

Public Facilitation of Small Farmer Access to International Food Marketing Channels:

An Empirical Analysis of the USDA Market Assistance Program in Armenia

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1. Introduction

With the continued globalization, rapid channel consolidation, increasing private grades and standards demands and food safety regulations, many small scale agricultural and horticultural producers from transitional and developing countries are rapidly becoming excluded from international agri-food marketing system (Dries and Swinnen, 2002 a&b). Consequently, governments and international agencies alike are reevaluating the structure, form, and delivery of their assistance programs as they search to identify new delivery mechanisms that can overcome the weaknesses that their traditional programs face within this new business environment. Their challenge is to design programs that facilitate the establishment of economically viable and sustainable market relationships and business models between small-scale producers and the international food marketing system that provide these financially distress producers access to the technological know-how, market knowledge and access, and financial and productive resources required to successively compete.

Recent Central and Eastern European (CEE) experiences indicate that foreign direct investment and the entry of multinational firms have successfully facilitated small farmers access to international marketing channels (Gow & Swinnen, 1998; 2001; Dries and Swinnen, 2002 a; 2002 b). By entering markets with sufficient capital to ensure contract enforcement and support investment, multinational firms can overcome the pervasive hold-up and underinvestment problems plaguing the sector thereby stimulating investment and growth in agricultural production (Gow & Swinnen, 1998; Walkenhorst, 2000; Gow & Swinnen, 2001; Dries & Swinnen, 2002a; 2002b). For numerous reasons access to sufficient foreign direct investment or multinational firms may not be an option for many countries. The obvious question therefore becomes, can an alternative third-party facilitation mechanism for stimulating agriculture be identified apart from the

private solutions found in Central and East Europe? Glover and Kusterer (1990), Porter and Philips-Howard (1997), Coulter *et al* (1999), Eaton and Shepherd (2001), and Simmons (2001) allude to the benefits of public agencies in facilitating firm farmer relationships. However as of now the literature has not identified nor extracted the critical processes and factors required in the design, development and establishment of long-run economically viable and sustainable business models that facilitate small producers' access to international food markets.

In this research we examine the critical processes and factors involved in the public facilitation of the establishment of economically sustainable marketing relationships between small producers and agro-processors in the presence of financial distress and absence of effective enforcement mechanisms. The USDA Market Assistance Program (MAP) Goat Industry Development Program in Armenia provides an instrumental case study for examining these issues, Armenia's agricultural sector has not experienced the recovery found elsewhere. A key constraining factor has been the lack of foreign direct investment initiated solutions so successfully employed elsewhere (World Bank, 1999; 2002). Without the presence of private solutions that can create self-enforcing relationships and encourage relationship specific investment, the Armenian agricultural sector has remained in a sub optimal equilibrium characterized by deep financial distress and a general lack of investment. The MAP project appears to provide a public solution rather than a private solution to the problem, as in all the previous research (Gow & Swinnen, 1998; Foster, 1999; Gow & Swinnen, 1999; Gow *et al*, 2000; Walkenhorst, 2000; Gow & Swinnen, 2001; Dries & Swinnen, 2002a; 2002b; Cocks & Gow, 2003a; 2003b).

2. The Armenian Goat Industry

The Armenian livestock industry underwent a rapid contraction in the early nineties, upwards of 50 percent, due to: substantial cost increases; substantial payments delays by state owned processing enterprises; and depressed consumer demand (World Bank,

1995b). Goat numbers were less affected than other livestock types as: 1) Armenia's mountainous terrain favored goats and their foraging style of low input agriculture; 2), goats provided an economically viable source of nutrition for many newly independent small farmers (Sardaryan, 2001b); and 3), goat milk provided a regular cash flow source for financially distressed households.

Goat production is primarily concentrated in Armenia's mountainous and high altitude areas. At night goats are housed in farmers' buildings and during the day grazed on village common land, often in mixed ownership herds. Poorly defined property and grazing rights over common land is resulting in over-grazing problems, which leads to both reduced yields and environmental degradation.

The Armenian goat industry is in a rudimentary level of development with little genetic improvement over the past fifty years (Hutchens, 2001). The predominant Armenian goat breeds are focused on meat production, rather than milk production. As a result problems are encountered when using Armenian goats for milking purposes, because they are older than recommended for maximum production, smaller than most milking breeds, and they breed later in life (Hutchens, 2001).

Traditionally, goat milk is processed into cheeses, curds, and yoghurts for private consumption in Armenian households with small surplus quantities, if any, being sold in the local village market. Buried cheese is the popular traditional Armenian goat cheese with rural villagers and has origins dating back to the beginnings of Christianity. Rarely is goat cheese marketed outside the village and certainly not in a systematic manner.

3. USDA MAP Involvement in the Goat Industry

In 1998 Gagik Sardaryan, the economic development advisor to USDA MAP, saw the need to further develop the Armenian goat industry, as goats handle Armenia's harsh mountainous terrain and are one of the few (environmentally, financially, and socially) viable farming systems for many rural communities. His proposal emphasized the rapid development of a sustainable dairy goat industry for these remote areas and initially focused on genetic improvement. Later elements included development of the cheese

industry, developing farmer marketing associations, genetic improvement, and education and extension programs for breeding and animal nutrition (Scarfie, 1999).

The Yekeghis valley in the Vayots Dzor region was selected as the projects first area of focus for a number of reasons: 1) Vayots Dzor's Yekeghis valley was Armenia's poorest region; 2), substantial Azerbaijan war refugee population;⁴ 3) the mountainous, rocky terrain limited alternative farming systems; and 4), goat numbers higher and increasing faster than elsewhere in region⁵.

