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ESTONIA'S POST-SOVIET AGRICULTURAL REFORMS: LESSONS FOR CUBA

Mario A. González-Corzo

Agricultural reforms are at the forefront of Cuba's efforts to "update" its economic model ("*actualización del modelo económico*"). However, despite the gradual implementation of calibrated agricultural reforms since 2007, Cuba's agricultural model remains primarily centralized. According to the "Guidelines" ("*Lineamientos de la Política Económica y Social del Partido y la Revolución*") ratified in April 2011, bureaucratic, centralized, coordination mechanisms will continue to play a leading role in Cuban agriculture along with non-State actors such as cooperatives and small-scale private farmers. The general ambivalence of the Guidelines with respect to the role of the State, market-oriented mechanisms, and the emerging non-State sector, combined with the official insistence on the need to find uniquely-Cuban solutions to the country's agricultural problems, creates uncertain expectations and highlights the need to examine the experiences of other post-socialist economies.

This paper analyzes the agricultural reforms in the former Soviet Socialist Republic (SSR) of Estonia. The first section outlines the principal characteristics of Estonian agriculture during the Soviet era (1940–1991). The second section examines the principal reform measures implemented during the first stage (1990–1995) and second stage (1995–2001) of post-socialist agricultural transformations, and their economic impact. Finally, the third section draws relevant lessons from the Estonian experience for present day Cuba.

ESTONIAN AGRICULTURE DURING THE SOVIET PERIOD (1940–1991)

Before the 1940 Soviet occupation, Estonia's agricultural model was primarily based on family farming. In 1939, there were an estimated 140,000 family farms in Estonia, with an average size of 22.7 hectares¹ and close to two-thirds (66.6%) of the economically active population was engaged in agriculture (Pajo, Tamm & Teinberg, 1994; V.R., 1951).

Privately-owned farms were generally dependent on family labor, which accounted for approximately 83% of their total labor input, and were characterized by relatively low levels of mechanization (Pajo, Tamm & Teinberg, 1994). Horses, rather than tractors or other modern capital inputs, were used for tilling, transporting, and hauling agricultural goods, and some 33% of family-operated farms had only one horse (Pajo, Tamm & Teinberg, 1994).

The growth of Estonian agricultural exports before the Soviet period was driven by the land reform of the 1920s, which divided large landholdings into smaller plots no larger than 50 hectares, increases in the arable land and livestock, improved yields and factor productivity, and the expansion of the agricultural cooperative movement² (V.R., 1951). Between 1920 and 1939, arable land increased by 19.7%; the acreage dedicated to grains expanded by 30%; output of grains for human (food) consumption increased by 52%; the number of horses used in farming grew

1. One hectare (ha.) equals 2.47 acres.

by 30.5%; cows increased by 88%; the number of pigs grew by 65.8%; and the yield of milk of controlled herds (e.g., cow, sheep, goat, etc.) grew by 78.8% (V.R., 1951).

The Soviet occupation in 1940 significantly transformed the structure and composition of Estonia's agricultural sector. Estonia was occupied by the Germans between 1941 and 1944; in 1944, German forces withdrew, and the Red Army re-conquered Estonia. The Soviets nationalized farms that were 30 hectares or larger, and converted them into one of two new property forms: (1) collective farms (*kolkhoz*): and (2) State farms (*sovkhos*) (Unwin, 1994). Private property was eliminated by the Soviets, as family-owned farms were divided into smaller units and new farmers were settled into these plots (V.R., 1951). Inflation-adjusted agricultural prices were reduced by 35%, as market-based coordinating mechanisms were replaced by bureaucratic coordinating mechanisms (e.g., State-fixed prices), and taxes paid by farmers were raised by about 30% (Jaska, 1952). The Soviets also imposed an obligatory procurement system that originally required all farms to deliver significant portions of their output to the State (Pajo, Tamm & Teinberg, 1994; Jaska, 1952).

The implementation of State-run agricultural procurement systems meant that often farmers were not paid for the output they delivered to the State procurement agency, and in other cases (like present day Cuba, for example) payments were in arrears. In the case of Estonia, during the early collectivist phase of the Soviet period (in the late 1940s), only between 4% and 6% of total farm income was derived from payments from the State (Pajo, Tamm & Teinberg, 1994; Maide, 1995; Alanen, 1999).

