural persons without land at 13.42 hectares (ha) and 40.26 ha for those that already possessed land (either in direct ownership or in usufruct) (Decreto-Ley 259, 2008). The delivery of any additional land in usufruct was contingent on the usufructuary's "efficient utilization" of existing land, and the availability of productive resources, and the crops that the usufructuary intended to produce (Decreto-Ley 259, 2008).

Decree-Law 259 (2008) was repealed with the approval of Decree-Law in 2012. Decree-Law 300 (2012) kept the limit of 13.42 ha that could be transferred to natural persons without land established by Decree-Law 259 (2008), but increased the maximum amount of land that could be assigned to natural persons who already possessed land (either in direct ownership or in usufruct) from 40.26 ha to 67.10 ha (Decreto-Ley 300, 2012). To qualify, usufructuaries, with previous land

possession, were required to be directly associated with a legal person (e.g., CPA, or UBPC), and their land had to be within five (5) kilometers (km) from its territory (Decreto-Ley 300, 2012).

Decree 304 (2012), which was approved in conjunction with Decree-Law 300 (2012), allowed usufructuaries to construct permanent structures (*bienhechurías*), but limited their size to 1% of the area granted in usufruct (Decreto 304, 2012). If the usufruct contract was terminated, usufructuaries were entitled to compensation (or reimbursement) for such investments from the state based on their appraised values (Decreto-Ley 304, 2012).

The approval of Decree-Laws 311 and 319 in 2014 modified the provisions with regards to usufruct rights established by Decree-Law 300 (2012) and Decree 304 (2012), respectively. These measures authorized natural persons (i.e., landowners and/or usufruct farmers) – associated with the Credit and Services Cooperatives (CCS) to obtain up to 67.10 hectares (ha) of idle state-owned land in usufruct in municipalities in which CCS exist and in those in which, state farms, CPAs and UBPCs are located more than 5 kilometers (km.) from the land (or plots) granted in usufruct (Decreto-Ley 311, 2014; Decreto-Ley 319, 2014).

Decree-Law 300 (2012) was replaced after the approval of Decree-Law 358 in 2018. Decree-Law 358 (2018) allows natural persons, who already possess land in usufruct, to become associated with state-owned forestry and sugar enterprises (Decreto-Ley 358, 2018). Decree-Law 358 (2018) extended the duration of usufruct contracts for natural persons from 10 years to 20 years and indefinitely for legal persons; it increased the size of the plots (of idle state-owned land) that can be transferred to first time usufructuaries from 13.42 ha to 26.84 ha; and allows usufruct farmers to use up to 3% of the area granted in usufruct to construct permanent structures (*bienhechurías*) (Decreto-Ley 358, 2018). Idle state-owned land can be transferred in usufruct to natural persons for raising cattle or growing animal feed for their herds (Decreto-Ley 358, 2018). In this case, up to 67 ha. can be initially granted, provided that the land is strictly used for the aforementioned purposes (Decreto-Ley 358, 2018).

Although they are permitted to hire (or contract) labor, to obtain usufruct rights, farmers are required to administer and work on the land directly (Decree-Law 358, 2018). In addition, the usufruct contract can be terminated by the state due to the use of illicit financial resources by the usufructuary for any purpose or reason, or by any reasons determined by the state (Decree-Law 358, 2018). Finally, beginning in 2019 usufruct farmers will be required to pay taxes on the possession of land as established in Law 113 (2012), and after a determined “grace period,” the will be required to pay taxes on idle land (Decree-Law 358, 2018).

