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Agricultural Reforms, Land Distribution, and Non-Sugar Agricultural Production in Cuba

Since 2007, the Cuban government has introduced a series of agricultural reforms to increase non-sugar agricultural production and reduce the country's dependency on food and agricultural imports. The most important agricultural reforms implemented in Cuba (so far) include: (a) increases in the prices paid by the state for selected agricultural products, (b) restructuring the Ministry of Agriculture (MINAGRI) and the Ministry of the Sugar Industry (MINAZ), (c) a new agricultural tax system, (d) the authorisation of direct sales and commercialisation of selected agricultural products, (e) micro-credits extended by state-owned banks to private farmers and usufructuaries, and (f) the expansion of usufruct farming. These reforms have contributed to the redistribution of Cuba's agricultural land from the state to the non-state sector, notable reductions in idle (non-productive) agricultural land, and mixed results in terms of agricultural output. However, they have not been able to sufficiently incentivise output and reduce the country's high dependency on agricultural and food imports to satisfy the needs of its population. Achieving these long-desired objectives requires the implementation of more profound structural reforms in this vital sector of the Cuban economy.

Keywords: Agricultural reforms, Cuban agriculture, Cuban economy, transition economies

JEL classifications: Q15, Q18

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Introduction

In 2007 the Cuban government began the implementation of agricultural reforms to increase production, improve efficiency, and reduce the country's dependency on imported food and agricultural products. The most significant measures included: (a) increases in the prices paid by the state for certain agricultural products, (b) the reorganisation of the Ministry of Agriculture (MINAG) and the Ministry of the Sugar Industry (MINAZ), (c) a new agricultural tax regime, (d) direct sales and decentralisation of selected agricultural products, (e) micro-credits by state banks to non-state agricultural producers, and (f) the expansion of usufruct farming, which constitutes the most profound and far-reaching structural reform in the recent history of Cuban agriculture.

This paper discusses the agricultural reforms implemented in Cuba since 2007, as part of its efforts to "update" its socialist economic model, and evaluates the impact of these reforms on two important indicators: (1) land distribution and (2) non-sugar agricultural production. The paper is organized as follows. Section one describes the agricultural reforms implemented in Cuba since 2007. Section two analyses the impact of these reforms on land distribution and non-sugar agricultural production during the 2007-2017 period. Section three presents the conclusions of the paper.

Cuba's Agricultural Reforms: 2007- Present

Prices increases for selected agricultural products

Beginning in 2007, Cuba's state-run agricultural procurement and distribution agency, Acopio, raised the prices it paid to agricultural producers for a selected group of products, including beef, milk, potatoes, and rice (Nova González and González-Corzo, 2015).[1] To incentivise non-sugar agricultural production, between 2007 and 2013, Acopio increased the price it paid rice producers by 226.5%; similarly, the price paid for potatoes was raised by 20%; the price paid to milk producers increased by 479.8%, and the price paid to beef producers rose by 263.3% (Spadoni, 2014).

The approval of Resolutions 238 and 239 in 2015 increased the prices paid by Acopio for beef, milk, potatoes, and tomatoes. The price of beef was raised from 6.50 Cuban pesos (CUP) per kilogram (kg) to 12 CUP / kg; milk prices were increased from 2.50 CUP per litre (L) to 4.50 CUP/L; the price of potatoes was raised from 45 CUP per quintal (qq) to 65 CUP/qq; and the price of tomatoes was increased from 100 CUP/qq to 110 CUP/qq (Cubadebate, 2015; Gaceta Oficial de Cuba 18, 2015).

Restructuring of the Ministry of Agriculture (MINAG) and the Ministry of the Sugar Industry (MINAZ)

The approval of Decree-Law 287 in 2011 restructured the Ministry of Agriculture (MINAG) and the Ministry of the Sugar Industry (MINAZ) in order to improve efficiency. The MINAG was placed in charge of managing the areas dedicated to sugar cane cultivation, which were previously administered by the Ministry of the Sugar Industry (MINAZ) (Gaceta Oficial de Cuba 37, 2011). The MINAG also became responsible for overseeing all aspects of non-sugar agricultural production, as well as the functions related to sugar

[1] Acopio, which is officially known as the Unión Nacional de Acopio (UNA), currently operates under the Ministry of Agriculture (MINAGRI) and consists of 12 enterprises (empresas nacionales) and 15 basic enterprise units (Unidades Empresariales de Base – UEBs) that operate nationwide, except in the provinces of Artemisa, Mayabeque, and Havana, and in the Isle of Youth, where the direct commercialization of selected agricultural products is permitted (Martín González, 2018). Acopio supplies an estimated 400 state-run agricultural markets (Mercados Agropecuarios Estatales – MAEs) and some 1,200 agricultural sales outlets (puntos de venta) on daily basis with domestic agricultural products, which are collected from state farmers, agricultural cooperatives, and private producers (e.g., independent farmers and usufructuaries) (Martín González, 2018).

production previously assigned to the MINAZ under Law 95 – also known as the "Law of Agricultural Production Cooperatives and Credit and Services Cooperatives" approved in 2002 (Gaceta Oficial de Cuba 37, 2011).

Decree-Law 294 replaced the Ministry of the Sugar Industry (MINAZ) with a State-owned holding company known as Grupo Azucarero, S.A. (AZCUBA) in 2011 (Gaceta Oficial de Cuba 37, 2011). AZCUBA reports directly to the Council of Ministers, and is responsible for implementing policies and strategies related to the production of sugar and its derivatives (Gaceta Oficial de Cuba 37, 2011).

