
POLICY BRIDGE

Recent transformations in Cuban agricultural policy and impacts on markets and production

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The Cuban government has implemented a series of agricultural transformations since 2007 to increase the country's agricultural self-sufficiency and reduce its dependence on food imports. These include the transfer in usufruct, i.e. use rights only, of State-owned land to non-State producers (i.e. cooperatives and private farmers), moderate price reforms, the decentralization of decision making, and the gradual relaxation of existing forms of agricultural commercialization. As a result of these measures, the area planted, as well as physical output and agricultural yields (in selected non-sugar crop categories) have shown mixed results, and still remain below desired levels. There are three fundamental unresolved issues that have prevented Cuba's agricultural sector from achieving desired levels: (1) the need to achieve the "realization of property"; (2) recognition and acceptance of the market as a complementary economy in coordination with a planning mechanism; and (3) absence of a systemic focus to achieve the successful completion of the agricultural production cycle (i.e. the value chain). These unresolved issues should be addressed through: (1) consolidating markets for inputs, where producers can obtain essential inputs at prices that correspond to the prices they can obtain for their output; (2) granting greater autonomy to agricultural producers to allow them to decide when, where, and to whom they can sell their output, after social contracts have been fulfilled; (3) diversifying types of agricultural commercialization to permit greater participation by non-State economic actors; (4) allowing agricultural producers to freely hire the labor necessary to sustain and increase production; and (5) providing agricultural producers with needed financing and technical assistance. *Please refer to Supplementary Materials*, DOI: <https://doi.org/10.1525/elementa.323.s1>, for a full text Spanish version of this article.

Keywords: Agricultural economics; Policy; Land tenure; Cooperatives; Cuba

El gobierno cubano ha implementado una serie de transformaciones en el sector de la agricultura desde 2007 con el objetivo de aumentar la autosuficiencia agrícola del país y reducir su dependencia de las importaciones de alimentos. Estas transformaciones incluyen la transferencia en usufructo (solo derechos de uso) de tierras de propiedad estatal a productores no estatales (cooperativas y agricultores privados), reformas moderadas de precios, la descentralización de la toma de decisiones y la relajación gradual de las formas existentes de comercialización agrícola. Como resultado de estas medidas, el área sembrada, así como la producción física y los rendimientos agrícolas (en categorías seleccionadas de cultivos sin incluir la caña de azúcar) han mostrado resultados mixtos y aún se mantienen por debajo de los niveles deseados. Hay tres problemas fundamentales no resueltos que han impedido que el sector agrícola de Cuba logre los niveles deseados: (1) la necesidad de lograr la "realización de la propiedad"; (2) el reconocimiento y aceptación del mercado como una economía complementaria en coordinación con mecanismos de planificación; y (3) ausencia de un enfoque sistémico para lograr la finalización exitosa del ciclo de producción agrícola. Estos problemas no resueltos deben abordarse a través de: (1) la consolidación de mercados para insumos, donde los productores pueden obtener insumos esenciales a precios que corresponden a los precios que pueden obtener por su producción; (2) otorgar mayor autonomía a los productores agrícolas para permitirles decidir cuándo, dónde y a quién pueden vender su producción, después de que se hayan cumplido los contratos sociales; (3) la diversificación de los tipos de comercialización agrícola para permitir una mayor participación de actores económicos no estatales; (4) permitir a los productores agrícolas contratar libremente la mano de obra necesaria para sostener e incrementar la producción; y (5) proporcionar a los productores agrícolas el financiamiento y asistencia técnica necesarias. *La versión en español de este artículo se puede encontrar en Materiales Suplementarias* DOI: <https://doi.org/10.1525/elementa.323.s1>.

Palabras clave: Economías agrícolas; Políticas públicas; Tenencia de tierra; Cooperativas; Cuba

I. Introduction

Agriculture is strategically important to the Cuban economy because of its spillover effect on other economic sectors. The Cuban agricultural sector provides approximately 35 to 40 percent of calories and 35 to 37 percent of total daily protein consumed by the Cuban population (Nova, 2006), and it directly employs close to one-fifth of the economically active population (ONEI, 2017). An estimated four million Cubans depend directly on agricultural activity to maintain their households (Nova, 2008).

Moreover, the agricultural sector generates revenues through the export of agricultural products¹ (with potential yet to be developed). Even more importantly, it has the potential to contribute substantially to import substitution for food products, thereby significantly reducing the country's current dependence on external food sources (approximately \$2 billion USD in food is imported annually, details provided later in this article).

In environmental terms, the sugar agro-industry not only produces many high value-added sub-products and derivatives, it also generates non-polluting renewable energy. This industry provides a positive net balance between CO₂ emission and absorption, benefiting environmental conservation and positively impacting the region.

The agricultural sector also brings together high levels of experience, practical and scientific/technical knowledge, accumulated and passed on from generation to generation of farmers and scientists. The sector has also developed experiences in forms of cooperative production over the last 50 years. This experience is an important source of knowledge and a point of reference for non-agricultural cooperatives, recently promoted by the government in accordance with the Economic and Social Policy Guidelines of the Party and the Revolution (known as “*Los Lineamientos*”).²

The objectives of this article are: a) to present and analyze diverse measures taken by the Cuban government between 2007 and 2017 that affect Cuba's agricultural sector; b) to analyze how these measures are expressed in agriculture and the national economy (in food production, sales and imports); and c) to propose a series of changes needed for viable and sustainable changes to the agricultural sector, within the framework of the updating process of Cuba's economic system. This analysis was based on the findings of previous research carried out by the article's first author, as well as analysis of official agricultural policy documents (laws, decrees and regulations) and secondary data published by the National Office of Statistics and Information (ONEI) and official sources in Cuba's Ministry of Agriculture.

The article is structured as follows: Section II presents an analysis and evaluation of government measures implemented in the 2007–2017 period, with a special emphasis on land allocations, the creation of non-agricultural cooperatives, and the process of decentralizing agricultural product sales. Section III provides performance indicators for agriculture and the national economy related

to agricultural production, food imports, and prices for agricultural products in the retail market. Section IV addresses the new agricultural model promoted by government measures and argues for implementation of a completely new model of economic management for Cuba's agricultural sector.

