

IMPACTS OF THE GLOBAL FINANCIAL AND ECONOMIC CRISIS ON THE AGRO-FOOD SECTOR: EVIDENCE FROM ARMENIA

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In mid-2009 the FAO commissioned some research aimed at assessing the impacts of the global financial and economic crisis on the agro-food sector in Central and Eastern Europe and Central Asia. This paper assesses the impacts on three supply chains within the Armenian agro-food sector, wheat, grapes and milk, based on the results of interviews and selected official data sets. The entire agro-food supply chain was affected, though the magnitudes of the impacts differed for each product. Overall, the milk supply chain was hit the hardest, and the least affected was the wheat supply chain. The situation was the worst at the upper level of the chains (farmers). Input prices increased which translated into higher production costs for farm products. Hence, output prices ought to have increased to account for the higher production costs but that did not happen. Farmers even had to lower the product price to be able to sell. The reasons for this were threefold. Firstly, the level of remittances to Armenia decreased greatly which weakened the purchasing power of consumers (i.e. there was a decrease in local demand for goods). Secondly, the export markets dried up and the processing firms were unable to sell the products. Therefore, the demand for products from farmers also declined. Thirdly, the Armenian government lagged behind in supporting farmers: the support programmes were very limited and not well-tailored. The paper concludes by proposing some policy measures which could mitigate the impacts of any future crises².

Keywords: *global crisis, agrarian sector, Armenia*

JEL classification: Q13

Introduction

In the years prior to the onset of the global financial and economic crisis, 2005-2007, Armenia had impressive double digit GDP growth (EVRC, 2009). During this period it had the best performance indicators in the region. However, after 6.8% GDP growth in 2008, Armenia's economy was expected to contract by about 10-15% by the end of 2009 (ARKA, 2009). The country recorded an increase in commodity prices, decreases in remittances, exports, construction growth rate, and the mining industry. As a result, the main macroeconomic indicators declined dramatically. For instance, 18.3% economic decline was recorded in the country during January-September of 2009 compared with that of 2008. Almost all economic sectors showed a decrease in output, such as construction (43.8%), industry (11.4%), services (1.4%) and agriculture (1.3%). EVRC (2009) suggests that the reason for such a sharp decline is the non-sustainable nature of growth drivers. In other words, the economic growth was not entirely based on the fundamentals and the slightest external shock was enough to undo much of what has been done so far.

In developed countries the crisis first hit the financial markets then passed through the rest of the economy. By contrast, Armenia first received the crisis shocks in the real economy then it passed through the banks (AmCham,

2009). This is perhaps explained by weak linkages with global financial system. However, it is not immune and the impact started to affect the Armenian banking sector in 2009. On 3 March 2009, the Central Bank changed the exchange rate regime from fixed to floating (Avagyan, 2009) which resulted in about a 20% depreciation of Armenian dram (AMD).

Armenia, being an in-transition nation, greatly depends on agriculture. The share of agriculture in the GDP for the years 2004-2008 averaged about 18.8% (Agrolratu, 2009). Approximately 46% of employment in Armenia and about 60% of income in rural areas in this period was due to the agricultural sector and the average annual growth in agriculture was about 7.4%. This helped the case of food self-sufficiency, which in 2008 reached 60% in the country. The local demand for plants, potatoes, main fruits, grapes and veal was 98% satisfied by local production, whereas the self-sufficiency level was still quite low for wheat (40%), other grains (50-55%), poultry (15-17%) and pork (50-55%). Improving Armenian agriculture could lead to poverty reduction, food security, a better quality of life especially in rural areas, stability, and strategic improvement of other sectors.

However, the rural community was hit hard by the crisis. Agricultural gross production decreased by 5.1% in the first quarter of 2009 (relative to the first quarter of 2008). In the same time period the economic loss in the processing industry was about 5.7%, where the production of cognac and canned food nearly halved. Moreover, the ratio of agricultural food imports to exports increased to 5.9/1 in the first four month of 2009 (the ratios for 2007 and 2008 were 2.6/1 and 3.6/1, respectively). In other words, exports of food products declined by about

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45% in the first four months of 2009 relative to 2008. The level of imports of food products did not decrease greatly (5.3%), but the fact that it decreased already indicates reduced purchasing power of population.

The crisis affected agriculture through the means of cultivation. For example, a 25 kg bag of fertiliser produced in Georgia cost 5500 AMD in 2008 and 7000 AMD in 2009. The cultivated land for crops decreased from 304,500 ha in 2008 to 298,000 ha in 2009. The situation is similar for the livestock sector. The overall number of livestock decreased by 7% or by 44,300 heads in 2009, among which cows decreased by 27,000, sheep and goats by 77,900 or 12%, and pigs by 1,900 or 2%. The main reason for this is the drop in feed production, particularly barley and wheat, an increase in feed price, and decreased demand by processors (Agrolratu, 2009). On top of these, the biggest problem facing agriculture was the fact that most agricultural inputs are imported, while a large portion of processed goods are exported. Hence, the dependence on the international market both for imports and exports was very high. Therefore, the global outlook for the sector is important given the high level of interdependence on external markets.