The replacement of the MINAZ with AZCUBA in 2011 was part of the continuation of the restructuring process initiated in 2002, which consisted of four (4) key elements: (1) closing 71 of the country's 156 sugar mills, (2) repurposing 14 mills to specialise in the production of sugar and molasses for animal feed, (3) reallocating land from sugar to non-sugar crop production, and (4) reassigning some 100,000 sugar industry workers to other sectors of the economy, particularly tourism (Álvarez and Pérez-López, 2005; Pérez-López, 2016; Pollit, 2010).

Since 2002, there has been a notable reduction in the area dedicated to sugarcane cultivation, particularly in the state sector (Pérez-López, 2016). This trend has continued after the replacement of the MINAZ with AZCUBA in 2011. During the 2001/2002 harvest (or *zafra*), the last year before the 2002 restructuring, a total of 1,041,200 hectares (ha) were dedicated to sugar cane (ONEI, 2017). A year later, during the 2002/2003 harvest, the area dedicated to sugar cane fell by 38.2% to 643,800 ha (ONEI, 2017). During the first harvest under AZCUBA in 2011/2012, the area dedicated to sugar reached a historical low of 361,300 ha, which was 65.2% below the area dedicated to sugar cane during the 2001/2002 harvest (ONEI, 2017).

The reduction in the area dedicated to sugar cane production, along with the massive reduction in the number of operating sugar mills, and the marked decline of the sugar agro-industrial complex since 2002 have adversely impacted Cuba's sugar production and exports (Pollit, 2010; Pérez-López, 2016). Between 2011 and 2016, Cuba's sugar production reached an annual average of 1.5 million metric tons (mt), which is quite low by historical standards; and in recent years, Cuba has been forced to import sugar from Brazil, Colombia, and (more recently) France, to meet its international obligations and satisfy domestic demand (Hernández, 2018). Sugar output for the 2018/2019 harvest is expected to fall well below the 1.6 million mt forecasted by AZCUBA at the beginning of the year, signalling the continuation of the ongoing decline of this vital sector of the Cuban economy (Hernández, 2018)

A New Agricultural Tax System

Law 113 introduced a new agricultural tax system in Cuba in 2012. Under 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, are required to pay taxes in Cuban pesos (CUP) for the possession and utilization of such land based on its classification (Gaceta Oficial de Cuba 53, 2012). Law 113 (2012) also introduced income (or sales) taxes for individual agricultural producers, agricultural cooperatives, and state-owned agricultural enterprises. Initially, agricultural producers were given a two-year grace period, during which they were exempted from the land and sales taxes established by Law 113 (2012). This grace period was extended several times until the approval of Decree-Laws 350 and 358 in August 2018, which stipulated that agricultural producers must pay land and income (sales) taxes as stipulated in Law 113 (2012) (Gaceta Oficial de Cuba 39, 2018).[2]

Agricultural land, including forested areas and idle land, classified as Level I (or top-quality agricultural land) is subject to a land tax of 180 CUP per hectare (ha) (Gaceta Oficial de Cuba 53, 2012). Holders of agricultural land classified as Level II are required to pay a land tax of 90 CUP/ha; those who possess Level III land are required to pay a land tax of 90 CUP/ha; and holders of Level IV land (i.e., land considered to be of the worst quality – often covered by marabú[3]) are required to pay a land tax of 45 CUP/ha. (Gaceta Oficial de Cuba 53, 2012). According to official estimates, only 20% of Cuba's agricultural surface is considered as Level I land (Castro Morales, 2018).[4]

According to Law 113 (2012), individual agricultural producers are required to pay a minimum income (sales) tax of 5%. They are also required to pay additional taxes on personal income based on the following scale: 10% on annual income up to 12,000 CUP, 15% on annual income between 12,001 CUP and 24,000 CUP, 20% on annual income between 24,001 CUP and 48,000 CUP, 30% on annual income between 48,001 CUP and 72,000 CUP, 35% on annual income between 72,001 CUP and 100,000 CUP, 40% on annual income between 100,001 CUP and 150,000 CUP, and 45% on annual income of 150,001 CUP or higher (Gaceta Oficial de Cuba 53, 2012).[5]

Law 113 (2012) establishes a minimum income (sales) tax of 5% for agricultural cooperatives and state-run agricultural enterprises. Agricultural Production Cooperatives (*Cooperativas de Producción Agropecuaria – CPA*) and

[2] According to Cuban authorities, the tax on idle land (which became effective after August 2018) aims to incentivize holders to "put their idle land to productive use" (i.e. to plant it with suitable crops) (Castro Morales, 2018). While the land tax on idle land is not intended as a source of tax revenue for the state, according to Law 125 of the State Budget for 2018, the revenues collected will be used to support the country's agricultural programs and policies (Castro Morales, 2018). Unlike other agricultural taxes, land tax payments cannot be deducted (Castro Morales, 2018).

[3] Marabú (Dichrostachys cinerea) grows in large, open spaces (e.g. unattended pastures or grazing areas, abandoned or idle agricultural land, etc.) and thrives under various climatic conditions (e.g., intense heat, arid terrain, etc.). It is hard to cut down, often requiring mechanised cutting and elimination by chemical treatment. In the case of Cuba, marabú occupies a significant portion of Cuba's idle agricultural land and underutilised pastures.