Estonian agriculture during the Soviet period was also characterized by mass landholder deportations. In 1949, more than 20,000 Estonians (about 2% of the population) were deported (Pajo, Tamm & Teinberg, 1994; Unwin, 1994). This mass deportation reshaped the structure of Estonia's rural labor market

and contributed to the acceleration of the collectivization of the country's agricultural sector. By 1949, close to 80% of Estonia's rural labor force was employed by collective farms, compared to 8.5% a year earlier (Pajo, Tamm & Teinberg, 1994; Alanen, 1999).

When the collectivization of Estonian agriculture officially began in 1947, the country only had five collective farms (or *kolkhoz*); the number of collective farms grew to 58 by 1948, and to 641 in 1949 (Pajo, Tamm & Teinberg, 1994). By 1951, 100% of Estonia's rural population was affiliated with collective farms (or turned into *kolkhozniks*), and privately-operated family farms were completely eradicated.

Independent farmers who resisted collectivization were required to perform various forms of forced labor such as cutting, collecting, and hauling timber to State-run sawmills, repairing rural roads, clearing the ruins of rural towns devastated by the ravages of World War II, etc. (Jaska, 1952). They were forced to sell their output to the State at fixed prices, insufficient to cover production costs, and were subjected to excessive taxes. V.R. (1951) estimated that the ratio of annual taxes paid by independent farmers compared to those of farmers belonging to a collective (*kolkhozniks*) was about 5.4 times.

In the 1950s, under the leadership of Soviet Premier Nikita S. Khrushchev (1953–1964), conditions in Estonian agriculture began to improve. The massive deportation of rural dwellers was terminated, and the State-run procurement agency increased the prices it paid for selected agricultural products (Pajo, Tamm & Teinberg, 1994; Alanen, 1999). This contributed to increases in the incomes of collective farms (and their workers), improved labor discipline, higher quality agricultural output, and the reorganization of collective farms into larger State farms, heavily subsidized by the State. Given the efficiency and comparative advantage of Estonia dairy and meat products, larger quantities of imported inputs (e.g., grain feed, fertilizer, machinery, etc.) were allocated to the dairy

2. According to V.R. (1952), in 1939 there were 3,972 agricultural cooperatives in Estonia; 1,666 (42%) were consumer cooperatives, in which members collectively owned and shared equipment, buildings, and machinery, and 486 were classified as production cooperatives.

Table 1. Estonian Agriculture, 1970–1992

	1970	1980	1985	1989	1990	1991	1992
Collective Farms (number)	317	151	150	200	2221	274	
State Farms (number)	171	178	152	126	117	120	
Agricultural land ('000 ha.)	1,425.0	1,372.5	1,328.8	1,312.2	1,367.7	1,368.6	
Total sown area ('000 ha.)	798.3	956.8	931.2	925.9	919.5	344.3	
Barley ('000 ha.)	208.5	268.8	256.6	284.6	263.7	284.8	
Fodder crops ('000 ha.)	368.0	428.3	455.8	468.0	468.5	465.2	
Rye ('000 ha.)	45.2	60.7	52.1	64.9	65.9	58.5	
Potatoes ('000 ha.)	79.5	72.3	60.9	52.0	45.5	52.2	
Milk production ('000 t)	1,024.6	1,169.7	1,260.1	1,277.2	1,208.0	1,092.8	
Milk yield per cow (kg.)	3,315.0	3,658.0	4,045.0	4,217.0	4,164.0	3,968.0	
Cattle ('000)	692.4	818.7	840.2	806.1	757.8	708.3	479.0
Dairy cows ('000)	308.7	314.1	302.7	292.9	280.7	264.3	186.0
Pigs ('000)	688.0	1,085.5	1,073.6	1,080.4	959.9	798.6	470.0
Poultry ('000)	3,677.1	6,842.7	6,911.5	6,922.5	6,536.5	5,538.4	1,973.0
Productivity per person (kg.)							
Grain	532.0	644.0	473.0	613.0	605.0	600.0	390.0
Potatoes	1,036.0	775.0	542.0	548.0	391.0	378.0	425.0
Vegetables	101.0	84.0	82.0	91.0	66.0	77.0	48.0
Meat	100.0	133.0	141.0	145.0	139.0	117.0	90.0
Milk	751.0	791.0	820.0	810.0	763.0	698.0	590.0

Source: Unwin (1994).

and meat industries at preferential terms and prices (Pajo, Tamm & Teinberg, 1994). Subsidies, price supports, and direct transfers from the State, contributed to the concentration of dairy and meat production in large State-owned farms, converting the Estonian dairy industry into the showcase of Soviet-style agriculture (V.R., 1951).