In mid-2009 the Food and Agriculture Organization of the United Nations (FAO) commissioned some urgent research in four representative countries² aimed at assessing the impacts of the global financial and economic crisis on the agro-food sector of Central and Eastern European and Central Asian countries. This paper reports the results of the research conducted in Armenia. Three agro-food supply chains were selected which enabled us to make cross-chain analysis. The field research is accompanied by data mainly sourced from National Statistical Services of RA (NSS, 2009).

Methodology

All four country case studies included the wheat sub-sector, owing to its importance in international trade. The choice of other sub-sectors was based on local importance, and milk was selected to represent the livestock sector in Armenia. However, grape production was also included as it is strategically important for Armenia and the country is known for its brandies and wines. A detailed rationale for the selection of each of the supply chains is as follows.

Wheat is the most important crop in Armenia. The annual aggregate wheat supply in the country (650,000-720,000 tonnes) is based not only on local production but also on imports. Armenia heavily depends on wheat imports, with the level of self-sufficiency being as low as 31-43%. It is also very vulnerable with prices of wheat

changing sporadically. In 2008, the Government of Armenia developed a programme for the country's wheat self-sufficiency policy despite three previously unsuccessful trials. This policy could be implemented by bringing in high value wheat seeds, providing relevant agricultural machinery to farmers, and subsidising the lands for wheat production. A challenging issue is inadequacy of the agricultural machinery. According to official data, 12%-17% of wheat yield is lost because of machinery defects. Thus, to achieve the sufficient amount of wheat for food, more croplands should be allocated for wheat production. The government of Armenia has provided subsidies to wheat farmers since 2008. In 2009 the amount of subsidies to wheat farmers was AMD 1,692,000,000, i.e. about 35,000 AMD/ha.

The milk processing industry had an annual capacity of 320,000 tonnes of dairy production, about 27,000 tonnes of cheese and 13,000 tonnes of ice cream prior to transition. All former 42 state-owned dairy factories were privatised during the 1990s and most presently work below their capacity or not at all. No single dairy processing company dominates the market for major dairy products, because of the wide range of products and large number of processors in the market. Since independence, the bulk of dairy production has originated from small private farms with 1-2 milking cows on average. Another important development is the emergence of milk marketing cooperatives; currently there are almost 30 milk marketing cooperatives throughout Armenia. Overall, dairy production including cheese has been increasing. Cheese exports increased sharply reaching to about 2,000 tonnes in 2005. However, with recent exchange rate fluctuations (especially with local currency appreciation) the cheese exports declined drastically. Butter and cheese imports were still relatively high, although the amount imported was not significantly high. A sharp decline in world dairy prices might increase the dairy imports in Armenia.

Grape is expected to become another national value in Armenia and compete with apricot. During the soviet period, Armenia had 35,000 hectares of vineyards. Following the land privatisation, farmers destroyed most of the vineyards and used the land for wheat production instead. In addition, wineries stopped production. In recent years, however, grape production has been revitalised in the country. Vineyards are increasing every year. They are produced not only by individual, small-scale farmers who own 95% of the vineyards in the country, but also by large farms. The total annual grape supply in Armenia (160,000-230,000 tonnes) is mainly produced locally and the level of grape self-sufficiency in Armenia is 98%-100%. Most of the grape goes to brandy production. The Armenian brandy is known all over the world and is the main alcoholic beverage exported from Armenia (90% of the total beverage export). Brandy exports have been continuously increasing since early 2007, thereafter gradually

² The other three countries were Hungary, Ukraine and Kyrgyzstan.

decreasing. The production of brandy in Armenia during the first quarter of 2009 decreased by 36.8% compared with a year earlier.

Because the time to complete this study was relatively short, and there were still very limited data available to assess the impacts of the crisis on the agro-food sector in Armenia, the research was mainly based on qualitative structured interviews conducted with stakeholders drawn from all stages of the three supply chains. The interview questions were formulated in consultation with the FAO Regional Office for Europe and Central Asia and addressed the following key questions:

- What is the current state of the agro-food sector compared to, say, 12 months ago?
- What are the principal factors causing changes to the state of the sector?

- What strategies have businesses adopted to cope with these changes?
- How is the present situation likely to change?
- Policy responses and recommendations.

Overall, 68 interviews were conducted (Figure 1). All of the interviewed processors, retailers, traders, and banks were the largest and most popular ones in Armenia. These companies also comprised a large portion of market share. Farmers, on the other hand, are so many in all the regions of Armenia, that the interviewed ones would certainly not be representative. However, based on the existing reports and the general perception, the results are expected to be true for the non-interviewed farmers as well. Therefore, some of the analysis should be interpreted bearing in mind the degree of possible bias.