Impact of the Reforms

Land distribution

Table 1: Cuba: Land distribution based on tenure form, 2007 and 2016

2007		**State Sector**	**Non-State Sector**			
Thousand Hectares	**Total**	**Total**	**Total**	**UBPC**	**CPA**	**CCS and Private**
Total Land Surface	10,988.60	6,088.90	4,899.70	2,804.80	692.8	1,402.10
Agricultural Surface	6,620.00	2,371.20	4,248.30	2,448.20	585.8	1,214.30
Cultivated Area	2,988.50	694.2	2,294.30	1,189.90	305.3	799.1
Non-Cultivated Area	3,631.00	1,677.00	1,954.00	1,258.30	280.5	415.2
Idle Land	1,232.80	627.2	605.6	465.4	73.4	66.8
2016						
Thousand Hectares	**Total**	**Total**	**Total**	**UBPC**	**CPA**	**CCS and Private**
Total Land Surface	10,988.40	6,080.50	4,907.90	1,782.30	509.3	2,616.30
Agricultural Surface	6,226.70	1,912.00	4,314.70	1,528.40	503	2,283.30
Cultivated Area	2,733.50	521.9	2,211.60	840.4	267.3	1,103.90
Non-Cultivated Area	4,761.70	4,168.50	593.20	253.9	6.3	333.00
Idle Land	883.9	520.4	363.5	192	8.8	162.7

Sources. *Anuario Estadístico de Cuba 2008, 2016.* Oficina Nacional de Estadísticas e Información (ONEI), 2010, 2017, and 2017a.

There has been a notable redistribution of Cuba's agricultural land from the state sector to the non-state sector since the introduction of agricultural reforms in 2007. The non-state sector includes Basic Units of Cooperative Production (UBPC), Agricultural Production Cooperatives (CPAs), Credit and Services Cooperatives (CCSs), private farmers (*agricultures pequeños*) and usufructuaries (ONEI, 2017). In 2007, 35.8% of Cuba's agricultural surface (2,371,200 ha) was held by the state sector; this figure decreased to 30.7% (1,912,000 ha) in 2016. By contrast, the non-state sector's share of the agricultural surface increased from 64.2% (4,248,300 ha) in 2007 to 69.3% (4,314,700 ha) in 2016 (Table 1).

Cuba has also experienced a significant reallocation of agricultural land within the non-state sector since 2007. As Table 1 illustrates, the UBPCs' share of the agricultural surface fell from 37% (2,448, 200 ha) in 2007 to 24.5% (1,528,400 ha) in 2016. The more autonomous and productive CCSs and private farmers held 18.3% of Cuba's agricultural surface (1,214,300 ha) in 2007 (ONEI, 2010, 2017), compared to 36.7% (2,383,300 ha) in 2016.

Since the approval of Decree-Law 259 in 2008, there has been a significant expansion in usufruct farming in Cuba. In 2017, 161,083 usufruct farmers held 1,316,652 ha, representing 21.1% of the country's agricultural surface (Nova González, 2018). Natural persons currently hold approximately 91% of all the land transferred in usufruct since 2007; the rest (around 9%, or 135,695 ha) are held by legal persons (Nova González, 2018). At the present time, there are an estimated 900,000 ha of idle state-owned land in Cuba, out of which some 400,000 (or 44.4%) could be potentially transferred in usufruct in the near future.

The agricultural reforms implemented in Cuba since 2007 have also contributed to notable reductions in idle land. The amount of idle land in Cuba increased by 32.7%, from 929,200 ha. in 2002 to 1,232,800 ha. in 2007. As Riera and Swinnen (2016) indicate, the need to reduce the amount of idle state-owned land to increase production, substitute imports, and improve food

security was one of the principal objectives of the agricultural reforms implemented in Cuba since 2007.

Table 2: Cuba: Idle Land by Tenure Type, *Thousand Hectares*

	2002	2007	2013	2014	2015	2016	2017
Total	**929.2**	**1,232.8**	**1,046.1**	**962.1**	**924.8**	**883.9**	**917.3**
State Sector	516.1	627.2	574.9	546.6	537.6	520.4	582.2
Non-State Sector	413.1	605.6	471.2	415.5	387.2	363.5	335.1
UBPC	301.3	465.4	258.5	230.7	216.8	192.0	166.6
CPA	53.6	73.4	5.2	6.9	8.9	8.8	6.7
CCS	53.6	45.7	4	3.9	5.1	4.5	3.9
Private Farmers	58.0	20.6	96.7	76.7	68.4	70.9	72.5
Usufruct Farmers	n.a.	n.a.	106.8	97.3	87.9	87.3	85.4

Sources. Panorama del Uso de la Tierra 2013, 2014, 2015, 2016, 2017. Oficina Nacional de Estadísticas e Información (ONEI), 2014, 2015, 2016, 2017a, 2018a.