[4] For tax purposes, Level I land is defined as high quality land suitable for diverse types of crops, with the potential of reaching 70% or more of its minimum potential yield (as defined by the MINAG) (Castro Morales, 2018). Level II land consists of good quality land, which requires some minimal conservation or soil improvement measures, and can potentially achieve between 50% and 70% of its estimated (agricultural) yield (Castro Morales, 2018). Level III land includes medium quality land, with medium or low fertility levels, which require significant conservation or soil improvement measures, and can achieve agricultural yields ranging from 30% to 50% of their estimated potential (Castro Morales, 2018). Finally, Level IV land consists of poor quality land, with relatively low fertility rates, often covered in marabú, requiring very large conservation or soil improvement measures, and normally dedicated to reforestation or similar purposes (Castro Morales, 2018).

[5] The first 10,500 CUP of income are exempted from the income (sales) tax; individual agricultural producers can deduct up to 70% of the expenses incurred during the regular course of business, and are only required to provide supporting documentation for half of the deducted expenses (Castro Morales, 2018; Gaceta Oficial de Cuba 53, 2012).

Basic Units of Cooperative Production (*Unidades Básicas de Producción Cooperativa – UBPC*) are required to pay additional income taxes on their per capita income (i.e. income per associate or member) based on the following scale (Gaceta Oficial de Cuba 53, 2012): 5% on annual per capita income up to 10,500 CUP, 10% on annual per capita income between 10,501 CUP and 23,500 CUP, 12% on annual per capital income between 23,501 CUP and 46,500 CUP, and 17.5% on annual per capita income of 46,501 or higher.[6]

Decentralized Commercialization of Selected Agricultural Products

The approval of Agreement 6853 and Resolution 206 in 2010 authorised the direct sale of agricultural products at roadside kiosks operated by agricultural cooperatives, self-employed workers and state enterprises (González-Corzo, 2013). Producers or their representatives operating in roadside kiosks are allowed to sell their excess production after meeting their contractual obligations with Acopio (González-Corzo, 2013).[7]

Resolutions 90, 121, 122, and 369 (2011) regulate direct sales of selected agricultural products to tourism enterprises (Gaceta Oficial de Cuba 38, 2011). Resolution 90 (2011) created a new entity, Fintour, S.A., to provide credit financing, factoring services, and consultancy to tourism enterprises, including those that buy directly from authorised agricultural producers (Gaceta Oficial de Cuba 38, 2011).[8] Prices can be determined without state intervention; payments can only be made in Cuban pesos (CUP), unless otherwise stated; however, in the case of transactions approved in convertible pesos (CUC), Fintour, S.A. is authorized to act as a transfer payments agent, and converts CUC to CUP at a predetermined exchange rate (Gaceta Oficial de Cuba 38, 2011).[9]

The approval of Resolutions 37, 58, and 352 in 2013 authorised direct sales of selected agricultural products in Cuban pesos (CUP) to tourism enterprises by *all* types of agricultural producers, without state intermediation, including individual (private) farmers and usufructuaries. The list of authorized products was expanded to include fresh cut flowers, gardening services, floral arrangements, dry spices, and eggs (Gaceta Oficial de Cuba 4, 2013).

Decree-Law 318 (2013) further expanded the direct commercialization of agricultural products by authorizing direct sales to the population at the following outlets: State Agricultural Markets (MAEs), Demand and Supply Markets (MOD), Leased Markets (agricultural outlets leased by the state to non-state producers), and stalls, or kiosks located in neighbourhoods, and highway rest stops. Retail prices of these agricultural products are set by the Ministry of Finance and Prices; however, producers that operate in the MAEs that have been converted to non-agricultural cooperatives (CNAs) can set their own prices, but these must be approved by the Ministry of Finance and Prices (Gaceta Oficial de Cuba 35, 2013).

Micro-credits for Non-State Agricultural Producers

The approval of Decree-Law 289 2011 authorised the extension of micro-credits (or micro-loans) by state-run banks to private farmers and usufructuaries in Cuban pesos (CUP) (Gaceta Oficial de Cuba 40, 2011). The terms of these micro-credits are set by the lending institution based on the borrower's risk profile, and type and value of collateral; the Central Bank of Cuba, rather than the lending institution, determines the interest rates for these micro-credits; and farmers can use them to purchase equipment and supplies, cover the costs associated with field preparation and conditioning, and any other activities to improve agricultural production (Gaceta Oficial de Cuba 40, 2011).

Expansion of Usufruct Farming

The most profound agricultural reform implemented in Cuba since 2007 has been the expansion of usufruct farming (Febles *et.al.*, 2017; Mesa-Lago, 2013, 2014; Nova González, 2013, 2013a, 2014; Nova González and González-Corzo, 2015; Villalonga Soca, 2015). This process began with the approval of Decree-Laws 259 and 282 in 2008, which 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 (Gaceta Oficial de Cuba 4, 2008). The maximum amount of land that could be transferred to usufruct farmers was limited to 13.42 hectares (ha); permanent investments in housing for usufructuaries and their families were excluded; the transfer of usufruct rights to third parties was prohibited; and the cancellation of usufruct contracts was only allowed under exceptional circumstances (Gaceta Oficial de Cuba 4, 2008).