4. Research Methodology

This research is concerned with developing an empirical understanding of the critical processes and factors involved in the public facilitation and establishment of sustainable and enforceable market relationships between financially distressed agribusinesses and their farmer suppliers in transition agriculture. This phenomenon is similar to that of recent research on private solutions in CEEC agriculture (Gow & Swinnen, 1998; Foster, 1999; Gow & Swinnen, 1999; Gow *et al*, 2000; Walkenhorst, 2000; Gow & Swinnen, 2001; Dries & Swinnen, 2002a; 2002b; Cocks & Gow, 2003a; 2003b).

From initial research in 2002, the research team became interested in empirically evaluating and modeling how the USDA MAP successfully facilitated the development of economically-sustainable inter-organizational marketing relationships between agro-processing firms and farmers. To do this we followed a grounded theory approach that provides a methodology for the development of theory from the systematic gathering and analysis of data (Strauss & Corbin, 1994). Theory is developed during the actual research process, and through the constant interplay between analysis and data collection (Strauss & Corbin, 1994). By utilizing a combination of qualitative and quantitative data, a richer base of data can be compiled from which to develop theory. The major

⁴ It is important to note that substantial aid to these refugees following the end of the war had created a dependency culture.

⁵ Goat numbers in the valley had increased six fold since land privatization (Sardaryan, 2003, personal communications)

difference between grounded theory and other approaches to qualitative research is that the focus is on theory development (Strauss & Corbin, 1994).

Following this methodology, theory can be generated initially from the data, or, if existing (grounded) theories seem appropriate to the area of investigation then they can be elaborated and modified with the inclusion of the new data (Strauss & Corbin, 1994). Proper use of theory when collecting qualitative data will better focus the data collection and give 'stronger voice' to the data (Westgren & Zering, 1998). Eisenhardt (1989) argues that tying emerging theory to existing literature enhances the internal validity, generalizability, and theoretical level of theory building from case study research. This is particularly relevant to our theoretical model for the GIDP which draws upon insights from the grounded theoretical model developed by Gow *et al* (2000). However, as Strauss and Corbin (1994) note the researcher must be careful with applying previous theories without a genuine grounding in the current study.

Case studies are an avenue for the development of theory (Eisenhardt, 1989). The case study is a research strategy which focuses on understanding the dynamics present within single settings (Eisenhardt, 1989). Case study research offers a tool to build theory by examining phenomena that are not suited to traditional statistical approaches (Westgren & Zering, 1998). Additionally, case studies can be a useful analytical tool for researching firms and industries in transition, where the researcher wants to gain insights that may not be found in historical time series (Westgren & Zering, 1998).

There are two principle types of case study: intrinsic and instrumental. In an intrinsic case study the researcher has an intrinsic interest in a particular case and wants to learn more about it (Stake, 1995). The purpose is not theory building or understanding some abstract construct or generic phenomena, but because the case is of intrinsic interest to the researcher (Stake, 1995). In instrumental case studies the researcher has a research question or need for general understanding that they feel a particular case may fulfill (Stake, 1998). The case is of secondary interest, it plays a supportive role in facilitating our understanding of something else, an issue, or a refinement of theory (Stake, 1998).

The USDA Marketing Assistance Project was chosen as it provided an instrumental basis for understanding a greater phenomenon: the public facilitation of sustainable inter-organizational relationships in transition agriculture. The dairy goat project was selected from the USDA MAP projects because of the accessibility of data, the intrinsic interest in the case, and the apparent success of the project.

5. Data Collection

The initial data collection took place during the fall of 2002 using a combination of unstructured interviews and participant observation. Nineteen unstructured interviews were conducted with agro-processing firm managers (industries included brandy (four interviews), wine (two interviews), vegetable canning (four interviews), and dairy (one interview), and with USDA MAP consultants (cooperative development (three interviews), dairy management (two interviews), goat management (one interview).

The qualitative data for the GIDP case were collected during March, 2003. Seventeen semi-structured interviews were conducted with cheese plant managers and presidents (three interviews), milk marketing association managers and presidents (four interviews), short term consultants to USDA MAP (two interviews), the resident long term project leader and goat advisor to the GIDP (two interviews), USDA MAP permanent staff (two interviews), the director of the Center for Cooperative Development at the AAA (one interview), and with the USDA MAP marketing manager (one interview).⁶ Triangulation of data was achieved through interviewing multiple parties within each of the relevant groups: the farmer marketing associations; the cheese plants; and USDA MAP personnel.

Secondary data were collected through publications on Armenia and Armenian agriculture. Specific data related to the GIDP were obtained from GIDP consultancy reports, proposals, and management plans which dated back to the start of the project in 1998.

⁶ Comprehensive interview notes were taken during each interview which were later rewritten and compiled. These interview notes are available on request from the authors.

Quantitative data were collected with a survey instrument specifically designed, tested, and implemented to measure the impact of the USDA MAP program and farmers responses. A stratified random sampling frame was used to purposively select three groups, or strata, each containing three villages: Group A had access to a milk marketing association, Group B were in the process of setting up cooperative organizations to gain access to a marketing associations, and group C did not have access to a milk marketing association. The survey followed a similar design to Dries and Swinnen (2002a; 2002b), Hansen *et al* (2002), and Simmons *et al* (2003). The survey had eight sections covering questions related to the milk marketing association, financial information, land use and ownership, demographics, general agricultural production, specific goat production, investment, and finally farmers involvement in the association and community. The survey was extensively pilot tested and double blind reverse translation was used to ensure that the survey questions had the right meaning.

The survey was administrated during the April 2003 to 341 goat farmers. Each survey was personally enumerated and took between one and two hours to complete. The survey results were coded, cleaned, and entered into SPSS for analysis.

6. USDA MAP Goat Industry Development Project

Initial Efforts

The Goat Industry Development Project provides an instrumental case of how a public or 3rd party agency (USDA MAP) can facilitate the establishing economically sustainable marketing channels.