As Table 2 demonstrates, the country's idle agricultural land declined by 25.6%, from 1,232,800 ha in 2007 to 917,300 ha in 2017. The most notable reductions have taken place in the non-state sector in which idle land fell from 605,600 ha in 2007 to 335,100 ha in 2017, representing a decrease of 44.7% during this period. The CCSs have experienced the most significant (-91.5%) decline in idle land within the non-state sector during the 2007-2016, followed by the CPAs (-90.0%), UBPCs (-64.2%), and usufruct farmers (-20%).

As can be observed in Table 2, there has been a notable redistribution of idle land from the state to the non-state sector since 2007. In 2007, 50.9% (627,200 ha) of Cuba's idle land was held by the state sector; this figure increased to 63.5% (582,200 ha) in 2017. By contrast, the non-state sector's share of idle land decreased from 49.1% (605,600 ha) to 36.5% (582,200 ha) during the 2007-2016 period (Table 2). As Table 2 shows, the share of idle land held by non-state agricultural producers, except private farmers, and usufructuaries, declined between 2007-2016. The principal causes were the expansion of usufruct farming after 2008 and 2012, and reductions in the amount of agricultural land (including idle land) held by the state sector (Nova González, 2018).

Non-sugar agricultural production

The need to increase production, substitute imports, and improve food security were the principal motivations for the agricultural reforms introduced in Cuba since 2007 (García Álvarez and Nova González, 2014; Mesa-Lago and Pérez-López, 2015; Nova González, 2018; Riera and Swinnen, 2016).

Table 3: Cuba: Non-sugar agricultural production, selected crops and produts. Metric Tons (Mt), except when indicated

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Roots and tubers	1,115.8	1,074.6	1,177.4	1,150.6	1,122.4	1,108.8	1,395.4	1,670.8	1,743.4	1,843. 4	1,828.9
Potatoes	136.4	192.0	283.9	195.2	167.3	130.9	112.6	53.3	123.9	95.7	147.0
Plantains	805.2	599.8	489.9	549.3	644.4	708.4	658.5	836.1	890.2	1,016.1	1,014.9
Vegetables	1,690.7	1,528.4	1,697.3	1,492.2	1,504.3	1,444.1	1,665.9	2,499.2	2,424.2	2 384.8	2,483.7
Tomatoes	346.5	332.0	476.4	313.8	364.7	338.1	418.5	454.2	551.0	481.4	584.1
Rice	205.2	205.3	317.5	320.0	459.5	514.2	597.8	584.6	418.0	514.0	404.7
Beans	97.2	97.2	110.8	110.8	133.0	127.1	129.8	135.6	117.6	136.5	132.2
Citrus Fruits	503.1	435.2	370.3	309.2	264.5	203.7	166.9	96.8	115.4	119.5	98.8
Other Fruits	783.8	738.5	748.0	762.0	817.0	964.9	925.0	884.3	942.7	944.5	926.2
Corn	368.8	325.7	304.8	324.5	354.0	360.4	426.2	418.7	363.0	404.4	373.9
Beef (peso pie)	108.1	123.9	130.0	127.0	133.0	134.1	134.1	146.7	151.2	167.6	173.4
Pork (carne pie)	268.2	292.0	271.0	261.0	267.0	252.0	292.9	298.4	309.7	338.9	355.0
Sheep goat (peso pie)	23.3	24.8	25.0	25.5	28.5	29.4	27.6	27.3	24.2	25.3	26.9
Cow Milk	485.1	545.1	600.3	629.5	599.5	604.3	589.1	588.1	494.8	612.8	537.4
Eggs (MMU)	2,351.7	2,328.0	2,426.8	2,430.0	2,620.0	2,512.6	2,655.5	2,572.2	2,321.2	2,418.6	2,535.4
Bird meat (peso pie)	43.0	42.4	42.6	43.1	45.1	44.9	41.3	42.3	42.9	39.2	37.5

Sources. Anuario Estadístico de Cuba 2008,2010, 2012,2014 2016, and Sector Agropecuario Indicadores Seleccionados Enero-December 2017, Oficina Nacional de Estadísticas e Información (ONEI), 2017, 2018a.

