

# **The Role of Milk Marketing Cooperatives in the Recovery of the Armenian Dairy Sector**

**Vardan Urutyan, PhD**

Director of the International Center for Agribusiness Research and Education Foundation  
Head of the Agribusiness Department, Armenian State Agrarian University  
Address: # 74 Teryan Str. Yerevan 0009, Armenia,  
Tel: (37410) 52-28-39, Ext. 21.  
Fax: (37410) 56-62-21.  
E-mail: [vardan@icare.am](mailto:vardan@icare.am)



**Paper prepared for presentation at the FAO WORKSHOP entitled  
Agribusiness and Agro-industries Development in Central and Eastern Europe**

**IAMA 19<sup>th</sup> Annual World Forum & Symposium  
Global Challenges - Local Solutions**

Budapest, Hungary  
June 20-21, 2009

**COPYRIGHT © 2009 BY AUTHOR. ALL RIGHTS RESERVED. READERS MAY TAKE VERBATIM COPIES  
OF THIS DOCUMENT FOR NON-COMMERCIAL PURPOSES BY ANY MEANS, PROVIDED THAT THIS  
COPYRIGHT NOTICE APPEARS ON ALL SUCH COPIES.**

## **Abstract**

The role of milk marketing cooperatives in the Armenian dairy sector continues to increase. These cooperatives have been mainly supported by the USDA Marketing Assistance Program in Armenia (active in Armenia during 1992-2005) and later by the Center for Agribusiness and Rural Development (CARD).

Among the self-enforcing relationships in the Armenian dairy sector, the most common one is the farmer - dairy processor relationship. Many authors studied different aspects of the farmer-processor relationships. There is no a documented study about farmers – milk marketing cooperative relationships which are practically new for Armenia.

This paper aims at studying and revealing the role of the milk marketing cooperatives in the recovery and growth of the overall dairy chain in Armenia. The study reviews and analyzes the outcomes of the Cooperative Development Program implemented by the USDA Marketing Assistance Program and continued by the Center for Agribusiness and Rural Development. The paper also identifies and discusses the forms of vertical integration occurring in the dairy sector of Armenia and concentrates on several important issues like: contractual mechanism between farmers and cooperatives and farmers and processors, problems and challenges milk producers face, farm investments and innovation issues.

The paper also aims at studying the relationships between member farmers and milk marketing cooperatives. In particular, the study looks at the contractual relationships, hold-up problems, production and prices, trust and social capital among the cooperative members, contract enforcement mechanisms used by the cooperatives. The study also reveals the determinants of farmer satisfaction with their current relationships.

The research was based on surveys and interviews. Official publications, internal documents, interim and final reports, coops' financial statements and other materials were also used in the study. Based on findings, certain recommendations have been proposed.

**Keywords:** milk marketing cooperative, social capital, trust, hold-up, contract enforcement.

## **1. Introduction**

In Armenia the market-oriented reforms introduced in 1991-92 comprised the privatization of many productive resources and organizations. Armenia was one of the first former Soviet republics to privatize agriculture effectively and swiftly during 1991-92: after independence, followed the legislation necessary for the privatization of land; around 70% of arable land and agricultural output came into hands of individual peasant farms. The egalitarian land privatization led to very small size of family farms (1.4 ha on average). The small farm size is not conducive to the application and use of new innovative technology which itself hinders the development of the sector.

Like in many transitional countries of Europe and Central Asia (ECA), a major problem in Armenia during the transition period was the breakdown of the relationships of farms with input suppliers and output markets. The result is that many farms and rural households face serious limitations in accessing essential inputs (feed, fertilizer, seeds, chemicals, etc.) and selling their output (Swinnen, 2005). Widespread forms of contracting problems like long payment delays or non-payments for delivered products (Swinnen, 2005) were apparent in Armenia during the transition. Restructuring and privatization in Armenia has led to the separation of many previously horizontally and vertically integrated enterprises together with the emergence of new type of businesses (White and Gorton, 2004). This itself led to a situation of widespread financial distress, high discount rates, and lack of contractual enforcement (Gow & Swinnen, 2001). In general, the model of agricultural transition in Armenia is similar to that of other transition countries in the region (Cocks, 2003). To a large

extent, private solutions that successfully overcame the transition problems in ECA have not occurred in Armenia.

Prior to transition, the milk processing industry had an annual capacity of 320,000 tons of dairy production, about 27,000 tons of cheese and 13,000 tons of ice cream (MoA and FAO, 2002). All former 42 state-owned dairy factories have been privatized. Currently, most of these factories work at a low level of their capacity and some of them do not operate at all. Production focuses on cheese, milk and other dairy products. Many small plants emerged also (about 500), which produce mainly salted cheese under inadequate hygiene conditions and without necessary facilities, resulting in big share of home-made products especially in markets out of the capital city.