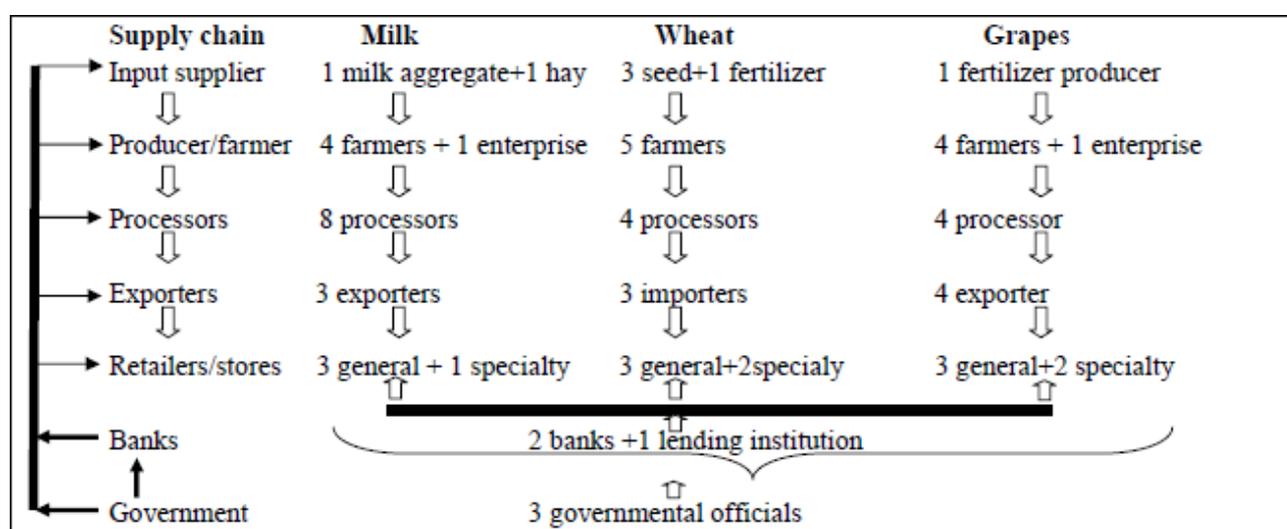


Figure 1. Numbers of interviewees categorised by type of supply chain and position within the chain

Results

The findings of the research were as follows.

Wheat supply chain

Input suppliers

These suppliers mainly produce wheat seeds and were subsidised by the government. The farmers produce 50-100 thousand tonnes of seed yearly but sell it cheaper to the customers as they receive subsidies (based on the produced tonnes) from the government. On average, the price per kilo of wheat seed was 240 AMD but they sold it at 160 AMD in the market. According to the seed producers, the demand for high quality seed decreased in 2009. Moreover, approximately 20% of the land was not cultivated in 2009 owing to the lack of funds necessary for cultivation and harvesting activities.

The production costs did not increase in 2009. Only the price of fertilizer increased from 6000 AMD in 2008 to 8000 AMD in 2009 (Table 1). Moreover, the product delivery was often delayed even when the payment was made beforehand. On the positive side, fuel was cheaper at the beginning of 2009: 400 AMD/litre in 2008 vs. 300 AMD/litre in 2009. Hence, the total costs of wheat production remained nearly the same. The sale on credit increased by wheat farmers and many buyers delayed the payments for several months and even years. Therefore, most of them relied on bank credit to continue their operations. In 2009 they had some difficulties in getting loans but some suggested that if you make payments to the banks on time, it was easier to get a new line of credit. Interest rates increased (sometimes even up to 28%) and the loan amount was provided in USD. The latter factor had a negative influence on them when the AMD depreciated in March by increasing the loan amount in AMD by about 20%.

Table 1. Agricultural input price indices in Armenia (previous year = 100)

	2005	2006	2007	2008	2009	2010
Seeds	88.0	109.0	140.8	85.5	93.5	120.5
Energy	123.2	105.1	99.3	127.4	87.0	117.5
Fertilisers	99.9	107.9	98.7	115.8	150.7	91.8
Plant protection	101.1	98.8	90.4	100.2	105.4	103
Veterinary expenses	98.7	116.6	102.3	105.6	129.3	97.1
Feeding stuffs	100.4	131.7	95.2	91.2	99.6	118.9
Total	106.7	108.9	98.7	108.8	104.7	114.1

Source: NSS of RA, www.armstat.am

Farmers

Wheat farmers were in a similar situation as the wheat seed producers. The difference is that wheat prices were lower than that of seeds. Also the quality of locally produced wheat was very low and not well cultivated. Moreover, the price of the locally produced wheat was quite low (80-100 AMD) but the production costs were high (approximately 100 AMD per kilo) and the farmers ended up having operational losses. Therefore, not many farmers were motivated to produce wheat; hence demand for wheat seeds was lower in 2009. Government provided land subsidies of 35,000 AMD for 1 hectare to wheat producers in 181 communities of seven Armenian regions (mainly the mountainous regions with high altitude) in 2008 and 2009, which greatly helped the farmers and encouraged them to continue wheat production (Agrolratu, 2009). Moreover, farmers and processors mostly used outdated and worn-out machinery that resulted in production loss reaching up to 17%. They believed that if the government continued giving subsidies and helped them in acquiring new machinery, the future would be very promising.

