

MOLDOVA TRADE STUDY
Note 3

Competitiveness in Moldova's
Agricultural Sector

The World Bank



Table of Contents

1. Introduction and Summary Recommendations	1
2. Agricultural Competitiveness.....	4
3. Underlying Drivers of Competitiveness.....	14
3.1 Quality of Management and Production Techniques	17
3.2 Post-Harvest Processes and Infrastructure	20
3.3 Marketing and Market Information.....	22
3.4 Input Market Issues	24
3.5 Market Issues.....	29
3.6 Access to Finance and Cross-Cutting Policy Issues.....	32
4. Recommendations	37
5. Bibliography.....	41

List of Figures

Figure 1: Agricultural Production, 1996–2014, Constant 1996 Prices and Annual Growth	4
Figure 2: Composition of Moldovan Agricultural Production, 2000–2013 (% of total)	5
Figure 3: Major Segments of Moldova’s Agri-Food Exports, 2010–2014 (US\$)	6
Figure 4: Unit Prices Achieved in End Markets for Moldovan Produce (selected products and markets; unit price in US\$/kg).....	8
Figure 5: Quality Ladders for Moldovan Exports.....	9
Figure 6: Yields for Selected Fruits and Vegetables (MT/ha, 2007-2012).....	12

List of Boxes

Box 1: Margins in Low-Value and Higher-Value Agriculture	15
Box 2: Group of Fruit Producers – Rayon of Hancesti.....	24
Box 3: Illustration of Land Plot Size for Grape Cultivation.....	25
Box 4: Initiatives to Address Issues Related to Variety Registration.....	26
Box 5: Marketing Channels Used by Moldovan Table Grape Producers (Illustrative).....	30
Box 6: Public Support to Agriculture in Moldova.....	34

List of Tables

Table 1: Recommendations..... 38

1. Introduction and Summary Recommendations

The agriculture and agri-food sector is a substantial driver of Moldova’s international trade and export competitiveness. The Trade Outcomes note produced as part of this study shows that fruits, vegetables, and nuts comprised 33 percent of Moldova’s exports from 2011–13. Exports have grown significantly—from US\$90 million on average in 2000–02, to nearly US\$460 million on average in 2011–13. Food products represent the second-largest category of Moldovan exports, with a 26 percent share and average value of US\$370 million in 2011–2013, up from US\$238 million in 2000–2001.¹ Agriculture and agri-food products are also among the priorities for Moldovan exports and for Moldovan authorities to further support the development of small and medium enterprises, as determined by two studies supporting the implementation of the World Bank-funded Second Competitiveness Enhancement Project (CEP II).²

Enhancing Moldova’s agricultural competitiveness is a key element in improving the access of Moldovan agro-food products to the European Union market and capitalizing on the potential benefits from the Association Agreement (including the Deep and Comprehensive Free Trade Agreement, DCFTA). The challenge of strengthening competitiveness and reorienting a substantial proportion of Moldova’s agro-food exports to the EU appears today more pressing than ever in view of increasing uncertainties in its traditional Commonwealth of Independent States (CIS) markets. At the same time, it is realistic to expect that many farmers will continue to produce for non-EU markets and that agriculture will retain its role as a source of income for less prosperous households.³ The objective of this note is to examine the competitiveness of Moldova’s agriculture sector, and synthesize relevant research on drivers and recommendations on improving agricultural competitiveness in Moldova, for policy makers.

In spite of its large size and significant contribution to the economy, Moldova’s agriculture sector has been performing rather unevenly as growth has been slow and highly variable. Agriculture presently accounts for 10–12 percent of gross domestic product (GDP), and employs about 26–28 percent of the labor force. However, the average sector growth rate has been rather low at 3.6 percent per annum over the last 10 years, mainly due to the sector’s vulnerability to the weather. Putting the sector on a sustainable growth path is paramount for reducing poverty and achieving shared prosperity in rural areas. The highest poverty rates are registered among the agriculture-related population: 21.7 percent of farmers and 31.3 percent of agricultural workers were found to be poor in 2013, with these two categories accounting for 31 percent of the country’s poor population.⁴

There is a large degree of heterogeneity in the characteristics and performance of agriculture producers. There are about 900,000 farms in Moldova, with an average size of 2.5 hectares. Eighty-eight percent of producers engaged in fruit production (nearly 400,000) have holdings of less than 0.1 hectares. Another 9 percent (just over 40,000) have holdings between 0.1 and 0.5 hectares. At the larger end of the spectrum, fewer than 1,000 farmers have holdings

¹ World Bank, Analysis of Trade Competitiveness.

² Gateway Baltic 2015 and Economisti Associati.

³ Briefing Book from Development Partners.

⁴ Briefing Book from Development Partners.

of 10 hectares and more. Of these, 115 farmers have holdings of more than 100 hectares.⁵ Major issues producers generally face, by size, are as follows:⁶

- *Large-scale farmers* have the scale to compete in international markets, and are able to grow a range of crops that allow them to spread risks of market and crop failures. However, they may still face deficiencies in some on-farm infrastructure to further diversify risks, and may lack technical expertise. Larger farms, which are profitable, sustainable, and able to respond to challenges, have a capacity to innovate and improve technologies that is lacking in smaller-scale farmers. Larger operations can bring in the management, technology and know-how needed for developing higher-quality and more competitive agricultural operations in Moldova.
- There is a large share of *small farmers* that have trouble accessing high-value markets and little capacity to cope with market and weather risks. Small-scale farmers cannot achieve volumes or the consistent quality of supply that major buyers and distributors of produce require. However, there is an opportunity for smaller farmers to improve their growing and harvesting practices, and to learn from larger-scale operations to find and take advantage of niche opportunities.⁷
- There is a small segment of the horticulture processing industry that adds value by producing shelled walnuts in retail-sized packages (EU market); apple juice, preserved vegetables, and jams (niche markets in Germany); and tomatoes (the Russian Federation, Belarus, Kazakhstan, and supermarkets in Moldova). However, the size of the processing sector (excluding wine) is relatively small, at 4.5 percent of the total food and beverage industry in 2013.⁸

In recent years, Moldovan producers have been turning towards the EU market, focusing mainly on neighboring countries and traditional products such as apples and stone fruit.

This note examines numerous studies that have been done to date on Moldova's agriculture sector and its export competitiveness, synthesizes the findings, and presents recommendations. **In order for significant exports to the EU to become reality**, Moldova's farmers and exporters will need to adhere to the high product quality standards and traceability required in these markets, improve the quality of packaging, and in some cases, adjust the grading specifications. Achieving this requires actions to improve practices during growing and harvest; improve post-harvest handling and infrastructure; and improve the flow of market information and requirements to producers. These improvements will not only better position Moldova to compete in the EU, but also in more demanding markets (such as supermarket chains) in the CIS and in other regions (for instance, some agri-food producers have begun to explore markets in

⁵ World Bank, Rapid Assessment of the Horticulture Industry in Moldova. Based on data from the 2011 Agricultural Census.

⁶ The impact of farm size on productivity varies by crop and other factors such as farm management. For instance, while grain production is characterized by economies of scale in on-farm production, economies of scale may be less in high-value, niche fruits and vegetables. The information presented in this note is a synthesis of research done on Moldova, which does not yet include a detailed assessment of economies of scale by crop, or differentiation between economies of scale and other causal factors underlying productivity trends.

⁷ World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

⁸ Ibid.

the Middle East). This will allow Moldovan producers to diversify markets in order to mitigate market and price vulnerabilities that have affected them to date—including bans on exports to Russia and depressed prices due to over-supply. The quality demanded of Moldovan produce will only increase as retail channels (supermarkets) grow in importance in Moldova and the CIS region, Moldovan producers look to penetrate European markets, and as producers from competing countries improve their quality.

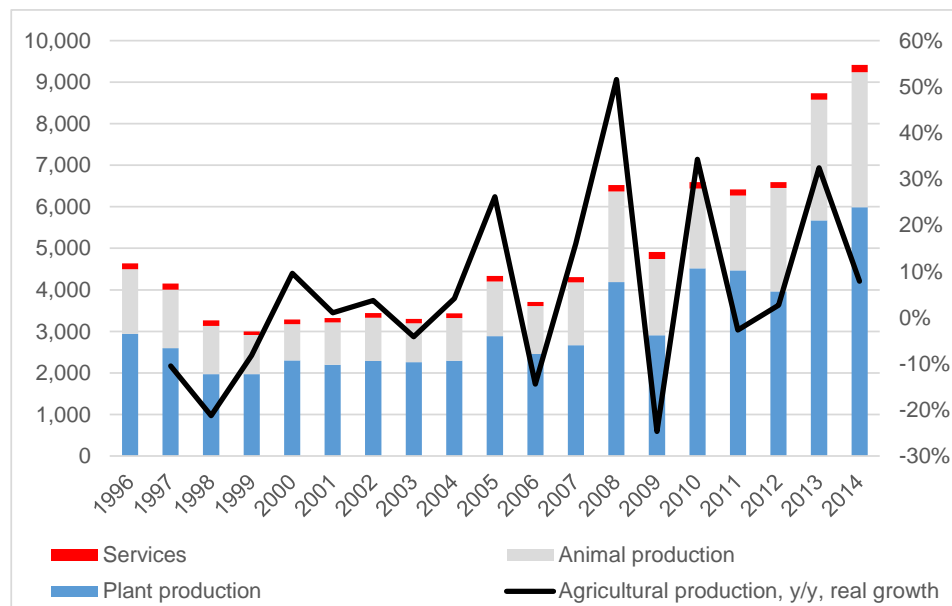
Moldova should improve the competitiveness of its agricultural produce by:

- *Improving productivity* through improved production processes, such as: using fertilizer and pesticides appropriately; applying other best-practice production techniques (e.g. irrigation; chemical thinning; soil, water, and plant tissue analysis; and using varieties that are best-suited to production conditions in Moldova).
- *Increasing quality* through improving harvest and post-harvest processes and infrastructure: sorting, grading, and packaging products to retain their quality; reducing time from harvest to storage (especially for table grapes); using cold storage; and improving greenhouses (for vegetable production).
- *Improving the ability of producers to compete*, including: producers' understanding of product characteristics demanded in end markets (e.g. sizing, quantity, packaging) and requirements for entering those markets (e.g. food safety standards and traceability); producers' ability to meet Global Good Agricultural Practices (G.A.P.) for the most advanced markets and product-specific standards, such as “Marketing Standards for Apples” in the EU; and producers' understanding of seasonality vis-à-vis competitors from other countries and their ability to spread marketing over time (with cold storage or by using greenhouses for vegetables). Organic farming can also be promoted as a way to differentiate products and compete in higher-value market segments. This would require farmer to increase their education levels, adopt appropriate production methods, and obtain appropriate certifications.

2. Agricultural Competitiveness

The value of Moldova's agricultural output has followed a strong upward trend over the past 20 years. However, the sector is vulnerable to fluctuations as shown in the drop in values in 2007, 2009, and 2012. These fluctuations are driven by climate effects as well as market effects (e.g. Russian bans on imports from Moldova). This vulnerability is an important reason behind Moldova's push to find new markets for its agricultural produce and to help farmers increase the value of, and diversify, their crops.

Figure 1. Agricultural Production, 1996–2014, Constant 1996 Prices and Annual Growth



Source: National Bureau of Statistics.

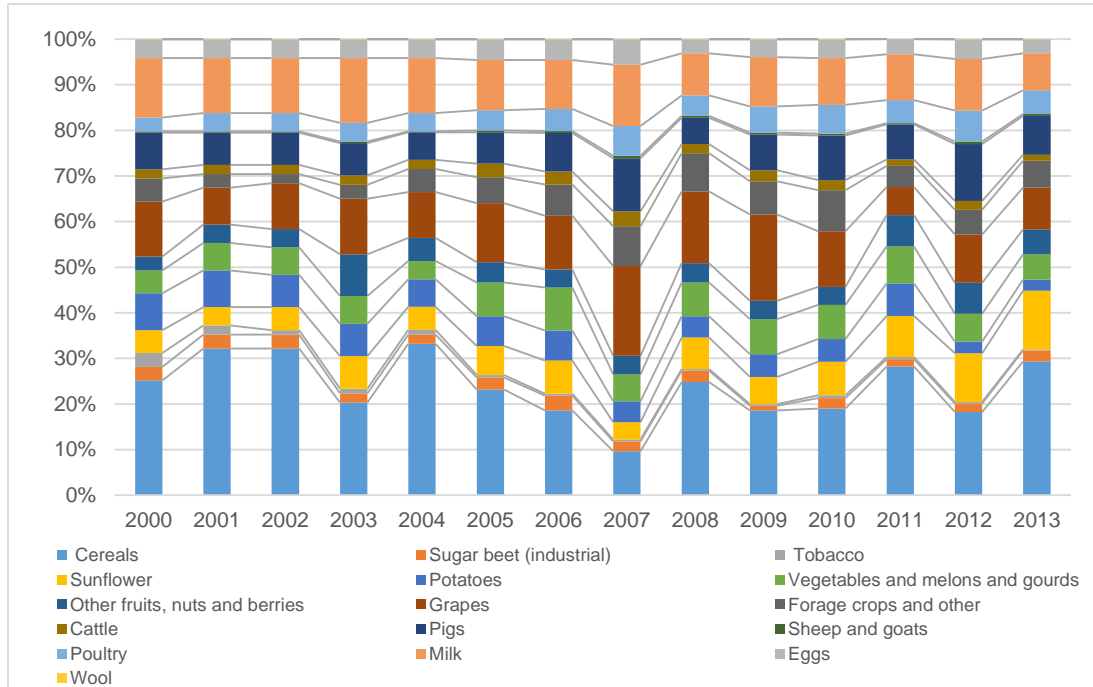
Moldova's agricultural production and agri-food exports can be broken into several categories:

- Sectors characterized by a large number of producers across the country that have important social impacts in addition to their strong economic impact. Fruit, vegetables, nuts, their products (e.g. fruit juice) fall into this category, and represent 25 percent of agri-food exports in 2014.
- Sectors dominated by a few large enterprises, including sunflower seeds, cereals, sugar, and oils (derived from sunflower and others), which account for 43 percent of agri-food exports in 2014.
- Wines and spirits, which are a leading export sector and have been analyzed in depth (18 percent of agri-food exports in 2014).
- Other agricultural sectors with smaller output: honey, dairy, and meat (5 percent of agri-food exports in 2014).