No single dairy processing company dominates the market for major dairy products, because of wide range of products and large number of processors in the market. There are no foreign direct investments and joint ventures in the dairy sector. Since independence, most of these farms have been dismantled and currently the bulk of dairy production originates from small private farms with 1-2 milking cows.

Table 1 shows key dairy indicators for the period of the last 8 years. Positive changes can be observed looking at the numbers. In particular, the milk production and milk processing increased significantly. And it can be observed that milk yield has been increased as in 2008 the number of cows was reduced but the milk production continued to rise.

**Table 1: Key selected dairy indicators in Armenia, 1996-2008**

|                                      | 2000 | 2002 | 2004 | 2006 | 2008 |
|--------------------------------------|------|------|------|------|------|
| <b>Number of dairy farms</b> (1.000) | 197  | 193  | 202  | 203  | 199  |
| <b>Milk</b> (1.000 tons)             | 449  | 489  | 555  | 620  | 662  |
| <b>Number of milk cows</b> (1.000)   | 262  | 280  | 290  | 307  | 283  |
| <b>Milk delivered to dairy</b>       | 269  | 294  | 388  | 434  | 456  |
| <b>Household use</b>                 | 180  | 195  | 167  | 186  | 189  |

Source: NSS of RA 1999, 2003, and 2008

The indicators of household use of milk in the table include both the consumption of milk by families and the home made production of dairy products. The table above provides evidence that the portion of milk sold to processors, milk consumer cooperatives or other middlemen has drastically increased from 59% in 2000 to 71% in 2008, which means that farmers gradually integrate into market relations and switch from subsistence farms to commercial ones.

Melkonyan et al. (2008) in framework of the research related to dairy cooperatives development constrains presented an interesting image when comparing the tables of annual milk production, sales and self-consumption. The more farmers produce the more sell and eventually less consume per 1 cow. Thus, a low consumption of milk per 1 cow may serve as a good indicator for evaluation of dairy farming practices. The explanation behind this statement is that the more farmer produces the more earns. The later means that farmer's daily food consumption bundle doesn't heavily depend on dairy products. Moreover, when they specialize in dairy farming they prefer to sell their milk and buy already ready dairy products rather than spend their time and other resources on self-processing of their milk into cheese or something else.

An efficient linkage of dairy producers to processors, wholesale and retail markets is a base for establishment of sustainable production and marketing chain of milk. However an unconsolidated way of realization of milk by big number of small dairy producers created additional threats related to excess transportation costs, insufficient sanitary conditions while transporting milk and lack of bargaining power at the point of sales. The current conditions for raw milk production are far from being adequate because of the low quality of the milk with important variations in-farm and among farms. In addition, the low level of organization of the smallholders and the high fragmentation of production imply that processors have to deal with lots of producers who deliver small quantities of different qualities of milk. In order to mitigate these shortcomings it is extremely important to improve the conditions of milk production and marketing as well as to consolidate milk producers into milk marketing cooperatives.

Groups of individuals around the world and throughout time have worked together in pursuit of common goals. Examples of cooperation, or common action, can be traced back to the prehistoric predecessors, who recognized the advantages of work in cooperation in contrast to that on their own (Zeuli 2004). It is obvious that by uniting in the agricultural cooperatives or producer owned groups dairy farmers can solve the majority of the above mentioned problems and will gain relatively higher bargaining power. We aim at studying and analyzing the role and importance of the milk marketing cooperatives operating in Armenia since 2001 to the member farmers and for the overall dairy chain of Armenia. The objective of this study is also to identify and discuss the forms of vertical integration occurring in the dairy sector of Armenia.

