THE ROLE OF AGRICULTURE IN THE TRANSITION ECONOMY OF ARMENIA

by

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(Under the Direction of Lewell Gunter)

ABSTRACT

Transition economy issues resolution changes significantly depending on country of interest. Despite commonalities with other transition economies, especially those of Former Soviet Union, Armenian agriculture developed in its own, unique way. While the land reforms were bolder and more successful than in other transition economies, development of appropriate marketing chains is still slow and access of family farmers to relevant information is limited. In this work, we made an attempt to summarize implemented reforms and their consequences, to point out current state and issues of Armenian agriculture.

INDEX WORDS: Transition, Agriculture, Family Farm, Economic Growth, Irrigation, Co-Operatives, Reform, Market Institutions

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Diploma, Yerevan State University, Armenia, 1998

A Thesis Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

MASTER OF SCIENCE

ATHENS, GEORGIA

2005

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August 2005

DEDICATION

To My Family

ACKNOWLEDGEMENTS

First of all, I would like to express my deepest gratitude to my major professor, Dr. Lewell F. Gunter. His optimism, attention, advice and patience made it possible to perform the research and complete the thesis.

I would also like to express my gratitude to other members of my advisory committee, Dr. Glenn C. W. Ames and Dr. Michael E. Wetzstein, who provided support for literature review and helped me drafting the thesis.

I would like to thank Dr. Jack E. Houston who expressed interest in my studies and was helpful with literature as well as Vahe Heboyan whose consultations I used in my work.

Special thanks go to UGA Department of Agricultural and Applied Economics and Edmund S. Muskie / Freedom Support Act Graduate Fellowship Program.

I would also like to thank all the graduate students in the Department as well as other professionals who contributed to the thesis.

THANK YOU!

Marianna Arzangulyan

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CHAPTER 1

INTRODUCTION

1. Armenia in Transition

Agriculture in Armenia is one of the basic industries, providing some more than one third of population with work and about one forth of the country's GDP. The government of Armenia launched a major structural reform program shortly after its independence in 1991. It called for the liberalization of prices of most goods and services, setting up a liberal trade and foreign exchange regime and support for private sector development. Enterprise privatization was initiated starting with small enterprises. The collective farm system was quickly broken up and land was privatized to small holders. Confronted with rampant inflation and deep drops in GDP during the early 1990s, Armenia implemented stabilization policies in the spring of 1994. Public expenditures were limited to priority items with a sharp reduction in fiscal transfers to enterprises, and Central bank financing of the fiscal deficit was circulated. In addition, since late 1994, the government's anti-inflationary efforts were aided by inflows of external financing from the IMF and the World Bank (WB 2001).

Armenia has made major progress in macroeconomic stabilization and in establishing a suitable framework for structural reforms since the mid-1990s. Macroeconomic performance is quite stable with low inflation, a relatively stable exchange rate, a sufficient level of international reserves, and a manageable level of fiscal deficit.

Inflation has fallen sharply. The annual inflation rate fell from 1820% in 1993 to 26% in late 1995 and to under 6% by the end of 1996; in 2004, the rate is 4.4%. Annual inflation rose to 14% in 1997, following some increases in VAT rates, but in 1998-2000, inflation was fully under control. In 2004, inflation rate was 4.7%.

On the structural reform side, the Armenian government made substantial progress in reforming budget management, tax administration, Central Bank of the Republic of Armenia (CBA) regulation, privatization, and various sectoral reforms, including in energy, education, health and social protection. The government maintains a liberal trade regime and remains active in upgrading the country's legal framework. A new company law and laws on real property, banks and banking, collateral, bank insolvency and commercial bankruptcy have also been adopted. By the end of 1997, over 80% of small enterprises and about 65% of medium and large enterprises had been privatized. The share of the private sector in GDP production increased from 11.7% in 1990 to 74.5% in 1998 and 83.9% in 2004 (CBA).

After more than 50% decline in GDP between 1991 and 1993, GDP recorded a growth of 5.4% in 1994. GDP growth rates have remained positive since that time. It is expected that GDP level will return to the 1989 level in 2005.

Armenia's economic growth also showed a remarkable degree of resilience in the face of two major shocks of the late 1990's. First, in the face of Russia's bank and fund market crisis in 1998 (Third World Network), Armenia avoided both an exchange rate crisis and an acceleration of inflation and after a brief slow-down the economy continued to expand. Then in October 1999, several leading Armenian politicians, including both the prime-Minister and the Speaker of the Parliament, were assassinated. The political aftermath of the assassinations led to a considerable deterioration in fiscal and investment performance. Nonetheless economic growth

resumed by mid-2000. For 2000 as a whole, GDP growth reached 6% despite a severe drought. Another drought took place in 1997.