A farmer survey conducted in late 1999 indicated that farmers had considerable interest in the ownership and production of goats. At the time approximately one third of the average household income came from goats, with the majority of farmers indicating that small ruminants were their best source of farm income. Consequently in May of 2000, a breeding base of 20 does and 10 bucks were imported from the U.S. and Europe and

placed at the local Agricultural Support Center⁷ (ASC) for the Vayots Dzor region. There were initially various problems with goat health and body condition but the introduction of western management techniques, enhanced housing and training alleviated these problems to a large extent. Scarfie (1999) argues that the initial efforts were successful, and provided a platform from which to expand and implement a full industry development and technology transfer project. Scarfie (1999) placed great emphasis on the success of the collaboration between USDA MAP, ACIDI VOCA, and the AAA in transferring technology to villages.

Establishment of the Goat Industry Development Project

In June 2000 the United Methodist Christian Relief (UMCOR) initiated the establishment of the 'Golden Goat' milk marketing association and cheese factory in Goghtanik village, Yekeghis valley, so farmers could collectively market their goat milk. Soon after the USDA MAP was asked to assist and then take over project management. A marketing association was chosen over alternative organizational structures such as contracting and spot markets, due to the need for centralized control and ownership of a milk collection center to collect, cool, and store milk, and also increased farmer bargaining power with the downstream firms.

A milk collection center was established to collect and store the farmer's goat milk before transportation to the market. All association farmers pooled their goats in a collective herd, shepherded by two herdsman and milked daily in a controlled mechanized milking parlor by trained milk maids. A milk cooling tank was leased to the association by Agroleasing and USDA MAP provided an in-kind grant for the building of the collection center. USDA MAP provided a range of technical assistance to the association in milk handling and sanitation, animal husbandry and forage management.

Once a downstream market was established a pricing system was developed for the association. The margin between what the cheese plant paid the association and what the

⁷ The ASC is a regional extension center overseen by the Armenian Extension Service located at the AAA in Yerevan.

association paid farmers was established with limited economic analysis and optimistic projections of expenses and production. This has resulted in USDA MAP topping up the revenue for the association so that it can pay farmers the agreed upon price.

During the associations establishment, the newly elected association president identified an opportunity to start a cheese factory to purchase and process milk from the association. Hence he established 'Golden Goat Plus' cheese factory with the assistance of two small USDA MAP grants in August 2000. The USDA MAP approach to assistance following the factories formation was continual marketing and technical assistance as and where required. Marketing assistance first focused on assisting with local promotion, product development, and packaging. When the company began exporting to Russia in 2001, USDA MAP provided assistance with promotion and distribution of the company's products. Technical assistance came in the form of training in cheese making, sanitation, and food safety.

The ARID Center

The *Armenian Improved Dairy* center (ARID Center) was established in September 2000 as a nonprofit cooperatively owned breeding center designed to provided genetics, education, veterinary services, medicines and extension. The ARID center also provided the base for the marketing, technical, and financial assistance for the GIDP and USDA MAP efforts and therefore farmers identify the GIDP and USDA MAP with the ARID center. Terry Hutchens and Armen Harutunyan initially managed the ARID center⁸ and its staff which consisted of veterinarians, lab specialists, herdsman, drivers, and an accountant. Langston University⁹ provided technical assistance and training to the ARID Center staff in genetic improvement, AI, and relationship development. The breeding program was mostly implemented through AI (Table 1), although small numbers of purebred bucks were released into villages in 2001.

⁸ Hutchens, an American extension plant pathologist working for USDA MAP on seed potatoes in the Vayots Dzor region, was technical advisor to the center. Hutchens split his time evenly between seed potatoes and providing technical assistance to the ARID center. Harautunyan, who was the manager of the Vayots Dzor ASC, was appointed director of the ARID center.

⁹ E Kirka de la Garza Institute for Goat Research at Langston University, Oklahoma, is the only goat research institute in the U.S.

The project's progress over the 2000/2001 was hampered by poor management and technical expertise within ARID. First, the project needed a trained animal scientist who possessed the requisite skills and knowledge of goats to advance the genetic improvement, nutrition, and education and extension programs. Second, poor local management and leadership resulted in the ARID center losing vision of its intent and the Armenian manager's autocratic leadership style reduced staff effectiveness and lowered community contact. In March 2002, Justen Smith, an Assistant Professor in extension and rangeland sciences from Washington State University, was employed at the advisor on goat breeding, nutrition and extension and later Director of the ARID center and Project Leader for the Goat Industry Development Project. He reorganized the ARID center to streamline leadership, reduce duplication, staff and budgetary costs and eliminate corruption.

GIDP Expansion

When the mayor of Khachik village approached the USDA MAP about establishing an association and cheese factory in their village the process of GIDP expansion began. Recognizing the concerns and difficulties related to the first association's establishment, the USDA MAP took a slightly different approach. This led to a USDA team visiting the village and explaining how an association would work. The villagers thought this sounded like a good idea and decided to go ahead with the association. The newly formed association was granted a milk cooling tank and received milking machines via Agroleasing.¹⁰ The USDA MAP also supported the entrepreneurial mayor in developing a cheese factory and provided similar grants and support as previously.

A problem with the Khachik association, like many associations USDA assists, is that the leader who first approaches USDA MAP or who is elected as president often has an involvement in both the association and the cheese factory, in addition to sometimes being the mayor of the village and owning a substantial herd of goats. While this is

¹⁰ When providing financial assistance USDA MAP tries to avoid providing grants as they believe they provide perverse economic incentives. Where possible they lease equipment to firms and farmer groups. The enforcement of leases is better than direct loans and the incentives are better than direct grants.

critical initially it creates a conflict of interest in that this person may have difficulty working in the best interest of their own cheese factory and the association they lead. Consequently USDA now attempts to reshuffle management *ex post* to alleviate this.