II. Changing the Cuban Agricultural Sector. Measures Implemented from 2007 to 2017

The government's first steps to modernize Cuba's economic and social system were aimed at agriculture. From 2007 – four years before the Social and Economic Policy Guidelines (“*Los Lineamientos*”) were published – to date, the government has carried out a series of transformations meant to revive the agricultural sector. The main goals were: a) to increase production; b) to replace food imports; c) to expand and develop the production and use of renewable energies; and d) to produce surplus for increasing agricultural product exports.

Land allocation

To date, the government has implemented more than 20 measures – laws, decree-laws, and resolutions – that directly affect agriculture. The one with the most significant impact has been the allocation of idle (non-farmed) state lands with usufruct rights, i.e. solely use-rights, to farmers and other individuals, private farms, cooperatives, and state enterprises. These allocations were carried out under Decree-law 259 (2008) and modified under Decree-law 300 four years later (2012).

Decree-law 300 permits individuals who do not own land to acquire up to 13.2 hectares. Others may increase their lands to up to 67.1 hectares (a limit set by the 1963 Agrarian Reform); however, this only applies to members of cooperatives or those associated with a state farm. Usufruct or use-rights are granted for a period of 10 years to individuals and 25 years to cooperatives and state farms. In both cases, once the time limit ends, those use-rights may be extended. By 2015, more than 1.7 million hectares of land had been allocated in this manner (See **Table 1**).

As a consequence of the land allocation process, the structure of land possession and management has changed over the last 10 years (see **Table 2**), resulting in the growing role of the non-state sector (cooperative and private) in Cuban agriculture. This in no way implies a corresponding change in the structure of land ownership. According to official sources, the State owns 78.7 percent of farm lands (ONEI, 2017b). This means that agricultural production is managed, to a great extent, by the non-state sector (83 percent, see **Table 3**), on land that is primarily state-owned but allocated with usufruct rights, along with some private land and cooperative-owned land.

Agricultural producers in Cuba are divided principally into five types: Basic Units of Cooperative Production (UBPCs), Agricultural Production Cooperatives (CPAs), Credit and Service Cooperatives (CCSs), small farms (privately managed by individuals who are not cooperative members), and state farms.³ The new scenario, shown in **Table 2**, primarily benefited CCSs and small farms, which over a 10 year period went from managing 18.5 percent to 51 percent of agricultural lands. These two types of

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Table 1: Results of land allocation under Decree-laws 259 and 300 in Cuba (2008–2015). DOI: <https://doi.org/10.1525/elementa.323.t1>

	Total Grantees	Total Hectares (ha)	Individuals*	(ha)	Legal entities**	(ha)
Decree-Law 259 (until Dec. 2012)	173,869	1,529,926	171,235	1,367,569	2,634	162,357
Decree-Law 300 (until March 2015)	31,067	240,815	30,795	224,074	272	16,741
TOTAL	204,936	1,770,742	202,030	1,591,644	2,906	179,098

Source: Report by the Ministry of Agriculture Land Office, March 2015.

* Not registered as business entities. Includes: private individual, person with usufruct rights, small landholder, etc.

** Identified as businesses and/or legal productive units, including cooperative forms such as a Credit and Service Cooperative (CCS), Agricultural Production Cooperative (CPA), Basic Units of Cooperative Production (UBPC), and state enterprises.

Table 2: Percentage of land by tenure and management. DOI: <https://doi.org/10.1525/elementa.323.t2>

Entity	2007 %	2015 %	2017 (estimated %)
State	35.8	25.1	17
Non-State	64.2	74.9	83
CCS	18.5	18.8	51
In usufruct (Decree-laws 259 and 300)		28.2	
Small farms		1.8	
UBPC	36.9	18	23
CPA	8.8	8.1	9
TOTAL	100	100	100

Source: Report by the Ministry of Agriculture Land Office and ONEI (2008, 2016), Land-Use Overview.

producers tend to function more effectively than the others, accounting for 69.7 percent⁴ of Cuba's total agricultural production. They produce 66.2 percent of milk (compared to 13 percent produced by the State) and possess more than 66.3 percent of dairy cows and more than 65.8 percent and 57.8 percent of cattle and hogs, respectively.⁵

The land allocation process faces new challenges. According to official reports, in late 2012, only 23 percent of new usufruct-rights landholders had previous farming experience.⁶ To attain the success they need, these new producers need assistance: technical, economic, and legal training; business advice; incentives and special regulations, and more (to be assessed later in this article). Moreover, the allocation of land (limited to 67.1 ha) has consolidated the predominance of small and medium-size farms. This does not mean a return to the late 19th century, when small and medium-size landowners outnumbered large landowners. The agricultural model promoted by the Cuban government involves a variety of economic actors, while emphasizing collective forms of management and production (the cooperative movement). The new model will benefit from a combined use of farmers' traditional knowledge, passed down from generation to generation, and the country's scientific and technical development. The new model will also help the repeasantization of Cuba's farmlands by reintegrating thousands of farmers and their families, as well as farmworkers, into agriculture.

More recent measures (2013–2017)

In 2013 and 2014, the government announced a new series of measures and implemented others (some on an experimental basis), as part of the changes taking place in Cuba's agricultural sector. Below is an outline of the measures and their contents.

1. Ministry of Agriculture (MINAG) Restructuring Process

The MINAG restructuring process involves changes in the operations and composition of its executive bodies, business system, and productive base (the latter being the focus of the most important changes). The transformation process was projected for two years in three stages:

- i. Improvement of the state budget system (2014 – first semester 2015)
- ii. Creation of provincial agricultural enterprises (2nd semester 2014–2015)
- iii. Elimination of the Provincial and Municipal Agriculture Delegations and creation of Agriculture Offices as part of the provincial and municipal (People's Power) administrations (2015–2016). Provincial enterprises will be overseen by the provincial administrations.

2. Non-restricted sales of supplies and equipment

Resolution 218 (2014) authorized the non-restricted sales of supplies and equipment (including animal feed, i.e. mixed foods and industrial sub-products) to any type of productive entity and to individual producers. This measure began on an experimental basis in 2014, in the municipality of Isla de la Juventud (Granma, 2014).

3. Incentives for Agricultural Production

Higher state payments to farmers for agricultural products constituted an incentive for production; profits of 30 to 50 percent over production costs were applied. This did not translate into higher retail prices, and so the State increased its total spending on food (Cubadebate, 2015).