- Other food products, which represent 9 percent of agri-food exports in 2014.⁹

Figures 2 and 3 illustrate the composition of Moldova’s agricultural production and exports.

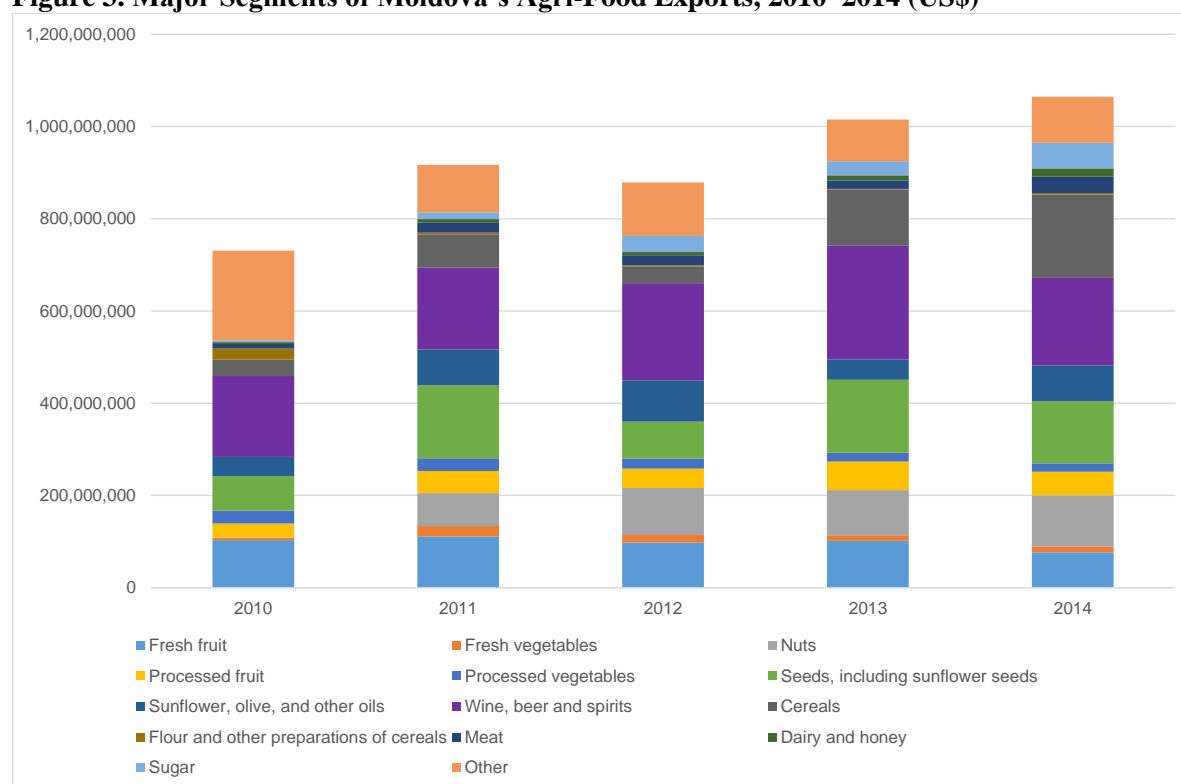
Figure 2. Composition of Moldovan Agricultural Production, 2000–2013 (% of total)



Source: National Bureau of Statistics.

⁹ Based on UN Comtrade data. A breakdown of categories by HS code is available from the authors.

Figure 3. Major Segments of Moldova’s Agri-Food Exports, 2010–2014 (US\$)



Source: Elaborated by the author based on UN Comtrade data. Note that while export data may disguise factors arising from re-exports, this is the most detailed data that is readily available.

This study focuses on the first category in the list above—fruit, vegetables, nuts, and their products—given its important economic impact, not only in terms of exports but also in the domestic economy. The large number of small producers in this sector means that the sector affects a large proportion of the population in the rural areas. This is also the sub-sector within agriculture in which most opportunities for increased competitiveness have been identified.

Some observations on the sectors in which this study will not focus primarily include the following:

- **Grains:** Moldova produces wheat, barley, and corn, and production is primarily focused on the internal market. The sector is dominated by a small number of companies. Although this sector shows a substantial amount of exports, these also include substantial re-exports, especially in drought years (which significantly affect Moldovan production). Little research or development activities have been done on this sector in Moldova because it is not considered to have a comparative advantage or conditions upon which to build competitive advantages.
- **Livestock/animals:** The livestock sector in Moldova comprises sheep, goats, swine, and cattle. Pork leads meat production. This sector is quite weak, with very few large farms and a lack of grazing and pasture areas. The number of animals in the sector decreased

substantially from 1995 to 2010.¹⁰ Production is mostly focused on the domestic market; it accounts for a very small share of Moldovan exports. Further, domestic production only meets around 40 percent of demand for dairy and beef, with 60 percent of domestic consumption coming from imports. While the Ministry of Agriculture is interested in studying this sector further, it has not been the focus of research or development activities to date.

To examine levels of competitiveness in agriculture (focused on fruit, vegetables, nuts), it is useful to examine the markets in which Moldova competes and the values it generates in these markets. An analysis of apple exports reveals the following:¹¹

- ***A large portion of Moldova’s apple exports generates relatively low value*** when examined by product and market. Eleven percent of Moldova’s apple exports (by value) in 2014 were shipped to Kazakhstan, with an average price of US\$0.24 per kilogram. In addition to this being a relatively low-value destination of Moldovan produce, Moldova also competes at the low end of the market in Kazakhstan. The unit price paid for Moldovan apples was nearly half of Kazakhstan’s average import price of apples (US\$0.45/kilogram), and at the low end of the spectrum of unit prices from all apple exporters to the country (US\$0.27–US\$2.45/kilogram) (See **Figure 4**). A similar pattern holds true for Belarus; however, shipments to Belarus during 2014 have substantial re-exports to Russia.
- ***A small portion of Moldovan apples was exported to higher-value markets, and the picture in these markets is mixed.*** Less than two percent of Moldova’s apple exports was sold to markets where their average unit prices ranged from US\$0.49/ kilogram to US\$1.02/ kilogram, including the United Kingdom, Georgia, Bulgaria, and the Arab Republic of Egypt. In the United Kingdom and Bulgaria, Moldovan apples compete in the middle range of the market, as shown in **Figure 4**. In Georgia, they compete at the lowest end of the market.
- ***Moldova’s market share is also substantially lower in the “high-value” markets than in the “low-value” markets.*** Although Moldovan prices are quite competitive (low) in these markets, importers are willing to pay more for produce from other locations. This indicates that the quality of Moldovan produce is lower and it may have space to climb up the quality ladder. It also reflects the fact that Moldovan producers and intermediaries are not well connected with these markets as they are in the more traditional markets.
- ***Furthermore, Moldova has not substantially succeeded in increasing the relative value of its produce over the past 10 years.*** Of all countries exporting apples, Moldova ranked in the bottom 10 in terms of unit price received for its produce in both 2003 and 2012.

A similar picture is repeated for table grapes and plums. See Figures 4 and 5.

¹⁰ The number of sheep and goats declined by 35 percent, swine declined by 45 percent, and cattle declined by 56 percent from 1995 to 2010.

¹¹ The analysis in this section is based on data from the UN Comtrade database. This is the best source of data available for this analysis; however, it has some drawbacks. Actual prices obtained by traders may be substantially higher than those reported in official statistics, as enterprises may have an incentive to under-report revenue for tax purposes. There are also differences in volumes and prices reported by the exporting country and the relevant importing countries (including, but not limited to, the cost of insurance and freight). These impacts are explained further in footnotes to the tables below.

The data available indicates that: (i) overall, important Moldovan agricultural products are competing in lower-value market segments, and are actually quite price-competitive; (ii) in higher-value markets, Moldovan produce still competes in the middle or lower end of the spectrum, indicating opportunities to improve competitiveness by improving quality and deepening market linkages; and (iii) some producers in Moldova have been able to reach higher-value segments; thus, there may be potential to build on this success.

While this trend does not hold for all products covered by this study, it is important to consider why Moldovan products are not more competitive in the higher-value market segments. Seasonality also affects the high prices achieved by producers from other countries. However, Moldovan producers still have substantial room to increase quality and achieve higher prices.

Figure 4. Unit Prices Achieved in End Markets for Moldovan Produce (selected products and markets; unit price in US\$/kg)¹²

Apples	Moldovan exports, US\$, mln	Destination's share in Moldova's exports	Unit Price of Moldovan apples ¹³	Average (Median) Unit Price, all sources	Min-Max Unit Prices, all sources	Moldova's market share in imports
<i>Low Value</i>						
Belarus	11.0	44%	0.17	0.52 (0.70)	0.11 - 1.58	12.6%
Russian Federation	8.9	35%	0.28	N/A	N/A	N/A
Kazakhstan	2.8	11%	0.24	0.45 (0.70)	0.27 - 2.45	4.5%
<i>Higher Value</i>						
United Kingdom	0.02	0.1%	1.02	1.21 (1.07)	0.63 - 3.57* (1.77)	0.0%
Georgia	0.05	0.2%	0.53	0.73 (0.65)	0.57 - 1.69	2.4%
Bulgaria	0.05	0.2%	0.53	0.30 (0.50)	0.17 - 1.26	0.5%
Egypt, Arab Rep.	0.27	1%	0.49	N/A	N/A	N/A
<i>Total/Average</i>	<i>25.1</i>	<i>100%</i>	<i>0.21</i>			

Notes: Reliable data is not available for Russia's or Egypt's apple imports.

The highest unit price of apple imports into the United Kingdom may be an outlier, as it is far above other unit prices reported. Thus, the second-highest unit price has also been listed in parentheses in the table.

¹² Data in the first three columns of the table are Moldovan exports as reported by UN Comtrade for 2014. Data in the last three columns are the destination market's imports as reported by UN Comtrade for 2014.

¹³ Due to differences in reported trade data on Moldova's exports and destination countries' imports, there is some variation in the reported unit price of Moldovan produce. This column uses the unit price reported when looking at Moldovan export data. The unit prices reported when looking at destination countries' imports is as follows: Moldovan apples imported by Belarus: \$0.43/kg (largest difference); imported by Kazakhstan: \$0.28/kg; imported by the United Kingdom: \$1.04/kg; imported by Georgia: \$0.57/kg; imported by Bulgaria: \$0.55/kg.

Table Grapes	Moldovan exports, US\$, mln	Destination's share in Moldova's exports	Unit Price of Moldovan grapes ¹⁴	Average (Median) Unit Price, all sources	Min-Max Unit Prices, all sources	Moldova's market share in imports
<i>Low Value</i>						
Russian Federation	11.9	59%	0.41	N/A	N/A	N/A
Romania	3.0	15%	0.29	0.66 (0.88)	0.27 - 6.20	15.7%
<i>Higher Value</i>						
Poland	0.08	0.4%	0.68	1.58 (1.90)	0.37 - 4.05	0.1%
Spain	0.03	0.2%	0.62	2.06 (2.40)	0.66 - 7.64	0.0%
Estonia	0.03	0.1%	0.50	1.85 (2.08)	0.38 - 4.06	0.4%
Belarus	4.4	22%	0.52	1.22 (1.46)	0.60 - 2.49	7.6%
<i>Total/Average</i>	<i>20.1</i>	<i>100%</i>	<i>0.40</i>			

Plums	Moldovan exports, US\$, mln	Destination's share in Moldova's exports	Unit Price of Moldovan plums ¹⁵	Average (Median) Unit Price, all sources	Min-Max Unit Prices, all sources	Moldova's market share in imports
<i>Low Value</i>						
Belarus	3.9	71%	0.22	0.84 (1.29)	0.62 - 1.74	49%
Romania	0.6	12%	0.18	0.33 (0.65)	0.18 - 2.77	38%
<i>Higher Value</i>						
Poland	0.03	1%	0.79	1.05 (0.91)	0.14 - 4.29	0.4%
Latvia	0.05	1%	0.69	0.88 (0.99)	0.42 - 3.70	2.8%
<i>Total/Average</i>	<i>5.4</i>	<i>100%</i>	<i>0.23</i>			

Source: Elaborated by the author based on UN Comtrade data for 2014.

The figure below plots the unit values received from each exporting country for its produce in 2003 and 2012. Moldova (shown in red) consistently ranks near the bottom of the distribution.

Figure 5. Quality Ladders for Moldovan Exports

¹⁴ Per the footnote above, the unit prices reported when looking at destination countries' imports is as follows: Moldovan grapes imported by Poland: \$0.72/kg; imported by Spain: \$0.66/kg; imported by Estonia: 0.62/kg; imported by Belarus: \$0.68/kg.

¹⁵ Per the footnote above, the unit prices reported when looking at destination countries' imports is as follows: Moldovan plums imported by Belarus: \$0.62/kg (largest difference); imported by Romania: \$0.18/kg; imported by Poland: \$0.93/kg; imported by Latvia: \$0.80/kg.