One economic indicators is the share of agriculture in the structure of GDP (Figure 1.1). It fell slightly after the earthquake and then rose enormously during the energy crisis before declining gradually.

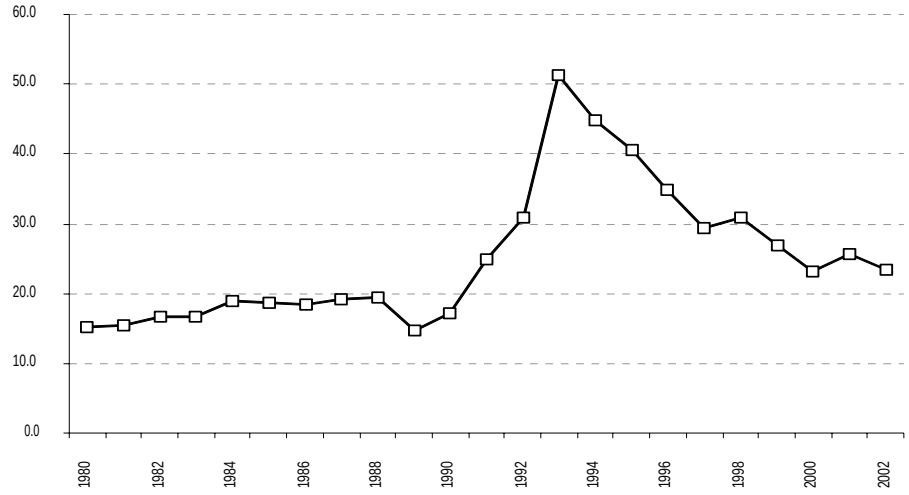

Figure 1.1 Share of Agriculture in the Structure of GDP (1980-2002)

Source*:* National Statistical Service

2. Objectives for Research

The overall objectives for the research are:

1. to provide an overview of Armenian agriculture in Soviet and post-Soviet periods
2. to point out the main problems for the agriculture's development
3. to highlight selected state policies for agricultural and related issues

In this study, we rely mainly on National Statistical Service (NSS) data and literature on transition literature that does not give much space to agriculture.

3. Organization of Thesis

Chapter one of the thesis provides a brief description of the topic and objectives for research. Chapter two shows the state of Armenian agriculture before and through the first years of independence. Chapter three highlights literature on transition economics and agriculture. Chapter four presents main Armenian reforms in agriculture and describes its current condition. Chapter five provides conclusions and some recommendations for further research.

CHAPTER 2

BACKGROUND INFORMATION

1. Geography and Resources

The Republic of Armenia lies in a triangular section of the Transcaucasus, bordered by Azerbaijan, Iran, Turkey and Georgia. Armenia, once a Soviet Union Republic, is an independent country since September 21, 1991.

The capital city, Yerevan, lies on the Hrazdan River, and is home to some 1.2 million people, while the country's population is close to 3.2 million people. The next three largest cities are Gyumri (pop. 121,000), Vanadzor (pop. 74,000) and Abovian (pop. 54,000).

The greatest part of Armenia is mountainous. The highest elevation is Mt. Aragats (4,095 meters or 13,435 feet above the sea level) and the lowest point is River Debed (400 meters or 1,312 feet above the sea level).

There are more than 200 streams and rivers in Armenia, none navigable, however, because of their steep descents and rapid currents. The Armenian countryside also boasts some 100 small, but picturesque lakes. One of the largest mountain lakes in the world, Lake Sevan, covers an area of 1,400 square kilometers or 541 square miles and is about 1,916 meters or 6,287 feet above the sea level. (Ministry of Foreign Affairs).

Armenia enjoys a variety of climatic conditions depending upon altitude. The Ararat valley is characterized by dry hot summers and cold dry winters, with annual precipitation not exceeding 300 mm. Precipitation increases toward the mountains to 1000 mm per year.

Temperatures decrease with altitude and have an annual average of 10^0C in Yerevan and 4^0C at Sevan Lake. Growing periods vary between 250 days in the lowest valleys, 170 days around Sevan Lake, and 95 days in mountain areas. Monthly precipitation is highest from April to June and lowest during July to September. Crop water deficit during May to August ranges between 200 to 700 mm, which cannot be supplied from soil moisture alone and irrigation, is thus necessary for crop growth. Agro climatically, Armenia is divided into eight regions, some of which are further split into subregions. (WB, 1995)

Armenia has limited forestry resources. In the beginning of the 19th century, 25% of the country was covered in forest. This was reduced by exploitation to only 7% by the 1950s. Since the 1950s, the forest cover has been increased to 11% as a result of active reforestation. In first years of post-Soviet rule, large abuses of forest resources took place due to lack of heating possibilities. As a protection measure, a logging ban has been in place in Armenia since 1996. Today, reforestation activities continue and forest cover is close to 10%. (FAO)

Out of Armenia's total area of 29.740 km^2 (2.97 million hectares), about half (46.78%, NSS, 1997) is suitable for crop production and grazing. Cultivated land lies within an altitude range of 600 to 2500 m. Only 28% of the land is located below 1500 m of elevation and only 29% is flat or has slopes of 3 degrees or less. Armenia has a great variety of soils. About 48% of arable land is comprised of chernozems and another 14% fertile chestnut soils.