4. Creation of Farmers' Markets under Non-Agricultural Cooperative Management

The creation of farmers' markets under non-agricultural cooperative management became possible under Decree-law 305 (2012) for first and second-level non-agricultural

coops, and Decree-law 309 (2012), which established regulations for first-level non-agricultural cooperatives (see **Figure 1**). Both measures were implemented on an experimental basis. In March 2014, there were 101 non-agricultural cooperatives (20.3 percent of the total), devoted to retail sales of agricultural products (Piñeiro Harnecker, 2015).

5. Modification of the Policy on Non-Restricted Sales to Tourism Facilities

Resolution 581 (2013) also authorized small farmers (private or with usufruct rights) to sell directly to tourism facilities. The previous resolution of 2011 permitted sales only to state and cooperative entities. Likewise, the list of products that could be sold was expanded.

6. Relaxing of Rules on Agricultural Product Sales

Decree-law 318 (2013) allowed a greater variety of economic actors to participate in sales (wholesale and retail) of farm products in a larger assortment of spaces (different types of markets, small stands, and carts). The measures contained in Decree-law 318 were tested on an experimental basis in three Cuban provinces (Havana, Mayabeque and Artemisa). This decree-law was an important step in the process of decentralizing sales of farm products.

7. More functions for cooperatives

Under the Ministry of Agriculture’s Resolution No. 673 (2013), cooperatives were given more functions in the areas of sales and services (more details below).

8. Modification of Decree-law 300

Decree-law 311 (2014) made it possible for CCS members to request up to 67.1 ha of land. Previously, under Decree-law 300 (2012), only members of UBPCs, CPAs and state farms could make such a request.

Below, we analyze some of these measures in more detail.

Regarding the Experimental Process of Non-Agricultural Cooperatives

While the creation of non-agricultural cooperatives is an important step in diversifying non-state economic agents in the national economy and expanding cooperativism to non-agricultural production, the current regulatory framework is such that constituting a non-agricultural cooperative is a lengthy, highly bureaucratic and centralized process. **Figure 1** summarizes the procedures for constituting non-agricultural cooperatives, as set forth in Decree-law 305 (2012) and Decree-law 309 (2012).

The steps that must be taken by a private individual to form a non-agricultural cooperative (see **Figure 1**) are excessive, and the bureaucratic process goes beyond the purely necessary. Before a proposal for a cooperative can be approved, it must be submitted to both the municipal and provincial bodies of the People’s Power, to the Central State Administration body that corresponds to the cooperative’s proposed activities, and to the Standing Committee for the Implementation and Development of “Los Lineamientos.”⁷ After a proposal has been approved by each of these authorities, it is presented to the nation’s Council of Ministers. The fact that the Council of Ministers must approve the formation of each and every cooperative makes the process more complex and centralized, and is distracting for the Council, when it is a process that should be in the hands of the local People’s Power authorities, which would inform higher bodies as appropriate.

When a proposal for a non-agricultural cooperative is initiated by the local People’s Power authorities or other national entities whose state-funded enterprises or units administrate the assets that are the basis for requesting cooperative management, such a proposal goes directly

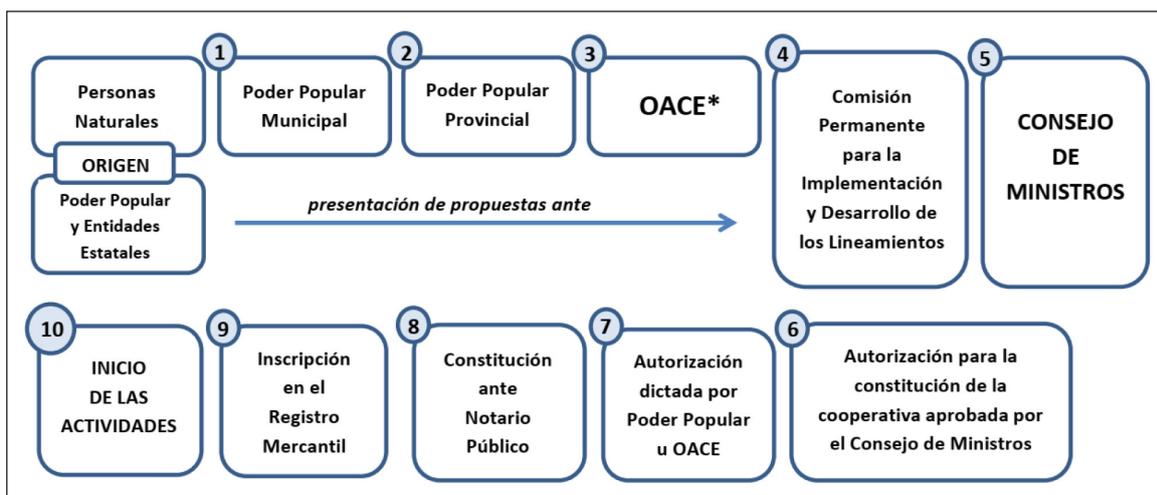


Figure 1: Summary of the procedure to form non-agricultural cooperatives, as specified by Decree-law 305 and Decree-law 309*. *1. Municipal People’s Power, 2. Provincial People’s Power, 3. OACE: Organ of the Central Administration of the State, 4. Standing Commission for the Implementaion and Development of “Los Lineamientos” (The Socil and Economic Policy Guidelines), 5. Council of Ministers, 6. Authorization for the constitution of a cooperative approved by the Council of Ministers, 7. Authorization issued by People’s Power or th OACE, 8. Constitution of the cooperative before a notary public, 9. Registration with the Mercantile Registry, 10. Start Operations.

Source: Decree-Law 305 (2012) and Decree-law 309 (2012). DOI: <https://doi.org/10.1525/elementa.323.f1>

to the Standing Committee for the Implementation and Development of “Los Lineamientos.” Essentially, these are state enterprises that are transitioning into non-state cooperatives. This is the origin of most (77 percent) of the non-agricultural cooperatives created to date (Piñeiro, 2015; Vuotto, 2015). It is notable that the procedure does not include any prior consultation with the workers (previously state employees about to become coop members). The consultation is carried out subsequent to cooperative formation, which is contrary to the first principle of cooperativism, i.e., the voluntary desire to form a cooperative and be part of it.

A similar procedure was followed when the UBPCs were created in agriculture in 1993. Overnight, state agricultural enterprise workers became cooperativists and their membership was designated, all without being consulted first. While it is true that the UBPCs were formed in the worst moments of the economic crisis (“Special Period”), which could justify this manner of proceeding to a certain extent, these times are different. While changes are urgently needed, it would be appropriate to comply with the principle of voluntary cooperative membership.