Traders

Most of the traders are the processors who export their products. Given the limited quantity of local wheat production, 80% of the wheat used in Armenia was imported from abroad, mainly from Russia, Ukraine and other former soviet republics. There were three main importers who then resold the wheat to other processors in the country. The price of imported wheat was high in Armenia even if it was much lower in the global market. This simply indicates the price setting power of the importers. The amount of wheat imported was increasing until the time of crisis. Besides wheat, a small quantity of flour was imported though it was less efficient than wheat imports. Wheat importers were hit hard by the AMD depreciation. However, given their price determining power, the increase was transferred to consumers. The importers also faced tough regulations and customs by Armenian government. The outlook was positive and the prognosis was that with the economic situation the demand would increase, thus the sales volume would spike up.

Processors

The four interviewed wheat processors (flour mills) supplied about 90% of the market. Moreover, two are the biggest wheat importers and dominant flour suppliers in Armenia. All processors rely strongly on imported wheat, firstly because local wheat does not have adequate quality to produce high quality flour which is demanded in the market, and secondly because the self-sufficiency level of wheat in Armenia is very low (30-40%). In other words, the Armenian wheat supplies are only sufficient for about two months. Moreover, imported wheat costs less than local wheat after considering the cleaned portion of the inputs. On average, the usage of local wheat in the production process is 10-20%. The demand for flour decreased as a result of the crisis by about 20-30%. Customers have become more conscious about the amount they consume. In addition, the production costs increased. Storage of wheat is costly and risky. All these factors caused not only the big processors to cut production, but also small processors to close their businesses.

All surveyed processors, except Baghramyan flour mill, used credit. No changes were observed in terms of credit accessibility but the credit terms changed in favour of the banks. The interest rates were higher and loans were mostly provided in USD. The change in exchange rate was the main obstacle. The input and credit costs were in USD whereas the revenue from flour sale was in AMD. This mismatch was quite risky especially considering the unstable nature of Armenian monetary policy. Consequently, all processors tried to limit the risks of the flour business unit by establishing other business units which in most cases are perfect examples of unrelated diversification.

Retailers

Wheat retailing has only been affected by crisis to some degree. Bread is a traditional and highly important product in Armenia and the consumption will not decrease much even if purchasing power of buyers decreases. Flour is also consumed largely by the public for various purposes. There was a noticeable shift in consumers' behaviour, preferring to buy flour instead of bread and making their own bread. This has a seasonal nature: during winter time the demand for flour increases with people preferring to

make their own bread and at the same time warm up the house. Overall, consumption decreased by about 20%. Competition among bread factories or pastries increased over the last three years. The interviewed store used no credit and managed its finances successfully. The outlook was again positive in this sector despite of the absence of government programmes and support system.

Grape supply chain

Input suppliers

The number of input suppliers interviewed was not sufficient to have a representative sample but a very general picture can be drawn based on the results. The interviewed input suppliers for the grape supply chain included a fertiliser supplier. Fertiliser is a key input in grape production. The conditions compared to three years earlier had improved for the fertiliser supplier: in 2009 the demand for fertiliser increased by about 30% despite the crisis. The interviewee suggested that the reason for the increase was the favourable weather. Also, farmers' confidence did not decline until they were unable to market the harvested products. The supply, on the other hand, did not increase and they could only sell a limited quantity of fertilisers. As a socially responsible organisation, the Federation of Agricultural Associations (FAA) did not raise the prices of fertilisers despite the global increase in the fertiliser price and the existing mismatch between supply and demand. In fact, they did not adjust the prices even in case of the AMD depreciation, which increased the import costs by about 20%. The products were imported from Russia before the depreciation, thus the change of exchange rate policy did not have a direct impact on their cost.

FAA sells fertiliser (and also several other types of raw materials) to farmers through a lending organisation which provides them money and they should provide the product to the farmer. Because of this payment structure, it is difficult to assess whether or not farmers had any difficulties in paying for the product on time. On the other hand, FAA has always made payments according to the contract with their supplier (an exporting agency in Russia).