The Golden Goat association was also expanded in 2002 with the inclusion of two new villages, Yereghis and Hermon. Collection centers were established in each village in a same manner as the original Goghtanik collection center. Each collection center had a manager, who was also a director on the board of directors for the association. This expansion increased goat numbers by 200 percent.

However, the original Golden Goat association facility has not achieved its anticipated potential due to problems of very poor milk quality and poor leadership. Low milk quality was caused by poor milking technique, poor milk handling, and inadequate transportation from the collection center to the cheese factory. Continual coaching and training on milking practices and subsidizing milk maid wages in addition to developing the leadership of the milk collection centers leadership late in the 2002 season overcame many of the milk quality problems.

Golden Goat Plus cheese factory increased cheese production each year following its formation. Production was 12.5 t for 2002, up from 3.0 t in 2001 and 0.5 t in 2000. Up until 2003 two cheese varieties were produced, buried and feta, which were marketed within Armenia and to Russia. The range of cheeses was expanded in 2003 to eight varieties in an effort to provide clients with more of a portfolio of cheeses, which was hoped, would facilitate marketing. The plant manager believed around half of the Goghtanik village had a relationship with the cheese factory either through goats in the association or through employment in the factory.

During 2002 the GIDP was initiated in a third community within the Vayots Dzor region. Levon Gharzayan, a former manager of a Soviet Collective farm from Salli village had been watching the developments occurring in the nearby Yekehgis valley. He approached USDA MAP with the idea to form an association and cheese factory in the Salli area modeled on Golden Goat Plus and the Golden Goat association. Renovation of

a building began in May with some initial production beginning in August. Gharzayan was aiming for factory throughput of 65 to 70 tonnes of milk which equates to approximately six tonnes of cheese. With the assistance of the USDA MAP marketing team the cheese factory hopes to market the cheese to Russia.

An estimated 500 goats from 40 farmers in three villages, Salli, Aghanzadgor, and Hors, joined the association for the 2003 season. A milk collection center based around a cooperative herd was developed at each village. Gharzayan noted how once the villagers learnt more about the association and association principles they became very positive toward the association, especially when they learnt that they will own and control the association. Prior to the USDA MAP intervention there was no market for goat milk in the area, apart from barter and trading within the villages.

Market Driven Expansion

Late in 2002 a large market potential for Armenian goat cheeses was recognized in parts of California where there is a large Armenian Diaspora population, and to a lesser extent in neighboring Republic of Georgia. The estimated demand for the two markets was 200 tonnes. These new markets would be in addition to servicing the Armenian market, which had been growing at 50 to 100 percent per annum since the beginnings of the project, and a growing Russian market.

The finding accelerated the expansion of the GDP by (a) increasing the size of existing associations through the inclusion of more villages and/or increasing current herds, (b) developing new associations, (c) improving the quality of cheeses to adhere to U.S. standards through the technical assistance in cheese making and the provision of pasteurizers, and (d) through strengthening the management and leadership of both existing and new associations.

An association was established at Ahnidzor village in Lori region with four members and 250 goats. The mayor of the village approached USDA MAP with an interest in forming an association and starting a cheese factory. USDA technical and financial assistance facilitated this development.

Goat numbers in the Golden Goat association doubled from 2002 to 2003 to 1,220 goats as a result of two main factors. Firstly, was a group of farmers from the village of Vardahovit who approached the association with an interest in joining. This village successfully joined the association in 2003 with eight farmers and 320 goats. Secondly, with the help of the USDA MAP credit team, 15 existing members of the association formed a credit club. Seventy percent of the finance obtained went toward the purchase of additional goats with the remaining 30 percent used for purchasing winter feed. The credit club borrowed \$15,000 for the first year.

The development of an additional two associations encompassing six villages and linked cheese factories was underway, with an aim to be collecting milk and making cheese in 2004 for one association, and in 2005 for the other. Two more villages were projected to join the Salli association in 2004.

Table 1: Goat Numbers in Associations at the Beginning of 2003

	2000	2001	2002	2003
Golden Goat Association	n/a	300	660	1,220
Goghtanik	n/a	300	320	400
Hermon	0	0	180	300
Vardahovit	0	0	0	320
Yereghis	0	0	160	200
Khachik Association	0	0	144	214
Salli Association	0	0	0	500
Aghnjadzor	0	0	0	160
Hors	0	0	0	140
Salli	0	0	0	200
Ahnidzor Association	0	0	0	250
TOTAL	n/a	300	804	2,184

Table 2: Farmer Numbers in Associations at the Beginning of 2003

	2000	2001	2002	2003
Golden Goat Association	n/a	40	111	119
Goghtanik	n/a	40	43	43
Hermon	0	0	26	26
Vardahovit	0	0	0	8
Yereghis	0	0	42	42
Khachik Association	0	0	41	41
Salli Association	0	0	0	40
Aghnjadzor	0	0	0	n/a
Hors	0	0	0	n/a
Salli	0	0	0	n/a
Ahnidzor Association	0	0	0	4
TOTAL	n/a	40	152	204

The requirements of the U.S. market were such that the existing and new cheese factories needed upgrading so as to meet the higher quality specifications. USDA MAP facilitated this upgrading through the involvement and recommendations from a number of short-term consultants with expertise in cheese making over late 2002 and early 2003. The advice and efforts of these consultants solved many of the cheese quality problems. Additionally the U.S. market required that all dairy products be pasteurized. To meet this requirement USDA MAP, through Agroleasing, leased pasteurizers to each cheese factory which were to be equipped during the 2003 summer. This would also open the European market to Armenian goat cheeses.