Figure 2.1 shows distribution of agricultural lands by type (WB 1995). It is constructed according to 1997 land cadastre data.

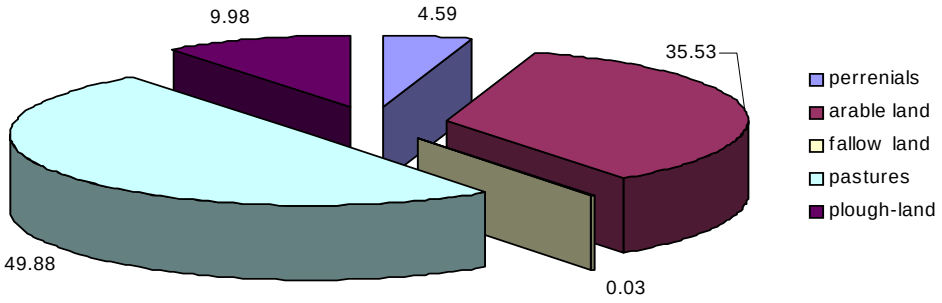

Figure 2.1. Distribution of Agricultural Lands by Types (land balance in 1997)

Source*:* National Statistical Service

There is now much greater emphasis on cereals (as a cash crop) and much less emphasis on feed crops compared to Soviet period (due to the reduction of livestock herds in recent years, see Figure 2.2). Because of changes of political alignments in the region, Armenia was forced to move away from its traditional position of importer of grains and exporter of fruits and vegetables, in an attempt to emphasize grain production for domestic consumption (Lerman, Mirzakhanyan 2001).

Table 2.1. Sown Areas under Agricultural Crops

thou ha	1997	1998	1999	2000	2001	2002	2003
Total sown area	335.0	323.8	328.0	303.2	317.1	305.7	314.6
Grains	198.8	198.8	175.6	181.1	203.4	191.9	200.8
industrial crops	0.4	0.5	1.6	2.9	1.5	1.4	1.3
potatoes	32.9	32.7	32.0	34.2	31.8	30.5	32.3
vegetables	19.7	19.3	20.9	20.0	19.8	20.2	23.1
melons	3.6	3.3	4.2	3.4	3.3	3.9	4.1
Forage crop	79.6	69.2	93.7	61.6	57.3	57.8	53.0