Decree-Laws 259 and 282 (2008) were repealed with the approval of Decree-Laws 300 and 304 in 2012. The limit of 13.42 ha for first-time usufructuaries was kept, but the maximum amount of land that could be transferred to natural persons who already possessed land (either in direct ownership or in usufruct) was increased from 40.26 ha to 67.10 ha (Gaceta Oficial de Cuba 45, 2012). Usufruct farmers who already possessed land were required to be directly associated with a CPA or UBPC, and their plots had to be located in the immediate proximity of such cooperative or within five (5) kilometres (km) from its territory (Gaceta Oficial de Cuba 45, 2012). Usufruct farmers were allowed to construct permanent structures –including housing, but their size was limited to 1% of their plots, and they could receive compensation from the state for the assessed value of such structures upon the termination of the usufruct contract (Gaceta Oficial de Cuba 45, 2012).

Decree-Law 311 and Decree-Law 319 (2014) authorise farmers associated with the Credit and Services Cooperatives (CCS) to obtain up to 67.10 hectares (ha) of idle state-

[6] CPAs and UBPCs can deduct up to 12,000 CUP per associate or member from gross income for tax purposes (Gaceta Oficial de Cuba 53, 2012).

[7] Agricultural producers operating under this modality are required to pay taxes and make social security contributions as stipulated by Law 113 (2012).

[8] In addition to *Fintour, S.A.*, Resolution 121 (2011) authorized the *Banco de Credito y Comercio (BANDEC)* and the *Banco Metropolitano (BM)* to provide custody, and transfer payment services in Cuban pesos (CUC) or convertible pesos (CUP) on behalf of tourism entities with direct purchases from authorized agricultural producers.

[9] The Cuban economy operates under a system of monetary dualism with multiple exchange rates. For example, the official exchange rate between the "regular" Cuban peso (CUP) and the "convertible" Cuban peso (CUC) is 25 to 1, and the official exchange rate between the CUC and the USD is 0.80 per 1.00 USD. (See Mesa-Lago and Pérez-López (2015), Posada (2011), and Spadoni (2014) for more information about Cuba's dual currency and multiple exchange rate systems.).

owned land in usufruct (Gaceta Oficial de Cuba 4, 2014). Usufruct farmers can acquire land beyond 5 km from CPAS, UBPCs, and state farms (Gaceta Oficial de Cuba 4, 2014).

The laws that regulate usufruct farming in Cuba were further modified with the approval of Decree-Laws 350 and 358 in August 2018 (Gaceta Oficial de Cuba 39, 2018). These regulations, which replaced Decree-Laws 300 and 304 (2012), extended usufruct contracts from 10 years to 20 years for natural persons and from 25 years to an indefinite time period for legal persons; the size of the plots that can be transferred to first-time usufructuaries was doubled from 13.42 ha. to 26.84 ha.; usufruct farmers can be associated with (state-owned) forestry and sugar agricultural enterprises; and usufruct rights can be granted for raising cattle (but farmers are required to grow their own fodder) (Gaceta Oficial de Cuba 39, 2018).

However, to obtain the land, usufructuaries are required to work on the land and administer it directly and personally (Gaceta Oficial de Cuba 39, 2018). The usufruct contract can be terminated (by the state) due to the use of illicit financial sources (by the usufructuary) for any purpose or reason (Gaceta Oficial de Cuba 39, 2018).

Impact of the Agricultural Reforms

Land distribution

As Table1 illustrates, there has been a significant redistribution of Cuba's agricultural surface and cultivated area from the state sector to the non-state sector since 2007. [10] In 2007, 35.8% of Cuba's agricultural surface (2,371,200 ha) was held by the state sector, compared to 30.7% (1,912,000 ha) in 2016. Similarly, the state's share of the cultivated area declined from 23.2% (694,200 ha) in 2007 to 19.1% (521,900 ha) in 2016. Conversely, the non-state sector's share of the agricultural surface increased from 64.2% in 2007 (4,248,300 ha) in 2007 to 69.3% (4,314,700 ha) in 2016. The non-state sector's share of the cultivated area increased from 76.8% (2,294,300 ha) in 2007 to 80.9% (2,211,600 ha) in 2016 (Table 1).

There has been a notable reallocation of agricultural land within the non-state sector from the least autonomous and inefficient agricultural cooperatives (i.e., the UBPCs) to the more autonomous and productive CCSs and private farmers since 2007. As Table 1 shows, the UBPCs' share of the agricultural surface decreased from 37% (2,448,200 ha) in 2007 to 24.5% (1 528 400 ha) in 2016. Similarly, their share of the country's cultivated area declined from 39.8% (1,189,900 ha) in 2007 to 30.7% (840,400 ha) in 2016. The CCSs and private farmers held 18.3% of Cuba's agricultural surface (1,214,300 ha) and 26.7% of its cultivated area (799,100 ha) in 2007 (ONEI, 2010, 2017). By the end of 2016, the CCSs and private farmers held 36.7% of the agricultural surface (2,283,000 ha) and 40.4% of the cultivated area (1,103,900 ha) (Table 1).

Another tangible effect of the agricultural reforms implemented in Cuba since 2007 has been the reduction of idle land.[11] As Table 2 shows, the amount of idle land was reduced from 1,282,800 ha in 2007 to 917,300 ha in 2017, representing a decrease of 25.6% during this period (ONEI, 2008, 2018). The most notable reductions have taken place in the non-state sector, which experienced a decline in idle land of 44.7%, from 605,600 ha in 2007 to 335,100 ha in 2017. Within the non-state sector, the CCSs have experienced the most significant (-91.5%) decline in idle land during the 2007-2017 period, followed by the CPAs (-90.0%), UBPCs (-64.2%), and usufruct farmers (-20%) (Table 2).