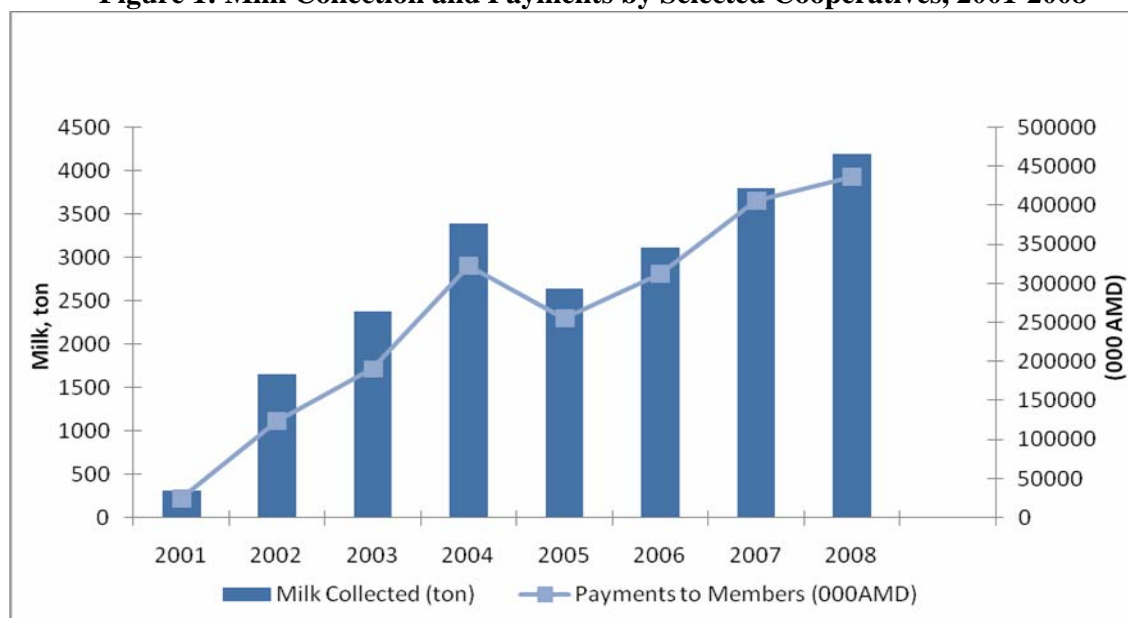
## **2. CARD - Cooperative Development Program**

The role of Center for Agribusiness and Rural Development (CARD) Foundation, as a third – party facilitator in the development of the dairy marketing channels in Armenia has been and remains significant. Through a package of marketing, technical and financial assistance, CARD aims at increasing rural incomes, creating jobs and raising the standard of living of rural communities. In particular, CARD contributed to the development of the dairy marketing channels in Armenia by establishing milk marketing cooperatives and milk collection centers in many villages across the country. These cooperatives are not-for-profit organizations with the objective of marketing the milk produced by their members.

The cooperatives closely work with CARD clients – dairy processors by supplying improved quality milk and are able to work with other processors as well. Following the activities and examples of CARD, many international and national organizations and large dairy processors assisted farmer groups to establish cooperatives aimed at improving management practices in the dairy farms in order to improve the quality and quantity of milk supplied. Currently there are almost 30 milk marketing cooperatives throughout Armenia.

The Figure 1 below shows the milk collection and payments to member farmers by CARD-supported marketing cooperatives. Cooperatives pay their entire income to farmers, after taking out operating expenses. Operating expenses are paid through a price margin, i.e. the difference between the price of milk and the price received by farmers.

**Figure 1: Milk Collection and Payments by Selected Cooperatives, 2001-2008**



Source: Financial Statement of Cooperatives (2001-2008) and CARD Cooperative Development Program Reports.

It can be certainly stated that the impact of the cooperative movement in increasing the cash incomes of member farmers remains significant. “Ashtarak-Kat” CJSC, the biggest dairy processor, alongside with its 11 milk collection centers, is working with 5 milk marketing cooperatives. The company is collecting milk from a total of 5,000 farmers and pays them regularly on every 15th day. Not all processors are able to provide prompt payments to milk producers.

However, on the other hand Melkonyan et al. (2008) presented the evidence that the farmers hardly realize their affiliation to the cooperative, as well as the idea behind main principles of cooperation: user-control, user-benefit, and user-owner. The studies of previous years showed that farmers in most of the cases confuse the cooperative with former Soviet type collective farms, which still remains a major constraint in establishment and efficient operations of cooperative organizations. In their latest study only 35.4% of 294 farmers either agreed with the statement that they exercise their “one-member, one-vote” right, 39.5% percent of all respondents either agreed with their status of user-beneficiary, 24.8% of all respondents agreed that they are user-owners, and only 28.2% of all respondents agreed with their status of user-controllers.

Simultaneously Grigoryan et al. (2007) supported the idea that the lack of the Social Component still remains an obstacle and reason of mistrust of farmers towards cooperative organizations, stating that in spite of increased confidence, many farmers still perceive the cooperative as a separate institution they deal with.

Nevertheless, Hovhannisyan et al. (2004) showed that 88% of member farmers used cooperatives to market their milk, while 7% also sold it in the retail market. What is interesting is that the vast majority of surveyed member farmers expressed intention to stay with cooperatives. Thirty percent of respondents would be willing to hand their milk to also those offering higher price, while the remaining 70% value loyalty, trust and stability most. In general, this situation continues to be the same almost in all cooperatives.