Source*:* National Statistical Service

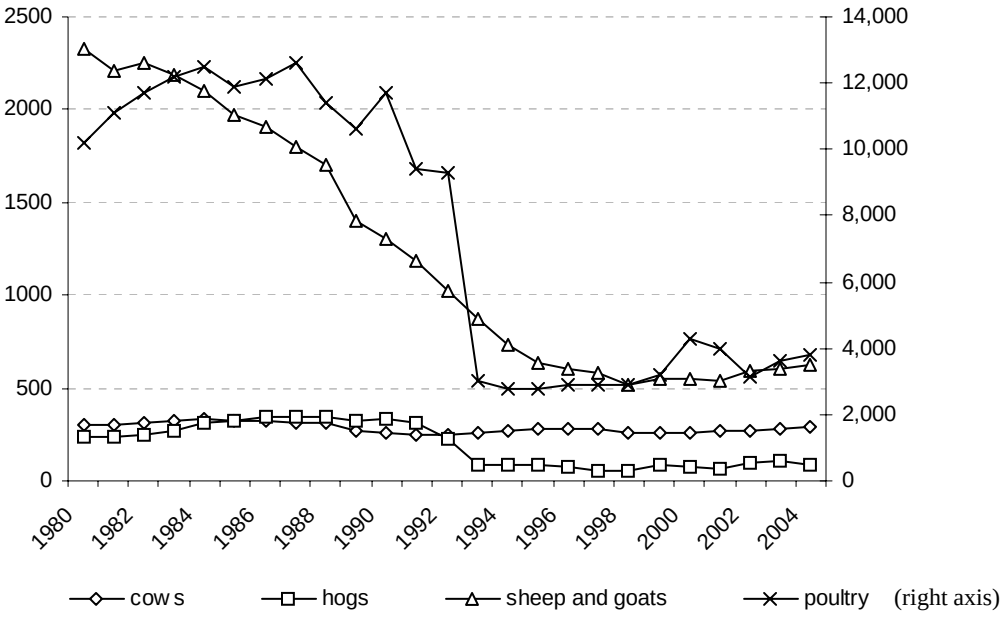

Figure 2.2 Livestock Numbers

Source*:* National Statistical Service

Armenia is the smallest of the former Soviet Republics with economic structure highly dependent on outside sources for energy and raw materials for its industries, and grain for its people and livestock. Starting in 1991, agriculture has had to play an increasingly important role in national economy, as the output of the economy as a whole declined more than agricultural sector. Moreover, contrary to other transition economies, gross agricultural product did not decline after 1990. With slight ups and downs, agricultural product in Armenia gradually grew in the process of privatization; it reached 155% of the 1990 level in 1998 and 158% in 2003. Declines in 1997 and 2000 are attributable to very bad droughts.

2. Armenia before the Transition

To provide a better pattern of Armenia's post-Soviet development, a number of general considerations are necessary.

Conflict with Azerbaijan, that was hidden however not quenched since the days of Genocide and all during Soviet period, finally brought to war. Officially, period of Armenian Genocide is considered from 1915 to 1923 with April 24 as conventional commemoration day; parts of Armenian ancestral land were annexed by Josef Stalin in 1921 and given to newly formed Azerbaijan. During 1988-1992 ethnic cleansing was organized by Soviet Azerbaijan throughout its territory, and Armenians of Nagorno-Karabakh (hereafter Artsakh) were attacked. Liberation, in which Armenia supported Artsakh, was stopped by international community during advance of Armenian forces and cease-fire agreement was signed on May 14, 1994. About 10 thousand people are reported killed in the war.

In those days, transportation routes that traditionally lead to landlocked Armenia through Azerbaijan were blocked. Instability in Georgia made routes lying through this country unreliable. Nowadays, Georgia remains the main transition country for Armenia; Azerbaijan still keeps its borders closed as does Turkey; however, Turkey does not try to prevent informal trade with Armenia.

There were over 350 thousand refugees from Azerbaijan. The recorded number would be greater, if those who took citizenship of Armenia as soon as they arrived as well as those who did not stay in Armenia long enough, were counted. There were also 70 thousand refugees from bordering regions.

The main arrival of refugees was still ahead when on December 7, 1988 devastating earthquake in the Northern Armenia killed over 60 thousand people and swept away one third of the country's economy. Reconstruction and development, though successful, are still in process.

Threatened by consequences of this natural disaster, Armenian politicians decided to close nuclear station and thus rely heavily on imported fuel and hydroelectric stations' produce. The station was closed in February 1989 until October 1995, when one unit of the two resumed operations (Nuclear Threat Initiative). This decision brought a critical lack of electric power throughout the country. Cold winters of 1992-1994 without heating and electricity (on average, 6 hours of electricity a day) had bad consequences for people's health. (Coleman 2005)

The resulting lack of energy and raw material supplies brought Armenia's industrial sector to an almost complete stand still and created serious shortages in input supplies for agriculture (WB 1995).

Meanwhile, many families left their country for a better life. In some families only economically active members left. Approximately one forth of the labor force was absent during the worst years and sent their earnings home. In 2003, transfers amounted to US$220 million compared to US$170 million in 2002. Also, the migration balance was for the first time positive in 2004 with immigration prevailing insignificantly. (Coleman 2005)

In this context, economic development of Armenia is a long record of substantial structural shifts. Some of the first and the most important took place in agriculture.

In the Soviet period of a planned economy, there were several thousand large state and collective farms that had their structure, approach to production, marketing methods, developed and detailed accounting, and a list of goals for the next several years. A collective farm was a

cooperative agricultural enterprise, operated on state-owned land by peasants from a number of households who belonged to the collective and who were paid as salaried employees on the basis of quality and quantity of labor contributed.

Conceived as a voluntary union of peasants, the collective farm became the dominant form of agricultural enterprise as the result of a state program of expropriation of private holdings embarked on in 1929. Operational control was maintained by state authorities through the appointment of collective farms' chairmen (nominally elected) and (until 1958) through political units in the machine-tractor stations (MTS), which provided heavy equipment to collective farms in return for payments in kind of agricultural produce. Individual households were retained in the collective farms, and in 1935 they were allowed garden plots.

An amalgamation drive, beginning in 1949 increased the pre-World War II average of about 75 households per collective farm to about 340 households by 1960. In 1958 the MTSs were abolished, and the collective farms became responsible for investing in their own heavy equipment. By 1961 their production quotas were established by contracts negotiated with the State Procurement Committee, in accordance with centrally planned goals for each region; the collective farms sold their products to state agencies at determined prices. Produce in surplus of quotas and from garden plots was sold on the farm market, where prices were determined according to supply and demand (RusNet).