The agricultural reforms introduced in Cuba since 2007 have also contributed to the redistribution of idle land from the state to the non-state sector (Table 2). In 2007, the state sector held 50.9% (627,200 ha) of Cuba's idle land; this figure increased to 63.5% (582,200 ha) in 2017 (Table 2). By contrast, the non-state sector's share of the country's idle land fell from 49.1% (605,600 ha) to 36.5% (582,200 ha) during the 2007-2017 period (Table 2). As Table 2 indicates, the share of idle land held by non-state agricultural producers, except private farmers, and usufructuaries, declined between 2007 and 2017. This is mainly attributed to the expansion of usufruct farming after 2008 and 2012, and the reduction in the amount of agricultural land (including idle land) held by the state sector (Nova González, 2018).

Non-sugar agricultural production

Increasing agricultural output to substitute imports, and improving food security remains one of the principal objectives of the agricultural reforms implemented in Cuba since 2007 (García-Álvarez and Nova González, 2014; Riera and Swinnen, 2016). As Table 3 demonstrates, production increased in six (6) out of the nine (9) principal non-sugar crop categories reported by Cuba's National Statistics Office (ONEI) during the 2008-2016 period. Output increased in the following crop categories: (1) cocoa (87.1%), (2) legumes (40.5%), (3) plantains (34%), viandas (33%), (5) other fruits (27.9%), and (6) cereals (i.e. rice and corn) (20.6%). Conversely, the following crops experienced lower output levels between 2008 and 2016: (1) citrus fruits (-69.5%), (2) tobacco (-8.4%), and (3) vegetables (-2.2%) (Table 3).

These trends seem to suggest that at least in terms of production Cuba's recent agricultural reforms have achieved mixed results. However, at the present time, domestic agricultural production is unable to satisfy the country's food demand, and Cuba imports a significant share of the food and agricultural products consumed by its population. In 2007, Cuba imported approximately $1.5 billion in food and agricultural products, representing 15.4% of total merchandise imports (ONEI, 2010). Food and agricultural imports increased to an estimated $1.8 billion in 2016, representing 17.3% of total merchandise imports (ONEI, 2017). Cuba imports 64% of the rice, 52% of the beans, 68% of the corn, 100% of the wheat flour, and 100% of the vegetable oils consumed by its population, highlighting its relatively-high levels of external sector dependency, and its inability

[10] 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).

[11] Between 2002 and 2007, the amount of idle land in Cuba increased by 32.7%, from 929,200 ha to 1,232,800 ha; according to Riera and Swinnen (2016), 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 1: Land distribution based on tenure form in Cuba, 2007 and 2016.

2007		State Sector	Non-State Sector			
Thousand Hectares	**Total**	**Total**	**Total**	**UBPC**	**CPA**	**CCS and Private**
Total Land Surface	10,988	6,088	4,900	2,804	692	1,402
Agricultural Surface	6,620	2,371	4,249	2,448	585	1,214
Cultivated Area	2,988	694	2,294	1,189	305	799
Non-Cultivated Area	3,631	1,677	1,954	1,258	280	415
Idle Land	1,232	627	605	465	73	66
2016						
Thousand Hectares	**Total**	**Total**	**Total**	**UBPC**	**CPA**	**CCS and Private**
Total Land Surface	10,988	6,081	4,907	1,782	509	2,616
Agricultural Surface	6,226	1,912	4,314	1,528	503	2,283
Cultivated Area	2,733	521	2,212	840	267	1,104
Non-Cultivated Area	4,761	4,168	593	254	6	333
Idle Land	883	520	363	192	9	162

Source: ONEI 2010, and 2017.

Table 2: Idle Land by Tenure Type in Cuba, 2002-2017, 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	4.0	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: ONEI, 2008, 2014a, 2015a, 2016a, 2017a, and 2018.

Table 3: Non-sugar agricultural production in Cuba, selected crops, thousand tons.

CROPS	2008	2009	2010	2011	2012	2013	2014	2015	2016
Viandas[(a)]	2,151	2,236	2,250	2,280	2,337	2,239	2,507	2,634	2,860
Plantains	758	670	735	835	885	659	836	890	1,016
Vegetables	2,439	2,549	2,141	2,200	2,112	2,407	2,499	2,424	2,385
Cereals	762	868	779	920	1,002	1,099	1,013	781	919
Legumes	97	111	80	133	127	130	136	118	137
Tobacco	22	25	21	20	20	24	20	25	20
Citrus Fruits	392	418	345	265	204	167	97	115	119
Other Fruits	739	748	762	817	965	925	884	943	945
Cocoa	1	1	2	2	2	1	2	2	2

Sources: ONEI, 2010, 2011, 2012, 2013,2014,2015,2016 and 2017.

to substitute essential food and agricultural imports (Nova González, 2018).