Farmers

In 2009 the supply of grapes was much higher than in 2008 due to the favourable weather and over 220 thousand tonnes of grapes were harvested. The demand was very low: processors bought about 127 tonnes of grapes in 2009 which is about a tonne less than in 2008, but the yield was much higher due to the favourable weather. Prices were much lower than in 2008 (from 140 to 130 AMD) for those who were able to market it. However, strict rules were imposed on farmers in terms of quality and quantity. Producers did not accept even a kilo more than the amount stated in the contract or, if they did, they negotiated a very low price for the extra quantity. The

quality checking process became stricter and more conservative. Moreover, many processors deceived the farmers about the quality of grapes and deliberately claimed it to be lower to pay less for it. Despite these stricter (and unfair) rules, farmers were happy that they are able to sell their product at 130 AMD. There are many farmers who were not able to sell because of the limited demand. Some processors offered just 70-110 AMD per kilo which barely covered the production cost. Moreover, the processors often failed to make timely payments and farmers needed to obtain loans to continue farming. The availability of loans was limited by banks as a result of the crisis. Hence, most of the farmers used up their personal funds living at a subsistence level.

Processors

Prior to the crisis, the favourable economic conditions were reflected in increased demand which attracted many new grape processors. However, the situation was changed drastically by the crisis. Many small companies went out of business; some were left on the verge of bankruptcy, while the big players in the market were surviving with hope. The volume of cognac and other processed goods declined by about 30-50%. All the grape processors sell over 90% of the production outside of Armenia. Hence, the decline in sales volume was mainly a result of reduced foreign demand. Despite the crisis and reduced purchasing power of the buyers, many buyers shifted from cheaper to premium cognac/brandies. In fact, the demand for premium brandies even increased because of this structural change. The implication is that rich people were not affected and only people with middle and low income levels were hit by the crisis.

Interviewed processors used contracts with buyers but some failed to follow the contract obligations because of the low turnover and lack of short-term non-interest bearing loans. Some of those that sell at local supermarkets complained that retailers did not always pay on time. This phenomenon has not only been a result of the crisis, but bad retail management. Many processors stated that their costs increased due to high raw material prices, high inventory costs and expensive credit. AMD depreciation helped most of the grape processors as a large portion of their products were sold in overseas markets. However, the benefits did not exceed the losses they faced from loan costs. As a risk management tool, many tried to diversify products, retailers, farmers, export destinations, etc. Mixed answers were given regarding advertising: some reduced it completely to save money (MAP), some increased it to promote consumption (Vedi Alco, NOY) and some left it unchanged as they did not think it would make much difference (Yerevan Brandy). In general, most processors thought that if the situation in Russia improved, so would their business. That is because a significant portion of their profit was received from exports.

The long term outlook was good also because the small-scale competitors had vanished from the market.

Traders

Most of the traders are the processors who export their products. Armenian brandy has always been demanded by other countries, particularly Russia, and exports of brandies comprise nearly all the processor's sales volume (up to 97%). Hence, even small changes in the export destinations will greatly influence the processors. The blossoming export markets dried up starting from 2009 mainly due to the reduced foreign demand as a result of the crisis.

The grape processors/exports did not use much credit. Yerevan Brandy Company, for example, used credit but not from Armenian banks, but through Pernod Ricard and international banks and did not face any difficulties or changes the credit terms. Most of the others either used personal funds or a limited amount from the banks. They claimed that the terms of credit had not changed because they had been good customers and in good relations with the lending institutions. All these exporters/processors benefited from the change in exchange rate policy.

Retailers

Surveys were conducted not only in retail supermarkets but also in specialised brandy shops. All surveyed retailers recorded a decline in sales. Meanwhile both high and low priced imported brandies were not sold and some contracts were even terminated. For instance, Yeritsyan and Sons supermarket, which was the least affected retailer, sold imported high priced brandies only once a month. The consumption of local brandies also changed in favour of low priced ones. The demand for premium "Ararat" brandy was higher during the summer as tourists preferred to buy it. Moreover, as one of the store managers noted, the consumers bought more wine and vodka rather than brandy although Armenians prefer brandy.

Milk supply chain

Input suppliers

Neither of the interviewed milk input suppliers (the milking aggregate supplier and hay supplier) were affected by the crisis. In fact, the demand for milking aggregates and the price has increased not only relative to three years ago, but also during the crisis. The price of hay increased in 2009 as did the price of milking aggregates. Moreover, the selling price of milking aggregates increased abruptly by about 20% as a result of a currency exchange rate policy change from fixed to floating on 3 March 2009. The reason is that the milking aggregates are imported. The terms of loans which are largely used for financing the reserves have been unchanged under the crisis situation. This is explained by the fact that CARD

Foundation includes various units, including the credit organisation, which cooperate extensively. Their outlook is quite positive both in short and long terms (about 40% increase in sales volume in the short term). However, the enhancement of government support was reported to be an important key to improving agriculture.