Another feature of Estonian agriculture under Soviet rule was the combination of less productive and profitable farms with more successful ones to create larger State-run farms (Jaska, 1952). However, low total factor productivity (TFP), poor management, limited access to essential inputs, rigid price controls, and bureaucratic constraints and limitations negatively impacted State-farm output and yields and led to a shift in government policy (Pajo, Tamm & Teinberg, 1994).

The long-term effects of the collectivization of Estonian agriculture were quite significant. Between 1940 and 1955, meat production declined by 15% and milk output by an estimated 29% (Unwin, 1994). As Table 1 shows, the structure of Estonian agriculture changed significantly during the Soviet period, with notable changes in the number of collective farms, total area under cultivation for the coun-

try's principal agricultural products, and average productivity per worker.

One of the most interesting characteristics of Estonian agriculture during the Soviet period is the share of output recorded by collective and State farms that was actually produced by the private sector particularly in the 1980s (Hedlund, 1989; Unwin, 1994). As Abrahams (1992) indicates, 30.8% of milk production and 22.7% of total meat production originated from the private sector in 1984. Vegetables and fruits produced in privately-owned gardens (attached to summer cottages) and in allotments located on the outskirts of major towns represented a significant portion of total production and accounted for an estimated 25% of total food consumption for a notable percentage of the Estonian population (Unwin, 1994).

Estonian agriculture during the Soviet period was also characterized by sharp decreases in the rural population. According to Aunap and Mander (1991), between 1940 and 1955, war and the impact of the early stages of Soviet-style collectivization contributed to a decline of 177,000 in the rural population. The depopulation of Estonia's rural areas continued well into the 1980s; the percentage of the labor force engaged in agriculture declined from 26.5% in 1960

to 13.9% in 1980 (Unwin, 1994). Estonian agriculture was also impacted by the adverse effects of increased fertilizer and pesticide use, and the use of heavy machinery, particularly Soviet-made tractors and farm equipment, contributed to soil compaction (Unwin, 1994).

Despite enjoying direct State subsidies, and the benefits of State-financed capital investments, collective farms were less efficient than smaller, independent, family-owned farms. According to Pajo, Tamm & Teinberg (1994), this can be explained by several factors. First, collective farms were required to sell their output directly to the State at prices well below their production costs. Second, collective farms suffered from a weak production base due to insufficient inputs. Third, Estonian agriculture during the Soviet period was affected by the migration of the more educated and younger segments of the rural population to cities and towns in search of better opportunities. Fourth, collective farms were run by political appointees who often had a poor (if any) understanding of farming policies, and lacked expertise in agricultural production and the management of large-scale, collectivized, agricultural enterprises. Fifth, collective farms lacked direct access to farming machinery, particularly tractors and combines; these were often held in “stations” (i.e., centralized, State-owned depots), which were staffed by incompetent and unmotivated managers and staff.³

During the late 1940s, and the rest of the Soviet period, declining physical output volumes and yields in State-owned farms were also caused by adverse weather conditions, improper or insufficient application of fertilizers, pesticides, and nutrients, the lack of machinery to apply them, and the absence of economic (or material) incentives to motivate workers to become more productive (Pajo, Tamm & Teinberg, 1994). Collective farms also suffered from stringent bureaucratic constraints and regulations covering all aspects of their operations, such as land ownership by members (or workers), as well as limitations on other

types of property rights (related to ownership of animals such as cows, pigs, chickens, sheep, etc.).⁴

POST-SOCIALIST AGRICULTURAL TRANSFORMATIONS

According to de Melo, Denizer, and Gelb (1997), “the transition from a planned economy to a market economy involves a complex process of institutional, structural, and behavioral change.” As Table 2 demonstrates, the Estonian economy followed the standard patterns of post-socialist transition and underwent a radical transformation as a consequence of the disappearance of the Socialist camp in 1989 and the disintegration of the USSR in 1991. These changes were particularly pronounced during the first stage of Estonia’s transition to a market-oriented economy (1990–1995).