History offers an important point of reference. To a great extent, problems that have arisen in the UBPCs stem precisely from this distortion in the coop’s formation, the rapid way in which the change was carried out and the induced transformation from producer-state worker to producer-collective owner (Figueroa-Albelo, 2016). The lessons learned from these successes and errors by the UBPCs and agricultural coop movement in general should be taken into account when implementing measures such as those we are addressing.

The granting of new business licenses for new non-agricultural cooperatives officially came to a halt in mid-2017 (Cubadebate, 2017a, 2017b). Authorities declared that given limitations or shortcomings in the work of non-agricultural cooperatives, the State would concentrate its efforts on consolidating the work of the existing 429 cooperatives (Cubadebate, 2017a, 2017b).

Measures for Relaxing Sales: Decree-law 318

Decree-law 318 makes it possible (in provinces where it is being implemented experimentally) to have a greater number of subjects involved in agricultural product sales. The list of authorized actors includes state enterprises and farms, agricultural and non-agricultural cooperatives, small farmers, wholesale and retail vendors, and street vendors of agricultural products. Agricultural production entities and small farmers will be able to sell their products in these markets only after having fulfilled their commitments to the State, i.e., after having met contracted quotas for products to be sold to the State.

More spaces are available for retail sales of agricultural products, in six categories: i) state-managed farmers’ market ii) farmers’ market managed by non-agricultural cooperative; iii) supply-and-demand farmers’ market; iv) leased markets (markets where supply and management are run by the productive entity that leases the space and by self-employed workers; v) points-of-sale (kiosks and other); and vi) street vendors with push-carts.⁸ All of these sales forms are

responsible for their operating costs and sell their products under different price schemes, both those fixed centrally by the State and those determined by supply and demand.

This decree-law also authorized the creation of wholesale supply markets administered by state enterprises that would lease facilities to a non-agricultural service cooperative, which would sublet different spaces and locales. The first of these markets was founded in Havana in December 2013. After less than three years of operations, the market was shut down, and the non-agricultural cooperative that administered it was dissolved. The government alleged that this occurred because of “irregularities, crimes, illegal situations, a lack of control, and non-compliance with the missions for which this entity was created” (Granma, 2016).

Within Decree-law 318 there is an appreciation for the application of a systemic approach to the production-distribution-exchange-consumption cycle. It takes into account a diversity of productive economic subjects that interact in the marketing process, and recognizes the intermediary (self-employed workers) as a figure within that process. Moreover, it identifies – in line with the national economic situation as well as distribution policies – a number of products that should not be sold by these sales networks, and prices are centrally fixed for others to protect consumers.

The leased markets category has become an interesting model, because it encompasses the whole production-distribution-exchange-consumption cycle. With productive entities being the lead actor in this type of market, we can see a continuity in the chain of production (from production to the consumer). That continuity links producers to sales and makes it possible for the benefits of sales to be reinvested into production, thus achieving increased production. At the same time, the management process is more streamlined, and both producers and products are brought closer to the consumer. All of these different forms require observation and study; however, leased markets deserve special attention because they represent a chain of production, and also offer opportunities for value chain research.

Changes in the Social Object of Cooperatives

The Ministry of Agriculture’s Resolution 673 (2013) adjusted the social object⁹ of cooperatives by authorizing UBPCs, CPAs, and CCSs to carry out the following production, service and sales activities:

- a) To produce and sell agricultural, livestock, forestry, sugar cane, and other products.
- b) To sell the agricultural, livestock, forestry, and sugar cane products of other types of producers and small farmers to different buyers, as contracted by individuals and legal entities.
- c) To sell production supplies for agricultural, livestock, forestry and sugar cane production to individuals who are members of these cooperatives and to those using land with usufruct rights.
- d) To provide agricultural and other necessary services for production to their members and to those using land with usufruct rights.

Article 3 of this Resolution opens up greater space for carrying out “secondary or incidental production, sales and service activities, as well as production support activities, which with economic and social purposes should be carried out to the benefit of the agricultural cooperative, the community, and its members” (Resolution 673, 2013).

In short, the implemented measures are without question a step forward in the process of transforming the national agricultural sector. However, we must take into account that the main problem lies not in the post-production value chain (although this does present problems) but rather in production.

Based on the above, we recognize the need to eliminate a series of obstacles that remain present in production, using a systemic approach. It is not appropriate to adopt decentralizing measures solely for the last link in the chain (sales) without considering that the link is part of a system wherein production remains essentially unchanged, and wherein that production is the decisive factor.

We should note that the action of the market in and of itself does not solve disproportions or achieve equilibrium.

What is needed is a complementary relationship between planning and the market (Nova, 2015). The market makes it possible for problems to come to the surface, to be perceived and identified, so that the necessary adjustments, modifications and changes can be made in a complementary way with planning.

Without question, it is up to the State to correct the failures of the market, to prevent monopolies and oligopolies, and to develop social programs to attain the greatest level of equity possible. It should also take responsibility for redistributing income obtained from taxes, foster economic development based on efficiency, and ensure profit margins at every link of the chain and throughout the cycle of the value chain.

III. Production, food imports and retail prices

Despite the measures implemented since 2007, agricultural production output is insufficient (see **Figures 2, 3 and 4**), showing that the productive forces (meaning the means of production plus human labor) in that sector remain at a standstill. **Figure 2** shows the production per-

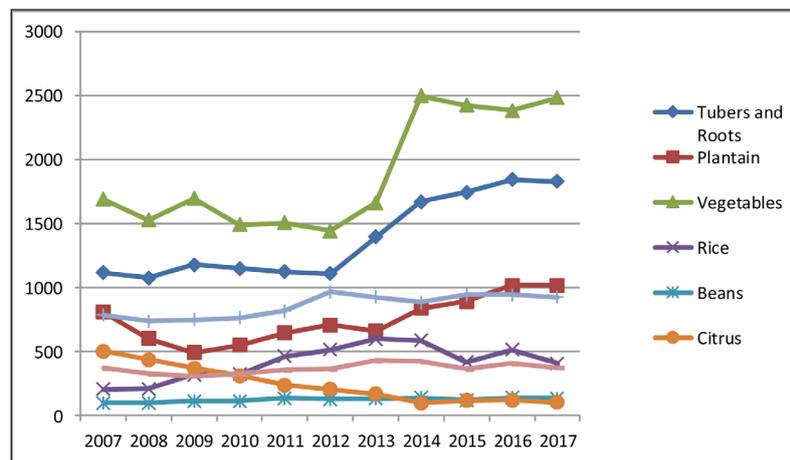


Figure 2: Agricultural production of selected crops, Cuba (2007–2017). (2007 = 1).