Apples

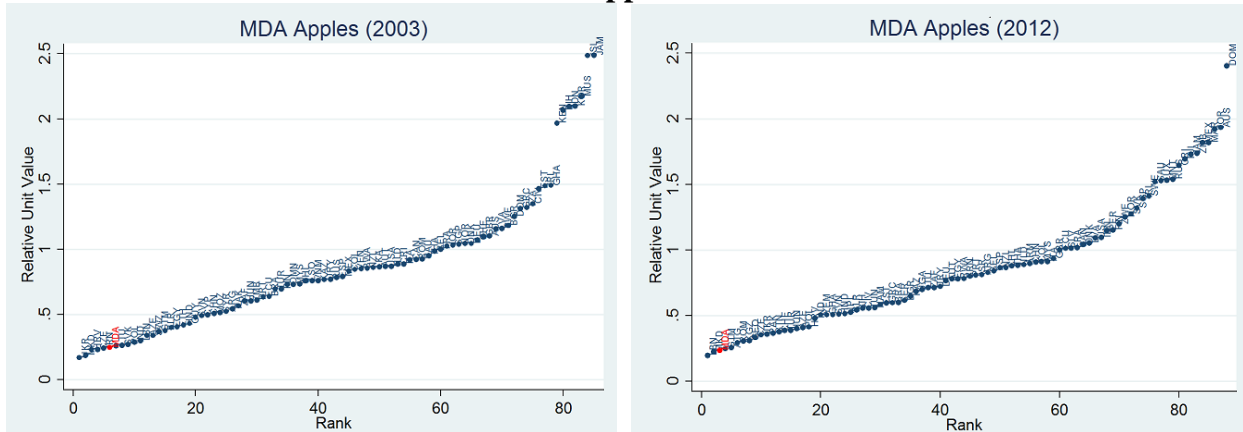
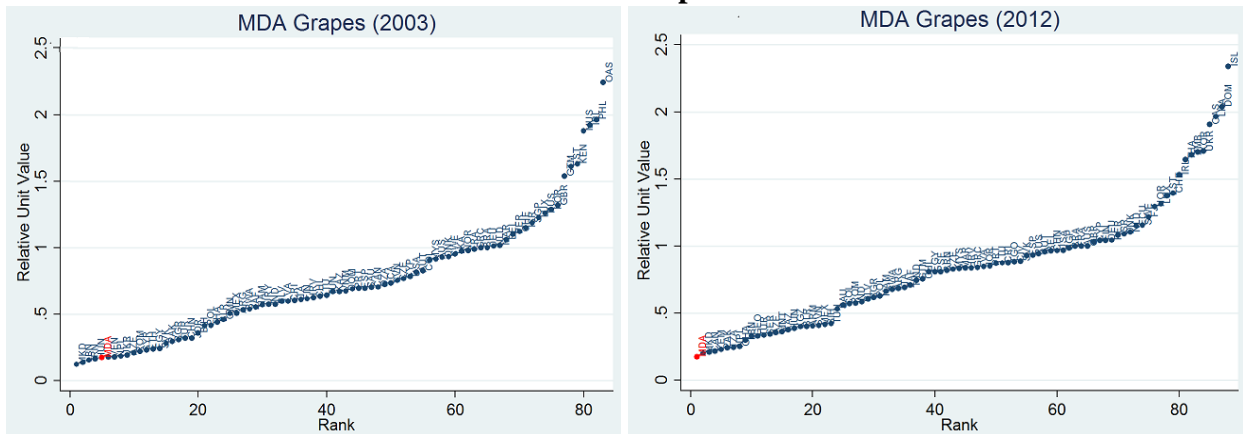
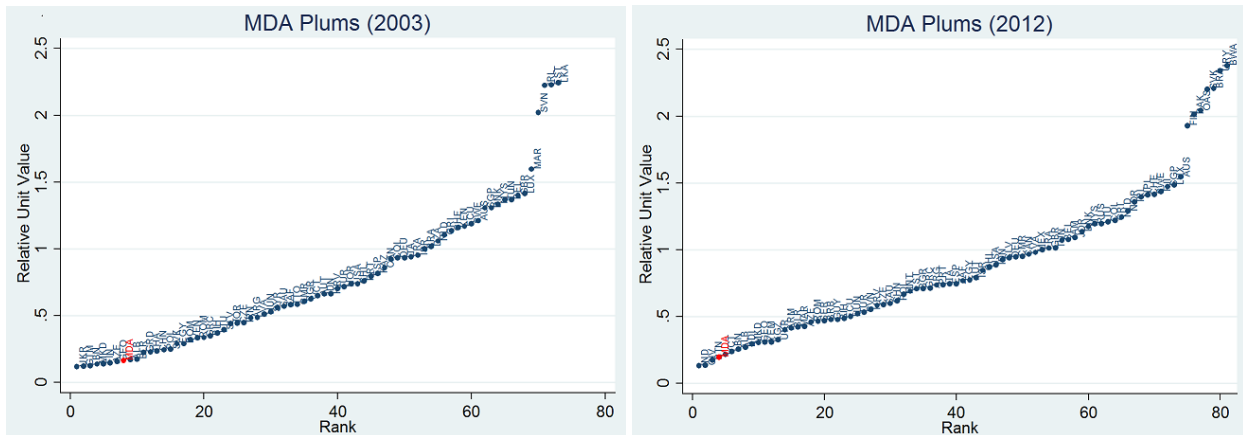


Table Grapes



Plums



Source: Elaborated by the authors based on Comtrade data.

An important element driving Moldova's ability to compete is also productivity, measured in yields. The "Rapid Assessment of the Horticulture Industry in Moldova" (World Bank, March 2015) examined yields across several crops and found that "average yields for fruits and

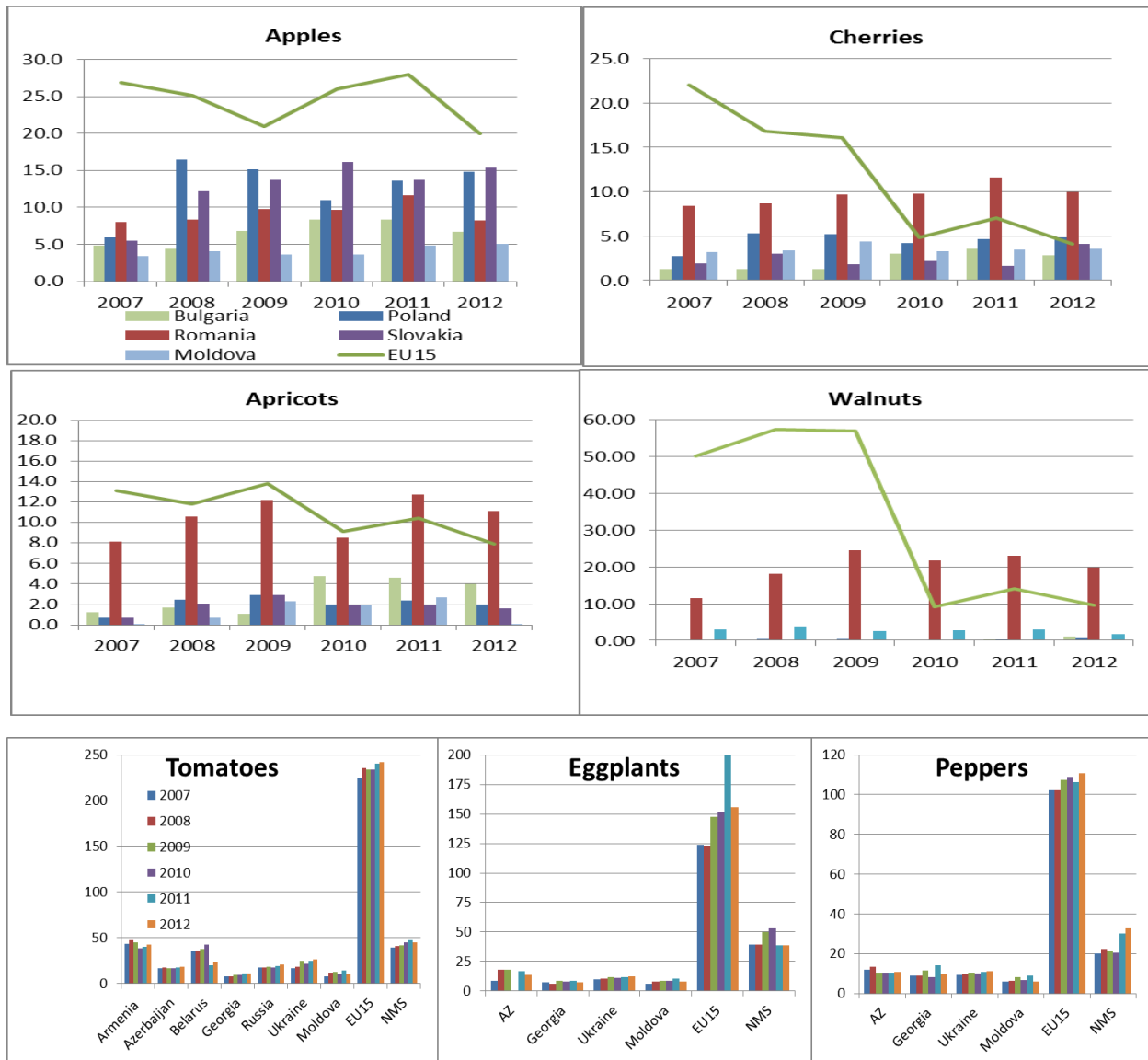
vegetables in Moldova are low in comparison with those in its EU neighbors and even lower when compared to the EU-15 averages.”¹⁶ By crop:

- Moldova’s productivity for apples is well below most of the new EU member states used as comparators (Romania, Poland, Bulgaria and the Slovak Republic, with the exception of Bulgaria in 2008), and further below the EU-15 average.
- In cherries, which are increasing in importance in Moldova’s agricultural production, Moldova’s productivity is closer to the averages observed in Bulgaria, Poland, and the Slovak Republic, but well below productivity levels in Romania. Average productivity in the EU-15 has fallen by more than 4 times in recent years (from approximately 22 MT/ha to under 5 MT/ha), so that by 2012, levels of productivity in the EU-15 were not much higher than in Moldova. However, this reflected a deterioration in other countries, as Moldova’s productivity remained relatively stable over the period.
- In wine and table grapes, the horticulture study found that productivity “is comparable to some of the new EU member states (Romania, Poland, Bulgaria and the Slovak Republic), but lower than productivity in Moldova’s eastern neighborhood (Armenia, Azerbaijan, Belarus, and Georgia) and well below the productivity of more advanced wine-making countries like France, Italy, and Spain.”¹⁷
- Moldova’s productivity in apricots and walnuts also remains well below comparators in the region.
- For vegetables, Moldova’s yields are low when compared to EU-15 countries and new EU member states, but are comparable to regional yields.

¹⁶ The abbreviation EU-15 refers to the number of EU member states prior to the EU enlargements of 2004, 2007, and 2013, and includes the following countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the United Kingdom.

¹⁷ World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

Figure 6. Yields for Selected Fruits and Vegetables (MT/ha, 2007-2012)



Source: Horticulture study, based on Eurostat and FAO data.

In spite of this, there are some signs of opportunity:

- As discussed in Section 1, there are *approximately 115 larger farms that have the scale and ability to compete in high-value markets*. Moldova is already the second-largest supplier of walnuts to the EU. There is an opportunity to expand cherry exports to this market as well, and there are opportunities to improve the quality of vegetables to supply the local market (see “Rapid Assessment of the Horticulture Industry in Moldova”). Although it still represents a small amount of total output, the data above shows that some producers have been able to achieve higher prices for their crops in EU markets.

- ***Commercial agriculture enterprises have yields nearly 1.5 times the yields of small farmer/peasant households.*** Furthermore, yields may be underreported in the statistics above, as producers reduce them for tax purposes. Data available from ACSA (Rural Development Agency) show that yields may in reality be 2-3 times higher for high-value crops than the data reported to Moldova’s National Bureau of Statistics (NBS).¹⁸ For instance, while NBS data shows apple yields at 3-5 tons per hectare, ACSA data reports it as 15-20 tons per hectare. Furthermore, super-intensive apple orchards (discussed in the next section) are an option for Moldovan farmers to increase yields even beyond average EU levels.
- ***Moldova has been successful in competing in some niche markets.*** As stated above, some Moldovan producers have been able to enter and compete in the middle range of the apple market in the United Kingdom and Bulgaria. Additionally, Moldova is the second-largest supplier of walnuts to the EU (after the United States).¹⁹ In 2014, Moldova supplied 38 percent of the shelled walnuts imported by France, and 15 percent of those imported by Italy.²⁰ In another niche market, Moldova exported 80,817 tons of organic produce in 2013, with a value of US\$32 million, according to the Moldovan Investment and Export Promotion Organization. This represented a substantial increase from prior years: 32.9 thousand tons in 2012 and 18.6 thousand tons in 2011.
- ***Further, not all agriculture necessarily needs to reorient to the EU.*** The markets in CIS countries generate returns that are sufficient for some farmers at current productivity levels. However, it will still be important for producers that aim to continue competing in CIS markets to improve the quality of their produce as supermarket channels become more prominent and popular, and to find ways to mitigate market access risks in the Russian market.

¹⁸ The biennial farm survey conducted by ACSA (Moldova’s rural extension network) indicates significantly higher yield levels for all crops than reported by the NBS. See: World Bank. “Moldova Food Security Assessment: Analysis of the Current Situation and Next Steps,” February 2015.

¹⁹ World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

²⁰ According to Comtrade data.