### **3. Vertical Integration in the Armenian Dairy Industry**

Vertical integration in the sector occurs either through full ownership or through formal or informal contracts. In Armenia, farmers or cooperatives do not own a processing company, and usually their relation is based on informal contracts. Gow and Swinnen many times discussed the importance of self-enforcing - by designing contracts such that private losses from contract breach outweigh potential benefits, (Gow & Swinnen, 2001) in developing and transition economies.

Self-enforcing relationships in the Armenian dairy sector, Hakobyan (2004) documents as follows: farmer – processor, farmer – cooperative, and cooperative – processors relationships. The most common is the farmer – processor relationship. Hakobyan (2004) alludes to the uniqueness of this type of integration that processors have milk collection and cooling capacities and are able to pay fast cash to farmers. Very often processors offer some contract support measures to farmers, in order to guarantee the stable milk supply and higher quality of milk. The contract innovation measures (Gow & Swinnen, 2001) frequently take the form of prompt payments, covering the transportation costs, and veterinary services. According to

White and Gorton (2004), contracting is relatively developed in the Armenian dairy sector. They conclude that in Armenia the relatively high level of contracting cannot be linked directly to FDI as all of the dairies in the country are owned by domestic investors but it can be linked to the growing export volumes of dairy products (White & Gorton, 2004).

Although the statistics shows that since 2005 the volume of cheese export decreased about 5 times due to appreciation of Armenian Dram compared to the US Dollar. That situation was not conducive for processors to boost cheese export and the majority of the processors concentrated on local markets. In 2009 this situation will be improved as the Central Bank of Armenia, since March, stepped out of the interventions carried out in the exchange rate fixing and a floating exchange rate policy has been restored again.

Farmer- farmer-coop relationships are practically new for Armenia. Likewise processors, cooperatives also possess cooling tanks and storage facilities, which enable them to continuously procure milk from farmers. The reason for self-enforcement in this case is that if one farmer supplies low quality milk, the entire cooperative will suffer – as the milk will not be accepted by the processor, or the cooperative might receive a penalty for low quality (Hakobyan, 2004). Therefore coop members constantly improve the quality of milk, and meet the requirements set by the processors.

The relationships between member farmers and milk marketing cooperatives are analyzed in this paper. In particular, the study also looked at the contractual relationships, hold-up problems, production and prices, trust and social capital among the cooperative members, contract enforcement mechanisms used by the cooperatives and farm investments. The study also revealed the determinants of farmer satisfaction with their current relationships.

### **4. Data and Research Methodology**

The research was based on survey data. The survey was conducted in Armenia in the scope of the “Supporting the International Development of CIS Agriculture” (SIDCISA) project, funded by EU INTAS. The SIDCISA project aimed at understanding the supply chain relationships of commercial milk producers in Armenia, Moldova and Ukraine. A total of 300 dairy farmers were drawn randomly from all regions of Armenia which have significant commercial milk production, based on proportions given from statistical data on milk production. The sample turned out containing 238 individual farmers (non-members) selling their milk to dairy processors and 62 cooperative member farmers selling their milk to cooperatives.

Several papers have been released in the scope of the findings of the SIDCISA project (Gorton et al. 2007, Dries et al. 2006). However this study mainly concentrates on data collected from Armenia with main emphasis on the relationships of the *member farmers and cooperatives* as their main buyers as well as provides interesting comparisons with the relationships *individual farmers have with their main buyers (dairy processors)*.

Data on farm growth, prices, yields, investment, the nature and satisfaction with relationships with their main buyer and non-price aspects of contracts were also collected and categorized per sub sample groups.

First a multivariate regression analysis, using the ordinary least square method, has been developed to test whether the members of cooperatives have better bargaining power, are paid higher for their milk by the cooperatives and have higher welfare. Milk price is the dependent variable and the independent variables are “time with main buyers in months”, firm’s organizational form (A dairy processor is the reference category), ten regions of Armenia (Tavush region is the reference category), and finally a dummy variables indicating whether the payment for milk was received after or before the delivery. Since survey questionnaire contained detailed information on milk price, such as average milk price, minimum milk price and maximum milk price, a separate regression was developed for each price category. This allowed testing the consistency not only in average price differences, but also in minimum and maximum price differences.