Source: ONEI [National Office of Statistics and Indicators] (2007–2017), Principal Indicators of the Agricultural Sector.

DOI: <https://doi.org/10.1525/elementa.323.f2>

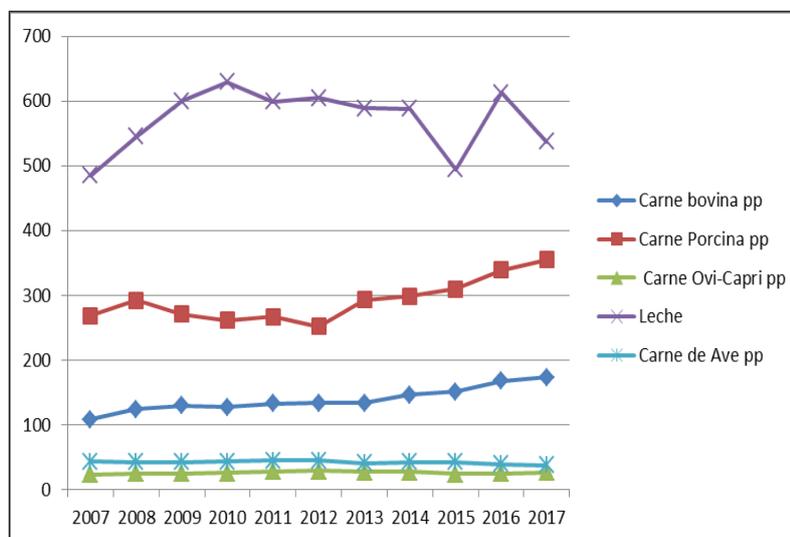


Figure 3: Production of select animal and dairy products, Cuba (2007–2017). (2007 = 1). *Carne bovina = beef; carmen porcina = pork; carne ovi-capri = Lamb, goat; Leche = milk; carne de ave = poultry.

Source: ONEI (2007–2017) Principal Indicators Agricultural Sector. DOI: <https://doi.org/10.1525/elementa.323.f3>

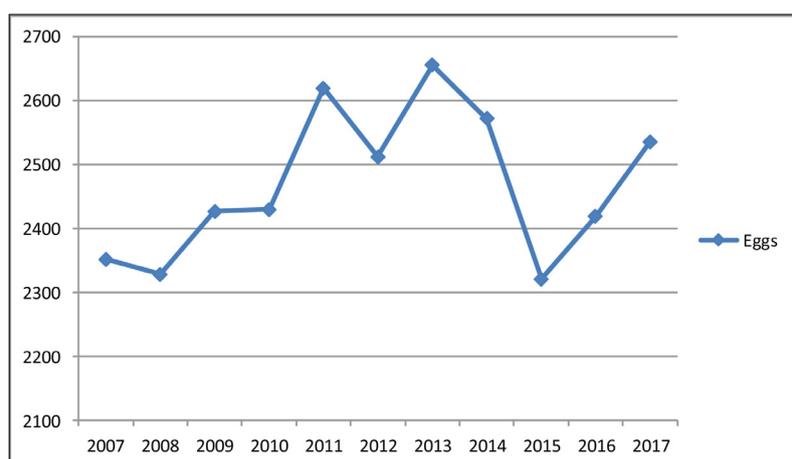


Figure 4: Egg production, Cuba (2007–2017). (2007 = 1).

Source: ONEI (2007–2017) Agricultural Sector Principal Indicators. DOI: <https://doi.org/10.1525/elementa.323.f4>

formance of a group of produce crops that are representative of the Cuban diet. **Figures 3 and 4** show the production performance of animal-based foods.

Rice and beans

While rice and bean production are far from meeting national demand, the increases obtained have made it possible to slightly reduce imports. Cuba spends \$180–250 million USD annually on rice imports (ONEI, 2017a). These imports provided annual rice availability of 335,000 to 540,000 tons over the 2013–2016 period (ONEI, 2017a). And bean imports cost USD \$75–100 million annually (ONEI, 2017a).

Tubers, roots and vegetables

Tuber, root and vegetable production remained practically stable until 2014, when it began to grow. Nevertheless, production levels are below national demand.

Citrus and other fruits

Beginning in 2009, citrus production saw a downward trend due to the crop disease Huanglongbing.¹⁰ Production of other fruits has been unstable, with a decrease from 2008 to 2010 and a slight increase between 2011 and 2014.

Pork

Pork production remained stable between 2007 and 2008, followed by a drop in 2009–10, growth in 2011, a drop in 2012 and growth from 2013 to 2017. Production is still below demand, which does not have a good impact on retail market prices. In general, production levels are based on imported raw materials for animal feed, with the goal of increasing pork production, replacing imports, and meeting delivery commitments to the industry and to tourism. However, Cuba imports USD \$10–13 million in pork annually (ONEI, 2017a).

Beef, poultry and lamb and mutton

Beef production tends to be unstable, with periods of growth and decline. Production is not meeting demand. Some USD \$7–10 million in beef is imported annually. (ONEI, 2017a).

Poultry production has remained on a downward trend, in general, with a slight increase in 2014. Some USD \$200 million in poultry is imported annually, with \$145 million of that imported from the United States. (ONEI, 2017a).

Lamb and mutton production are experiencing more dynamic growth, but it has a small impact, representing only 3 percent of all meat produced in the country (ONEI, 2016).

Milk and eggs

Milk production saw accelerated growth between 2008 and 2010, mostly due to a new milk price policy. Production then dropped in 2011, remained more or less stable from 2012 to 2014, dropped in 2015, recovered in 2016, and dropped again in 2017. Production is not meeting demand. Cuba spends close to USD \$200 million annually on dairy product imports (ONEI, 2017a).

Egg production saw a decrease from 2008 to 2010 and slight growth in 2011. It dropped in 2012, grew slightly in 2013, dropped in 2014 and crashed in 2015. Generally, it has been unstable, which is reflected in domestic market prices.