3. Underlying Drivers of Competitiveness

Moldova faces a challenge of increasing the competitiveness of its agriculture in order to boost incomes and prosperity. As noted in the introduction, the agriculture sector has performed unevenly in the last 10 years. Farmers and agricultural workers account for nearly one-third of the country's poor population. With high-quality soil and substantial agricultural land, the sector has potential to grow and further contribute to poverty alleviation and shared prosperity. The question is how to unlock the sector's potential.

While the previous section showed that Moldova is price-competitive in low-value markets (such as some crops in Belarus, Russia, and Romania), pursuing a higher-value strategy has been put forth as the preferred option for Moldova to overcome several challenges and to take better advantage of the Association Agreement with the EU. Donors including the Agency for International Development (e.g., the Agricultural Competitiveness and Enterprise Development (ACED) project) and policy makers are focusing on how to make a higher-value strategy a reality for several reasons:

- A higher-value approach provides higher margins for producers (see **Box 1**).
- Moldova's traditional lower-value markets are becoming more demanding, with increased competition from supermarkets in retail segments. Supermarkets require a higher quality of produce and specific packaging and labeling standards, and the value chain analyses conducted by ACED indicate that they have better long-term market prospects than traditional outlets for lower-value agriculture.
- Lower-value markets present greater market access risk than higher-value markets (such as in the EU). Moldova faced bans on its agricultural exports to Russia several times in the past 15 years, including during 2014-2015, and this has had substantial negative impacts on producers. While some producers have switched to selling to Belarus, for instance, not all producers have been able to find market outlets that would allow them to maintain their levels of income.

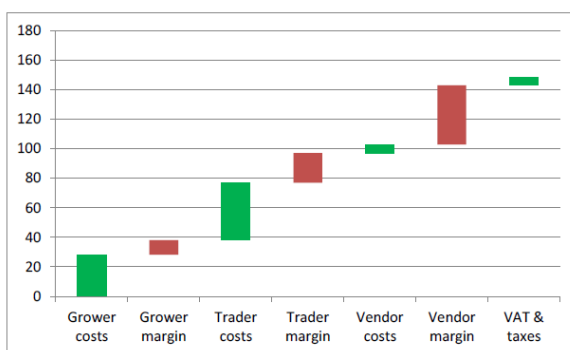
In the higher-value markets, Moldova's low levels of agricultural competitiveness are driven by a combination of factors, including:

- *Lack of competent management and lack of knowledge of improved production techniques.* Producers do not implement production techniques that can improve the quality of their produce. This stems mostly from lack of knowledge of such techniques. Further, management capacity on many farms remains weak. Improving production techniques will also allow producers to comply more closely with food safety requirements, including cleanliness, levels of pesticide and chemical residues, etc.
- *The post-harvest process requires improvement.* This includes handling of produce as well as cold storage, sorting and grading, packaging, compliance with food safety standards, and others. These elements play a major role in determining the quality of the end products and the markets in which they can compete.

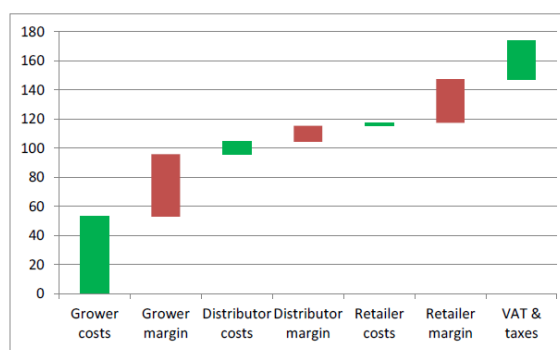
Box 1. Margins in Low-Value and Higher-Value Agriculture

The ACED Apple Value Chain Study demonstrates the increased margins that producers who pursue a higher-value strategy may achieve. It compares two cases: (i) the case of the “truck market channel,” which consists of producer using traditional technologies and wooden packaging, selling his apples to traders, who then sell the produce to small retailers and in open-market vendors through a truck market; and (ii) the case of a “direct trade channel,” in which a producer uses modern technologies, stores the apples in cold storage, grades the fruit, buys cardboard packaging, and arranges the transportation of the goods to a distributor located in Russia. The distributor re-packs the produce and sells them to a retail chain. The grower’s margin is several times higher in the “direct market” channel (see below).

Costs and Margins in the “Truck Market”



Costs and Margins in the “Direct Market”



The ACED Table Grape Value Chain Study demonstrates the higher margins that can come from using cold storage. In their example, growers selling direct from their field have a gross margin of 47 percent, while growers selling after at least one month of cold storage have a gross margin of 63 percent.

Source: ACED Apple Value Chain Study, ACED Table Grape Value Chain Study.

- *There is a low ability to detect and respond to market trends and requirements*, and the transfer of knowledge on the types of techniques and production that can increase competitiveness is also weak. Traders and exporters have the most access to market information regarding end market requirements and market trends; however, given that their relationships with producers are generally short-term (driven by issues in both segments of the value chain), they tend not to convey strategic information to producers. In addition, Moldovan producers also need to understand the nature of the competition they face in end markets.
- Regarding *market access*, periodic bans on imports of Moldovan agricultural products are a well-known issue, and are a driver of the need to diversify to other markets. In *EU*

markets, producers will need to be cognizant of the minimum entry price (MEP) (and also MEP-free quotas under the DCFTA) and how it affects their competitive positioning. Reorienting Moldovan produce to this product will require implementation of improved production and post-harvest techniques (listed above), as well as implementation of advanced approaches including traceability and G.A.P. certification. *In CIS markets*, Moldova's Ministry of Agriculture maintained a list of enterprises that are allowed to export to Russia and Belarus, which is currently still in force for Russia. According to the ACED table grape value chain study, full transparency is lacking regarding the process and criteria for enterprises to be included in the list.

- *Access to finance* is an important issue in the agriculture sector, due to the relatively long period of elapsed time between planting and harvest, and the cost of establishing greenhouses (for vegetables). The tenors available from the domestic banking sector are short relative to producers' needs. Banks typically do not accept land and plantation as collateral, and perceive high risks when lending to the sector. Much agricultural production takes place at the household level where financial management is limited.²¹ To address the issue of access to finance, the government of Moldova provides investment subsidies to farmers for production and post-production needs and has secured lines of credit from donors. While these subsidies may be helpful, at times they have led to unintended consequences, including creating incentives to plant traditional apple orchards instead of intensive orchards, and incentives against planting crops with a longer time between planting and fruiting.²² The design of agricultural subsidy instruments could thus be improved by focusing public support on stimulating innovative and modern agricultural practices, and respectively phasing out and/or abolishing subsidization of traditional and sometimes outdated technologies or equipment that do not serve current market demands and may lead to distorted business decisions. Actions should be taken to improve the "demand side" of access to finance as well, including farm productivity and quality.
- *Issues in input markets also affect the sector's competitiveness, although the impact of these issues seems to be secondary to the issues listed further above.*
 - The preponderance of farmers with *small land plots* impacts productivity, quality, and financial viability of agricultural production in Moldova. There is no strong evidence that land markets are functioning poorly. However, the restriction on foreign ownership of land is an impediment to foreign participation in the sector.
 - The *time-consuming, vague, and complex procedures for importing new varieties* negatively impact producers' ability to import more disease- and pest-resistant varieties, which would in turn improve yields and quality. The procedures also negatively impact producers' ability to adjust production patterns to market opportunities, which would increase competitiveness. There is also lack of market information for producers on which varieties are best suited for the Moldovan environment and demanded in international markets.
 - *Availability and prices of some agricultural inputs* affect the sector. This includes registration and access issues related to phytosanitary products (fertilizers,

²¹ ACED Apple Chain Value Study and World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

²² Ibid.

pesticides); the high cost of seedlings in some crops (e.g. tomatoes); and high tariffs on packaging materials.

- Although one of Moldova's comparative advantages is its low labor cost, the *availability of agricultural labor is an issue*. Larger-scale farmers report problems finding sufficient manpower, especially at harvest time. Finding skilled labor is also an important issue in agronomy, production technologies, engineering, as well as for processing plants in rural areas. Furthermore, the lack of professional skills negatively affects the quality of domestic research, education, and extension networks.
- *Other cross-sectoral constraints to doing business, including difficulty trading across borders and electricity costs*, affect the agriculture sector. The number of documents required for export, the time it takes to deal with them, and the discretion of officials with jurisdiction over international trade administration is a hindrance to agricultural exports. The relatively high cost of electricity in Moldova compared to its neighbors keeps the cost of greenhouse production high, which affects tomato and other horticulture production.

The issues above create a vicious cycle of low-technology production, low investment, low quality, and therefore low overall competitiveness. However, there are reasons to be optimistic. Some larger farmers and processing companies have achieved success, and can provide a demonstration effect to others. These larger and more productive farmers can invest in more advanced technologies and pilot improved production techniques, lead other producers to adapt newer technologies and techniques through demonstration effects, and lead the exploration of new markets and potentially new products.

The following sub-sections explore the findings in more detail.

3.1 Quality of Management and Production Techniques

A major driver of low competitiveness in the agriculture sector is the lack of competent management and lack of knowledge and application of improved production techniques. Farmers generally do not have the right techniques or equipment to reach the quality standards expected in higher-value markets. Nearly 30 percent of fruit orchards are cultivated by farms with less than 2 hectares of land, which largely engage in subsistence farming. These producers have limited financial and knowledge capability to invest in technologies that would enhance yields and quality. However, some producers in Moldova, including many who have received support through donor projects, do have the capacity to reach the best international yields. The challenge is to bridge the gap between the high-productivity and low-productivity sectors, including by improving production techniques, variety choice, application of fertilizer and pesticides, and the flow of information on market requirements and techniques to achieve them. Many of the efforts required to improve productivity and quality do not require a large degree of investment, but rather increased awareness and capabilities.

Although Moldova has a long history of fruit and vegetable production, many producers have only been engaged in agricultural production within a market-based economy for the past 15 years or so. The land privatization process that took place between 1998 and 2000

produced over 1 million new landowners. The management and strategic decision-making structures that existed during Soviet times, when fruit production and the marketing sector were managed as a single, integrated firm, needed to be replaced by landowners that needed to learn how to produce and sell based on market demand. There was a gap in management skills and technical knowledge that the existing systems of agricultural research, education, and extension services have not been able to completely fill. Many producers lack a strategy for planning production and making it consistent with market requirements, which reduces the value they can achieve from their crops.²³ Although domestic research, education, and extension networks exist, they largely fail to adequately serve the private sector of farmers and agribusinesses.²⁴

Good farm management also requires appropriate production techniques to increase competitiveness and yields. Many farmers in Moldova grow old varieties that are planted too far apart, without irrigation or hail or frost protection. Although technologies for high-class production are available and being used by some of the most advanced producers in the market, for the most part small-scale farmers are not adopting them.²⁵ The enterprises that are the most competitive and able to export directly tend to be large producers who have technical and management capacity, and are fully integrated from producing to storing and packaging.²⁶

Examples of lack of application of modern production techniques include the following:

- Intensive production technologies by using dwarf apple trees are not widely used. Despite its advantages, only 6 percent of new plantings in 2009 (latest data available) used dwarf (M9) rootstock.²⁷
- In table grape production, although irrigation is the factor that most influences productivity—with the possibility of increasing yields by 1.5 to 2 times—Moldovan producers rarely use irrigation. Producers also pay insufficient attention to soil, water, and plant tissue analysis for diagnosing fertilization requirements. Producers’ use of biological crop protection is insignificant. They do not use methods to protect against late spring frosts, which are common in Moldova, and most do not apply good thinning practices. In addition, Moldova is only at the incipient stage of producing seedless varieties.²⁸
- In order to provide table grapes with sufficient quality to the market, it is important that producers reach the volume required to harvest a full 20-ton truckload, per variety, in one day. Harvesting a full load in one day is very important, as it keeps the stem from browning and allows the fruit to maintain the required shelf life. However, very few producers have this capacity.²⁹
- In tomato production, producers lack awareness of the varieties they plant and ways to improve their performance. Producers also do not use the types of production techniques found in higher productivity markets (in such markets, commercial producers use bags, hard containers, or sand culture with fertilization; while Moldovan producers use ground

²³ ACED Apple Value Chain Study.

²⁴ National Agriculture and Rural Development Strategy for Moldova 2014-2020 (approved by GoM in June 2014).

²⁵ World Bank Rapid Assessment of the Horticulture Industry in Moldova.

²⁶ ACED Grape Value Chain Study.

²⁷ ACED Apple Value Chain Study.

²⁸ ACED Table Grape Value Chain Study.

²⁹ ACED Table Grape Value Chain Study.

beds or troughs with drip irrigation and some fertilization). Poor fertilizer use and lack of soil testing also limits the performance of tomatoes. When combined with poor pesticide use, this further diminishes the quality of Moldovan crops.³⁰

- Greenhouses in Moldova suffer from poor design, such as lack of heating, poor ventilation, and poor insulation.

Poor business planning also affects this sector. Growers tend to harvest at the same time, bringing produce to market within a short window of time. This reflects business decisions on planting sequence, and could be mitigated by better business planning. This also reflects business decisions on the types of varieties to produce (there are varieties that would have longer harvesting seasons). The concentrated harvest time reduces Moldova's ability to supply consistent volumes over time. In addition, producers tend to lack long-term strategic planning, and do not pursue new business models or cooperative marketing arrangements that would help them access higher-value markets collectively.³¹

Some segments of the agriculture sector have been able to attract good management. For instance, in the walnut value chain there are a number of efficient and well-managed exporters who compete to buy nuts from the farmers. However, the majority of agricultural producers do not have the management skills required to substantially increase competitiveness. An ongoing hypothesis is that the crops that offer good margins can attract good management;³² however, the reverse may also be true—good managers are able to produce and market in a way that produces good margins.