Estonian agriculture was significantly transformed by land, property, and agricultural reforms during the 1990–1995 period (Alanen, 1999). The transition from a planned to a market-based agricultural model was driven by several measures: the *Farm Law of 1989*, which created new tenant farmers (based on the hereditary rights from landownership prior to the 1940 Soviet occupation) (Maide, 1995); the *Ownership Reform Act* introduced in 1991, which provided the framework for the restitution of confiscated property or compensation of former owners or their heirs (Viira et. al., 2009); the *Land Reform Act*, also adopted in 1991, which provided the legal mechanisms to return land to its rightful owners, as well as the privatization of land held by collective farms and State farms; and several amendments to the *Land Reform Act* (1991) to address issues related to uncertain property relations, and unresolved disputes with regards to the restitution of lands to private parties according to pre-World War II boundaries (Viira et. al., 2009).

The transition to a market-oriented agricultural model in Estonia was accelerated with the introduction of the *Agricultural Reform Act of 1992*. This

3. See V.R. (1951) for more on Estonia’s famed “machinery and tractor stations” during the Soviet period.

4. V.R. (1951) presents a detailed account of the organizational and administrative structure of Estonian collective farms (*kolkhoz*) during the Soviet period, as well as the use of “moral” and “material” incentives to stimulate production.

Table 2. Estonia: Selected Economic Indicators, 1990–1994

	1990	1991	1992	1993	1994
% change in GDP	-3.6%	11.8%	-31.6%	-25.0%	4.0%
Gross fixed capital formation (at constant prices), % of GDP	—	15.0%	25.6%	22.7%	24.3%
% change in price level	23.0%	210.6%	1069.3%	89.0%	48.0%
Trade with FSU countries (billion USD)	\$2,468.0	\$1,928.0	\$732.0	\$414.0	—
Trade with the rest of the world (billion USD)	\$198.0	\$50.0	\$242.0	\$461.0	—
Unemployment rate (%)	0.0	0.1	5.0	5.1	5.6
Employment (thousands)	826.0	807.0	779.0	710.0	693.0

Source: de Melo, Denizer, and Gelb (1997); Iradian (2007); Mundell (1997); Pitlik (2000); and author's calculations.

Table 3. Agriculture in the Estonian Economy during the Transition Period, Selected Years

	1992	1993	1996	1997	1998	1999	2000	Change 1992– 2000	% Change 1992– 2000
Share of Agriculture in GDP (%)	11.7%	9.3%	5.2%	4.3%	4.3%	3.7%	3.6%	—	—
Employment in Agriculture ('000)	114.6	91.9	52.1	44.8	43.5	38.2	31.5	-83.1	-72.5%
Share of Agriculture in total employment (%)	15.0%	13.0%	8.1%	6.9%	6.8%	6.2%	5.2%	—	—
Agricultural exports (millions of kroons)	973.5	2,498.6	3,227.6	3,391.3	3,476.9	2,589.9	3,093.6	2,120.1	217.8%
Share of Agriculture in total exports (%)	17.5%	23.5%	15.2%	11.5%	9.9%	7.5%	5.8%	—	—

Source: Estonia Ministry of Agriculture, 2002 and author's calculations.

measure provided the legal framework for the liquidation of collective farms and the creation of new privately-owned farms and agricultural enterprises (Alanen, 1999; Viira et. al., 2009). In addition, it privatized the assets of collective farms (e.g. machinery, livestock, facilities, etc.) in order to speed up the transition to a market-based agricultural model in Estonia.

Table 3 shows the role of agriculture in the Estonian economy during the transition period (1990–2000). Between 1992 and 2000, agriculture's share of Gross Domestic Product (GDP) decreased from 11.7% to 3.6%; employment in the agricultural sector fell from 114,600 workers in 1992 to 31,500 in 2000; similarly, agriculture accounted for 15% of total employment in 1992, and just 5.2% in 2000. At the same time, the aggregate value of the country's agricultural production increased from approximately 1.7 billion *kroons* in 1992 to 2.8 billion in 2000; during the same period, the value of agricultural exports rose from 973.5 million *kroons* to 3.1 billion, while agriculture's share of total merchandise exports fell from 17.5% in 1992 to 5.8% in 2000 (as the result of the expansion of the country's total output and exports during the second half of the post-Soviet transition period).

Rural employment in Estonia declined significantly during the transition period (1990–2000). In 1992, there were 237,300 rural workers; this figure declined 25.2% to 177,400 workers in 2000. Agricultural workers represented 50.6% of total rural workers in Estonia in 1992; this ratio fell to 17.8% in 2000. The (rapid) privatization of State-owned farms and collective farms was a key element of Estonia's post-socialist agricultural transition (Laar, 2007; Nellig, 1996; Raig, 1993). One notable feature of the privatization of Estonian collective farms (and their assets) during this period was their decentralized and participatory nature. According to Maide (1995), collective farms established a local reform committee responsible for formulating the key elements of the reform plan. This plan required the approval of the municipal council. All the members (or workers) of a collective farm were entitled to a fractional share of ownership of its assets, and privatization was mostly carried out through an action, where participants could pay with "privatization vouchers"—which were distributed to individual members based on their "work shares"—or with "compensation vouchers"—which were issued to compensate owners of confiscated lands or their heirs (Alanen, 1992).