Food imports

The Cuban economy has seen a growing tendency in food imports over the last 10 years (see **Tables 3 and 4**). With respect to the availability of a select and representative group of foods, imports have accounted for approximately 69 percent.¹¹ This dependence on imports with respect to availability could probably be reduced by 35–40 percent, on the basis of growing national production, under conditions of competitiveness.¹²

The agricultural trade balance shows a deficit that has sometimes surpassed USD \$2 billion (see **Table 5**). From 2014 to 2016, Cuba imported about \$2 billion annually in food (ONEI, 2017a).

Impact on retail prices of agricultural products in Non-Agricultural Cooperative Markets and Leased Markets

After Decree-law 305 (2012) and Decree 309 (2012) for non-agricultural cooperatives went into effect in July 2013, followed by Decree-law 318 (2013), a series of

Table 3: Total imports and food imports, Cuba, 2005–2014. DOI: <https://doi.org/10.1525/elementa.323.t3>

In USD billions	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total Imports	7.6	9.49	10	14	8.9	10.6	13.9	13.8	14.7	13.1
Food	1.4	1.39	1.7	2.5	1.7	1.7	1.8	1.9	1.8	2.0
Human	1.3	1.26	1.5	2.2	1.5	1.45	1.6	1.7	1.3	1.4
Animal	0.13	0.17	0.17	0.26	0.23	0.25	0.22	0.19	0.49	0.5
Foods vs. Total %	20	15	17	18	20	17	14	14	14	15

Source: Elaborated by the author from the Statistical Yearbook for Cuba (Anuario Estadístico de Cuba), National Bureau of Statistics (ONEI) 2005–2013 and the Economic and Social Panorama (ONEI) 2014.

Table 4: Imports of selected foods, Cuba (2007–2013). DOI: <https://doi.org/10.1525/elementa.323.t4>

In tons	2007	2008	2009	2010	2011	2012	2013	Total 2007–13
Animal Origin								
Beef (boned)	4,066	4,847	5,261	4,963	1,641	746	1,089	22,613
Pork (canal)	8,500	7,850	8,848	10,256	4,805	4,195	4,984	49,439
Poultry (slaughtered)	156,786	143,537	160,280	143,621	150,358	154,982	179,330	1,088,894
Powdered milk	50,913	52,113	51,040	37,924	45,535	42,155	42,979	322,659
Butter	1,941	1,444	2,106	2,348	1,460	1,399	1,578	12,276
Fish	32,023	39,027	24,956	12,447	9,295	7,292	9,013	134,053
Vegetable origin								
Rice (consumption)	586,644	567,284	511,642	413,910	505,153	359,785	335,295	3,279,713
Beans	236,106	24,617	113,627	71,398	114,524	74,220	105,516	740,008
Corn	708,389	716,984	682,526	785,856	712,800	707,712	769,144	5,083,411
Soy	151,806	132,452	120,311	102,922	132,088	130,348	132,022	901,949
Wheat (grain)	565,488	660,653	671,629	777,961	805,975	750,007	778,471	5,010,184
Wheat flour	165,105	141,288	82,172	52,912	11,411	18	6	452,912
Vegetable oils								
Crude	17,016	37,737	23,428	26,708	9,965	23,887	14,186	152,927
Refined soy	40,143	48,228	48,437	66,676	61,160	53,891	53,369	371,904
Refined sunflower	7,543	109	446	3,437	309	1,820	718	14,382

Source: ONEI (2007–2013), Cuba Statistical Yearbook (Anuario Estadístico de Cuba).

Table 5: Agricultural trade balance, Cuba 2008–2013. DOI: <https://doi.org/10.1525/elementa.323.t5>

In USD millions	2008	2009	2010	2011	2012	2013
Importation of food and raw materials	2544	1755	1700	1863	1927	1848
Importation of other agricultural inputs for agro-industrial production	800	1200	700	650	620	600
Exports	559	499	541	687	790	804
Balance	-2785	-2456	-1858	-1826	-1757	-1644

Source: ONEI (2008–2013), Cuba Statistical Yearbook and ONEI Economic and Social Panorama (2014).

results was registered in the area of agricultural product sales that deserve to be analyzed and evaluated.

Given the absence of published official statistics on sales and retail prices for agricultural products, information has been taken directly from price behavior at certain markets (state, cooperative and leased) in Havana. The

data contained in **Table 6** below was collected from direct observation at the specified markets during 2013–14. The selection is not part of a scientifically-based sample, and the results cannot be extrapolated to the rest of the country. Also, the differences in time when the prices were noted may introduce distortions in the analysis.

Table 6: Comparison of prices between State Agricultural Markets (MAE) and cooperative and leased markets in Havana 2013–2014. DOI: <https://doi.org/10.1525/elementa.323.t6>

	MAE (01/2013)	Coop. "Merca" (08/2013)	Coop. "33 y 30" (01/2014)	Coop. "Mariposa" (08/2013)	Leased market 19 y 48* (08/2013)	Leased market 19 y 34** (01/2014)
All prices in Cuban pesos (CUP)						
Taro root (lb.)	3.00	5.00	5.00	3.50	3.30	3.00
Cassava (lb.)	2.00	3.00	2.00	1.50	1.50	1.50
Sweet potato (lb.)	0.80	2.00	2.00	1.50	1.50	1.50
Yellow squash (lb.)	2.50	3.00	2.50	2.00	1.50	1.50
"Burro" plantain (lb.)	1.00	2.00	2.00	–	1.50	1.50
Plantain (lb.)	3.00	3.50		–	4.50	3.50
Tomato (lb.)	1.25	15.00	7.00	5.00	5.00	5.00
Cucumber (lb.)	4.50	6.00		4.00		
Carrot (bunch)	4.00	4.00	10.00	–	–	
Eggplant (unit)	5.00	1.00		–		
Garlic (head)	4.00	4.00	2.50	2.50		
Papaya (lb.)	3.00	3.50		3.50	3.00	
Pineapple(unit)	12.00	10.00	12.00	–	7.00	8.00
Black beans (lb.)	10.00	12.00	12.00	12.00	12.00	10.50
Red beans (lb.)	12.00	15.00		14.00	13.00	12.00
White beans (lb.)	13.00	15.00	15.00	–		
Pork						
steak (lb.)	35.00	40.00		40.00	40.00	40.00
Leg (lb.)	25.00	30.00		30.00	30.00	28.00
Loin (lb.)	25.00	30.00		30.00	30.00	28.00
Rib (lb.)	20.00	25.00		25.00	25.00	25.00

Source: Elaborated by the author, ANG, based on direct observation at the specified markets in 2013 and 2014.