Characteristics of sound management required in the agriculture sector include an ability to detect and respond to market trends and requirements. For instance, the growing modern retail sector across Eastern Europe is increasingly developing its quality requirements and imposing them along the whole value chain, including an emphasis on quality, the mode of tendering or procurement, the terms of quality assessments, terms of payment, and others. Few Moldovan apple producers are working with the retail chains, citing long payment terms as a barrier. But the lack of consistent supply and grading equipment to establish quality are also major impediments.³³ Producers require a management vision that embraces and learns how to respond to such market requirements. Before the Russian embargo of 2014, there were a limited number of cases of cooperation between Moldovan producers and Russian importers, in which the Moldovan producers that were able to offer a continuous supply of fruit (greater than 1,000 tons) upgraded the post-harvest processes specifically to support the importer's ability to meet the requirements of retailers.³⁴ Although finance for investment is also required, the change begins with an awareness of market requirements and a willingness and ability to make strategic decisions to meet those requirements.

One factor underlying the challenges in management capacity and production techniques discussed above is the quality and availability of agriculture education. Moldova has six agricultural colleges, all located outside of Chisinau. Their curricula are outdated and do not reflect the demands of the modern agro-food industry that require more marketing and business

³⁰ ACED Tomato Value Chain Study.

³¹ ACED Tomato Value Chain Study.

³² World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

³³ ACED Apple Value Chain Study.

³⁴ ACED Apple Value Chain Study.

skills than in the past. The curriculum is focused on relatively outdated technologies. Only one of these colleges focuses on horticulture (Taul in Donduseni in the north of the country), and as with the rest, it concentrates on technical aspects and not business or marketing. These colleges also lack strong interactions with the private sector that could form the basis of knowledge transfer and spur innovation.

Moldova's irrigation infrastructure is in poor condition, impacting particularly the development of the horticulture sector. On average, only 10-20 percent of Moldova's agriculture land is irrigated. Irrigated land has fallen from 230,000 hectares in 1990 to as low as 7,000–15,000 hectares currently.³⁵ Approximately 60 percent of the centralized irrigation systems in the country need rehabilitation (pumps, electrical and control panels, basins, pipes, etc.). These systems cover 131,688 hectares, over 78 systems.³⁶ The quality of groundwater is uneven, and use of groundwater is not an option for many farms. The Millennium Challenge Corporation is working to rehabilitate former Soviet irrigation systems, which could provide up to 15,000 hectares of irrigated land near the Nistru and Prut rivers. Along with improvement in the availability of irrigation, it would be necessary to improve producers' management capacity and ability to produce profitably given the cost of water and irrigation management.

Given the challenges in capacity and practices as described above, the degree of innovation in Moldova's agriculture sector is low. However, some of the largest and most productive farmers have the resources to invest in more advanced technologies and pilot improved production techniques. They could lead other producers to adapt newer technologies and techniques through demonstration effects, and explore new markets and potentially new products. Innovative approaches could also be supported by public sector instruments that provide funding and mitigate the risks involved in adapting such approaches. Institutions such as agriculture extension services and sector associations have a role to play in disseminating information on production techniques and technologies. The government's export promotion agency, Investment and Export Promotion Organization (MIEPO), can disseminate information on market demand and requirements. It can also facilitate linkages between Moldovan producers and their target markets not only to make a sale, but also to learn about advanced production techniques, characteristics of competing products, and product characteristics demanded in these markets.

3.2 Post-Harvest Processes and Infrastructure

The post-harvest process, including handling of produce as well as cold storage, sorting and grading, packaging, compliance with food safety standards, and others, plays a major role in determining the quality of the end products and the markets in which they can compete. The lack of product sorting and classification and proper packaging and labeling reduces the added value of Moldova's fruit and vegetable produce.³⁷ Sophisticated markets (e.g. supermarket distribution channels) require not only consistent volumes of quality production, but also visual product appeal and conformity, sufficient product shelf life (made possible by better cold chain

³⁵ While the current capacity for irrigation is 144,600 hectares, the de facto irrigated area does not exceed 15,000 hectares per year, according to the Water Agency (January 2015).

³⁶ World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

³⁷ World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

management), reliable delivery, packaging, labeling, food safety/certification, and proper invoicing.³⁸ First, producers must be aware of these requirements and techniques for improving quality, some of which require only improved practices, without substantial investment. Then, there needs to be a sufficient availability of equipment and installations for washing, sorting, packaging, labeling, storage and transport of products to markets.³⁹

A review by the ACED project identified issues related to harvest and post-harvest process management that, if improved, can make a large impact on quality without requiring substantial investment. Such techniques include proper determination of fruit maturity, proper scheduling of harvest operations, implementing quality-based picker remuneration systems, and rapid fruit movement into cold rooms.⁴⁰ For instance, improving the way in which table grapes are harvested, handled, and stored can improve the size of the bunches and berries, improve efficiency of handling and packing, and reduce losses from deteriorations in quality. The shelf life of tomatoes can be improved by treating them with calcium or other firmness enhancers.⁴¹ The quality of grapes can be improved by applying disinfectants while storing, such as by fumigating or applying sulfur dioxide to kill fungus.⁴²

Availability of appropriate post-harvest infrastructure is also essential to improve quality and thus the ability of products to compete in international markets. Post-harvest facilities are limited across the board. For tomato production, no warehousing or pre-cooling/cold storage facilities or services are provided along the value chain. Pre-cooling and forced-air cooling can also improve the shelf life of tomatoes and table grapes. Greenhouses in Moldova (applicable to tomatoes and vegetables) lack post-harvest cooling. Good international practice shows that greenhouses should be equipped with cooling stations, which allow producers to store tomatoes for 10 days after the harvest, and therefore help them to match the timing and quantity of produce delivered to market with demand.⁴³ The ACED project estimates that the lack of post-harvest facilities results in post-harvest losses of 10 to 15 percent by volume. Improvements are also needed in cold transport, packaging, and laboratory testing.⁴⁴

An important way in which producers differentiate the quality of their production is by sorting and grading produce appropriately, and packaging it according to market demand and standards. There is a lack of grading equipment and facilities in Moldova. Proper packing, grading, and sorting allow for a supply of uniform quality produce across types of fruit and vegetables. Lack of appropriate and reliable packaging is also a major bottleneck.

Quality Standards and Food Safety

Quality standards refer to compliance with food safety norms established in target markets, as well as the ability to provide produce with characteristics demanded by consumers in those markets. Food safety requirements for fruit refer mostly to levels of pesticide and other residues, as well as pests, and this also requires important attention in

³⁸ ACED End Market Study for Fresh Fruits and Vegetables in Moldova.

³⁹ World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

⁴⁰ ACED Apple Value Chain Study.

⁴¹ ACED Tomato Value Chain Study.

⁴² ACED Grape Value Chain Study.

⁴³ World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

⁴⁴ World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

Moldova. Consumer-oriented standards for table grapes in European markets include specific size preferences and uniformity in sizing.

To further improve the quality and ability of Moldovan produce to meet international standards, laboratory capacity should be improved, both in terms of equipment and staff capacity. Quality standards for agricultural produce in Moldova are not yet fully harmonized with requirements in the EU. The recent reform of food safety institutions and the creation of the national authority for food safety (ANSA) are good steps forward, and work should be continued. In addition to minimum standards, more advanced food quality and safety standards are required for entering high-value markets, including the EU. This includes Global G.A.P. certification, traceability, and reliable labeling. Few Moldovan producers can meet the EU standards for safety and quality, including Global GAP certification.

Barriers to Developing Post-Harvest Infrastructure

Given the quality improvements that can be gained from the use of appropriate post-harvest infrastructure, investment in such infrastructure in Moldova is still lacking. One factor that limits its further development is the limited knowledge and ability of industrial designers and equipment suppliers to design and build appropriate post-harvest facilities (especially for grading and packing). Lack of access to long-term finance for such an investment is also an important issue. Further, producers face barriers to obtain the permits required to develop a cold storage facility because of the definition of “agricultural land” (and other issues) in the Land Code (from 1991). According to the ACED study, “Some local authorities do not issue the construction permit [for cold storage facilities] because they require growers to change the legal status of the land from agricultural to industrial (which requires a special Government Decision and is a costly procedure).”⁴⁵ Additionally, high-quality Moldovan produce is not yet produced at a scale that would fully capture economies of scale from some types of post-harvest infrastructure, though this may vary by crop and type of facility.⁴⁶

3.3 Marketing and Market Information

An important barrier to increased quality among Moldovan producers and processors is lack of market information. This results from poor links from primary producers to end markets and poor communication down the value chain. Growers are fragmented and do not have long-term relationships with traders (the actors in the value chain that have the most market information). However, longer-term relationships are often hindered by the inability of producers to provide a consistent supply, and side-selling by producers. Producers require information on varieties, colors, size, weight, and plant protection practices required in end markets. They also need information on the markets in which Moldovan produce can likely be more competitive, taking into account market demand and competitors. In contrast to the relatively low-value agriculture value chains that most of Moldovan produce currently participates in, higher-value

⁴⁵ ACED Apple Value Chain Study.

⁴⁶ For instance, according to the ACED Apple Value Chain Study, a grading line costing US\$150,000 could handle all of the fruit of an average 600 metric ton apple cold storage facility in just one month.

agriculture tends to be characterized by closer relationships along the value chain and better flows of market information to producers.

Furthermore, lack of communication among producers of the same crop results in variability in product quality and the inconsistencies seen in shipments from Moldova to foreign markets. The small size of many agricultural plots compounds this issue, as the produce of many producers is aggregated for marketing. As stated in the “Rapid Assessment of the Horticulture Industry in Moldova,” “if fruit is grown by a number of disparate farmers employing different management techniques at distinct sites, there will inevitably be some natural variation.” The quality and even varieties of fruit produced vary from grower to grower. Variability of quality is especially a problem in marketing fruit from small producers to the EU. The World Bank’s Agricultural Competitiveness Project is aiming to address this by helping groups of farmers access higher-value international markets.⁴⁷ **Box 2** highlights an example of work with producer groups.

⁴⁷ *Moldova Agriculture Competitiveness Project* (P118518). More information available at: <http://www.worldbank.org/projects/P118518/moldova-agricultural-competitiveness-project?lang=en>. The project aims to establish groups of five to six farmers with at least 50 hectares of orchards (i.e. medium-sized operators). Once established, these groups benefit from considerable amounts of technical assistance to prepare business plans, apply for government subsidies and train the management in production techniques and business skills. The project also provides up to US\$350,000 for equipment (including post-harvest infrastructure); all in all this represents a major incentive for group formation. Since its establishment in 2012, the project has helped establish eight groups: (i) five groups growing table grapes, with a 1,000MT contract to supply Romanian supermarkets; (ii) two apple/plum orchards; and (iii) an almond group. In total this should benefit between 40 and 48 farmers, each of whom have 10 to 15 hectares of productive land. It will not directly impact small farmers with less than 1hectare of land, yet should provide employment opportunities for the nearby farming households. The expectation is that, over time, a few of the better small farmers who have learnt the skills necessary to produce good quality produce will really reap the marketing benefits of the group.

Box 2. Group of Fruit Producers – Rayon of Hancesti

The group of fruit producers in Hancesti was created in 2013 by five peasant farms that jointly manage a land area of 123 hectares (each member has between 23 and 25 hectares of land). Sixty-eight hectares of the total area have apple and plum orchards that were planted between 2007 and 2009 and entered the production cycle in 2014. In 2014 the group jointly marketed its fruit production (800 tons of apples and 450 tons of plums) in total amount of approximately MDL3 million on the domestic market—to traders and on local open markets (note that 2014 was a challenging year for Moldovan fruit producers due to the Russian embargo). Cooperation among farmers in the group had several advantages:

- **Management:** There is a clear division of members' responsibilities established within the group, i.e. each member is responsible for a specific business segment, such as administration, accounting/financial, technology, etc.
- **Production:** The members have jointly rehabilitated a part of the orchard area; have been purchasing the inputs together; and utilizing similar production technologies on their orchards.
- **Sales:** In 2014 the group managed to negotiate a better price for its premium-quality fruits with the traders.

The group has big plans for business development and growth over the next few years: (i) at the production level it plans diversification of products to include cherries, sour cherries, apricots, as well as the purchase and installing of a drip irrigation system for their semi-intensive orchards; (ii) post-harvest: to add value to their products the group intends to build a refrigerated storage of 600 tons, as well as a drying facility for fruits; (iii) sales: obtain Global GAP certification and access regional markets.

Source: AGROinform (National Federation of Moldova's Agricultural Producers).

3.4 Input Market Issues

The functioning of input markets is an important determinant of agricultural productivity. This section reviews issues related to land, seeds/varieties, fertilizers, and others.

Land

The preponderance of farmers with small land plots impacts productivity, quality, and financial viability of agricultural production in Moldova. As stated in the section on production techniques for table grapes, the ability to harvest and fill a single truck in one day is a key determinant of the final quality (and competitiveness) of grapes, as the time from field to cold storage or market impacts one of the major quality aspects—stem browning (lack thereof). Producers with a small scale are unable to achieve the timing required to preserve quality of the product. See **Box 3** for an illustration of the size of land plots for table grape production. The small size of land plots also makes mechanization (except for very high-value crops) economically unviable, as economies of scale are not present. Furthermore, small plots lead to specialization in specific crops. Larger producers are able to mitigate risks by diversifying

production (e.g. apples and field crops). This proved to be an important strategy when the Russian ban on Moldovan imports was imposed. Growers with smaller plots of land under cultivation are unable to spread risks in this way.⁴⁸

Box 3. Illustration of Land Plot Size for Grape Cultivation

The vast majority (95 percent of the total number of commercial growers) are small growers that hold 47 percent of the area under production. When the land reform was carried out, very small plots emerged. For example, 300-hectare vineyards were split into 300 parcels (number of parcels depending on the number of families in the village). Due to this, the average table grapes parcel size among small growers is very small: about 2 hectares per grower. The rest of commercial growers (5 percent) are producers that hold 53 percent of the fresh grape production area.