Another notable aspect of the Estonian experience is that the reform process did not necessarily result in

Table 4. Structure of Estonian Agriculture, 1985–1999

Year	Collective Farms		Agricultural Enterprises	Private Farms	
	Number	Average Area (ha.)	Number	Number	Average Area (ha.)
1985	302	8,369		17	0
1989	326	7,628		828	25
1991			396	7,029	25
1992	—	—	—	—	—
1993	—	—	—	—	—
1994			1,013	10,153	25
1995			983	13,513	23
1996			873	19,767	21
1997			803	22,722	22
1999			680	34,671	22

Source: Viira et. al. (2009).

the liquidation of collective farms, but promoted their termination as legal entities and their reorganization as independent agricultural enterprises (Viira et. al., 2009).⁵ As Table 4 demonstrates, by the late 1990s, the structure of Estonian agriculture had changed quite markedly. Between 1989 and 1999, the number of private farms increased significantly; in 1989, there were 828 private farms, with an average size of 25 hectares, while a decade later the number of private farms had increased to 34,671. The same trend can be observed in the case of agricultural enterprises (or former collective farms). These increased from 391 in 1991 to 680 in 1999 (74%), despite the liquidation of non-competitive ones during this period.

The expansion of Estonia's private agriculture during the transition to a market economy can be explained by several factors. Private farms established during the early phase of the transition (1989–1992) received direct government support. In addition, agricultural enterprises created during this period benefited from subsidized inputs and services (Alanen, 2004). These forms of State support encouraged the return of family farms and the expansion of the rural population.

Land use and physical production were also notably transformed during Estonia's transition to a market-oriented economy. Between 1990 and 2001, the area sown dedicated to the following field crops declined as indicated: cereals and legumes (-30%), barley (-49%),

vegetables and greens (-37%), potatoes (-51%), and forage crops (-24%). The most significant decline took place during the 1990–1995 period, which was characterized by the implementation of fundamental land, ownership (or tenure), and agricultural transformations, and the dismantlement of collectivized agriculture in Estonia (Viira et. al., 2009).

According to Astover et. al. (2006), the decreases in land use that took place in Estonia during the transition period should not be only attributed to economic reforms and structural transformations; they were also caused by the abandonment of agricultural land with low fertility soils. Output from former collective farms in regions with low fertility soils was not competitive in a market economy, and the inability to successfully compete with more productive farms (located in areas with higher fertility soils) contributed to the notable reductions in areas sown (for selected field crops) during the 1990s.

During the transition period, the area sown dedicated to field crops with stronger export potential expanded as follows: wheat (129%), oats (44%), and industrial crops (784%). The increase in the agricultural lands dedicated to wheat can be explained by generous government price supports for this crop (Viira, et. al., 2009). The reduction in the area sown destined for the production of other cereals was caused by the elimination of existing export agreements between Estonia and the USSR (in 1991), while the notable decrease in the lands dedicated to

5. Tamm (2001) indicates that the majority of public opinion in Estonia in the early 1990s favored the liquidation of collective farms.

Table 5. Size of Animal Herds in Estonia, 1990, 1995, and 2001 (*thousands*)

	1990	1995	2001	Change (1990–1995)	% Change (1990–1995)	Change (1995–2001)	% Change (1995–2001)
Cattle	757.8	370.4	260.5	-387.4	-51.1%	-109.9	-29.7%
Dairy cows	280.7	185.4	128.6	-95.3	-34.0%	-56.8	-30.6%
Pigs	859.9	448.8	345.0	-411.1	-47.8%	-103.8	-23.1%
Sheep and goats	139.8	49.8	32.4	-90.0	-64.4%	-17.4	-34.9%
Poultry	6,536.5	2,911.3	2,294.9	-3,625.2	-55.5%	-616.4	-21.2%

Source: Viira et. al. (2009).

barley was the result of the decline in animal herds during the transition period, which had an adverse impact on the demand for barley as feed grain (Viira et. al., 2009).