The mixed results of the agricultural reforms implemented in Cuba since 2007, and the agricultural sector's inability to satisfy domestic demand, generate substantial export earnings, and reduce the country's dependency on imports can be attributed to several factors. According to Nova González (2013), there are three (3) fundamental unresolved issues that limit the impact of the agricultural reforms introduced since 2007: (a) producers must be allowed to freely choose the optimal inputs (e.g., labour and capital) to produce the desired output levels, (b) the state needs to recognise and accept the role of the market as complementary coordinating and rationing mechanism, and (c) the state procurement monopoly must be eliminated and replaced with more diversified forms of agricultural commercialization and distribution.

Non-sugar production has also been hindered by reductions in the cultivated area since 2007. The cultivated area decreased by 8.5% from 2,988,500 ha in 2007 to 2,733,500 ha in 2016, and fell in four (4) of the nine (9) major crop categories reported in Table 3 (ONEI, 2017). Between 2008 and 2016, the area planted and under production dedicated to vegetables decreased by 28.3%, from 259,073 ha to 185,743 ha (ONEI, 2013, 2017). Similarly, the area planted and under production dedicated to tobacco (Cuba's principal agricultural commodity) fell by 46.7%, from 23,048 ha in 2008 to 12,292 ha in 2016; the area planted with citrus fruits (another important crop) decreased by 64.7%, from 45,635 ha in 2008 to 16,105 ha in 2016; and the area planted with various tropical fruits (e.g., guava, mango, and papaya) decreased by 1.8%, from 83,058 ha to 81,585 ha between 2008 and 2016 (ONEI, 2013, 2017).

Cuba's non-sugar agricultural output has also been affected by the exodus of qualified workers, field workers, and technicians (Nova González, 2018). Agriculture's share of total employment fell from 18.8% in 2007 to 17.8% in 2016, and employment in this key sector of the Cuban economy decreased by 10.7%, from 919,100 workers in 2007 to 820,900 workers in 2016 (ONEI, 2010, 2017). Other demographic pressures, such as the aging of the Cuban population, the displacement of workers to other sectors of the economy, and overseas migration, have contributed to declines in agricultural sector employment.

The limited scope and nature of the agricultural reforms introduced since 2007, excessive regulations, and strenuous bureaucratic processes have hindered agricultural production in Cuba (Mesa-Lago, 2014). State-imposed restrictions on private property rights, prohibitions against the concentration of wealth, foreign investment, and exports, as well as an onerous tax system, and a restrictive business environment[12] (particularly towards private farmers and usufructuaries) have been (and remain) important limiting factors (Mesa-Lago, *et. al*., 2018; Spadoni, 2014).

Finally, since 2007, other factors that have constrained and continue to affect Cuba's non-sugar agricultural output include the poor conditions of warehouses and storage facilities, an antiquated communications system, dilapidated roads, rail networks, and transportation system, an inefficient and disconnected supply chain, insufficient access to essential inputs (e.g. fertilizers, irrigation equipment, machinery, seeds, and other technologies) (Feinberg, 2018; Mesa-Lago, *et. al*., 2018; Spadoni, 2014).

Conclusions

Despite its economic importance, Cuba's agricultural sector faces a wide range of challenges and limitations that constrain its productive capabilities and economic contributions. Agricultural producers face excessive state intervention, onerous taxes, restrictive state policies, inadequate access to capital, insufficient access to essential inputs (including labour), a deteriorated infrastructure, and inefficient and inadequate transportation and telecommunications systems. The state limits their access to foreign investment, and agricultural producers are unable to freely participate in global supply chains.

To address some of these challenges, incentivise production, and substitute imports, the Cuban government has implemented a series of agricultural reforms since 2007. These reforms have contributed to the redistribution of Cuba's agricultural land from the state to the non-state sector, and to the redistribution of agricultural land within the non-state sector. Since 2007, the share of the agricultural surface and cultivated area held by the less Basic Units of Agricultural Production (UBPC) has declined, while the amount held by the more productive and efficient Credit and Services Cooperatives (CCS) and private farmers has increased significantly.

Cuba's agricultural reforms have also resulted in significant reductions in the amount of idle land since 2007. This process has been mainly driven by the expansion of usufruct farming after 2012. The largest reductions in idle land have taken place in the non-state sector, particularly the CCS.

Non-sugar agricultural production has experienced mixed results since 2007. Even though output increased in six (6) of the nine (9) non-sugar production crop categories reported by Cuba's National Statistics Office (ONEI) during the 2008-2016 period, the agricultural sector has been unable to generate the quantities of output required to satisfy domestic demand, and Cuba currently imports a significant share of the food and agricultural products consumed by its population. These trends suggest that (at least so far) the agricultural reforms implemented since 2007 have not been able to sufficiently incentivise production to reduce Cuba's (relatively-high) dependency on food and agricultural imports.

This situation can be attributed to several factors. The area dedicated to agriculture and under production has decreased significantly since 2007; at the same time, agricultural yields for important crops have declined, mainly due to the lack of fertilisers, irrigation equipment, and machinery, and to adverse weather conditions. Cuba's agricultural producers lack the autonomy necessary to make optimal input and output decisions. The role of the market as an important economic coordination mechanism and its price-signalling and rationing functions remain strictly constrained by excessive state intervention. Despite limited "liberalisation" measures, the state retains its monopolistic control over key aspects of the commercialisation and distribution of most agricultural products.