Source: ACED Table Grape Value Chain Study.

Although in practice there are many small plots, there is no strong evidence that land markets are functioning poorly. Some producers are quite large (see data on farm sizes in Section 1). The impediment to further land consolidation appears to be the amount of financial resources required to purchase land, as well as some experience that suggests that landowners at times renege on contracts. These elements can be addressed through financial market development and protection of property rights.⁴⁹

The restriction on foreign ownership of land is an impediment to foreign participation in the sector. Agricultural land may not be sold to foreign individual, legal entities, or local legal entities with foreign capital. To address this, the Land Code should be revised.

Access to Plant Varieties

The time-consuming, vague, and complex procedures for importing new varieties negatively impacts producers' ability to import more disease- and pest-resistant varieties, which would in turn improve yields and quality. **The procedures also negatively impact producers' ability to adjust production patterns to market opportunities,** which would increase competitiveness. In Moldova, plant variety testing and registration is compulsory, thus only varieties listed in the national registry can be sold on the country's territory. Rigorous testing is performed by a public institution (the State Commission for Plant Variety Testing, "Seeds Commission") before any imported variety is listed in the catalogue. The Seeds Commission takes about 3 years to test annual crop varieties and 5–7 years to test multiannual crop varieties. Depending on the test results, the varieties are either approved or declined by the testing authority.

New (unregistered) EU-imported varieties undergo a streamlined testing procedure in place since 2013: one year for seeds and 4–5 years for seedlings. While this is a positive reform of the domestic testing system, the period for testing seedlings is still too long and causes delayed access to new fruit and vine varieties. The difficult process of registering new seedling varieties has led some producers to import varieties under names of other varieties that are included in the National Registry of Plant Varieties. This poses problems of incompliance with existing legislation, and

⁴⁸ World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

⁴⁹ Ibid.

also can make farmers unable to correctly market their produce under the name of the correct variety.

Difficulties registering varieties may also create missed opportunities for domestic nurseries that can only produce the new varieties once they have been accepted by the Moldovan authorities. While this affects mainly the larger and most advanced farmers, a more open policy on varietal registration would benefit producers overall.

Even a one-year testing period for seed varieties may serve as an access barrier if the market for the particular variety is likely to be small (in terms of sales) and may not justify the testing costs (including time costs) that importers have to incur. As a consequence, a large proportion of unregistered varieties and hybrids come into the country through smuggling, which poses serious phytosanitary risks for the domestic agricultural production, not to mention unreliable quality of smuggled seeds.

Box 4. Initiatives to Address Issues Related to Variety Registration

In December 2013, ANSA requested an opinion from MAFI on legalizing the status of 50 varieties and rootstocks that were not included in the National Registry of Plant Varieties. This request was refused. If the situation is not normalized, this can compromise the certification scheme for seeds and planting materials, and would perpetuate the issues described in the text above.

Furthermore, the legislation currently in force (Law on Plant Variety Protection, number 39-XVI of Feb. 29, 2008) includes plant variety protection and plant variety registration, which, according to a review conducted by the ACED project,¹ places unnecessary restrictions on the plant variety registration process. The ACED report recommends separating issues of plant variety protection from plant variety registration, in order to clarify the procedures and requirements and ensure that they are appropriate for each of these separate objectives.

Moldovan authorities have been working to address this issue, including through adoption of amendments to the laws on seeds, plant protection, viticulture, and orchards. These amendments: (i) enable piloting adoption of the EU Common Catalogue for a selected range of crops with obsolete and under-represented varieties (less than 10 varieties per crop) in the national catalogue; and (ii) abolish the National Council for Plant Varieties and attributes its functions to the testing institution. However, important issues remain unresolved.

Sources: ACED plant variety paper, ACED variety registration study, WB DPO document.

Apart from difficulties in registering and testing new varieties, there is also lack of market information for producers on which varieties are best suited for the Moldovan environment and demanded in international markets. According to the ACED table grape value chain study, this leads to “growers looking to foreign varieties that are not suitable for Moldova climate conditions and asking nurseries to grow varieties that are not tested and registered locally.” Given the poor suitability of the variety, the yield is lower and thus returns are lower. More information would be useful for producers. This problem calls for a rethinking of the role of the Seeds Commission with respect to imported plant varieties by moving from a prescriptive

to a consultative one, i.e. carrying out variety tests to identify and recommend imported varieties that perform best in the pedo-climatic conditions of Moldova, concomitantly not precluding the use of imported varieties. A closer cooperation between the Seeds Commission and the extension service network as well as the seed companies operating on the domestic market (e.g. joint efforts to set up demonstration plots for new variety testing) would serve the private sector needs and demands even better.

Agricultural Inputs

The availability and cost of agricultural inputs may be an obstacle for farmers, but further examination is needed. During interviews with farmers, two possible drivers of allegedly high costs were identified: first, that importers allegedly claim excessive margins, and second, that Moldova's small market size prevents rural economies of scale and therefore importers' unit costs are high. These issues can be addressed by ensuring even conditions for competition in the market for agricultural inputs, and by farmers taking the opportunity to import their own inputs—either individually or as a group. One group of farmers cited that import licenses were prohibitively expensive; this could explain the high cost to importers and the difficulties that farmers would face to import directly. This issue should be examined further, using international comparisons or benchmarks and examining the impact of direct import costs and other factors on final prices.⁵⁰

There are registration and access issues related to fertilizers and phytosanitary products that are similar to seeds and seedlings. The introduction of new phytosanitary products or mixes (fertilizers, pesticides) is subject to testing with the State Center for Testing and Homologation of fertilizers and phytosanitary products. The testing period for fertilizers is one year, and for pesticides is one to two years.⁵¹ The registration process can be quite costly, especially for pesticides.⁵² This lengthy and costly procedure delays (and even prevents in some cases) Moldovan farmers' access to new technologies and increases the costs of these inputs. Farmers report that they find it problematic to develop certain crops that are cultivated in smaller volumes (such as pears and quinces, for example) because the needed modern phytosanitary products are not in the Register, while the registration process is relatively costly for the size of the market for these products. As in the case of seeds or seedlings, these restrictions lead to smuggling of fertilizers and plant protection products. The use of smuggled inputs causes further chain problems with certification of outputs—agricultural and food products—produced by use of smuggled inputs.⁵³

In addition to testing and registration costs, there are conformity assessment requirements for plant protection products that add to the total costs incurred by the final users of these inputs (the farmers). These domestic conformity requirements make little sense for plant protection products that are produced according to EU requirements and represent an unnecessary layer of administrative burden for businesses (conformity certificates need to be obtained for each lot of imported produce). The price incurred by the importing companies is transferred further along the value chain and is paid off by the farmers.

⁵⁰ World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

⁵¹ ACED Tomato Value Chain Study.

⁵² The costs of testing and registration of a new plant protection product are between 2000 and 5000 euro, and for a new fertilizer – 1000-2000, depending on terms, crop and plot size (source: Government Decision #200 from 27.04.1995).

⁵³ Source: Moldova Fruct Association.

In some sectors, available data shows that the cost of seeds and seedlings can be quite high for certain crops, such as tomatoes. According to the ACED tomato value chain study, this is the principal driver of costs for tomato production, and can account for 41-50 percent of costs. Approximately 20-40 percent is the cost of the imported material, and approximately 35 percent is the local distributor's margin. In addition, the quality of seeds available in Moldova may be low. According to the study, local seed producers sell their best seeds abroad because they can fetch a higher price, and sell lower-quality seeds on the internal market. Reducing barriers to import could increase competition and adjust incentives so that local producers would be more likely to sell higher-quality seeds locally.

High tariffs on packaging increases the cost of these materials. While there are some companies in Moldova that produce packaging materials, these materials are often imported. Tariffs range from 11 percent to 15 percent for carton packaging and are 10 percent for glass containers and lids.⁵⁴

Labor Supply

Although one of Moldova's comparative advantages is its low labor cost, the availability of agricultural labor is an issue that merits attention. Larger-scale farmers report problems finding sufficient manpower, especially at harvest time. The horticulture study conducted by the World Bank and the ACED table grape value chain study identified several potential drivers: (i) small farmers need to harvest their own crops during the same time as larger farmers seek additional labor, and resulting labor shortages; (ii) the wages offered might not be sufficiently attractive; and (iii) small farmers have other sources of income (such as remittances) that make additional labor at larger farms unattractive. Potential ways to provide more stable employment include: expanding production in greenhouses, producing crops that can be stored and processed throughout the year (e.g. walnuts), and natural wage growth (driven by the private sector) as the sector's productivity and competitiveness increases.

Finding a skilled labor force in rural areas is an even harder problem. The general opinion is that the level of domestic technical expertise, both in production but especially in processing, is rather low and requires additional training and a higher skill level. Processing companies often voice concerns about the skill mismatch of young graduates and indicate the need to establish closer links with universities, colleges, and vocational schools. There is also a need to adjust the curricula of these institutions so that they better address current requirements for skills and expertise. Another problem reported often by processors is the lack of skilled young people willing to live and work in small towns where most agro-processing enterprises are located. This shortage induces large companies to think of some incentive-based approaches to encourage the educated labor force to return to their hometowns after graduation. There are similar problems on the farming side: commercial farms that want to plant intensive or super-intensive orchards (or any other type of innovative farming or post-harvest handling operation) report that they have to bring foreign experts in agronomy, production technologies, and even engineering, because it is impossible to find the necessary high-skilled professionals locally.

⁵⁴ ACED Tomato Value Chain Study.

Labor issues also extend to the agricultural support networks. The lack of professional skills negatively affects the quality of domestic research, education, and extension networks, which as discussed above, do not meet the needs of agribusiness or the private sector.

3.5 Market Issues

Marketing and Distribution Channels

The structure of how Moldovan agricultural produce is marketed, and lack of market information, also impedes the sector’s competitiveness. The large majority of farmers sell their produce at the farm gate, which limits their choices and market power. The World Bank horticulture study found that “In 2012 for example, only a third of the total fruit marketed and a fifth of the vegetables were bought by enterprises and organizations that collect and process agricultural produce.”⁵⁵ The prices typically paid at the farm gate are enough to provide a positive margin to the farmer, but not much more than that, thus limiting the profits that farmers could use to invest in improvements. Another factor that may limit the price intermediaries can pay is the cost of aggregating produce from many farmers—in the context of atomized small farmers transaction costs are high. Producers that do not sell directly at the farm gate usually go to open-air wholesale markets, which may also provide limited opportunities and low market power for producers. Typically, only the largest producers sell to traders in wholesale or export markets. At times, the largest producers may also export directly.

The positive margins and familiarity with current distribution channels may not provide Moldovan producers with enough of an incentive or drive to seek out new markets that could be more profitable. This leads to an equilibrium in which producers have positive but low margins, and do not face pressure to change. Such producers may maintain their current business model, and may prefer to not expend the effort required to generate a higher return – effort which would entail investing in upgrading technology, learning and applying more sophisticated production techniques, and making the effort to understand and adjust production to respond to market trends. As stated in the horticulture study, “The markets in CIS countries generate sufficiently good returns at current productivity levels, removing the incentives for improving yields further, as needed to supply to the much demanding and competitive EU market.”⁵⁶

Transport costs also impact the competitiveness of Moldovan produce on international markets. According to the apple value chain study, “There are freight cost variances between the major exporters of apples to Russia with Serbia being the most expensive (€3,100) per truck load and Poland being the least (€2,150) with Moldova in the middle (€2,800). While this cost difference is not a determining factor on the final price, it is an important factor in determining profitability of the business, especially in the mainstream market (low- to mid-priced). Generally, Serbian and Polish fruit sells for a small premium (10 percent higher) compared with Moldovan and Ukrainian fruit, based on consistent sizing, eye appeal, and attractive full pack out of the box.”⁵⁷ In addition to cost considerations, transportation must preserve the cold chain (refrigerated trucks) to maintain the quality of the produce.

⁵⁵ World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

⁵⁶ World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

⁵⁷ ACED Apple Value Chain Study.

Box 5. Marketing Channels Used by Moldovan Table Grape Producers (Illustrative)

The ACED table grape value chain study identified two typical marketing channels for these products, as follows:

In Channel 1 large growers organize harvesting, packing, storing, and transport to the external wholesale markets and sell at the open-air truck market operating as trader/exporter and wholesaler. The large growers that export by themselves have their own cold stores and can keep grapes for the off-season. Small growers that sell their grapes in the high season to traders who keep it for the off-season and then sell to exporters also are part of Channel 1. The grapes sold through Channel 1 have a better quality and a higher price. Subsequently, Channel 1 participants obtain higher margins.

Channel 2 and the domestic market is mostly represented by small growers and to a lesser extent by medium growers that have earlier varieties of predominantly light colored grapes and have smaller amounts of dark colored grapes. These growers usually sell their products by themselves at the wholesale market or to traders that operate in local wholesale and retail markets. As export traders will not accept grapes of poorer quality, by default, they are sold in the local market. Early grape varieties generally go to local markets for a smaller price because traders do not buy many grapes for export during the high season.

Source: Table grape VCS.