* Market leased by the Frank País CCS from Güira de Melena, located at the corner of 19 and 48 streets, Playa, Havana.

** Market leased by the Waldo Díaz Fuentes CPA from Güira de Melena, located at the corner of 19 and 34 streets, Playa, Havana.

Nevertheless, the price dynamic seen in **Table 6** provides important signs about the impact of the creation of cooperative and leased markets. In the selected markets that were converted into cooperatives and leased markets, prices have been noted to increase 15–16 percent and 17–25 percent, respectively, for at least 18 selected basic products. Some products do not reflect major differences, such as rice, yellow peas, green beans, corn, and others, which were not included in the table due to lack of space. However, independently of ranges and variability, higher prices for agricultural products have been seen in both types of markets, compared to prices at the State Agricultural Markets (MAEs).

One element that has contributed to the difference in prices between state markets and cooperative and leased markets is that until June 30, 2013, the state agricultural collection and distribution enterprise (Acopio) that supplies the MAE markets also covered all transportation, fuel, maintenance and complete operational costs of transporting products to different MAE markets.

Likewise, maintenance, electricity, telephone, local and wage costs were covered by the state enterprise. To a certain extent, those costs comprised a sort of subsidy provided by the State.

The cooperative and leased markets covered the costs involved in buying, transportation, and the maintenance and operation of different markets. This meant that a large part of the costs incurred were passed on to retail prices for agricultural products (a tax effect imposed on the economy), leading to price hikes.

In summary, the registered performance of agricultural production over the period analyzed and its consequences for food imports, trade balance, and higher prices for agricultural products confirm that the agricultural sector's productive forces have not been unblocked, even though a number of measures have been taken precisely for that purpose. Therefore, new and far-reaching measures need to be adopted with a systemic approach, with a view to immediately, dynamically, and quickly reactivating those productive forces.

IV. Unblocking the Productive Forces New Agricultural Model and its Consolidation. Implementation of a Totally New Economic Management Model

Consolidating an agricultural model foreseen by the government, based on what is laid out in “Los Lineamientos” and in the spirit of what has been implemented to date, requires a totally new model of economic management to be carried out (Nova, 2014). Such a model must achieve the solution of at least three unresolved aspects. The first is the realization of property, meaning that the producer has the right to decide what to produce, whom to sell to, and at what price, and to be able to resort to a market of inputs, means of production, and services to acquire whatever is needed at an opportune time and at prices that correspond to the earnings received from the sale of the final product. This would allow for the production cycle to close successfully. While steps have been taken in this direction, they are still insufficient. The prevailing economic management model used in the production-distribution-exchange-consumption cycle does not achieve realization of property. The second would be the recognition of the market’s real and objective existence, and the possibilities it provides in a complementary way with planning. Lastly would be the application of a systemic approach to the entire production-distribution-exchange-consumption cycle, the cost-system of prices, and the necessary interrelationship between macro and microeconomics.

For this economic management model, it is believed that changes are needed in the environment, and for that, a series of measures must be implemented, such as consolidating a market of inputs, services, and means of production. A second important measure would be to give agricultural producers more autonomy in decision making. A third step would be to diversify forms of sale, as an alternative to monopolies and/or oligopolies. This could be done through a) creating and organizing second-level sales cooperatives,¹³ b) expand retail sales sites, and c) diversifying actors charged with sales, such as sales cooperatives, individual producers, and the Acopio state enterprise.¹⁴ Decree 318 is a move in that direction.

A fourth measure would be to allow producers to freely hire the labor force that they need. And finally, producers who are starting out in agriculture could be offered adequate and necessary financing and periodic technical assistance. Additionally, the new model should take into account environmental factors, to achieve sustainable development in harmony with the environment, by applying agro-environmental techniques and procedures.

All of these measures will make it possible to have the realization of property, where the producer feels like the owner of his or her decisions and results. It will also make it possible to use the market as a tool to achieve better distribution and to seek efficiency, ensuring that it is adequate. All of this would help bring about a successful close to the production cycle with a systemic approach, and its integration into the macro and micro economy. In a scenario such as this, major increases in food production could be expected.

The Cuban agricultural sector also needs a major recapitalization process, and that requires both domestic and foreign investment, where the latter would function as a stimulating and significant element, and where cooperatives would play a direct and active role. At the same time, the agricultural sector needs the dissemination and application of scientific-technical and innovative results (attained and to be attained) through novel and participatory methods at the grassroots and territorial levels. That would play a big part in achieving growing and sustainable results, under conditions of competitiveness and economic efficiency.

In agriculture, the administrative methods traditionally used have been top-down and rigid. Because of its high degree of centralization, this sector has a heavy bureaucratic apparatus in the administration and management of agriculture. Even though it is a sector where high-impact structural transformations are being made, a new management culture is required for making the changes needed by the Cuban economy and especially in the agricultural sector.

The agricultural model promoted by the government calls for the development of horizontal relations and economic collaboration among local producers, to better address municipal and/or regional problems. The creation of producer associations could be one way of carrying this out, as a way of promoting inter-cooperation among local production entities (CCS, CPA, UBPC, small farms and new landholders with usufruct rights). New forms of inter-cooperation are needed that can function independently of the Ministry of Agriculture’s top-down system of relations. Local or regional producers’ associations would have common interests, with one representative from each related entity, and with a president and secretary elected by majority vote, with periodic rotation.

As part of updating Cuba’s economic and social model, the government is pushing forward the decentralization of local and regional spaces.¹⁵ The key objective is to separate the government’s state functions from business functions, and thus more efficiently provide goods and public services (Mulet Concepción, 2015). This context gives diverse agricultural production entities in the municipalities a chance to expand their functions and participate more directly in the social environment where they operate. A proposal for producers’ associations and/or other initiatives that would promote horizontal relations of economic collaboration could be an important step in the process of separating state management from strictly business management.

A new economic management model for the agricultural sector requires the training of business people/entrepreneurs, with the goal of increasing the efficiency and competitiveness of producers and decision makers. What is immediately needed is a training program focused on entrepreneurship, based on a systemic approach for the individual to be trained, and embracing the necessary interrelationship with scientific/technical system and innovation.