Soviet farms, state-operated agricultural estates, were organized according to industrial principles for specialized large-scale production. Workers were paid wages but might also cultivate personal garden plots. Its form developed from the few private estates taken over in their entirety by the state in the original Soviet expropriations. The number of soviet farms increased during the period of collectivization beginning in 1929 and spurted again during the

1950s when a number of collective farms, the more prevalent form of agricultural enterprise, were converted to soviet farms.

The Virgin and Idle Lands Campaign initiated in 1953 relied mainly on the soviet farms. In 1973 the total area of state farms was greater than that of collective farms for the first time (RusNnet).

The most important feature of control over agriculture concerned marketing and organization of sales: the transfer of agricultural produce from producer to consumer. Soviet farms had three different outlets for their marketable output: the state procurement organization, the consumer co-operative organization, and directly to the "free" collective farm markets (Figure 2.3) State purchasing was handled exclusively by the Ministry of Procurements, which was also responsible for all related activities, such as food inspection. Furthermore, that Ministry was directly responsible for the purchase, storage and proper utilization of all state grain resources. Virtually all of the output of technical crops was purchased in that way. The other purchasing organization was the Central Union of Consumer Co-operatives. Formally, this organization was independent of the state apparatus. In particular, livestock, potatoes, vegetables and fruit were purchased in that way. In addition, those Unions not only bought from the farms, but also from the private plot of the individual households. The final option was the free market, where households and farms alike had the right to market produce, with the sole restriction that they had to themselves be the- producer of what is sold (no private middlemen allowed). (Hedlund 1984)

Both types of farms were dismantled completely and rapidly during the first years of privatization in Armenia when the country tried to overcome difficulties of transition. The difficulties in agriculture originate from the heritage of "Soviet type agriculture": distorted input

and output prices, huge subsidization, low food prices, high inflation and other factors related to the collapse of the Soviet Economic area such as disruption of trade relations and payment problems. (WB 1995)

From the source to the consumer

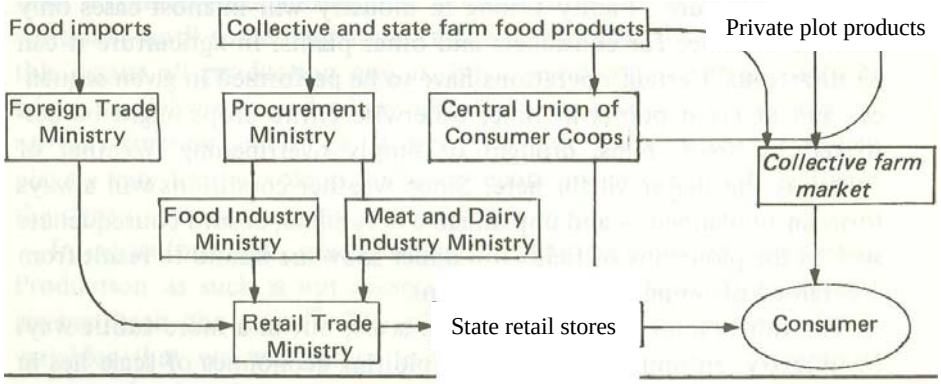

Figure 2.3. Flows of Agricultural Produce

Source: Hedlund 1984

CHAPTER 3

TRANSITION CHALLENGES AND SOLUTIONS

1. Transition Economies

The so-called transition economies are commonly understood to refer to countries which have moved or are moving from a primarily state-planned to a market-based economic system, with private ownership of assets and market-supporting institutions. These countries include those of the former Soviet Union (FSU) and those of Central and Eastern Europe (CEE) closely allied with the Soviet Union, as well as more recently countries in Asia and Africa undergoing market transformations of various degrees, such as China, Mongolia and Vietnam.

While the transition countries in the FSU differ from those in Asia and Africa and from one another in many respects, including culture, economic structure and extent of the informal sector, and pre-transition starting points, they nonetheless are affected by transition in much the same way. The transition process has brought with it significant short-run costs to the economies that are by now well-documented. The dismantling of the state-owned enterprise systems have resulted in increases in poverty as wages dropped in the face of disruptions in trade and financial links, in Eastern and Central Asia (ECA) primarily, unemployment increased in some cases as newly private firms struggle to become competitive, and vulnerable groups generally were not able to rely on heavily state-subsidized support services. These changes were exacerbated by the collapse of historic trading relationships and fiscal shocks to state budgets. In many cases, poverty and increasing urbanization have further stressed and weakened family and community-based coping mechanisms, particularly in Asia (Rozelle, Swinnen 2004).