Market Opportunities and Risks

Moldovan farmers have faced substantial risks in accessing Russia, their largest market, at various points since 2005. Russia placed bans on imports of agricultural goods from Moldova in the spring of 2005, autumn 2013, and summer 2014 (still ongoing). According to the World Bank horticulture study, “These ad-hoc bans have been the main driver behind the efforts of the Moldova's Government and the donor community to refocus the farmers’ marketing strategy towards the EU.”⁵⁸

To penetrate other markets, Moldovan producers need to understand not only the characteristics of produce demanded in those markets (discussed in various places above) but also the competition they face. For instance, producers in Spain compete in Eastern European markets starting from the beginning of their season in mid-May (shortly before Moldova), through July. In new EU member states, Moldovan producers face competition principally from Bulgaria, Romania, Ukraine and Turkey. Even in Romania, Moldovan growers and exporters need deeper market information in order to compete. Main competitors in the Romanian table grape market, for instance, are Italy, Turkey and Macedonia. There may be an opportunity for Moldova to compete on quality with Macedonian grapes (which tend to not be of a very high quality). In Romania, table grapes must also meet EU Marketing Standards.⁵⁹ Thus, Moldovan producers have a challenge of establishing a strategy for competing with these markets.⁶⁰

⁵⁸ World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

⁵⁹ ACED Table Grape Value Chain Study.

⁶⁰ World Bank, Rapid Assessment of the Horticulture Industry in Moldova.

In the European Union, Moldovan produce will need to be cognizant of the MEP and how it impacts their competitive strategy.⁶¹ After Romania joined the EU in 2007 and came under the MEP system, Moldova was squeezed out of the market by EU suppliers that are not subject to the MEP.⁶² However, the Association Agreement/DCFTA has provided quotas for Moldovan produce within which there is no MEP or ad valorem tax. These quotas apply for Moldovan products with high export potential to the EU: apples, table grapes, plums, tomatoes, and grape juice. The quota for apples during 2015 is 80,000 tons (40,000 tons in the framework of AA/DCFTA and 40,000 tons under Autonomous Trade Preferences, ATP). For table grapes, it is 10,000 tons under the DCFTA and 10,000 tons under ATP. The ATP regime will cease on Dec. 31, 2015, so the quota allocations will be reduced respectively. For volumes beyond the quotas, both MEP and the ad valorem tax are applied to these products. MEP applies to a range of other agri-food products as well.

Reorienting Moldovan production to compete in the EU will require new varieties, grading standards, the ability to meet food safety standards and traceability (including Global G.A.P) demanded by retailers in these markets. While this will require resources, training, and effort, the transformation of the Moldovan wine industry, precipitated also by difficulties accessing the Russian market, is a useful example of success. Further, a number of programs are available to assist Moldovan producers, including from the government of Moldova and donors. Moldova's domestic market may also provide an impetus to farmers to adopt some of these practices, as supermarkets become more dominant in the market and demand higher levels of quality.

There is also a potential role for international retail chains already present in Moldova to play as catalysts for improving product quality and safety. International retail chains players in Moldova may have an interest in upgrading local production networks, and this should be further explored.

Regulatory constraints also arise in Moldovan producers' ability to access the Russian and Belarussian markets. Due to allegations by Russian authorities that Moldovan produce has not met food safety standards in the past, Moldova's Ministry of Agriculture maintained a list of enterprises that are allowed to export to Russia and Belarus. The list is still in force for Russia. According to the ACED table grape value chain study, full transparency is lacking regarding the process and criteria for enterprises to be included in the list.⁶³

There are also some opportunities to sell into processing channels. Only a minority of Moldova's agricultural produce goes into processing channels, and this is mostly limited to apples and tomatoes.

- **Apples:** Apples for processing are used to make apple juice concentrate (AJC), which is exported primarily to the EU. The market for AJC is volatile, and competition from Chinese production is strong. According to the ACED apple value chain study, the prices offered by processors are much lower than those on the fresh market and are commonly

⁶¹ In practice, the MEP is an ad valorem tax that protects producers in the EU from lower-priced imports (below a certain threshold). The MEP varies seasonally.

⁶² ACED Apple Value Chain Study.

⁶³ ACED Table Grape Value Chain Study.

below growers' production costs. Thus, this is not currently an attractive market for Moldovan apple producers.

- **Tomatoes:** Unlike apples, market opportunities for tomato producers to sell to processors are growing. Processors are investing in new technologies to improve product quality and efficiency. Within Moldova, approximately 25 small and medium processors are using modern equipment, and there are approximately 10 fruit dryers and three flash freezing facilities. Processors interviewed for the ACED tomato value chain study have interest in developing new relationships with producers.⁶⁴ As of 2011, tomato processors were selling approximately 90 percent of their production to Russia, Belarus, and Kazakhstan, and approximately 2-3 percent into supermarket chains in Moldova.⁶⁵

3.6 Access to Finance and Cross-Cutting Policy Issues

Access to finance is an important issue in the agriculture sector, due to the relatively long period of elapsed time between planting and harvest, and the cost of establishing greenhouses (for vegetables). Planting an intensive apple orchard (see section on production techniques above) requires heavy investment in the first year, while investments in a traditional orchard are more spread out over several years. Cherry orchards take approximately 5-6 years to show a positive cash flow. Walnut trees take even longer, with some production in years 7-8, and more substantial yields in year 9.⁶⁶ For greenhouse vegetable production, up-front establishment costs may amount to more than half of the total cost of production. The most costly items are the greenhouses themselves, film cover, and irrigation system. Labor costs, purchase of seedlings, and fertilizer are also substantial, and greenhouses require significant maintenance work over time. Many growers are not able to cover these costs from available cash.

Obtaining a bank loan to finance such long-term operations is difficult for several reasons. First, on the domestic market, the maximum tenor available is three years, and such tenors are usually available only to the best clients. Second, banks typically do not accept land and plantation as collateral, due to high perceived risks.⁶⁷ Third, the agriculture sector is seen by banks as quite risky, and producers may be unable to provide the financial information necessary to support loan applications, given limited financial management and accounting skills.⁶⁸ In addition, the fact that much agricultural production takes place at the household level (as seen in the small farm size) also creates difficulties in access to finance. Farm incomes and expenses are generally not ringfenced from household incomes and expenses, and retained earnings and savings are low. According to the [horticulture study], this often leads to reduced use of fertilizer, pesticides, and labor, and thus lower productivity (yields).⁶⁹

Climate risks also affect Moldova's agriculture sector. Some mitigation strategies require finance for investment, and the government funds climate risk mitigation instruments. The

⁶⁴ ACED Tomato Value Chain Study.

⁶⁵ ACED Tomato Value Chain Study.

⁶⁶ ACED Apple Value Chain Study; ACED Tomato Value Chain Study; World Bank Rapid Assessment of the Horticulture Industry in Moldova.

⁶⁷ ACED Apple Value Chain Study; ACED Tomato Value Chain Study.

⁶⁸ World Bank Rapid Assessment of the Horticulture Industry in Moldova.

⁶⁹ World Bank Rapid Assessment of the Horticulture Industry in Moldova.

main risks include spring frosts that damage fruit orchards, extreme cold in winter that can damage walnut trees, hail that can reduce fruit quality, rain at harvest time that can cause splitting of cherries, and early autumn frosts that can damage unharvested apples. The risk management strategies for most of these are well-known: “the planting location of walnut trees has to take into account weather conditions of the area, earlier-maturing varieties of apples and plums could replace the existing ones, sprinklers can protect flowers from frost, while covers can prevent hail and rain damage, [and] irrigation can mitigate the effects of erratic rainfall patterns that result in droughts.”⁷⁰ Some of these strategies require significant capital investment, which then faces the difficulties in access to finance discussed here. The support available from the government to mitigate climate risks includes access to irrigation, adoption of modern agricultural technologies such as drought-resistant varieties, anti-hail protection tools, and innovative insurance schemes for agriculture (such as index-based weather insurance products). This support accounts for approximately 15 percent of government spending in the agriculture sector.⁷¹

To address the issue of access to finance, the government of Moldova provides direct financial support (subsidies and others) as well as fiscal incentives (tax breaks). The direct spending is channeled to the sector through subsidies, services, and donor programs, and is equivalent to 1.4 percent of GDP. Tax expenditures, including reduced corporate income tax rate, reduced value-added tax rate, reduced social security contribution rate, and reduced health insurance contribution rates, are equivalent to another 0.63 percent of GDP. Moldova spends relatively more on agriculture than other countries at a similar level of development.⁷²

The largest shares of government expenditure in the agricultural sector are allocated to: physical infrastructure and business development to modernize the sector, and agricultural education and food safety, research, and advisory services, among others. Other areas of expenditure include: viticulture and wine development in support of high-value markets and risk mitigation measures for climate risks. Subsidies are available to producers for investments in productive assets, including subsidies for the plantation of new orchards and vineyards, equipment for protected-field vegetable and strawberry production, agricultural machinery, and equipment for post-harvest handling and processing of fruits and vegetables.⁷³ Investment subsidies account for around 40 percent of investment expenditures in Moldova, and more than 90 percent if external donor funding is excluded.⁷⁴

Public support has helped Moldova’s agriculture sector to upgrade obsolete infrastructure, modernize the sector, and mitigate risks (e.g. climate risk). However, not all types of intervention financed from the agriculture budget are efficient. In general, the substance and the scope of the recurrent subsidy instruments in place still do not present the most efficient

⁷⁰ World Bank Rapid Assessment of the Horticulture Industry in Moldova.

⁷¹ World Bank Public Expenditure Review: Agriculture.

⁷² At over 1 percent of GDP, spending on agriculture is higher than that of most benchmark countries, including such new EU member state as Romania and Bulgaria. Source: Public Expenditure Review: Agriculture.

⁷³ The Public Expenditure Review on Agriculture provides a very detailed breakdown of the types of government spending and subsidies in the sector.

⁷⁴ World Bank Public Expenditure Review: Agriculture, page 26.

responses to existing sector constraints. For instance, according to the 2015 Public Expenditure Review on agriculture conducted by the World Bank:

- “Subsidies to facilitate access to credit are primarily benefiting wealthier farmers, who are already in better position to qualify for commercial credit. In addition, this support measure is used mainly for subsidizing operational loans and, as such, it becomes a vehicle for subsidizing agricultural inputs while only a small share was used for investments to strengthening productive capacity (such as purchase of equipment and infrastructure).
- “There [are] also design issues related to programs focused on risk management such as the hail prevention system and the risk insurance subsidy program.
- “Public support for agricultural investment is captured by a small number of corporate farms, and often does not reach individual small farmers (and hence the poorest). It is also affected by inequality in gender and geographical dimensions.”⁷⁵

In addition, the design of subsidies in some cases has produced misaligned incentives—for instance, a disincentive to invest in higher-productivity intensive apple orchards. According to the apple value chain study conducted by the ACED project: Until 2011, the subsidy for apple orchards was a flat MDL15,000 (approximately US\$1,300, using the average exchange rate for 2011) per hectare, regardless of tree density. This covered the cost of seedlings for a traditional orchard, but covered just 15 percent of the cost of seedlings for an intensive orchard. Thus, one unintended consequence of the subsidy level was to incentivize planting of only traditional orchards. In 2011, the government increased the support to intensive and super-intensive plantings, and included as an eligibility criteria a minimum level of tree density.⁷⁶

Recommendations from the Public Expenditure Review in agriculture include:

- *Reducing spending for:* (a) the credit subsidy program and the land consolidation program (if uptake remains small); (b) spending on agriculture education and institutional reform if no reforms are undertaken.
- *Redesigning the following programs:* (a) research institutes; (b) management of irrigation system (a new model for functioning of water agencies and water user associations); (3) support for food safety upgrades.
- *Considering increasing funding for:* (a) modern risk management programs, after improvement of current ones; (b) extension services generating positive results; (c) subsidy investment in post-harvest infrastructure, funded by a reduction of the large machinery program; (d) ‘smart’ subsidies.

Box 6 summarizes the findings on the government of Moldova’s financial support to the agriculture sector based on the June 2015 Public Expenditure Review focused on this sector. **Box 7** summarizes the PER’s recommendations.

Box 6. Public Support to Agriculture in Moldova

⁷⁵ World Bank Public Expenditure Review: Agriculture, page 19.

⁷⁶ ACED Apple Value Chain Study.

In Moldova, public spending on agriculture is through direct budget spending and tax expenditures (forgone tax revenues). Direct budget spending is in the form of subsidies (current and capital) and services (research, education, food safety, and extension services) and through donor-supported programs. Tax expenditures are through reduced corporate income tax (CIT), value-added tax (VAT), social security contributions (SSCs), and health contribution rates. Tax concessions, a type of tax expenditure, take the form of reduced tax rates, exemptions, and tax deductions.

Direct budget spending at 1.4 percent of GDP is high in Moldova compared to other countries, and public support reaches about 2 percent of GDP when tax expenditures are added. Moldova spent 1.4 percent of GDP and 3.6 percent of total government outlays on agriculture in 2013, which is higher than many countries in Europe and Central Asia (ECA), including new EU member states like Romania and Bulgaria. Moldova also spent 0.6 percent of GDP in the form of forgone taxes.

Allocative efficiency in direct budget spending on agriculture has improved. Spending is aligned with the government priorities reflected in the three main pillars of the National Agriculture and Rural Development Strategy: (1) enhanced competitiveness of the agricultural and agro-food sector through restructuring and modernization; (2) sustainable management of natural resources; and (3) better conditions for living and working in agricultural and rural areas. More than 80 percent of direct budget spending on agriculture is directed to the first priority. In particular, a large and increasing share of capital spending in the budget is directed to upgrading obsolete infrastructure. About 30 percent of the direct budget spending in this pillar is for core services to support agricultural competitiveness, such as research, education, and extension. Under Pillar II, support for sustainable management of natural resources accounts for less than 15 percent of expenditures; here the largest allocation is for hail prevention systems. The aspiration of better rural living and working conditions is not well reflected in the agricultural budget. What little support this area gets is mainly provided by donors. In any case, realizing Pillar III is beyond the responsibility of the Ministry of Agriculture and devolves to other ministries.