Estonian agriculture was highly specialized in the animal and dairy production during the Soviet period. However, during the transition to a market-oriented economy, this sector of Estonian agriculture contracted significantly. As Table 5 shows, the decline in the size of animal herds was more proportionately significant than the decreases in arable production experienced during the transition period. During the first stage of the post-socialist transition (1990–1995), animal production in *all* categories decreased by a larger percentage than during the second phase of the transition period (1995–2001). Livestock production in Estonia has not experienced the same recovery as cereal production despite the introduction of direct payments (to producers) for raising sheep and goats in 1999 (Viira et. al., 2009). In 1991, Estonia produced 1,092.8 tons of milk; by 2007, milk production was just 57.3% of 1991 levels (or 626.2 tons) (Viira et. al., 2009). Even though meat production has increased since 2009, current output levels are around 40% of the quantity reported in 1991; and egg production is around 30% of 1991 levels (Viira et. al., 2009).

Price liberalization and structural changes during the early stages of the post-socialist transition also had a direct impact on Estonian agriculture. Rapid agricultural deregulation contributed to higher inflation, which in turn reduced consumer demand for domestic agricultural products (Viira et. al., 2009). Between 1991 and 1994, input prices rose 17.5 times, and agricultural producer prices increased 11.5 times (Viira et. al., 2009). After the termination of Soviet consumer subsidies, retail food prices rose 28.9 times;

the terms of trade for agricultural producers deteriorated significantly; and consumers encountered higher food prices (Viira et. al., 2009). Prices were liberalized in 1992, as Estonia implemented a liberal trade regime to attract foreign direct investment (FDI). This provided (highly-subsidized) foreign competitors with a competitive advantage (*vis-à-vis* Estonian agricultural producers).

By the late 1990s, the principal focus of Estonian agricultural policy was to facilitate the country's entry into the European Union (EU). Negotiations with the EU towards this goal began in 1997, followed by a more comprehensive "EU accession plan" in 1998, designed to harmonize agrarian legislation and policies, and to establish administrative procedures that would enable Estonia's entry into the EU (Viira et. al., 2009). In 1999, Estonia advanced towards EU accession by implementing the Special Accession Programme for Agriculture and Rural Development (SAPARD) (Viira et. al., 2009).

Starting in 2001, Estonia entered the third stage of its post-socialist agricultural transition. During the years prior to its EU membership (2004), SAPARD payments reached an estimated 67.9 million Euros, and about three-quarters of the funds were used to finance agricultural investments (Viira et. al., 2009). SAPARD funds were also used to develop the administrative capabilities required for implementing the EU's Common Agricultural Policy (CAP) (Viira et. al., 2009).

Since it joined the EU in 2004, Estonia has applied the CAP with the common exemptions granted for new members (Viira et. al., 2009). It has further advanced towards harmonization by implementing market regulating mechanisms, particularly the 2007–2013 Rural Development Programme, under which direct payment levels (to agricultural produc-

ers) are expected to reach the levels that EU-15 members had in 2004 (Viira et. al., 2009).

EU membership has significantly transformed the Estonian economy. The expansion of export markets has boosted domestic demand for raw materials and inputs, which increased producer prices and revenues (Viira et. al., 2009). At the same time, however, increased demand for raw materials has also contributed to higher costs of production, affecting the profitability of independent farmers and agricultural cooperatives (Viira et. al., 2009).

LESSONS FOR CUBA

As Lerman (2000) indicates, “the transition of agriculture from plan to market is a complex multidimensional process, engineered with the objective of improving the notoriously poor productivity and efficiency of socialist agriculture.” Despite the moderate agricultural reforms introduced since 2007, Cuba still operates under the Soviet model of socialist agriculture that existed in Estonia during the Soviet period (1940–1990). Therefore, Estonia’s agricultural transition offers several valuable lessons for Cuba’s inexorable transition towards a more flexible, market-based, agricultural model.

The Estonian experience with agricultural reforms highlights the benefits of rapid privatization. The privatization of collective and state farms in Estonia dates back to some gradual liberalization measures introduced in 1987–88, which allowed the establishment of small-scale private farms for the first time in the Soviet era. In the case of Estonia, as in most post-socialist economies, agricultural privatization was essentially grounded on the restitution to their original owners or their heirs of privately-owned farms that were confiscated during the Soviet period. From the beginning, it became clear that those (former owners or their heirs) who did not want (or could not recuperate) their lands due to some form of encumbrance (e.g., the properties did not exist in their original form; their physical state was altered, etc.) would receive some alternative form of compensation.