Farmers

The crisis has had perhaps the most impact on the farmers: most of them were operating at a loss. Not only were farmers paid at lower rates for milk (lower milk prices), but also the payments were delayed by up to three months. Specifically, keeping cows for milking purposes was unprofitable. The supply of milk exceeded the demand, which resulted in lower milk prices. In 2009 the price of milk declined by about 20% (to 70-90 AMD) relative to 2008 and still there was a large surplus in the market. In addition, processors claimed that the milk grade was lower and deliberately paid lower prices to farmers. Moreover, processors reduced the purchase of milk due to the crisis and low world prices of milk powder. The latter is a substitute for milk and many processors were inclined towards making this structural shift. Farmers started finding ways to make profits from their cattle. Thus, a record number of cows were slaughtered in 2009 (about 20,000). Most of the remaining cows were held for production of calves rather than for milking purposes. This was more cost efficient and farmers obtained more profit from meat than from milk. Also, there was a noticeable shift in cows from regions that have a longer winter feeding period to the ones with shorter winters. If the trend continues and government support remained non-existent, there may soon only be a few milk producers. This poses a strategic threat to dairy sector in Armenia.

Processors

Over the years, more and more milk processors appeared in the market. Moreover, most of the farmers who have cows and milk sources tend to make cheese and other processed food themselves in a poor hygienic environment either for barter or sale for cash. The number of such farmers increased as a result of the crisis. Given the conditions and costs of making home-made cheese, the prices of these goods were much lower than those of large companies. Many consumers changed their buying behaviour as a result of the crisis. They preferred much cheaper and lower quality cheese or other milk products to more expensive and high quality ones. Consequently, the demand for home-made cheese was slightly higher. Overall, the demand for processed milk products decreased by 20%-30% in the local market which caused the local cheese and other processed goods production to decline.

Although milk prices declined in 2009 compared to 2008, some socially responsible processors purchased milk at higher prices than the competitors. Many milk processors stated that their cost increased due to high cost

of utilities, raw material (such as labels and bottles) prices and interest rates. In addition, the raw material prices increased in AMD as a result of the change in the exchange rate policy. The major investment most of the interviewed firms consider is the acquisition of a modern technology that is energy efficient and will cut utility costs. In addition, some of them cut advertising costs, while others started vigorous promotion activity to stimulate consumption. For example, Biokat advertised intensively, while Dustr Melanya reduced the funds allocated to product promotion.

Traders

Most of the traders are the processors who export their products. The growing economies in Russia and other neighbouring countries triggered the growth of the Armenian export industry. However, the foreign demand for Armenian dairy products has somewhat decreased over the years reaching its bottom during the crisis. Moreover, transportation of the dairy products to the export destination has been an obstacle since August 2008. The Russian economy has been highly influenced by the crisis. Given that it is the main destination of Armenian exports, the reduced demand by Russian customers put a downward pressure on the consumption of Armenian cheese. Moreover, the consumers' buying behaviour changed and cheaper dairy products were preferred over expensive/premium ones. Therefore, the demand for Armenian dairy products declined even more as the prices were higher (due to high costs) relative to other countries' products. In addition, the recent restriction of dairy products to be shipped to Russia through Georgia created additional problems for Armenian exporters. Now they either export through Iran or by air and the costs are quite high. Two of the interviewed dairy exporters said that they exported insignificant amount of cheese which spoiled on the way due to border issues.

The dairy exporters have not used much credit. More than 50% of the interviewed traders claimed they had difficulty in obtaining credit due to reduced collateral value and lack of guarantee that products will be sold in the market. The terms of credit definitely changed – interest rates were much higher, the screening was much stricter, and the collateral requirement was much higher. AMD depreciation also affected the exporters. The one that only exported benefited from the depreciation, while the processor/exporter was negatively impacted due to decrease in profits from selling as the contract was in RUR and the indirect impact of outstanding loans which were in USD (the loan amount increased by about 20% as a result of depreciation). All the above mentioned problems caused difficulties in making on-time payments.

Retailers

The growing Armenian economy from 2005-2008 intensified the competition in many sectors with an increase in the number of supermarkets/grocery stores/specialty stores almost everywhere in Armenia. Varieties, value-added services, aesthetics, reputation, location and prices have been updated continuously. The crisis did not pass this sector unnoticed. The decline of consumers' disposable income and loss of confidence shaped the new demand for products. Some products suffered more than others either due to price, necessity or variety. Moreover, most retailers suffered in a similar fashion except for the Yeritsyan and Sons supermarket. This is related to the customers' income level – those with high income levels consume nearly the same basket of goods, while consumers with middle and low income levels consume less with changed preferences. They now prefer cheaper products and the consideration of quality is not a top priority. Moreover, many buyers switched to smaller markets which tend to be cheaper due to the lack of additional services. In Armenia many consumers focus on the product and the price rather the brand name. Even so, the supply of products has not decreased; in fact, more producers and suppliers offer products now than before. To promote sales, producers offer their products at lower prices, discounts and bonuses.