Agriculture receives highly favorable tax treatment to compensate for its high risks, low profitability, and high capital intensity. Farmers benefit from such favorable tax arrangements as an alternative to direct spending. The annual cost of farming sector benefits from tax arrangements is estimated at more than 0.6 percent of GDP, with the largest share being for VAT treatment, followed by direct taxes and social security contributions. Tax expenditures amount to about 60 percent of tax collections in agriculture and about 40 percent of direct budget spending on agriculture.

Direct spending and tax expenditures could be redesigned to tackle agricultural problems in ways that are more efficient, cost-effective, and equitable.

Source: World Bank. Public Expenditure Review: Agriculture. 2015.

Box 7. Summary of Policy Recommendations from the Public Expenditure Review

Spending Policies to Increase Value for Money of Public Support

1. **Consider reducing spending on programs that have not brought expected results:**
 - Cancel the credit subsidy program
 - Redesign or revoke the land consolidation program
 - Replace the anti-hail program with a more efficient risk prevention program
2. **Take an action to increase value for money of several spending programs:**
 - Improve the quality of agriculture research and education
 - Revisit management of the irrigation system
 - Reform the Seeds Commission testing program
 - Continue to reform the food safety programs
3. **Increase budget allocation for the following programs:**
 - Extension services
 - Post-harvest infrastructure program through a reduction of the large machinery program
 - “Smart” subsidies aimed at promoting use of technology
4. **Continue improving the annual budget process**
 - Consider introduction of performance evaluations of spending programs

Tax Policies to Tackle Agricultural Problems in More Efficient Way

1. **Revamp incentives to invest in agriculture:**
 - Reconsider current tax incentives for private pension savings
 - Increase the CIT rate for agricultural enterprises to the standard 12 percent
 - Remove the VAT exemption for machinery and tractors
2. **Incentivize better use of land:**
 - Abolish or ease the restriction on land acquisition by foreigners
 - Continue effective valuation of land and property and adopt value-based taxation of property
 - Introduce a special tax on uncultivated land
3. **Provide income support to the poorest farmers:**
 - Introduce a presumptive turnover-based tax
 - Consider removing the reduction in the SSC rate for farmers
4. **Re-introduce a unified VAT rate for agriculture products combined with compensation for low-income households.**

Source: World Bank. Public Expenditure Review: Agriculture. 2015.

Finally, other cross-sectoral constraints to doing business, including difficulty trading across borders and electricity costs, affect the agriculture sector. The number of documents required for export, the time it takes to deal with them, and the discretion of officials with jurisdiction over international trade administration is a hindrance to agricultural exports. The relatively high cost of electricity in Moldova compared with its neighbors keeps the cost of greenhouse production high, which affects tomato and other horticulture production.⁷⁷

⁷⁷ World Bank. 2015. Rapid Assessment of the Horticulture Industry in Moldova.

4. Recommendations

The recommendations to address the constraints above follow from the constraints outlined at the beginning of Section 3. These recommendations echo the recommendations made in the “Rapid Assessment of the Horticulture Industry in Moldova” (World Bank, March 2015), the policy note on agriculture submitted in the “Briefing Book from Development Partners of Moldova” (January 2015), and crop-specific recommendations made in the various value-chain studies conducted under the USAID-funded ACED Project. The recommendations are presented here in summary form, in terms of the timeframe required to achieve an impact and the level of investment required.

Investment in quality-enhancing infrastructure such as greenhouses and post-harvest facilities (cold storage, sorting, grading) merits special attention. Such activities fall into the sphere of private investment. While it will be important for producers to improve such infrastructure, this note does not recommend public provision of this type of infrastructure for private producers, as this approach does not have a successful track record around the world.

There is also an outstanding question of why private investment in such infrastructure has not yet materialized in Moldova. It would be useful to survey agribusiness investors in the region and Turkey in order to further understand why investments in post-harvest infrastructure have not materialized in Moldova in spite of the export potential and gains from increased quality of Moldovan produce. The improvements in complementary areas recommended in the table below are expected to increase returns in the agriculture sector and thus make private investment in these activities more feasible. A survey of investors in the region can help to inform policy makers of the expected impacts of implementing the recommendations below and additional areas to address in order to further promote private investment.

Table 1. Recommendations

<i>Investment requirements</i>	<i>Impact achieved in the shorter term</i>	<i>Impact achieved in the longer term</i>
<p>Less Investment</p>	<ul style="list-style-type: none"> • Strengthen producers’ technical knowledge. Improve distribution of knowledge to producers on production techniques, harvest and post-harvest handling, varieties best-suited to Moldova, use of fertilizers and pesticides, use of irrigation, and other technical aspects of production. This may be done through extension programs managed by the Ministry of Agriculture and Food Industry (MAFI), donor-financed advisory services (AGROinform, National Farmers’ Federation [FNFM]), USAID-funded programs (e.g. ACED), establishment of a center of excellence, and/or others. Engage foreign experts. • Strengthen business advisory services for agriculture. Improve distribution of knowledge of market preferences and requirements, packaging, labeling, and food safety by fostering knowledge sharing between traders and producers, and producers exporting to higher-value markets and others. Involve the MIEPO and others (e.g. ACED, center of excellence) in this effort. Engage foreign experts. • Improve producers’ business planning and management skills, building on or expanding programs offered by the Organization for Development of Small and Medium Enterprises (ODIMM), MIEPO, and others. • Engage successful, higher-productivity producers in knowledge sharing with less-productive farmers, to facilitate demonstration effects. Involve the extension and advisory services in facilitating such activities. • Assess the impact of existing legislation on producers’ abilities to conduct and invest in post-harvest activities, and adjust legislation as required. Revise/ease the 	<ul style="list-style-type: none"> • Reform the agriculture research institutes and the agricultural educational establishments to ensure a close connection with the labor market and private sector needs for applied research, technology transfer, skill development, etc. • Modernize curriculum used in agriculture education. Focus on modern production processes, business and financial management, and develop curriculum in cooperation with the private sector. • Introduce internships offering practical management experience into university programs (or for selected graduates) – develop the dual system of education (education institutions + companies) to teach skills that satisfy the requirements of the labor markets. • Continue support to development of producers’ groups/associations for information-dissemination and -sharing activities, bulk purchases of inputs and sales of outputs (where appropriate), joint ownership of post-harvest and/or processing infrastructure, and others. • Liberalize the import regime for inputs (seeds, seedlings, fertilizers, pesticides), which are already available on EU markets by abolishing the mandatory testing and registration requirements. Adopt the EU Catalogue for Plant Varieties to offer immediate access to modern EU varieties. • Initiate substantial changes to the purpose of testing varieties from <i>protecting producers from unknown varieties</i> to <i>supporting producers’ use of new varieties</i>. Revise the role of the Seeds Commission in view of assigning it a consultative function. This will improve its connection to the private sector of seed dealers and to the extension network.

	<p>requirements towards changing the destination of agricultural land.</p> <ul style="list-style-type: none"> • Abolish the unnecessary and costly conformity assessment procedure for imported plant protection products that are produced in accordance with international/EU standards. • Improve accessibility of appropriate packaging materials by reviewing levels of tariffs and any distortions in the market for such materials. • Optimize the laboratory setup by improving the reliability of lab testing, increasing the capacity of staff at testing laboratories, as well as seeking to achieve international accreditation of domestic laboratories. • Eliminate the outdated practice of duplicating food safety controls of food business operators, so that controls on safety of the food products are carried out solely by ANSA. • Ensure the appropriate regulatory framework is in place for compliance with international food safety standards, including EU requirements, Global GAP, and others. • Simplify, and improve the transparency and predictability of export and import procedures. Eliminate duplications and reduce the load of mandatory documentation requirements. Introduce risk-based controls at the border for imports and exports to optimize the commodity flow. 	<ul style="list-style-type: none"> • Assess labor market issues in more detail, in consultation with market participants (producers and laborers). • Assess transport and logistics issues in more detail, in consultation with market participants (producers, traders, and providers of transport and logistics services). • Review the economics of production of the crops targeted by government subsidies and adjust the instruments to reduce distortion of market incentives. Focus government support/subsidies on market-driven and innovative investments concomitantly reducing/eliminating subsidies stimulating use of traditional/old technologies and equipment. • Authorize ANSA to develop and propose legislation that would help accelerate reforms in food safety. • Explore the possibility of strengthening linkages between domestic producers and international retail chains present in Moldova to stimulate increased product quality and safety. • Survey agribusiness investors in the region and Turkey in order to further understand why investments in post-harvest infrastructure have not materialized in Moldova in spite of the export potential and gains from increased quality of Moldovan produce.
<p><i>More Investment</i></p>	<ul style="list-style-type: none"> • Expand public support, including mobilization of donor resources, to alleviate investment problems along the value chains of competitive sectors: • Promote the planting of modern higher-productivity plant varieties to support the competitiveness of the sector; • Improve irrigation infrastructure, as appropriate for each crop/geographic area (e.g. some crops may require large 	<ul style="list-style-type: none"> • Review the levels and targeting of government incentives and availability of donor credit lines, and adjust as needed based on the economic assessments above. • Introduce innovative risk insurance schemes to help producers cope with and mitigate agricultural risks – consider the index-based weather insurance program. • Actively support produce differentiation techniques/practices aimed at accessing premium segments of

	<p>irrigation schemes covering many hectares, for which government investment could be justified, while other crops may require investment in on-farm irrigation structures for which the producer should bear the cost).</p> <ul style="list-style-type: none"> • Build sector resilience to adverse weather events by stimulating investments in anti-hail nets, anti-frost systems, drought-resistant plant varieties, etc. • Continue support to building a robust, reliable and effective domestic food safety system that serves the dual aim of ensuring the safety of food for country’s population and helping Moldovan agri-food products’ access to international/EU markets. 	<p>export markets. The differentiation may build on Moldova’s endowments in terms of climate and soil that determine produce special taste. Also, it may focus on prospective niche products, such as fresh/frozen berries, fresh/dried organic products, etc.</p> <ul style="list-style-type: none"> • The following items from the row above (“less investment”) may require increased investment over the longer term: (i) Reform the agriculture research institutes and agricultural education; (ii) modernize curriculum used in agriculture education; and (iii) introduce internships offering practical management experience.
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5. References

- Economisti Associati and Agrex NGO. 2015. *SME Segmentation Study*. City? Publisher?
- Gateway Baltic, CPM Consulting, and Chamber of Commerce and Industry of the Republic of Moldova. 2015. *Analysis of Priority Export Markets and Instruments to Promote Moldova Exports to the EU and Other Markets*.
- Grushevsky, Alexander and Dan Vulpe. 2013. *Internal Barriers to Exporting Fresh Fruits and Vegetables from Moldova*.
- Moldova. *National Agriculture and Rural Development Strategy for Moldova 2014-2020*.
- Moldovan Investment and Export Promotion Organization. (Year?) *Agriculture Report: Republic of Moldova*.
- U.S. Agency for International Development Agricultural Competitiveness and Enterprise Development (ACED) Project. 2011. *Moldovan Apple Value Chain Study*. Washington, DC: U.S. Agency for International Development.
- U.S. Agency for International Development Agricultural Competitiveness and Enterprise Development (ACED) Project. 2011. *Table Grape Value Chain Study*. Washington, DC: U.S. Agency for International Development.
- U.S. Agency for International Development Agricultural Competitiveness and Enterprise Development (ACED) Project. 2011. *Tomato Value Chain Study*. Washington, DC: U.S. Agency for International Development.
- U.S. Agency for International Development Agricultural Competitiveness and Enterprise Development (ACED) Project. 2014. *Assessment of Plant Variety Registration in Moldova*. Washington, DC: U.S. Agency for International Development.
- U.S. Agency for International Development Agricultural Competitiveness and Enterprise Development (ACED) Project. 2013. *Road Map for Investors in High Value Agriculture*. Washington, DC: U.S. Agency for International Development.
- U.S. Agency for International Development Agricultural Competitiveness and Enterprise Development (ACED) Project. 2012. *End Market Study for Fresh and Dried Fruits in Germany*. Washington, DC: U.S. Agency for International Development.
- U.S. Agency for International Development Agricultural Competitiveness and Enterprise Development (ACED) Project. 2012. *End Market Study for Fresh and Dried Fruits in Baltic States*. Washington, DC: U.S. Agency for International Development.
- U.S. Agency for International Development Agricultural Competitiveness and Enterprise Development (ACED) Project. 2011. *End Market Study for Fresh Fruits and Vegetables in Moldova*. Washington, DC: U.S. Agency for International Development.
- U.S. Agency for International Development Agricultural Competitiveness and Enterprise Development (ACED) Project. 2011. *End Market Study on Fresh & Dried Fruits in Russia*. Washington, DC: U.S. Agency for International Development.

U.S. Agency for International Development Agricultural Competitiveness and Enterprise Development (ACED) Project. 2011. *End Market Study on Fresh & Dried Fruits in Romania*. Washington, DC: U.S. Agency for International Development.

World Bank. 2015. "Moldova Food Security Assessment: Analysis of the Current Situation and Next Steps." Washington, DC: World Bank.

World Bank. 2015. "Moldova: Analysis of Trade Competitiveness." Washington, DC: World Bank

World Bank. 2015. "Public Expenditure Review: Agriculture.: Washington, DC: World Bank

World Bank. 2015. "Rapid Assessment of the Horticulture Industry in Moldova." Washington, DC: World Bank.

World Bank. 2015. *Briefing book from Development Partners of Moldova*. Washington, DC; World Bank Group.