Agricultural privatization in Estonia raised three key issues from its early stages: identifying those (former owners and their heirs) who had rights to the land; the need to develop new land registration records and

to conduct formal property surveys of existing farms; and the need to create new jobs (including alternative forms of employment) for cooperative members displaced by the process of privatization (Unwin, 1994). In addition, privatization (of collective and State farms) created considerable tensions between managers who actively opposed their transformations into private farms on both ideological and economic grounds, and the emerging independent rural class (Abrahams, 1992).

Reforming the cooperative sector in Estonia turned out to be quite a complex process due to the difficulties associated with distributing cooperative assets such as livestock, buildings, equipment, and machinery (Unwin, 1994). The Estonian experience with the reform of agricultural cooperatives in particular provides valuable insights for Cuba since in both cases this sector represents a large share of arable land and physical output. Estonia followed an inclusive approach to the reform of agricultural cooperatives characterized by three fundamental steps. First, cooperative assets were distributed among their members based on years of service and income levels. Second, cooperative members were given the opportunity to decide on the policies to restructure their respective cooperatives. And third, decisions were submitted for approval to local reform committees comprised of elected representatives from the cooperatives, local government officials, farmers, and State representatives (Unwin, 1994).

While some cooperatives were indeed privatized (i.e., divided into smaller farmers operated by their former owners or their heirs), the majority of former agricultural cooperatives in Estonia retained some elements of cooperative ownership, in most cases in the form of joint stock or shareholding ventures (in which members felt a real sense of ownership and responsibility for the results of their respective entities) (Unwin, 1994).⁶

Estonia’s experience with agricultural privatization also highlights the issues associated with land allocation and registration, issues that Cuba is likely to encounter during the transition period. Conducting formal land surveys and registering newly created (private) farms was a lengthy and labor-intensive pro-

cess in Estonia that required the development of competent administrative capabilities to ensure transparency and the confidence of the public. Estonian authorities were confronted with the challenges created by the need to allocate former State-owned lands of different quality and value to its newly-established owners. This process was complicated by the erratic (or volatile) nature of land prices during the early stages of the transition to a market-oriented economy (1990–1995), the inexistence of a definitive system of land valuation, and the unwillingness of new owners to incorporate themselves into the agricultural sector (Unwin, 1994).

The Estonian experience with post-socialist agricultural transformations suggests that agricultural transition is almost always characterized by radical changes in land tenure, significant output declines, falling income levels (at least initially), rural depopulation, and external sector reorientation. As we noted earlier, Estonia's post-socialist agricultural transformations were characterized by significant reductions in arable land; major decreases in physical output;⁷ the insolvency (and bankruptcy) of a large number of agricultural enterprises (i.e., privatized collective farms); and notable declines in rural household incomes (Alanen, 1999; 2004; Viira et. al., 2009). The decreases in arable land and physical output, and the failure of a substantial number of agricultural enterprises in Estonia, particularly during the early stage of its post-socialist transition (1990–1995), were primarily driven by the slow pace of land reform, the existence of incoherent property relations, the inability and unwillingness of new (private) farmers to manage farms, and the inef-

ficient use of agricultural land by former State-owned farms.

Under these circumstances, the agricultural sector was unable to offer attractive employment and income opportunities, and the rural population declined, further accelerating the general decline of the sector during the transition period. The decline in physical output began to level off during the second stage of transition (1995–2001), as a comprehensive set of agricultural policies, including support schemes for agricultural producers, were implemented and Estonia began to focus on EU accession (Viira et. al., 2009).⁸

Estonia's international trade patterns were radically altered during its post-socialist transition. Agricultural exports decreased significantly during the early stage of the transition (1990–1995) due to falling domestic output, declining productivity, and the disappearance of its principal trading partner, the USSR, in 1991. Improved relations with Western European countries led to the reorientation of Estonia's external sector, but came at high cost for domestic agricultural producers unable to compete with highly subsidized Western European agricultural products (Unwin, 1994). It took close to fifteen years for the (relative) stabilization of Estonia's external sector.

Estonia's agricultural transition was characterized by the creation of independent structures and programs to form, advice, and educate private farmers. In 1988, even before regaining its independence from the USSR, the Estonian Ministry of Agriculture began to offer formal training for individuals considering becoming private farmers (Unwin, 1994). In

6. As an example of one of the legacies of socialist agriculture, Unwin (1994) indicates that during the early stages of Estonia's post-socialist transition, members of agricultural cooperatives in areas of the country where State-sponsored cooperatives had a strong presence during the Soviet period preferred to retain substantial elements of cooperation, rather than adopting full-scale privatization.