Cuban agriculture has also been affected by the displacement of labour to other sectors of the economy, overseas migration, and the aging of the Cuban population (particularly the agricultural labour force). On the institutional front, agricultural producers face strict limitations on private property rights and on the concentration of wealth, excessive taxes, a complex bureaucracy, and hostile state policies (particularly towards private farmers and usufructuaries). Finally, Cuba's agricultural producers regularly contend with a wide range of logistical and administrative constraints and challenges (e.g. deteriorated infrastructure, poor telecommunications, a disconnected supply chain, insufficient access to essential inputs and sources of financing, etc.) that affect production and limit the agricultural sector's contributions to the economy.

While the agricultural reforms implemented since 2007 represent a step in the right direction, more profound structural reforms are necessary to achieve sustainable, long-term, progress in this vital sector of the Cuban economy

[12] The preferential tax treatment given by Law 113 (20123) to agricultural cooperatives and state enterprises is an example of the hostile business environment confronted by individual agricultural producers in Cuba; in addition, cooperatives and state enterprises receive subsidized essential inputs (e.g., fertilizer, equipment, machinery) from the state, operate under a friendlier regulatory framework, and may be authorized to receive foreign investment.

References

Álvarez, J. (2004): ACOPIO: Cuba's state procurement and distribution agency. University of Florida IFAS Extension, 1-5. http://edis.ifas.ufl.edu/pdffiles/FE/FE48400.pdf (Accessed April 2018).

Castro Morales, Y. (2018): Aplicación del nuevo impuesto para desterrar lo ocioso de la tierra [Application of the new tax on idle land]. Granma. http://www.granma.cu/cuba/2018-01-11/aplicacion-de-nuevo-impuesto-para-desterrar-lo-ocioso-de-la-tierra-11-01-2018-00-01-52?page=1 (Accessed December 2018)

Cubadebate. (2015): Nuevos precios para estimular la produccion agropecuaria [New prices to stimulate agricultural prices]. http://www.cubadebate.cu/especiales/2015/08/06/nuevos-precios-para-estimular-la-produccion-agropecuaria/#.XCwVNYfsboZ (Accessed December 2018)

Febles, J., Lorenzo Palmero Martín F., and García Álvarez, D. (2017): El usufructo agrario en Cuba: Particularidades del procedimiento de entrega de tierras en el Consejo Popular Ceballos de Enero de 2015 a Mayo de 2017 [Agrarian usufruct in Cuba: Particular aspects of the process of land distribution in the Popular Council of Ceballos between January 2015 and May 2017]. Revistas UNICA **6**, 176-190.

Feinberg, R. (2018): Cuba's economy after Raúl Castro: A tale of three worlds. Washington DC: Brookings Institution, 1-21. https://www.brookings.edu/research/cubas-economy-after-raul-castro-a-tale-of-three-worlds/ (accessed April 2018)

Gaceta Oficial de Cuba, No 04 Extraordinaria de 10 de julio de 2008.

Gaceta Oficial de Cuba No. 034 Ordinaria de 16 de agosto de 2010.

Gaceta Oficial de Cuba, No 037 Extraordinaria de 10 de noviembre de 2011.

Gaceta Oficial de Cuba No. 038 Extraordinaria de 15 de noviembre de 2011.

Gaceta Oficial de Cuba, No 040 Extraordinaria de 21 de noviembre de 2011.

Gaceta Oficial de Cuba No 045 Ordinaria de 22 de octubre de 2012.

Gaceta Oficial de Cuba, No 53 Ordinaria de 21 de noviembre de 2012.

Gaceta Oficial de Cuba No. 004 Extraordinaria de 21 de mayo de 2013.

Gaceta Oficial de Cuba No 035 Extraordinaria de 6 de noviembre de 2013.

Gaceta Oficial de Cuba No 04 Extraordinaria de 17 de enero de 2014.

Gaceta Oficial de Cuba No. 018 Extraordinaria de 29 de mayo de 2015.

Gaceta Oficial de Cuba No. 39 Extraordinaria de agosto 5 de 2018

García-Álvarez, A. and Nova González, A. (2014): Food production and import substitution in the Cuban reform process, in Brundenius C. and Torres Pérez, R. (eds.), No More Free Lunch: Reflections on the Cuban Reform Process and Challenges for Transformation. New York, NY: Springer Business Media, 83-108.

González-Corzo, M. A. (2013): Cuba's agricultural transformations: Moving towards market socialism?, in Font M. and Riobó, C. (eds.), Handbook of Contemporary Cuba: Economy, Politics, Civil Society, and Globalization. Boulder, CO: Paradigm Publishers. 97-110.

González -Corzo, M. A., and Nova González, A. (2013): U.S. agricultural exports to Cuba: Composition, trends, and prospects for the future. Choices **28**(4): 1-6. http://www.choicesmagazine.org/UserFiles/file/cmsarticle_341.pdf

Hagelberg, G.B. (2010): If it were just the marabú: Cuba's agriculture 2009-2010. Cuba in Transition **10**, 32-45. https://ascecuba.org//c/wp-content/uploads/2014/09/v20-hagelberg.pdf

Hernández, M. (2018): En Cuba el azúcar se importa desde Francia [Cuba imports sugar from France]. 14yMedio. https://www.14ymedio.com/nacional/Cuba-azucar-importa-Francia_0_2515548423.html (Accessed December 2018)

Martín González, M. (2018): Acopio: tribulaciones de un resucitado [Acopio: tribulations of a resuscitated entity]. Cubadebate. http://www.cubadebate.cu/especiales/2018/07/30/acopio-tribulaciones-de-un-resucitado/#.XCwRYYfsboY (Accessed December 2018)

Mesa-Lago, C. (2012): Cuba en la Era de Raúl Castro: Reformas Económico-Sociales y Sus Efectos. Madrid: Editorial Colibrí.