The costs of the retailers increased as a result of increased cost of utilities. They were not able to cut the fixed costs as the entire store had to operate. Therefore, the management cut the number of employees, reduced the salary or increased the responsibilities. Yeritsyan and Sons supermarket even changed the light bulbs from high voltage to low ones to minimise electricity consumption. Some others have decreased the number of value-added services as a cost cutting strategy. Operational costs increases as a result of the crisis potentially forced some of the small retailers out of the market. One of the supermarket managers stated that some retailers which are competing for the same target market were likely to merge in the near future. He stated that there would be only one big retailer which would serve middle class consumers and one which would operate for upper class consumers.

All interviewed retailers, except for Yeritsyan and Sons supermarket, used credit heavily. However, access to the credit was not the same as in the pre-crisis period. Although these retailers are very well-known in Armenia and have good credit histories, they still had difficulties to get loans from banks or credit organisations. Moreover, the interest rate offered by the banks increased by 2-3% compared to 2008 which made credit more expensive. This may be the reason for difficulties in making timely payments to their suppliers. Retailers changed the payment conditions extending the payment cycle to the suppliers. The explanation for this change was the reduced consumption and lower turnover, which potentially increased the need for more credit.

For specific information about dairy products retailing we interviewed dairy specialty stores. The consumption of dairy products changed but not significantly as they are necessity products. The sales of sour cream and matsoun (traditional Armenian yogurt) were nearly unchanged. Sales of ice cream and premium cheeses such as Swiss and Dutch cheeses suffered most. Customers changed not only their preferences of consumed cheese, but also the store they purchased from. Many consumers shopped at cheap and low-class stores rather than supermarkets. Therefore, both the processors and retailers decreased the selling price of dairy products to stimulate consumption. This was related not only to crisis, but also to new entrants to the market (tougher competition).

Banks/lending institutions

The banking industry in Armenia was on a continuous rise until the crisis hit the economy. The positive trend enabled the growth of many businesses. However, the picture changed significantly in the post-crisis period. Most banks stopped providing consumer credits and the conditions of credit became stricter. The perceived risk was much higher, therefore the interest rates charged increased, the terms of credit were shortened (preference was given to the short-term loans), the screening and monitoring conditions became stricter, the loan/collateral ratio decreased, etc. All of these measures were taken to reduce the risk of potential delinquency by the firms/farmers. Most businesses encountered difficulties in making their loan payments on time, and consequently ended up paying fines. Banks also increased the rate of deposits as a way of competing with other banks for possible sources of money. The number of depositors decreased, while the demand for loans increased as a result of much stricter rules and regulations (fewer provided loans) and reduced credit in the banking sector. ACBA-Credit Agricole was an exception in this sector, as they did not reduce the amount of credit available and did not change the interest rates charged. The only change as a result of the crisis was the stricter screening and monitoring rules. Most banks were able to provide more loans to agribusinesses because the government provided funds specifically for the agricultural sector at a lower interest rate.

The government sector

The Armenian government had several programmes which were targeted at lowering the negative impact of the crisis on the agri-food sector. The objective was to intensify the support to agricultural producers. As such, the financing from the state budget is to be taken into serious consideration to implement useful programmes that aim at alleviating the impact on agriculture of the crisis. However, the current level of financing from the state budget is nearly three times lower than the projected level (3.5 bln AMD

currently vs. 9.4 bln AMD – Agrolratu, 2009). The ongoing programmes in the sector of agriculture include:

- Seed development;
- Plant protection;
- Agricultural animal grafting;
- State support to the agricultural land users;
- Provision of the agricultural animals at different payment terms;
 - Credit programme to agricultural enterprises and small-scale agricultural traders;
 - Credit programme for economic development of rural areas;
 - Requirement for dairy producers to include the proportion of milk powder and natural milk in the labels.

The successful completion of these programmes required sufficient amounts of state funding and support was essential. The interviewees indicated that besides the state financing, they received money from GFK and the World Bank. However, the total funding was still quite low. In fact, the projected 2010 budget about less than AMD 4 billion which was a record low figure. The Ministry of Agriculture expressed intentions of helping the sector overcome the crisis, but was unable to do much because of the level of financing that it received from the state budget. The actual spending was nearly three times lower than projected. So far, the government policies had only helped the wheat sector via land subsidies for wheat farmers. The other chains were left untouched were not directly supported by the government. The government favoured the residential construction sector which does not provide value-added services.

Discussion

The results of this work are consistent with the findings of Csaki and Buchenrieder (2011), who identified five interconnected issues related to the impact of the financial crisis on the agri-food sector in Europe and Central Asia, namely: (1) a reduction in income elastic food demand and commodity price decline, (2) loss of employment and earnings of rural people working in urban centres, implying also costly labour reallocation, (3) rising rural poverty originating mainly from lack of opportunities in the non-farm sector and a sizable decline of international remittances, (4) tightening of agricultural credit markets, and (5) the collapse of sectoral government support programmes and social safety-net measures in many countries.