As Table 3 illustrates, between 2007 and 2017, physical output increased in several important crop categories of non-sugar agriculture such as roots and tubers (63.9%), plantains (26%), vegetables (46.9%), tomatoes (66.7%), rice (97.2%), and beans (36%). By contrast, production of citrus fruits fell by 50.4%, and corn production increased by only 1.4% during this period. Production also increased in other staples such as beef (60.4%), pork (32.4%), sheep goat (15.5%), cow milk (10.8%), and eggs (7.8%).

Despite achieving notable output increases in the majority of the crops shown in Table 3, Cuba's agricultural sector has not been able to meet the nutritional needs of the country's population. Domestic production only satisfies close to 20% of Cuba's demand for goods and agricultural products, with imports reaching an estimated 80%. In 2007, Cuba imported approximately $1.5 billion in food and agricultural products, accounting for 15.4% of total merchandise imports (ONEI, 2010). In 2016, food and agricultural imports reached an estimated $1.8 billion, representing 17.3% of Cuba's total merchandise imports (ONEI, 2017). At the present time, Cuba imports 64% of the rice, 52% of the beans, 68% of the corn, and 100% of the wheat flour, and vegetable oils consumed by its population (Nova González, 2018), illustrating its relatively-high dependency on the external sector, and the inability of its agricultural sector to produce sufficient output to substitute imports.

This situation can be attributed to several factors. As Nova González (2013) indicates, after a decade of reforms there are three (3) fundamental unresolved issues affecting Cuban agriculture: (1) the need to give producers the necessary autonomy to make optimal input and output choices, (2) recognizing and accepting the role of the market as a complement to the state in its role as an economic coordination and rationing mechanism, and (3) diversifying the distribution or commercialization of agricultural products by eliminating the state monopoly and allowing non-state actors to play a greater role.

Agricultural production has also been affected by notable reductions in the cultivated area (or area planted) since 2007. As Table 2 demonstrates, the area planted fell from 2,988,500 ha in 2007 to 2,773,500 ha in 2016, representing a decrease of 8.5% during this period. Between 2007 and 2016, the area planted for several major non-sugar crop categories experienced notable reductions. For example, the area planted dedicated to vegetables fell by 28.3%, from 259, 073 ha in 2008 to 185,743 ha in 2016 (ONEI, 2013, 2017). Between 2008 and 2016, the area planted with citrus fruits fell by 64.7%, from 45,635 ha to 16,105 ha (ONEI, 2013, 2017). In the case of tobacco, Cuba's most valuable export crop, the area planted declined from 23,048 ha to 12,292 ha, representing a reduction of 46.7% (ONEI, 2013, 2017). Finally, during the same period, the area planted with tropical fruits (e.g., guava, mango, and papaya) decreased by 1.8%, from 83,058 ha in 2008 to 81,585 ha in 2016 (ONEI, 2013, 2017).

The exodus of field workers, qualified technicians, and administrative and managerial personnel has also affected Cuba's non-sugar agricultural output in recent years (Nova González, 2018). Agricultural employment accounts for approximately 18% of total employment in Cuba; this figure has remained virtually unchanged since 2007 (ONEI, 2013, 2017). However, employment in the agricultural sector fell from 919,700 workers in 2007 to 820,900 in 2016, representing a decrease of 10.7% during this period (ONEI, 2013, 2017).