The combined effects of these shocks have been dramatic. In 1990, an estimated 1.5% of the population in the ECA region lived on less than US$1 a day. By 1998, 5.1% of the population had fallen below this international poverty standard, with substantially higher rates and increased inequality in the lower-income and conflict-ridden countries. Many countries in the ECA region tried to hold together elements of the old social protection systems, including safety nets. In 1999, for example, it is estimated that Russia spent 50% more on residential care institutions – important under the Soviet system - than on social assistance benefits and child allowances combined.

The key issue for safety net provision in transition economies has been how to maintain an adequate mix of appropriate assistance for the poor and vulnerable while adhering to tighter budget constraints and changing government and institutional structures. The adjustments are ongoing. Recently, for example, several countries in the ECA region have improved the coverage and targeting of their programs, and by providing adequate financing, they have shown that it is possible to alleviate poverty at relatively low cost. (World Bank)

The reform path taken in most of CEE countries and Commonwealth of Independent States members, although implemented with variations in speed, was predicated mostly on removing central planning and privatizing the up- and downstream companies. Reformers in the most aggressive countries began to liberalize markets at about the same time that they privatized farms, liberalized prices and cut subsidies. Control and ownership of tens of thousands of firms shifted (Rozelle, Swinnen 2004).

2. Literature Review

Many studies address efficiency of agricultural reforms in CIS and CEE. Particularly, studies by Lerman, Csaki and Feder (2004), concern divergent paths from plan to market taken by transition countries within the CEE and the CIS, concentrating on transition in the agricultural sector. These authors discuss the common heritage of the former socialist countries in agriculture, the persistent inefficiency of the socialist agriculture, and the sources of this inefficiency. Setting out the desiderata for transition, the article explores the divergent approaches to reform between the CEE and CIS agricultural sectors, focusing on land policies and changes in farm structure. It also examines the impact of reform on agricultural performance at the national level. This article also considers what factors and forces explain the divergence between successful and unsuccessful enterprises in agricultural transition over the first decade of transition and discusses lessons of transition in agriculture.

2.1 Studies of Selected Countries That Are of Particular Interest.

Studies by Brem (2002) contribute to understanding of farm restructuring in transition by trying to identify driving forces behind organizational change in agriculture. The focus is the stakeholders' trade-off between internal transaction costs and switching costs. The factors determining the level of these two types of costs are introduced, such as the original size of the firm, inside-ownership and the type of production for internal transaction costs, and the remaining asset specificity after establishing the formal property rights for switching costs. The theoretical model is tested by data from a recent survey in two regions of the Czech Republic with both qualitative and quantitative analysis. The quantitative analysis characterizes the downsizing process of distinguishable restructuring paths of 87 farms. Mechanisms of individual stakeholders' redeployment decisions are elaborated on the basis of five qualitative case studies.

Research performed with Poland farms data by Van Zyl, Parker and Miller (2000) shows that larger farms are often actively promoted over small farms. This policy is based on the perception that there are economies of scale that favor large farms; however, this is contrary to international evidence, which generally indicates that larger farms are less efficient and use less labor than small-scale family farms. Using both total factor productivity measures and data envelopment analysis, empirical findings from Poland suggest that larger farms are no more efficient than smaller farms, and smaller farms are relatively more labor-intensive. These results have important policy implications for farm restructuring in Poland and other transition economies.

Study of Hungarian reforms by Shankar, Thirtle and Piesse (2003) demonstrate that subsidized energy prices in pre-transition period led to excessive energy intensity in the agricultural sector. Transition has resulted in steep input price increases. In this study, Allen and Morishima elasticities of substitution are estimated to study the effects of these price changes on energy use, chemical input use, capital formation and employment. Panel data methods, Generalized Method of Moments (GMM) and instrument exogeneity tests are used to specify and estimate technology and substitution elasticities. Results indicate that indirect price policy may be effective in controlling energy consumption. The sustained increases in energy and chemical input prices have worked together to restrict energy and chemical input use, and the substitutability between energy, capital and labor has prevented the capital shrinkage and agricultural unemployment situations from being worse. The Hungarian push towards lower energy intensity may be best pursued through sustained energy price increases rather than capital subsidies.

Agricultural reforms had different impacts on transition nations and sources of further growth are still arguable for each of them. Some researchers point out gradual sequencing of reforms that started with property rights and postponed changes to marketing system. They emphasize the rise of incentives provided by decollectivization. Well known example of China shows success in agricultural transition without well-functioning markets in the early years. At that time agriculture was still served by government-run marketing channels. Another reason for success was low initial level of development and rise of economic activity in East Asia in second half of 20th century. There is also a point of view that what was happening to East Asia cannot be used as an example or guide for CEE or CIS nations.