Then an ordered logit regression model was developed to test the following hypothesis:

- The members of a cooperative are more likely to be more satisfied from the relationship with main buyer (Cooperative),
- The members of a cooperative are more likely to have the buyer (Cooperative) visit premises to help improve performance,
- The members of a cooperative are more likely to have the buyer (Cooperative) provide training or education,
- The members of a cooperative are more likely to have main buyer contribute to increasing of the output,
- The members of a cooperative are more likely to have the actions of my main buyer help improve the quality of the produce,
- The members of a cooperative are more likely to have trustworthy main buyer (Cooperative),
- Being able to sell to a cooperative, members have improved the living standard of their household,
- Being able to sell to a cooperative, members have improved the profitability of their farm operations.

For each of these hypotheses a separate regression was run using ordered logit model. Firm’s organizational type (A dairy processor, Dairy logistics / collecting firm, Co-operative and other), taking milk to collecting station, being paid after delivery and the price of the milk are the control (independent) variables in the regressions. All dependent variables have 5 ordered outcomes, that are strongly disagree, disagree, neither agree or disagree, agree and strongly agree.

## 5. Results

It was expected that the members of cooperative must have a have better bargaining power, which is reflected in overall higher prices for collected milk. Higher prices, on the other hand, mean higher profits and as a result higher welfare. The unadjusted summary statistics in Table 2 indicates that on average members of cooperative have received 5.91 drams more

than “A dairy processor” last month (survey was conducted in spring of 2006), 4.69 dram more in year 2004 and 4.59 drams more in 2005. However this difference may be the result of regional price diversity. To test the assumption of higher welfare for a member of a cooperative we run a multivariate regression analysis using the ordinal least square method. The results of the OLS analysis are summarized in Table 3. The members of cooperative on average have received 9.66 drams more than a dairy processor in last month (when the survey was taken), 2.59 drams more in year 2005 summer season and 8.24 drams more in winter 2004-2005. All the results are statistically significant. Interestingly, the price difference for collected milk was consistently higher for a member of cooperative for minimum and maximum prices as well.

Time with the main buyers was negative indicating price discounts the long time reliable buyer gets. Milk prices were different across regions as well. Farmers from Aragatsotn (ARGT), Ararat (ARRT) and Kotayk (KTYK) regions were paid the highest rate for their milk. Surprisingly, farmers were paid less after the delivery. Summary of the multivariate regression analysis proves that the members of cooperative have better bargaining power, get paid higher for the milk they produce and as a result have higher welfare.

**Table 2: Unadjusted Summary Statistics.**

|                                 | Last Month | Summer 2005, Min. | Summer 2005, Mean | Summer 2005, Max. | Winter 04/05 Min. | Winter 04/05 Mean | Winter 04/05 Max. |
|---------------------------------|------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| A dairy processor               | 98.4       | 85.5              | 89.6              | 94.1              | 97.1              | 101.1             | 106.1             |
| Dairy logistics/collecting firm | N/A        | 80.7              | 90.3              | 100.0             | N/A               | N/A               | N/A               |
| Co-operative                    | 104.3      | 89.7              | 94.3              | 99.4              | 101.6             | 105.7             | 109.1             |
| Other                           | 100.0      | 73.3              | 76.7              | 80.0              | 90.0              | 95.0              | 100.0             |
|                                 |            |                   |                   |                   |                   |                   |                   |
| Total                           | 99.7       | 86.1              | 90.5              | 95.2              | 98.0              | 102.0             | 106.7             |
|                                 | 5.91       | 4.17              | 4.69              | 5.30              | 4.53              | 4.59              | 3.04              |

Source: Survey Data.

**Table 3: Results of the OLS analyses.**

|                                 | Last Month | Summer 2005, Min. | Summer 2005, Mean | Summer 2005, Max. | Winter 04/05 Min. | Winter 04/05 Mean | Winter 04/05 Max. |
|---------------------------------|------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| Time with mail buyer (months)   | -0.01      | -0.03             | -0.06***          | -0.09***          | -0.03*            | -0.01             | 0.01              |
| Collecting firm                 | N/A        | 2.07              | 8.76***           | 15.28***          | N/A               | N/A               | N/A               |
| Cooperative                     | 9.66***    | 3.43**            | 2.59*             | 4.22**            | 7.6***            | 8.24***           | 8.22***           |
| Other                           | 3.09       | -10.06**          | -11.35***         | -14.33***         | -3.38             | 0.99              | 1.62              |
| ARGT                            | 10.67***   | -5.12             | -2.51             | 2.74              | 10***             | 13.07***          | 15.56***          |
| ARRT                            | 14.11***   | 1.26              | 2.23              | 6.72*             | 20.5***           | 21.21***          | 21.86***          |
| GQNK                            | 9.85***    | -7.53***          | -0.05             | 7.8**             | 7.37**            | 11.92***          | 16.13***          |
| KTYK                            | 14.61***   | 9.45***           | 7.88***           | 9.21**            | 16.08***          | 14.09***          | 13.54***          |
| LORI                            | 2.85       | -4.92*            | -2.92             | -0.19             | 4.41              | 2.3               | 1.11              |
| SHRK                            | 6.38**     | -8.96***          | -7.46***          | -1.6              | 3.04              | 0.7               | 2.42              |
| SNK                             | 3.91       | -13.68***         | -13.9***          | -11.13***         | 1.76              | 0.17              | -0.94             |
| Payment received after delivery | 1.42       | -3.54**           | -2.07             | -2.83             | -2.13             | -4.87***          | -7.64***          |
| Constant                        | 89.32***   | 96.66***          | 99.08***          | 101.19***         | 93.31***          | 98.42***          | 103.32***         |