The crisis conditions were projected to continue for the rest of 2009 and the entire year of 2010 (World Bank, 2009). Thus, general statements by many government officials including the prime minister, Tigran Sargsyan (Government of the Republic of Armenia, 2009) affirming the importance of the agri-food sector are alone not

enough. During the crisis, Swinnen and van Herck (2010) identified three main groups of policy responses by governments in the region: (1) increased intervention in trade, (2) increased intervention in the supply chain (price control) and (3) increased support for the agricultural sector. Based on our interviews in three different supply chains, banks and government officials, the following specific policy responses for mitigating the effects of the present and any future crises are recommended:

- Greater availability and accessibility to loans at lower interest rates which government can ensure through banks (i.e. provide loans under several concessional terms and purchase equity);
- Technological support to farmers and processors who use mostly outdated and worn-out machinery that results in production loss (for example, for wheat farmers the percentage of loss due to worn-out machinery was about 13-17%);
- Subsidies to wheat farmers of all regions of Armenia in 2010;
- Simplified and supportive tax laws which could motivate more entrepreneurs to do business in Armenia. Also, a more relaxed tax environment will stimulate businesses;
- Support to farmers in creating farm associations, cooperatives and agricultural enterprises;
- A solid insurance system against natural disasters, such as hail, rains, etc;
- Various forms of government intervention, such as subsidies, loan rates, price ceiling and floor, tariffs;
- Establishing trade associations or export groups which will ease the process of exports;
- Provision of transportation support to exporters (i.e. either fund the transportation fully for the first export, and then partially, or other ways that would cut the potential costs and risks of exporters);
- Deferral of the VAT payment period for machinery importers (i.e. pay VAT not right at the border, but rather after the production and/or sale of the imported product);
- Support local producers vs. importers (i.e. increase the importing costs with the purpose of discouraging imports and promoting local produce);
- Support animal breeders in decreasing the diseases (i.e. help the farmers to decrease the food and mouth disease of cows).

These ideas are compatible with the policy recommendations made by Swinnen and van Herck (2010), namely to (1) enhance investment, (2) stabilise the financial sector, (3) continue the economic and institutional reform process, (4) enhance rural infrastructure, education and R&D, (5) facilitate the introduction of farmers into modern supply chains, and (6) avoid short-term policies that conflict with long-term goals.

The validity of our research methodology (seeking the views and perceptions of stakeholders) is shown by

the work of von Davier et al. (2010) which supported the idea that there is no objective market environment for agribusiness firms. Instead, market developments are, at least to a certain degree, constituted by the perceptions of supply chain actors. They therefore suggested that interested parties could try to actively manage the expectations of supply chain actors. By, for instance, publishing information that influences addressees' perceptions, it is possible to influence how farm and firm managers react and what strategies they choose.

Conclusions

The impact of the crisis on the agro-food sector in Armenia was reflected in the reduction of both supply and demand. From the supply side, farmers used less land because input prices were higher and the available funds (remittances) for many farmers were lower, the resulting production was lower. The limited access to and the costs of loans limited the possible actions of the farmers and agricultural processors. This threatened the sustainable rate of employment in the sector over time. From the demand side, reduced remittances for local consumers, their confidence level, and also the reduced purchasing power of foreign consumers all resulted in reduction of demand. In other words, both imports and exports decreased.

The milk and grape supply chains were strongly influenced by the crisis. The main problems occurred at both ends: farmers/growers and processors/retailers. Farmers were generally affected by the higher prices of inputs and reduced demand for their products, while the processors were affected by the lower demand in local and international markets. Almost no significant policy was devised by the government to alleviate the adverse affect of the crisis. The outlook of the sectors was unclear and in the case of grapes largely depended on the global economic situation.

The wheat supply chain was not influenced much by the financial and economic crisis. The reason was that the self-sufficiency level of wheat in Armenia was quite low and international prices declined over the past year. Also, flour and bread are strategic products and necessities. The demand for these products is inelastic and does not decrease very much in case of price changes. Moreover, wheat was imported and the processed products were barely enough for the local demand. Thus, wheat products were not exported, except for vodka. Hence, importers are analysed as traders. This is the chain that includes oligarchs and those who set prices in the market.

The banks and lending institutions raised the interest rates, tightened the screening process and reduced the available credit. These risk management tools significantly alleviated the impact of crisis on banks' operations by passing it through the customers.

The Armenian government devised anti-crisis policies and programmes to mitigate the unfavourable effect on the economy. This was a package of coordinated activities which covered almost all sectors of economy. However, the Ministry of Agriculture was unable to do much because of the financing that it received from the state budget. The actual spending was nearly three times lower than projected. However, it is known that the key to revitalising the agricultural sector which is essential for developing countries and in-transition countries is financial and other types of support to the players in the sector.

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