USDA MAP recognized that with such a significant expansion in the GDP, their human resources could be spread too thinly over the new and existing associations and cheese factories. They recognized the success of the Golden Goat association had been hampered by poor management and leadership within the association, and they therefore wanted to take every step to avoid this happening again. There was a realization that they could provide a great deal of marketing, technical, and financial assistance but if the associations were to be sustainable then there needed to be strong leadership, governance,

democracy, transparency, and the development of trust between the association and the members and between the members themselves. This requirement was addressed in three manners.

Firstly, at the beginning of 2003 The Center for Cooperative Development was formed within the AAA. This was to be managed and lead by Dr Rafael Surukhunyan, an AAA economics professor who had been involved in USDA MAP cooperative development during the period 2000 to 2002. The formation of the center was believed to be a critical step in divorcing responsibility and involvement in cooperative development away from USDA MAP and onto Armenian specialists. It was believed that this would be critical in the long term sustainability of the current associations and the formation of future associations. Surukhunyan assembled a team of Armenian specialists to work with him in close liaison with USDA MAP consultants with a view to taking over their work as and when possible. Secondly, a medium-term consultant in cooperative development was brought to the project in early 2003 to provide training on an individual and group level to association presidents, boards of directors, and collection center managers on cooperative leadership, governance and management. And thirdly, the business development office from a U.S. University was assigned to the project over the summer of 2003 with the task of developing management, leadership, accounting, and financial and strategic planning for the cheese factories.

Future of GIDP

When interviewed in March 2003, Justen Smith believed that for the first time in the project's history all the components of breeding, milk quality, milk marketing associations, health management, and cheese marketing were coming together. The consolidation and streamlining of the ARID center had proved to be a financial and managerial success. An initial focus on genetics and production instead of marketing, corruption and poor management at the ARID center, the lack of a trained animal scientist, CAE, and some mistakes in developing the Golden Goat association had constrained the progress of the project. That said there were still some potential problems that could hinder the success of the project in the future, including, association

leadership, milk quality, and cheese quality. These problems needed to be carefully managed and minimized during expansion.

The intention for the ARID center was a sustainable center funded by services provided and funding from the associations. Smith believed the future of the GIDP was self functioning milk associations and self functioning cheese factories producing export quality cheeses. These would be run by honest leadership that looks at the whole association rather than just a few elite members. The key to the sustainability of the project would be farmers making a profit and the associations making a profit without outside funding. Smith believed the project was successful because the goal of genetic improvement had been achieved, because the GIDP was creating jobs, and because farmers were making money.

7. Factor Analysis

One of the objectives of this research was developing a model of the importance of relationships in the establishment and development of rural agricultural enterprises. To achieve this, specific questions were included in the survey to measure farmers affect towards the association management, feelings toward USDA MAP, how their relationships changed with time, and impact of the association on their financial and business performance. These questions were based upon Hansen *et al* (2002).

Twenty nine variables pertaining to affect, feelings, and trust toward the association, other members, management, and USDA MAP were eventually loaded onto six factors for all farmers who were current members or were joining an association. For the farmers who were current members seven variables on financial situation and performance and outlook for the future were reduced to two factors. The method of extraction used was principal component factor analysis. This was used to force orthogonality. The extraction was analyzed using a covariance matrix, which was used because in general it contains more information than the correlation matrix. From observing the scree plot and the initial exploratory analysis the number of factors was limited to six for the first analysis and two for the second. Varimax rotation was used as

the method of rotation because it maximizes orthogonality of the factors, which simplifies their interpretation (Field, 2000).

To validate the factors two other extraction algorithms (maximum likelihood and unweighted least squares) were used; two other factor rotations were conducted (quartimax and direct oblimin); the analysis was solved using both the correlation and covariance matrices; and the numbers of factors in the solution was forced to be greater and lesser than six for the first analysis and greater than two for the second. These different combinations extracted slightly different factor loadings but there was no appreciable difference among the various factors solutions.

Once the factors had been extracted, tests were conducted to measure for significance of difference between mean values of selected variables and of the factor scores. Factor scores are the values of the latent variables (factors) calculated for each case respondent. Comparisons were made between the following four sets of groups: current association members compared with incoming association members; members who have been in an association for three years compared with members who have been in an association for one year; association members compared with non members; and finally, entering members compared with farmers who have the opportunity to enter but have chosen not to. An independent *t test* was conducted for comparison of means and was chosen because two experimental conditions with different subjects (i.e. the dichotomous groups) were being compared. A two tailed *t test* was used because there was no a priori hypothesis about the direction of differences between the group means. This is consistent with the methodology of grounded theory (Strauss & Corbin, 1994).

8. Results

The factor analysis extracted factor variables from a range of individual variables. As a result of the factor analysis every individual variable has a factor score that derives back to the variable. Factor scores are factor loadings multiplied by the farmers score in the individual variables. One can treat these factor scores as variables for subsequent

analysis. Table 3 shows seven variables measuring the impact of the association on farmer's financial situation and performance that were reduced down to two factors.

Table 3: Rotated Component Matrix for Current Association Members

Individual variables	Factor loadings	
	Social outlook on life	Economic outlook on life
My family is happier because of the association	.899	.248
The association has had a positive impact on the quality my family's lives	.872	.208
My family's outlook for the future has improved because of the association	.752	.332
The association has had a positive impact on the quality of life for villagers	.696	.107
Membership has increased my milk sales	.108	.890
Membership has increased my farming profits	.225	.849
I am satisfied with my membership	.442	.704

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 Rotation converged in 3 iterations.

These factors only apply to farmers who have been members of an association for one or more years. The highlighted factor loadings show those variables that obtained a high factor score for the respective factor. By examining the variables on the left hand column with the factor loading we were able to name each factor. The first factor is farmer's social outlook and the second is farmer's economic outlook for the future.