\*Significant at 10%, \*\*Significant at 5%, \*\*\*Significant at 1%

# A dairy processor is the reference group, ## Tavush region is the reference group

The odds of overall satisfaction from the relationship with the main buyer is 3.29 times higher for the member of cooperative compared to a dairy processor. The member of cooperative is less likely to get education or training from the main buyer. This was a surprising result, as the milk marketing cooperatives regularly provide many trainings on animal husbandry, veterinary, sustainable dairy practices, etc. Unadjusted statistics showed that cooperatives were more involved in the activities of their members' businesses like: often or always visiting the premises to improve the performance, conducting trainings and seminars (61% of the coop member respondents agreed to that statement vs. 15% non-member respondents).

The actions of main buyer significantly increase the output and improve the milk quality for the member of cooperative; the odds are 2.6 and 2.25 respectively. The likelihood of having more trustworthy buyer is 3.1 times higher for the member of cooperative (See Table 4). The results of the ordered regression analysis also confirm that the welfare and standards of living is much higher for the member of cooperative. The odds of improved living standards and improved profitability are respectively 4.96 and 4.74 time higher for the member of cooperative.

**Table 4: Summarized results of regression analyses for each hypothesis.**

|                            | Overall how satisfied are you with the relationship with your main buyer | The buyer visits your premises to help improving performance | The buyer provides training / education for you / your farm | The actions of my main buyer contribute to increasing my output | The actions of my main buyer have helped improve the quality of my produce | Our main buyer is trustworthy | Being able to sell to a cooperative, members have improved the living standard of their household | Being able to sell to a cooperative, members have improved the profitability of their farm operations |
|----------------------------|--|--|---|---|--|-------------------------------|---|---|
| Collecting Firm            | 1.00   | .08**  | N/A   | 6.34*   | 3.77   | 0.97                          | 3.63  | 3.34  |
| <b>Cooperative</b>         | <b>3.29***</b>   | <b>0.66</b>  | <b>.14***</b>   | <b>2.6***</b>   | <b>2.25***</b>   | <b>3.1***</b>                 | <b>4.96***</b>  | <b>4.74***</b>  |
| Other                      | 3.25   | 1.74   | N/A   | 0.02***   | 0.05**   | 0.17                          | 0.63  | 0.17  |
| Take Milk to Coll. Station | 1.07   | 1.30   | 0.81  | 1.45  | 1.75**   | 2.58***                       | 2.74***   | 2.52***   |
| Paid after delivery        | .33***   | 1.19   | 1.44  | .44**   | 0.62   | 0.52*                         | 0.82  | .34***  |
| Milk Price                 | 1.01*  | .96***   | .97***  | 1.03***   | 1.02***  | 1.02***                       | 1.03***   | 1.02***   |
| N                          | 300  | 300  | 300   | 300   | 300  | 300                           | 300   | 300   |
| R2                         | 0.0557   | 0.0305   | 0.1227  | 0.0745  | 0.0504   | 0.1129                        | 0.1172  | 0.1038  |

\*Significant at 10%, \*\*Significant at 5%, \*\*\*Significant at 1%

# A dairy processor is the reference group

It was interesting to see that milk price was not a decisive factor for overall satisfaction and improvement of the living standards of the farmers, even though it was significant but with very small magnitude (odds ratio 1.01). There are other "hidden" benefits that coop members have access to which eventually explain why the odds ratios are high for the cooperatives (4.96, 4.74). Similar benefits are the additional support services provided by the cooperatives to the members. Milk marketing cooperatives were able to provide more contract support measures (additional services) than processors which translated into higher performance, better yields, higher prices, trust and reliability for member farmers. Table 5 shows that the majority of coop members received forward payments or loans from the coop, veterinary support and physical inputs. The cooperatives were very prompt in making payments to farmers.