Dramatic changes in the aging structure of the Cuban population, the displacement of agricultural labor to other sectors of the economy and increases in emigration have also impacted agricultural production in Cuba since 2007. Other limiting factors include: the limited nature of the agricultural reforms introduced since 2007, excessively cumbersome and time-consuming bureaucratic processes, restrictions on private property rights and the accumulation of wealth, regulations that prohibit foreign investment, an onerous tax system, the poor state of the country's road networks and infrastructure, insufficient access to input markets, and the inability of Cuba's agricultural producers to insert themselves in global supply chains (Feinberg, 2018; Mesa-Lago *et. al,* 2018; Nova González and González-Corzo, 2015; Spadoni, 2014).

Import substitution and food availability

Even though production in important non-sugar crop categories has increased since 2007 (Table 3), Cuba remains highly dependent on food and agricultural imports to meet the nutritional needs of its population (Messina, Stefanou, and Royce, 2016). Imported food and agricultural products reached an estimated $1.7 billion in 2007, representing 17.3% of merchandise imports (Table 4). In 2017, Cuba's food and agricultural imports reached an estimated $2.1 billion, or 20.9% of merchandise imports (Table 5).

Table 4: Cuba: Merchandise Imports, *Thousand USD*					
Year	**Total**	**Food and Agricultural Products**	**Destination**		**Food and Agricultural Products % of Total**
			Human Consumption	**Animal Consumption**	
2007	10,082,557	1,746,402	1,570,706	175,696	17.3%
2008	14,249,234	2,544,822	2,280,401	264,421	17.9%
2009	8,906,010	1,755,604	1,524,645	230,959	19.7%
2010	10,648,831	1,700,000	1,450,000	250,000	16.0%
2011	13,952,403	1,835,000	1,585,000	250,000	13.2%
2012	13,800,851	1,926,884	1,728,789	198,095	14.0%
2013	14,706,619	1,848,051	1,350,314	497,737	12.6%
2014	13,036,844	1,917,741	1,618,118	299,623	14.7%
2015	11,702,367	1,800,910	1,540,900	260,010	15.4%
2016	10,269,904	2,083,332	1,729,165	354,167	20.3%
2017	10,171,983	2,129,572		-	20.9%

S*ource*. Nova González, 2018, and authors' calculations.

Table 5 below highlights Cuba's dependency on imported food and agricultural products. In 2017, the island imported 52% of the beans, 84% of the chicken, 68% of the corn, 47% of the milk, 64% of the rice and 100% of the soy, vegetable oil, and wheat flour consumed by its population of 11.2 million (Table 5).

Table 5. Cuba: Domestic Production and Imports of Selected Food and Agricultural Products, 2017					
Product	**Domestic Production (Mt)**	**Imports (Mt)**	**Total (Mt)**	**Domestic Production as % of Total**	**Imports as % of Total**
Beans	1,165.0	1,260.0	2,425.0	**48.0%**	**52.0%**
Beef	471.0	26.0	497.0	**94.8%**	**5.2%**
Chicken	321.0	1,663.0	1,984.0	**16.2%**	**83.8%**
Corn	3,660.5	7,601.1	11,261.6	**32.5%**	**67.5%**
Fish	434.4	166.8	601.2	**72.3%**	**27.7%**
Milk	5,831.0	5,194.0	11,025.0	**52.9%**	**47.1%**
Pork	1,853.0	62.0	1,915.0	**96.8%**	**3.2%**
Rice	2,731.0	4,766.0	7,497.0	**36.4%**	**63.6%**
Soy	0.0	1,168.6	1,168.6	**0.0%**	**100.0%**
Vegetable Oil	0.0	953.0	953.0	**0.0%**	**100.0%**
Wheat Flour	0.0	5,553.0	5,553.0	**0.0%**	**100.0%**

Source. Nova González, 2018, and authors' calculations.

In addition to insufficient (domestic) agricultural production, Cuba's demand for imported food and agricultural products has been driven by rapid growth of self-employment and entrepreneurial activities (since 2010), the expansion of international tourism, and increases in remittances from abroad.