Table 4: Rotated Component Matrix from Factor Analysis for all association members

Individual variables	Factor Loadings					
	Trust toward mgmt	Positive toward USDA	Positive toward mgmt	Trust toward other members	Affect toward the association	Integrity of mgmt
I relied on a rational process to gauge whether management could be trusted	.825	.065	.219	.226	.201	.039
I trust management of the association	.809	.109	.285	.249	.257	-.011
I have a feeling I can trust management	.781	.169	.291	.193	.232	-.023
I was unbiased when judging the trustworthiness of management	.755	-.018	.111	.120	-.006	.141
My instincts tell me I can trust management	.733	.078	.206	.358	.176	.044
I was unbiased when judging trustworthiness of other members	.578	.199	.177	.394	-.091	.121
I trust USDA to work in the best interests of our association	-.041	.855	.167	.015	.091	.051
USDA has been critical in the financial success of our association	.111	.817	.012	.063	.244	.029
I feel USDA has a reputation for being trustworthy	.009	.784	.177	.079	.104	.061
USDA has been critical in the technical success of our association	.083	.744	.006	.193	.125	.094
USDA are committed to the success of our association	.372	.728	.051	.013	.195	.151
USDA treats all farmers equally	.076	.706	.197	.054	.002	-.067
I feel confident management does what they say they will do	.133	.064	.769	.119	-.019	.275
The trust I feel toward management is	.107	.060	.733	.092	.251	.024

	Trust toward mgmt	Positive toward USDA	Positive toward mgmt	Trust toward other members	Affect toward the association	Integrity of mgmt
Management talks to members about decisions they are making	.051	-.041	.718	.200	.133	.043
Management is committed to the success of the association	.217	.136	.680	.180	.001	.022
Management makes sensible decisions	.275	.234	.662	.150	.279	.009
Management works to the best interests of the association	.332	.322	.619	.110	.092	.058
Management makes decisions democratically	.248	.213	.600	.206	-.147	.163
My instincts tell me I can trust other members	.209	.080	.169	.879	.209	.005
I trust all members	.291	.104	.180	.847	.144	.035
I decided rationally and logically whether other members could be trusted	.349	.109	.200	.802	.147	.047
I have a feeling I can trust other members	.187	.138	.336	.764	.114	.037
In general the trust I feel toward other members is	.336	.059	.187	.580	.431	.198
I am enthusiastic about the association	.256	.090	.202	.127	.832	.105
I am happy to be in the association	.084	.193	.132	.227	.810	.072
Our association is the best in the region	-.036	.392	.064	.161	.536	-.044
I feel a sense of belonging to the association	.264	.208	.002	.106	.439	.070
Management works to best interests of management	-.114	-.294	-.097	-.111	-.091	-.829
Management spends association money for their personal benefit	-.070	.061	-.223	-.022	-.088	-.793

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 7 iterations.

Table 4 summarizes the factors extracted for existing and entering members. Six factors were extracted from the variables in the left hand column for variables relating to affect, feelings, and trust toward the association, other members, management, and USDA MAP. After examining the groupings of variables with strong factor loadings and their corresponding factor we named the six factors, farmers trust toward association management, positive feelings toward USDA MAP, positive feelings toward association management, trust toward other members, farmers affect toward the association, and the integrity of management of the association.

9 Comparisons between Groups

This section tests for significant differences between individual variables and the extracted factors between four groups: association members compared with non members; members who have been in an association for three years compared with members who have been in an association for one year; entering members compared with farmers who have the opportunity to enter but have chosen not to; and finally, current association members compared with incoming association members.

Association Members Compared to Non Members

This section describes those variables where there was a significant difference between farmers that were members of an association compared to farmers who were not members of an association, including those farmers entering an association for the first time.

Farmers who are members of an association viewed their present income as higher and more able to meet their daily needs significantly more than non members. However, this perception was not reflected in their actual 2002 income. Non member's incomes were higher than members and the level of poverty present in the non member group was lower than in members, although neither of these differences was significant.

The refugee status of the majority of association members is likely to have influenced the significance between the groups over several variables. The area of land allocated during privatization, the area of arable land owned in 1992, involvement in leasing land, cereal area, and grape area were all significantly higher for non members. The percentage of total income from grapes and honey was significantly higher for non members. As was the percentage of people born in the village where they currently live (64 percent) compared to members (one percent). Non members had a significantly higher level (28 percent) of borrowing compared to members (16 percent).

A significantly higher percentage of association members farmed goats, earned income from an association, and sold goat milk to a dairy (as apposed to in their local village). A significantly higher percentage of association members (56 percent) increased their goat herds compared to non association members (36 percent). Goat milk yields were significantly higher for members than non members for 2002 and 2001, although there was no significant difference between the two groups in 2000, 1999, and 1996. Members attended a significantly higher number of village meetings per annum than non members did.

Association Members

This section evaluates the significance of differences between farmers who have been a member of an association for three years compared to those who have been members for one year. Three year members were allocated significantly more land (1.26 hectares) compared to one year members (0.47 hectares).

There were no significant differences in any of the income variables tested. However, one year members obtained a significantly higher percentage of their income from the milk marketing association in 2002 (42 percent) than three year members (18 percent). Goat milk yield per annum was significantly higher for three year members in 1999 and 2000, however for 2001 and 2002 there was no significant difference.

We also tested for any significant difference over the factors extracted from the factor analysis. There was no significant difference over all the factors except the factor for

positive feelings toward the USDA. Farmers who had been association members for three years were significantly more positive toward USDA than one year members. There was no significant difference in the commitment variable – ‘I have other options but have chosen to remain in the association’.