Contractual relationships were more developed within the cooperatives. The survey revealed that about 60% of the coop members have oral contracts, only 31% have written contracts with their cooperatives. Only 9% of the members had no preliminary arrangement for their

relationship. About 30% of non-member farmers had no contract with their main buyers; 40% had written contracts and the remaining 30% had oral contracts. Although the majority of coop farmers had only oral contracts, it didn't stopped them receiving the support measures. This fact highlights the role and the importance of trust between the member and the cooperative.

**Table 5: Contract Support / Innovation Measures: Cooperatives vs. Processors**

| Possible Support Measure           | Members |       | Non-members |        |
|------------------------------------|---------|-------|-------------|--------|
|                                    | YES     | NO    | YES         | NO     |
| Credit, Loans and Forward Payments | 54.84   | 45.16 | 24.37       | 75.63  |
| Physical Inputs                    | 51.6    | 48.39 | 7.14        | 92.86  |
| Machinery                          | 6.45    | 93.55 | 0.42        | 99.58  |
| Transportation                     | 6.45    | 93.55 | 23.95       | 76.05  |
| Specialized Storage                | 9.68    | 90.32 | 0.00        | 100.00 |
| Guaranteed Prices                  | 41.94   | 58.06 | 47.90       | 52.10  |
| Veterinary Support                 | 46.77   | 53.23 | 17.65       | 82.35  |
| Business and FM Support            | 14.52   | 85.48 | 1.26        | 98.74  |
| Harvest & Handling Support         | 8.06    | 91.94 | 1.26        | 98.74  |
| Loan Guarantees                    | 16.13   | 83.87 | 0.84        | 99.16  |
| Investment Loans                   | 6.45    | 93.55 | 0.42        | 99.58  |
| Quality Control                    | 85.48   | 14.52 | 81.93       | 18.07  |
| Prompt Payments                    | 90.32   | 9.68  | 86.97       | 13.03  |
| Market Access                      | 64.52   | 35.48 | 33.61       | 66.39  |

Source: Survey Data.

## 6. Conclusions

Nowadays world agriculture rather shows a growing tendency of consolidation. Armenian agriculture should also adopt this way of further development since smallholders' prevalence in the sector hinders an access to the world markets due to high production costs and low competitiveness. For such policies and forms of consolidation a well defined conception is needed, a practical implementation of which would guarantee smooth transition to the international standards. For elaboration of that conception both world experience and traditional features of the own sector are important. If world tendency defines the goal to which Armenia seeks to reach (i.e. modern consolidated agriculture), then specific features of own agriculture have to be crucial when elaborating the strategies of reaching that goal. In this light the historical development path of agriculture by advanced countries shouldn't serve as an example of blind imitation since Armenia doesn't have sufficient time and resources to go through any of it. Armenia rather needs a well elaborated model which would guide the sectors' development to higher technical and technological levels of productivity and efficiency within comparatively shorter time and low social costs.

We argue that the role of milk marketing cooperatives in the dairy supply chain continues to increase. In that process, the Center for Agribusiness and Rural Development, which continues providing technical and financing assistance to these cooperatives, has its valuable contribution. CARD uses integrated approach to assistance covering milk quality, cooperative development, dairy management, rural credit, and training in cooperative management and accounting that builds private enforcement capital between farmers and cooperatives and between cooperatives and dairy processors.

These cooperatives provide several benefits, among which the increased opportunity of milk sales is valued most by member farmers. We must again indicate that the impact of the cooperative development in increasing the cash incomes of farmers remains substantial. Following the activities and examples of CARD, many international and national organizations and large dairy processors assisted farmer groups to establish cooperatives aimed at improving management practices in the dairy farms in order to improve the quality and quantity of milk supplied. However, many of these organizations don't possess specialist knowledge and simply replicate the models and approaches of CARD in certain areas. These approaches will not always lead to the expected results. As Melkonyan et al. (2008) and Grigoryan et al. (2007) presented in their papers that farmers in most of the cases confuse the cooperative with former Soviet type collective farms and don't know how to exercise their "one-member, one-vote" right and don't realize that they are the owners of the cooperatives.

CARD and other organizations and NGOs active in the development of the cooperative movement in Armenia should regularly conduct trainings and consulting for both member and non-member farmers on "Cooperative Principles and Identity", "Cooperative Management", "Members' Roles and Responsibilities" and similar topics. In parallel, a lobbying campaign must be formulated by farmer organizations and cooperatives towards developing a "Law on Agricultural Cooperatives" which does not exist in Armenia.