The number of self-employed workers increased from 391,800 in 2011 to 583,200 in 2017, representing a growth rate of 48.9% during this period. According to Ritter and Henken (2015), there are at least four (4) unregistered self-employed workers for everyone self-employed worker that is legally registered in Cuba; based on this estimate, the actual number of self-employed workers in 2017 would be 2,333,800, representing more than half (52.2%) of the total number of employed persons in the country. The higher wages earned by self-employed workers and their improved living standards has been an important driver of Cuba's demand for imported food and agricultural products in recent years (Mesa-Lago, *et. al.*, 2018; Ritter and Henken, 2015; Spadoni, 2016).

The tourism sector has emerged as one of the central pillars of the Cuban economy since the early 1990s, and, in recent years, this vital sector of the Cuban economy has emerged as a major consumer of imported food and agricultural products (Feinberg and Newfarmer, 2016). International tourism has grown rapidly in recent years, particularly after the renewal of diplomatic relations with the United States in 2014. The number of international tourists increased from 2,716,317 in 2011 to 4,000,169 in 2016 (the last year for which official data is available), representing a growth rate of 47.6% during this period (ONEI, 2013, 2017). Gross receipts in the tourism sector increased by 18.2%, from $2.5 billion to $3.1 billion, between 2011 and 2016; and in recent years Cuba has increased investment to update and improve its tourism infrastructure (ONEI, 2013, 2017).

Another important driver of Cuba's demand for imported food and agricultural products has been the influx of remittances from abroad. Remittances are generally associated with improved employment opportunities, increases in household income, and higher consumption levels (Economic Commission for Latin America and the Caribbean [ECLAC], 1998). In the case of Cuba, remittances have increased by 50% from $2.3 billion in 2011 to $3.4 billion in 2016 (Morales Dopico, 2017), and an estimated 70% of Cuban population receives remittances on a regular basis (Morales Dopico, 2017).

Remittances are the principal source of capital for a significant share of Cuba's self-employed workers and emerging entrepreneurial class (González-Corzo and Justo, 2017; Mesa-Lago, *et. al.*, 2018; Ritter and Henken, 2015). They have transformed the consumption patterns of a vast portion of the Cuban population, and reduced their dependency on the state (Morales Dopico, 2017). Increases in the influx of remittances from abroad in recent years (as a greater share of the Cuban population travels and settles abroad) have contributed to a higher demand for imported food and agricultural products (Morales Dopico, 2017).

Challenges, Opportunities, and Policy Recommendations

The agricultural reforms implemented in Cuba since 2007 have contributed to significant changes in the distribution of land. The reforms have also contributed to notable reductions in idle land, particularly in the non-state sector, and to the expansion of usufruct farming. With regards

to physical output, the agricultural reforms introduced in Cuba since 2007 have shown mixed results. Even though production has increased in several important non-sugar crop categories since 2007 (Table 3), Cuba relies on imported food and agricultural products to meet at least 80% of the nutritional needs of its population. Domestic agricultural production remains hindered by institutional and operational constraints, logistical problems, lack of essential inputs, labor shortages, and the exodus of qualified personnel to other sectors of the economy.

Improving agricultural self-sufficiency and substituting imports were (and still remain) among the principal objectives of the agricultural reforms implemented in Cuba since 2007 (Riera and Swinnen, 2016). Despite these efforts, Cuba remains highly dependent on imported food and agricultural products. Agricultural imports (close to $1.8 billion in 2017) account for a significant share (18%) of merchandise imports, and Cuba imports more than half of the beans, chicken, corn, milk, rice, vegetable oil, and wheat consumed by its population (Nova González, 2018; ONEI, 2018).

In addition to insufficient domestic agricultural production, Cuba's increased dependency on imported food and agricultural products in recent years can be attributed to three (3) interrelated endogenous and exogenous factors: (1) the expansion of self-employment (and the non-state sector) since 2010, (2) the growth of international tourism, particularly after improved relations with the United States after 2014, and (3) notable increases in remittances , particularly after the introduction of more flexible regulations with regards to temporary migration by Cuban citizens abroad.