7. Unwin (1994) attributes the drastic decline in Estonia's agricultural output during the early stage of the transition period (1990–1995) to three main factors: (1) the disintegration of the USSR and the elimination of trade agreements between Estonia and the Russian Federation; (2) the excessive reliance of Estonia's livestock production industry on imported Soviet fodder; and (3) the devastating effect of rising energy costs (as a result of the end of subsidized oil imports from the USSR) on Estonian livestock production.

8. According to Viira et. al. (2009), the first positive effects of Estonia's impending integration into the EU were felt in 2001 when the harmonization of institutions (with other EU member states) and the adaptation of the Common Agricultural Policy (CAP) contributed to the development of a more systematic agricultural policy. Since joining the EU in 2004, Estonia's agricultural trade (exports and imports) has increased substantially, and output in crops in which it has a relative comparative advantage (e.g., cereals, oilseeds, etc.) has increased and even surpassed 1990 levels.

1989, an institutional entity to represent independent farmers, the Estonian Farmers Central Union, was created to facilitate the development of private agricultural enterprises. Membership in the Farmers Union had expanded to 6,253 private farms out of 8,406 (or 74.4%) by 1993, only 4 years after its creation, and it was organized into departments dealing with Education and Training, Foreign Affairs and Tourism, Technical, and Advisory Services (Unwin, 1994).

The Farmers Union played a key role in the enactment of the 1990 *Farm Law*, the first legislation approved to facilitate agricultural privatization in Estonia. This measure was the initial step in the creation and implementation of a comprehensive legislative package designed to facilitate the privatization of Estonian agriculture. The *Law of Property Rights*, which was approved in 1991, and confirmed the restitution of property rights of previous owners and their heirs to their agricultural lands and assets, represented another step towards agricultural privatization. Later in that year, the *Law on Land Reform* was adopted. This law established the processes for restituting confiscated agricultural lands to their original owners or their heirs, land substitution in instances in which the original owners (or their heirs) were unable or unwilling to take possession of their lands, and compensation if lands were not requested in kind. Finally, Estonian authorities approved the *Law on Agricultural Reform* in 1992, which set out the process to privatize and reorganize collective and State farms through the creation of agricultural enterprises (in which members of former collective and State farms were allocated shares of stock).

Estonia's post-socialist agricultural transformations were accompanied by the transfer of the administrative functions related to the provision of rural social services to local municipalities (Raig, 1993). This form of decentralized provision of social services contributed to improvements in the living standards of the rural population by the late 1990s, although (as indicated in Table 4) agricultural employment declined significantly during the transition period (1990–2000). To support agriculture during this pe-

riod, the Estonian government facilitated the integral use of existing properties and the expansion of ancillary entrepreneurial activities through the provision of favorable credits to small and medium enterprises (SMEs) engaged in agricultural activities such as intermediation, transportation, warehousing (or storage), etc. (Raig, 1993). The idea was that “private entrepreneurship, being guided by profit, set as criteria economic expedience and efficient management” (Raig, 1993), and its expansion would have a positive impact on agricultural efficiency and production.

The implementation of new technologies and new production techniques, in many cases supported by the government, was a key element of Estonia's extended “agricultural reform package” during the transition period (1990–2000) (Raig, 1993). Profit provided the necessary incentive for efficient resource allocation, and redirected technological resources (e.g., machinery, equipment, and infrastructure) to the private agricultural sector. At the same time, international trade was liberalized, as Estonia radically altered its trading patterns as a result of the collapse of socialism in the early 1990s. The combination of these factors contributed to a notable increase in the number of (small) private farms and agricultural enterprises during the transition period (1990–2000).

Finally, one of the principal institutional elements of Estonia's successful transition to a market-based agricultural model was the limited and transformed role of the State (Raig, 1993). The role of the State was limited mostly to regulatory and supervisory functions, with a particular emphasis on building the institutions necessary to “move new laws from paper to practice,” fostering the development of a civil society and the rule of law, and developing the legal framework to facilitate property reforms, and the privatization of collective and State farms (Laar, 2007). Efforts were also made to create and support a legal environmental protection system, to promote the use of land (in private hands) as a national resource, taking into account global forces likely to change utilization patterns, and guarantee the essential needs of the population, particularly those considered more socio-economically vulnerable.

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