Indeed, while in East Asia agricultural output was growing in post-reform CEE and CIS it fell and was not recovering for a long time. However, in some countries such as Hungary, Czech Republic, Slovakia and others farming sectors responded positively within a short period of time. Output per unit of labor rose sharply. Total factor productivity in agriculture grew as strongly in CEE within a few years after the fall of Berlin Wall as it did at a similar point in the reform process of China and Vietnam.

This is not the case for agricultural performance in most CIS countries, however. Although many policies – especially price adjustments and subsidy removals – were common across CEE and CIS nations, others, such as farm restructuring and liberalization of marketing institutions, proceeded more gradually in most CIS nations. A careful examination of the subsequent outcomes suggests that the nature of reform matters. While the magnitude of the collapse in terms of output was no worse in CIS nations than in CEE, when measured in terms of productivity, the slow move strategy of CIS was far less successful. Productivity in Russia, Ukraine and Kazakhstan not only fell sharply during the immediate post-reform period, it

continued falling or remained stagnant during the most of the first decade of transition. From the productivity point of view, the patterns of performance are more similar between East Asia and CEE than they are between CEE and CIS.

The general goal of the study by Rozelle and Swinnen (2004) is to find out lessons for economic performance outside the transition world. That's why, their specific objectives are to document the post-reform trends, to discuss key reforms, to review findings and draw lessons. This approach leads to a number of new insights: reforms in agriculture are linked to the performance in the sector; performance of agriculture in different countries in terms of productivity is quite similar; absence of markets and poor property rights make CIS countries an outlier. Thus, it is important to carefully compare the performance of transition nations on the basis of productivity not on output; conclusions change fundamentally. Two elements play the key role: good property rights and the institutional environment in which agents can exchange goods and services and access inputs.

Prices and subsidies: It is well known that in socialist planning system prices were administered by the apparatus. Depending on country, control over prices could be more or less strict; however the most important commodities were allocated according to quantity needed. Price played an auxiliary role and was used mainly for accounting purposes.

Differences among countries come from the ways of stipulating prices of the produce, inputs and services. In China and Vietnam, prices of agricultural produce were artificially low; the industry taxed heavily, while in most of CEE and CIS nations agriculture was substantially subsidized and supported, with low prices for inputs and high – for output. Thus, "setting the prices free" would depend on extent of market distortion.

Generally, reforms in CEE and CIS were much more radical than in East Asia, there were differences among regions. In Central Europe, socialist system of support to agriculture was broken at once: prices decontrolled, subsidies reduced, while in most CIS countries reformers decontrolled prices more gradually.

However, differences between these groups of countries lies rather in the direction of price adjustments. While in East Asia pre-reform prices were set below equilibrium, in CEE and CIS they were supported above. Thus, price liberalization caused declines in agricultural terms of trade. In the first five years of transition, for example, output-to-input prices in agriculture fell more than 30% in Hungary, 50% in Czech Republic, at least 70% in Slovakia, Poland, Russia, Ukraine, and some of the Baltics. In these countries, the combination of the fall in the real price of output and the sharp rise in the real price of inputs led to a severe drop in production in most agricultural sectors and food crises in a number of them (Rozelle, Swinnen 2004).

Property rights reform farm restructuring: Although there were many differences among countries in the organization of their agricultural sectors prior to reform, they were united by one feature: lack of incentives for farm workers, whose wages were loosely tied either to their effort or farm profitability. In addition, monitoring farm workers was difficult; state favored large farms were found to be inefficient. Logistics compounded the problems.

There were a number of reformation efforts still in socialist planning system to provide better incentives, to reduce operational size of farming unit, to facilitate better allocation of inputs. In most countries, including former Soviet Union, reforms were mostly market oriented.

In CEE, the dominant land reform procedure was restitution of land to the former owners who had lost their rights during the collectivization movement in the past. In different countries

land restitution was combined with other land reform programs, for example: voucher privatization (Hungary), distribution of state land (Romania), or the leasing of state-owned land (Czech Republic). Interestingly, fragmentation of ownership that resulted from this reform did not lead to fragmentation of farms. This happened, because new land owners, being mainly far from land tilling, rented their land to those who already worked on it.

In most CIS countries, land reform proceeded more gradually than in East Asia or CEE. Reformers followed two basic steps although not always completely: first, land was given from the state to the collective and, second, ownership rights were given to individuals. Certificates, given to individuals did not establish direct link to land ownership, however. Thus, land owners remained collectives.

Liberalization and Development of Market Institutions**:** Another task of reformers is to create more efficient institutions of exchange. Markets generally increase efficiency by facilitating transactions among agents to allow specialization and trade and by providing information through a pricing mechanism to producers and consumers about the relative scarcity of resources. To function efficiently, markets require supporting institutions to ensure competition define and enforce property rights and contracts, ensure access to credit and finance, and provide information. These institutions were either absent in communist countries or, if they existed, were inappropriate for a market system.