Farmers Joining an Association Compared to Those Not Joining

In this analysis we intended to test for significant differences between farmers who are entering an association in 2002 in the Group B villages and farmers in the Group B villages that have chosen not to enter an association. The intention of this is to test for any underlying factors within their farming businesses and social interactions that may cause some farmers to enter an association while others do not.

Total household income of farmers entering an association is significantly higher than for those who are not entering. There is a significant difference in how farmers entering an association perceive their farming profitability and farm production in 2003 compared to 1996. Farmers not entering view their profitability and production as similar to 1996, while farmers entering an association view their profitability and production as higher. Farmers entering an association had significantly larger goat herds in 2000 and 2001 but not in 2002. Farmers who are not entering an association have a larger area of fruit than those entering an association. Farmers entering an association attend a significantly higher number of villager meetings per annum (6.58 meetings which is 100 percent more) than farmers not entering an association.

Entering members compared to current members

The intention of this section is to describe the significant differences between farmers entering an association for the first time and farmers who have been in an association for either one or three years. Entering farmers had significantly higher income than current members and significantly lower poverty levels (46 percent) compared to current members (70 percent). This difference in poverty was not significant in 1996 when 75 percent of current members were in poverty compared 54 percent of entering members.

The refugee status of current members appears to affect this analysis over several variables. Land allocated during privatization, arable land owned in 1992, home ownership, percentage of respondents born in the village where they now live, and grape area were all significantly higher for entering members.

Entering members had a higher percentage of their income (33 percent) from off farm sources than current members (19 percent). Entering members also had more income from grapes.

Comparison of livestock numbers reveals entering members with significantly more cattle (2.67 compared to 1.26) and sheep (8.71 compared to 3.79) than current members. Entering members had significantly larger goat herds (an average of 5.12 goats) in 1999 than current members (3.27 goats), however by 2002 there was no significant difference and current members actually owned on average larger goat herds (7 goats in current member's herds compared to 6.69 in entering member's herds). Goat milk yield per annum was significantly higher for current members in 2001 and 2002 than entering members. There was no significant difference in the years previous to this.

Comparison of the factors extracted reveals one significant difference between the two groups. This is for trust toward management. Entering members have significantly higher levels of trust toward management than farmers who are already members. This may relate to adverse events that have spent up some of the social capital and private enforcement capital between management and farmers and management. Or alternatively entering members may be more naïve about management or have done a better job selecting their managers.

We also split the current members into those who had been members for one year and those who had been members for three years and then compared these groups with entering members. For milk yields, three year members recorded significantly higher yields than entering members, while one year members did not. Cattle and sheep numbers and percentage of income from off farm sources were significantly higher in entering members than one year members, but there was no significant difference

between three year members and entering members. And finally entering members had significantly more trust toward the management of the association than one year members, while there was no significant difference for this factor between entering and three year members.

10. Conclusions

This paper goal was to examine the phenomena of third party facilitation of the successful establishment and development of marketing relationships. The instrumental case of the USDA MAP GIDP was used as a mechanism to gain a greater understanding of the issues involved in this process. A mixed methods approach combining qualitative and quantitative data collection and analysis was used.

The results indicate that the development of economically sustainable marketing channels requires that the public agency remain an arms' length facilitator and provider of assistance, rather than be a leader in the development of the channel and thus an integral cog in the channels development. The actual development of the marketing channel should be led by an entrepreneur who possesses both the ability to develop the marketing channel and who is trusted by the local community. By leading the development of the channel the private enforcement capital¹¹ that is created through the development of the channel is created between the entrepreneur and the farmers. Over time this widens the self enforcing range of the relationship, therefore allowing greater shifts in market conditions and decreasing the risk of opportunistic behavior (Gow *et al*, 2000).

By holding the trust and respect of the community the entrepreneur inherently holds private enforcement capital with the rest of the community equivalent to the present value

¹¹ Private enforcement capital consists of a combination of privately enforceable sanctions that ensure that the partners to a transaction find it economically beneficial to abide by the contractual agreement they have made (Klein, 1996). Private enforcement capital consists of two sanctions: firstly, the discounted present value of all future rents that accrue to the continuation of the non-salvageable relationship specific investment, this is the value proposition of a downstream market; and secondly, the present value of the transacting parties reputation in the marketplace, this is the reputation of the entrepreneur with the farmers (Klein, 1996).

of their reputation or trust individually and collectively with the community (Klein, 1996; Gow *et al*, 2000; Oliver & Gow, 2002). Additionally, the expectation of a value proposition of a downstream market creates the expectation of private enforcement capital between farmers the entrepreneur through the present value of future returns that the entrepreneur could earn from the value proposition (Klein, 1996; Gow *et al*, 2000). Thus the combination of the present value of the entrepreneur's reputation with the farmers in the short term combined with the longer tem expectation of future returns through the value proposition and creates sufficient private enforcement capital for the immediate development of a self-enforcing relationship with the farmers.

11. References

- Atkinson, P., and Hammersley, M. (1998). Ethnography and Participant Observation. In, Denzin, N.K. and Lincoln, Y.S. (ed.), *Strategies of Qualitative Inquiry*, 110-136. California: Sage Publications.
- Cocks, J. and Gow, H.R. (2003a). Supplier relationship development in the food industry of transition economies: the case of Interbrew. *Journal of Food Distribution Research*, *in print*.
- Cocks, J. & Gow, H.R. (2003b). Supplier relationship development in the food industry of transition economies: the role of independent facilitators. Paper presented at the 2003 *Australian Agricultural and Resource Economics Society Annual Conference, Freemantle, Australia*.
- Coulter, J., Goodland, A., Tallonaire, A., and Stringfellow, R. (1999). Marrying farmer cooperation and contract farming for agricultural service provision in Sub-Saharan Africa. In, *Guide to Developing Agricultural Markets and Agro-Enterprise Series*, World Bank, Washington D.C.
- Dries, L., Swinnen, J.F.M., (2002a). Finance, investments, and restructuring in Polish agriculture. *PRG working paper*, Katholieke University, Leuven.
- Dries, L., Swinnen, J.F.M., (2002b). Globalization, European integration, and the transition of the Polish dairy sector. *PRG working paper*, Katholieke University, Leuven.
- Eisenhardt, K.M. (1989). Building theories from case study research. *Academy of Management Review*. 14:4, 532-550.
- Field, A. (2000). *Discovering Statistics using SPSS for Windows*. London, Sage Publications.