The research findings also revealed that being a member of cooperative, farmers became more motivated to invest more in their farms. In particular, about 42% of the coop members stated that they have invested in new shed for cattle, about 65% have enlarged their cattle sheds and 39% have purchased new milking cows. More than 20% of the member farmers have bought calves, modernized the cattle stall and purchased agricultural equipments. The same indicators for non-member farmers were only the half of what coop members invested.

With this paper the author once again advocates to continue and further develop cooperative movement and extend it over other aspects of the agricultural sphere enabling farmers to further integrate themselves in the agrifood chains and networks and improve their incomes.

## 7. Acknowledgments

The paper greatly benefited from valuable comments and suggestions received from **Dr. Vahram Ghushchyan** and **Dr. Artur Grigoryan**. The author acknowledges the valuable cooperation of all partners of the "Supporting the International Development of CIS Agriculture (SIDCISA)" project funded by EU INTAS.

## 8. References

- CARD, 2008. Cooperative Development Program Reports. Financial Statement of Cooperatives (2001-2008)
- Cocks, J. (2003). External Facilitation, Public Agencies, and Market Development in the Armenian Goat Industry: The Case of the USDA Marketing Assistance Project. Unpublished MS Thesis, University of Illinois at Urbana-Champaign
- Dries, L. Dumitrashko, M., Gorton, M., Hewson, P., Ignat, I., Ignat, G., Mkrtchyan, N., Sardaryan, G., Skripnik, A., Urutyanyan, V., Vandeplas, A. and White, J. (2007). Farmer – processor relationships in the CIS dairy sector: key findings from the SIDCISA research project, Working Paper 2007/4.

- Gorton, M., White, J, Dries, L, Ignat, I., Ignat, A., Sardaryan, G., Skripnik, A., (2007). Dairy Farming and Milk Marketing Relationships in the CIS. *Eurasian Geography and Economics*, 2007, 48, No. 6, pp. 733–747.
- Gow H., Swinnen J., (2001). Private Enforcement Capital and Contract Enforcement in Transition Economies. *AJAE* 83 (3), August 2001, 686-690
- Grigoryan, A., Kwapong, N. and Hakhnazaryan, T. (2007). Farmers Organization in the development of Agriculture in the South Caucasus: Case of Armenia
- Hakobyan, A., (2004). Evolving Marketing Channels in Armenia: A Structure-Conduct-Performance Analysis. Prepared for Poster Presentation at the 14<sup>th</sup> Annual IAMA World Food Forum and Agribusiness Symposium in Montreux, Switzerland, June 12-15
- Hovhannisyan V., Urutyanyan V., Dunn D., 2004. The Role of Cooperatives in Milk Marketing: The Case of Armenia. Paper presented at the 14<sup>th</sup> Annual IAMA World Food Forum and Agribusiness Symposium in Montreux, Switzerland, June 12-15, 2004.
- Melkonyan, Ch., Khachatryan, A., Arakelyan, A., Pogosyan, R. (2008). Dairy Cooperatives' development constraints in transition countries. Analysis of Basic Cooperative Principles (Armenian Dairy Sector Case)
- Ministry of Agriculture, 2002. A Strategy for Sustainable Agricultural Development. Prepared with the support of the Food and Agriculture Organization of the United Nations within the framework of TCP/ARM/0065.
- National Statistical Service of the RA, Yearbook 2008, available at [http://www.armstat.am/Arm/StatData/Taregirq\\_08/index-eng.html](http://www.armstat.am/Arm/StatData/Taregirq_08/index-eng.html)
- National Statistical Service of the RA, Yearbook 2003, available at [http://www.armstat.am/Arm/StatData/Taregirq\\_03/index-eng.html](http://www.armstat.am/Arm/StatData/Taregirq_03/index-eng.html)
- Swinnen J. 2005. When the Market Comes to You -- or Not. The Dynamics of Vertical Coordination in Agri-food Chain in Transition. Final Report of the World Bank (ECSSD) ESW “Dynamics of Vertical Coordination in ECA Agri-food Chains: Implications for Policy and Bank Operations” (EW-P084034-ESW-BB).
- White, J., Gorton, M., (2004). Vertical Coordination in Transition Countries: A comparative study of agri-food chains in Moldova, Armenia, Georgia, Russia, Ukraine. Report prepared for the World Bank (ECSSD) project on “Vertical Coordination in ECA Agrifood Chains as an Engine of Private Sector Development: Implications for Policy and Bank Operations” (Contract No. 7615040/7620016)
- Zeuli, A. Kimberley, Cropp R., (2004). Cooperatives: Principles and practices in the 21st century. University of Wisconsin System