This new economic management model should combine business interests with consumer or client interests

as well as social interests.¹⁶ It should also achieve the necessary complementary relationship between planning and the market within the national economy. This new model should also take into account that any type of economic management, especially agricultural, involves risk. In agriculture, risk is an important variable; it is not situational, and it affects results in agronomic, economic, and financial terms.

In summary, measures implemented since 2007 have not made this new model of management viable. Perhaps the clearest manifestation of this model's limitations is its insufficient production results, which show that the agricultural sector's productive forces remain blocked.

V. Conclusions

Production results obtained by Cuba's agricultural sector in the period analyzed are not in line with the results expected from the government's policy changes. While growth has been reported for some areas of production, it has been insufficient, and those products are used to replace imports, without helping to increase food availability or reduce retail prices. Research on the end-use of food production would shed light on its structure and dynamics.

The absence of a systemic approach to government policies implemented is considered the main reason that increased production (of some products) has not resulted in greater supply. Those measures (i.e. policies) have primarily addressed specific problems, such liberalizing sales (the final link in the value chain), through Decree 318 (2013). However, essential elements of production remain to be similarly decentralized; for example, a wholesale market is needed for inputs, equipment and services.

While higher state prices for agricultural products benefit producers and are important for stimulating production, they should be complemented with other measures that will have an impact on the rest of the value chain.

The policy of fixing prices, which greatly affects both input sales and state payments to agricultural producers, fails to take into account a number of essential variables, such as demand (the market), the seasonal nature of certain products, territorial differences, and the value chain. The distortions produced by fixed prices can lead to unexpected results, such as encouraging the existence of a black market.

A new model of economic management should achieve the realization of property, recognize the existence of the market, and apply a systemic approach to the whole production-distribution-exchange-consumption cycle, the costs-system of prices, and the necessary interrelationship of macro and micro economics. At the same time, changes to the environment are needed, as is the implementation of a series of measures that would facilitate a successful close to the production cycle. Moreover, business people/entrepreneurs and decision makers need vigorous, dynamic and practical training that will allow them to develop a new model of economic management.

Science, technology and innovation should play a significant role in achieving rapid, sustained, economically efficient results that are in harmony with the environment.

Cooperativism is the form of management that the government most encourages for the agricultural sector. However, centralized procedures continue to impede the full development of its potentialities. It is worth noting that cooperatives encompass economic and social content;¹⁷ however, if they do not produce satisfactory economic results, they will be completely unable to sustain the social benefits they bring. The more wealth is distributed, the fewer inequalities will exist, and a road can be opened to a more just agricultural and socioeconomic model (Nova, 2011).

Cuban agriculture has great potential for producing organic and/or agro-ecological products, which have been developed since the 1990s. However, because of limited supply, demand continues to be unmet, and this has prevented the emergence of a domestic market for organic and/or agro-ecological production. Even so, the export of organic products may be an important way for obtaining hard-currency income and openings to new international markets.

The Cuban economy needs to solve its agricultural and food problem. Achieving socioeconomic, growing, and sustainable development in Cuba depends to a great extent on solving Cuba's agrarian problem.

Notes

- ¹ Between 2011 and 2016 Cuba earned more than \$150 million USD through exports of agricultural products, not including sugar or sugar cane derivatives (ONEI, 2017a).
- ² The *"Lineamientos de la Política Económica y Social del Partido y la Revolución"* ("Economic and Social Policy Guidelines of the Party and the Revolution") is a document that lays out a set of measures to be implemented, as guidelines to follow, for updating Cuba's social and economic model. The first of these documents was passed by the 6th Congress of the Communist Party in April 2011. A revised version was passed by the 7th Congress in 2016.
- ³ There are also joint enterprises of national and foreign capital. They are principally service providers, with less participation in the agricultural business system.
- ⁴ Calculated by the first author based on official reports of the ONEI and MINAG in 2015.
- ⁵ Calculated by the first author based on official reports of the ONEI and MINAG in 2015.
- ⁶ Information provided by Ministry of Agriculture officials on the Nov. 1, 2012 episode of the television program "Mesa Redonda": "Decree-law 300, in Search of Land Productivity." Accessible at: <http://mesaredonda.cubadebate.cu/mesa-redonda/2012/11/01/decreto-ley-300-en-busca-de-la-productividad-de-la-tierra/> (12/07/2018).
- ⁷ A commission comprising representatives of different government ministries to oversee and coordinate implementation of "Los Lineamientos."
- ⁸ The markets administered by the Youth Army of Labor (*Ejército Juvenil del Trabajo*, EJT) are not included in the current experiment, but they will continue operating under their current management model.

- ⁹ The main function that characterizes or identifies the productive entity.
- ¹⁰ For more information about the Huanglongbing disease and its effects on Cuba, see López-Hernández et al (2014) and Luis et al (2009).
- ¹¹ Estimate calculated by author ANG, using the figures from Tables 4 and 5.
- ¹² These percentages are estimates calculated by author ANG, using figures from Tables 4 and 5.
- ¹³ Several producer coops agree to create a second-level cooperative to sell their products. Producer coops could consider the rest of the chain of production as well. Other second-level coops could include: coops for fresh produce, industrial transformation (i.e. processing), technical services, training services, planting, harvesting, and transportation. The values achieved in the process of circulation are mainly used to provide incentives for producers.
- ¹⁴ A state-run wholesale commercialization enterprise that buys products from producers (state and non-state) and distributes them to retail markets, hospitals, and workers' and students' dining halls.
- ¹⁵ As of 2012, through Decree 301, an experiment has been carried out with a new type of government structure in the provinces of Mayabeque and Artemisa. For a more in-depth explanation of this process, see: Mulet Concepción (2015).
- ¹⁶ These include what is needed by the general population, communities, schools, childcare centers, hospitals, workers' and students' dining halls, and others.
- ¹⁷ They combine material, moral and social incentives for increasing production and productivity. They help develop values. They lead to the realization of property (a greater sense of belonging, motivation, and a capacity for decision making). They distribute profits (after deducting expenses and the investment fund) according to the production results of each coop member, and create collective funds for social and family improvement within the cooperative. They have a greater commitment to the community in their territory. They tend to fail less than other economic-productive types of businesses. They are more transparent.

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Competing interests

The authors have no competing interests to declare.

Author contributions

- Concept and Design: ANG
- Acquisition of data: ANG and GFA
- Analysis and interpretation of data: ANG, GFA
- Drafted and revised the article: ANG, GFA
- Approval of submitted version for publication: ANG

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