- Foster, C. (1999). The impact of FDI in the upstream and downstream sectors on investment in agriculture in the NIS. In *Agricultural Finance and Credit Infrastructure in Transition Economies*, OECD ed., (Paris, France: OECD Publications, 1999), 198 – 211.
- Gow, H.R. and Swinnen J.F.M. (1998). Up and downstream restructuring, foreign direct investment, and hold-up problems in agricultural transition. *European Review of Agricultural Economics*, 25, 331-350.
- Gow, H.R. and Swinnen J.F.M. (1999). The impact of FDI in the downstream sector on agricultural finance, investment and production: evidence from the CEEC. In *Agricultural Finance and Credit Infrastructure in Transition Economies*, OECD ed., (Paris, France: OECD Publications, 1999), 184-197.
- Gow, H.R., Streeter, D.H. & Swinnen, J.F.M. (2000). How private contract enforcement mechanisms can succeed where public institutions fail: the case of Juhockur a.s. *Agricultural Economics*, 23: 253-265.
- Gow, H.R. and Swinnen J.F.M. (2001). Private enforcement capital and contract enforcement in transition economies. *American Journal of Agricultural Economics*, 83(3): 686-690.
- Hansen, M.H., Morrow Jr, J.L., and Batista, J.C. (2002). The impact of trust on cooperative membership retention, and satisfaction: an exploratory study. *International Food and Agribusiness Management Review*: 5, 41-59.
- Hutchens, T.K., (2001). *Close out report for ARID center goat breeding program*. USDA MAP TDY consultant report.
- Klein, B. (1996). Why hold ups occur: the self-enforcing range of contractual relationships. *Economic Enquiry*, 34: 444-463.
- Oliver, L.D. & Gow, H.R., (2002). Successful alliance establishment and evolution in a volatile business environment: the case of Cellars of Canterbury. Paper presented at the 2002 American Agricultural Economics Association meetings, Long Beach, California, USA.
- Porter, G. and Philips-Howard, P. (1997). Comparing contracts: an evaluation of contract farming schemes in Africa. *World Development*, 25(2): 227-238
- Sardaryan, G. (2001a). Food Marketing in Armenia: The Case of Cheese Products. Unpublished MS Thesis. Mediterranean Agronomic Institute of Chania, Greece.
- Sardaryan, G. (2001b). *Regional agricultural intervention and development project*. USDA MAP internal staff report.
- Scarfie, D.A. (1999). *Armenian goat breeding project 1999: report and recommendations*. USDA MAP TDY consultant report.
- Simmons, P. (2001). Overview of smallholder contract farming in developing countries. *Working paper*. Graduate School of Agricultural and Resource Economics, University of New England, Australia.

- Simmons, P., Patrick, I., and Winters, P. (2003). Evaluation of a hybrid seed contract between smallholders and an MNC in East Java, Indonesia. Paper presented at the 2003 *Australian Agricultural and Resource Economics Society Annual Conference, Freemantle, Australia*.
- Stake, R.E. (1995). *The Art of Case Study Research*. California: Sage Publications.
- Stake, R.E. (1998). Case studies. In, Denzin, N.K. and Lincoln, Y.S. (ed.), *Strategies of Qualitative Inquiry*, 86-109. California: Sage Publications.
- Strauss, A, and Corbin, J. (1994). Grounded theory methodology: an overview. In Denzin, N.K. and Lincoln, Y.S. (ed.), *Handbook of Qualitative Research*, 273-285. California: Sage Publications.
- Suroukhanyan, R., Vardanyan, F., Abrahamyan, L., Alexandryan, M., & Vanyan, A. (2002). Innovative approaches to farm enterprise development, cooperation and partnership arrangements for improved livelihood in Armenia. *Paper presented at the FAO Workshop, Prague, Czech Republic, October 13-16, 2002*.
- Swinnen, J.F.M. (2000). Ten years of transition in Central and Eastern European agriculture. *Paper presented at the KATO symposium, Berlin, Germany, November 2-4 2000*.
- USDA MAP, (2003). USDA MAP Mission Statement. Retrieved March 7, 2003 from the World Wide Web: <http://www.usda.am/mission.html>
- Walkenhorst, P. (2000). Foreign direct investment, technological spillovers and the agricultural transition in central Europe. *Post-Communist Economies*, 12: 61-75.
- Westgren, R.E. and Zering, K. (1998). Case study research methods for firm and market research. *Agribusiness*, 14:5, 415-424.
- World Bank, (1995a). Armenia Agricultural Policy Update. Retrieved from the World Wide Web October 25, 2002: http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1995/12/29/000009265_3961214152019/Rendered/PDF/multi_page.pdf
- World Bank (1995b). Armenia: The Challenge of Reform in the Agricultural Sector. Retrieved from the World Wide Web May 10, 2003: http://www-wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/1995/05/01/000009265_3961219112041/Rendered/PDF/multi_page.pdf
- Yin, R.K. (1994). *Case Study Research: Design and Methods*, 2nd ed. Sage Publications, Thousand Oaks, California