As Nova González (2013) indicates, after a decade of reforms, Cuba's agricultural sector still faces three unresolved structural issues that hinder its progress and have limited the impact of the agricultural reforms introduced since 2007. These are: (1) regulations that limit the autonomy and ability of agricultural producers to make rational input and output choices, (2) the need to accept the market as a complementary mechanism to coordinate economic activity, and (3) the need to decentralize (or deregulate) the production and distribution of agricultural products by allowing non-state economic actors (including intermediaries) to play a greater role in these processes (Nova González, 2013).

Restructuring Cuba's agricultural sector and addressing the principal institutional, organizational, and regulatory challenges that it currently faces, requires the implementation of a comprehensive package of policy reforms. The most important should include:

- Allowing agricultural producers greater levels of autonomy to make economically rational input and output choices. At the present time, agricultural producers (e.g., cooperatives, private farmers, usufructuaries, and even state enterprises) can hire (or contract) labor; they can also set prices based on supply and demand with the exception of those that are fixed as stipulated by Resolution 157 (2016) of the Ministry of Finance and Prices;
- Facilitate the creation and expansion of competitive input markets, where agricultural producers will be able to procure essential inputs (at prices that correspond to their real purchasing power); prices in these markets should be determined by the (market) forces of supply and demand; exit or entry should be relatively easy, and participation should be voluntary and driven by profit incentives; transactions should be conducted in either cash or

credit (offered by suppliers and depository and non-depository financial institutions) (González-Corzo, 2017);

- Expand the sources of credit financing available to agricultural producers beyond micro-credits offered by state-owned banks. As indicated by Nova González and González-Corzo (2015), these should include short-term and medium-term business and personal loans, equipment loans, input financing loans, farm improvement loans, etc.;
- Agricultural producers should be provided with diverse forms of technical assistance, agricultural extension programs, value chain development programs, agribusiness support programs, and financial support programs to expand their participation in export markets and global supply chains (Nova González and González-Corzo, 2015). Some of the technical assistance and agricultural support programs could be formed and managed through the creation of public-private partnerships. These can play a key role in strategically important areas such as value chain development, innovation and technology transfer, agricultural market infrastructure development, and supply chain management (Rankin, Nogales, Santacoloma, Mhlanga, & Rozzo, 2016);
- Diversify and decentralize the distribution and commercialization of agricultural products by reducing the role of the state and facilitating the expansion of non-state economic actors (e.g., cooperatives, private farmers, usufructuaries, and other necessary intermediaries).
- Reform the agricultural tax system to improve compliance, minimize evasion, and, more importantly, stimulate increases in production and employment (González-Corzo, 2018). One possibility, as suggested by Mielczarek (2017) in his exhaustive analysis of agricultural taxes in Poland, could be the replacement of agricultural taxes, as stipulated by Law 113 (2012), with a personal tax on agricultural income. This would improve tax compliance, potentially contribute to higher revenues, and improve the economic conditions of agricultural producers (Mielczarek, 2017). The transition from an agricultural tax to a personal tax on agricultural income could be a viable alternative as long as tax rates remain relatively low (Mielczarek, 2017).
- Expand Cuba's foreign investment law (Law 118, 2014) to direct foreign direct investment (FDI) to the agricultural sector; as the economic literature on FDI indicates (Blömstrom and Sjöholm, 1999, Findlay, 1978; Hallam, 2009; Kokko, 1994; Meyer and Sinani, 2009; Santangelo, 2018; Spencer, 2008), there are multiple spillovers (or positive externalities) associated with FDI in agriculture. The most significant include: the introduction of modern and more efficient production techniques, technology transfers, improved access to business practices, greater integration with global supply chains, economies of scale and scope, improved international competitiveness, and expanded access to domestic and international markets (Santangelo, 2018).

Reforming the agricultural sector should remain a top priority as Cuba continues to "update" its socialist economic model. Achieving this indispensable goal will undoubtedly require a strong dosage of economic pragmatism, and the political will to redefine the roles and functions of the market and the state, and substantially transform property relations in the Cuban economy.

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