Mesa-Lago, C. (2013): Los cambios de propiedad en las reformas estructurales en Cuba [Property changes in Cuba's structural reforms]. Espacio Laical **223**, February, 1-13. http://espaciolaical.org/contens/esp/sd_223.pdf

Mesa-Lago, C. (2014): Institutional change of Cuba's economic-social reforms: State and market roles, progress, hurdles, comparisons, monitoring, and effects. Washington DC: Brookings Institution, 1-30. https://www.brookings.edu/wp-content/uploads/2016/06/cubaseconomicsocialreformsmesalago.pdf

Mesa-Lago, C. and Pérez-López, J.F. (2015): Cuba Under Raúl Castro: Assessing the Reforms. Denver, CO: Lynne Rienner Publishers.

Mesa-Lago, C., Veiga González, R., González Mederos, L., Vera Rojas, S. and and l Pérez-Liñán. A. (2018): Voices of Change in Cuba from the Non-state Sector. Pittsburgh, PA: University of Pittsburgh Press.

Messina, W. A. (2009): The 2008 hurricane season and its impact on Cuban agriculture and trade. Cuba in Transition **9**, 421-428. https://ascecuba.org//c/wp-content/uploads/2014/09/v19-messina.pdf

Messina, W. A., Stefanou, S. E. and Royce, F.S. (2016): The United States and Cuba: As diplomatic relations warm, do trade relations? Choices **31**(4): 1-8. http://www.choicesmagazine.org/UserFiles/file/cmsarticle_542.pdf

Monreal, P. (2018): La reforma del agro cubano y el impuesto por tierras ociosas¿una buena idea? [The agricultural reforms in Cuba and taxes on idle land: a good idea?].El Estado Como Tal. https://elestadocomotal.com/2018/05/09/la-reforma-del-agro-cubano-y-el-impuesto-por-tierras-ociosas-una-buena-idea/ (Accessed December 2018)

Nova González, A. (2013). El Modelo Agrícola y los Lineamientos de la Política Económica y Social en Cuba [Cuba's Agricultural Model and the Economic and Social Guidelines]. La Habana: Editorial Ciencias Sociales.

Nova González, A. (2013a): Sector agropecuario y lineamientos [The agricultural sector and the Guidelines], in Font M. and Riobó, C. (eds.), Handbook of Contemporary Cuba:Economy, Politics, Civil Society, and Globalization. Boulder, CO: Paradigm Publishers, 81-96.

Nova González, A. (2014): Un nuevo modelo cubano de gestión agrícola [A new Cuban Agricultural management model]. Temas 77, 84-91.

Nova González, A. (2018): Agricultura en Cuba [Agriculture in Cuba]. Presentation at 'Cuba After Raúl? , 28th Annual Conference of the Association for the Study of the Cuban Economy (ASCE),' Miami, FL, 26-28 July, 2018.

Nova González, A. and González-Corzo, M.A. (2015): Cuba's agricultural transformations. Journal of Agricultural Studies **3**(2): 175–193. https://doi.org/10.5296/jas.v3i2.7547

Oficina Nacional de Estadísticas e Información (ONEI). (2010,2011, 2012 2013, 2014, 2015, 2016, 2017): Anuario Estadístico de Cuba 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016.

Oficina Nacional de Estadísticas e Información (ONEI). (2008, 2014a, 2015a, 2016a, 2017a, and 2018: Panorama del Uso de la Tierra 2007, 2013, 2014, 2015, 2016, 2017.

Posada, P. M. (2011): A synopsis of the dual currency system in Cuba. Journal of International Cuban Studies **3** (1): 43-50.

Pérez-López, J.F. (2016): The restructuring of the Cuban sugar agroindustry: A progress report. Association for the Study of the Cuban Economy (ASCE). https://www.ascecuba.org/asce_proceedings/the-restructuring-of-the-cuban-sugar-agroindustry-a-progress-report/ (Accessed December 2018)

Pérez-López, J.F., and Álvarez, J. (2005): The Cuban sugar agroindustry at the end of the 1990s, in Pérez-López, J.F., and Álvarez, J. (eds.), Reinventing the Cuban Sugar Agroindustry. Landham, MD: Lexington Books, 27-45.

Pollitt, B. H, (2010): From sugar to services: An overview of the Cuban economy. Monthly Review Online. https://mronline.org/2010/10/06/from-sugar-to-services-an-overview-of-the-cuban-economy/ (Accessed December 2018)

Riera O. and Swinnen. J. (2016): Cuba: agricultural transition and food security in a global perspective. Applied Economic Perspectives and Policy **38**(1):413-448. https://doi.org/10.1093/aepp/ppw018

Spadoni, P. (2014): Cuba's Socialist Economy Today: Navigating Challenges and Change. Boulder, CO: Lynne Rienner Publishers.

Villalonga Soca, A. (2015): El derecho real de usufructo: Particularidades en el derecho agrario cubano [Usufruct rights: Characteristics of Cuban agrarian rights]. Thesis., Universidad Central "Marta Abreu" de Las Villas, Villa Clara, Cuba. http://dspace.uclv.edu.cu/handle/123456789/1898