On the eve of transition, the agro-food systems in CEE and the CIS countries were organized much like in the West, with specialized companies at various stages of the chain, such as food processing and marketing companies (downstream firms) and fertilizer, machinery and feed producing and supply enterprises and agricultural banks (upstream firms). While there was specialization on a functional basis, the companies at various stages of the production and

marketing chain operated in an environment that was centrally planned by administrative apparatus and vertically integrated.

Currently in the countries that have most successfully created a system of market institutions, a complex of public and private and formal and informal institutions has emerged that is capable of enforcing contracts and supporting access to inputs and output markets. The emergence of markets has progressed considerably slower in most CIS countries because slow policy reforms have constrained both the development of public institutions that facilitate trading as well as private institutional innovations.

CHAPTER 4

TRANSITION AGRICULTURE IN ARMENIA

1. Trends in Macro Economy and Trade

During recent years, Armenia has seen significant macroeconomic improvements. In 2000-2003, the growth in Armenia's foreign trade, particularly the substantial increase in the volumes of merchandise exports, shows that Armenian economy's integration with the world economy advances in pace and volumes.

1.1 Economic Growth

In comparative terms, the Hirschman's index of export concentration for Armenia remains very high, one of the highest among the FSU economies. Even though the number of exported products has almost doubled from 1997 to 2002, export concentration has also increased in the same period. This means that Armenian exports mainly depend on fluctuations in international market prices and the demand for diamonds, metals, copper and alcoholic beverages.

During the past eight years, Armenia's foreign trade has been thoroughly redirected towards the developed countries. Over the period 1995-2003, the developed countries' share in Armenia's foreign trade has increased 4.6 times, hitting 54.7% in 2003 as compared to 29.3% in 1995. The trend is even more apparent in the export figures. In 2003, the developed countries' share of Armenian exports amounted to 72% as compared to 18% in 1995, registering a tenfold increase. At the same time, there has been a drop in the share of the CIS countries in the foreign

product turnover from 52.2% (1995) to 19.6 (2003): this is equivalent to 23% decrease in absolute numbers. The total exports to CIS countries have declined 1.5 times in the same time frame.

Based on a factor analysis of the continuous economic growth over nine successive years, two essentially different periods can be distinguished. Imports substitution and the autonomous expansion of the domestic market accounted for the economic growth in the first time period encompassing 1995-1999. Given that, the contribution of imports substitution to GDP growth rose from 11.4% (1996) to 40.2% (1998). In absolute numbers, it changed from 15.88 billion AMD in 1996 to 65.68 billion AMD in 1999 (NSS).

In 2000-2003, the contribution to the economic growth from exports has significantly increased. In 1995-2003 it amounted to 12.1% on the average; however it was in the negative in 1995-1999, plummeting down to -0.3% per annum. A drop in the total export volumes in those years accounts for the decline. In 2000-2003, the contribution of exports to the economic growth totaled 21.3% on the average, i.e. twice the impact of imports substitution. The role of the autonomous growth of the internal market has also declined.

The autonomous growth of the internal market driven mainly by external financing remains the main factor which accounts for the economic growth throughout the period under discussion.

In the case of market growth of the autonomous internal market, the same two-periods, 1995-1999 and 2000-2003 can be clearly delineated. In 1995-1999, more than half of the autonomous domestic market growth was attributed to an increase in other services (mainly education and health care) and indirect taxes and the contribution of industrial and agricultural

output added up to 12.24%. In 2000-03, the total contribution of these factors amount to a mere 35% with the industrial and agricultural output contribution making up 5.25%: more than 60% of the internal market growth was ascribed to construction and trade, as compared to 23.2% in 1995-1999. This data further reinforces the fact that the opportunities for commodity production growth driven by an internal demand are essentially exhausted, and in the medium term, growth can only be attained due to an incremental increase in exports. On the other hand, most of the unprecedented growth (at an average of 30.3% per annum) of construction in 2000-2003, and a considerable part of the industrial, trade, infrastructure and disaster zone construction (without expenditures on housing construction by the population) were financed by external resources, i.e. by loans and targeted grants. In view of the international experience that has been gaining a foothold in Armenia over the last years, construction, especially when financed or co-financed by the state, can be one of the key driving forces of a sustainable economic development. To ensure a steady development of the construction in the future, relevant institutional structures, non-existent at the moment, must be introduced, especially in view of anticipated cuts in foreign funding.

Since 2000, Armenia has been undergoing a transition from a model of externally-financed economic growth based on import substitution and the autonomous growth of the internal market, to a model of economic growth based on the use of internal resources where the main factors of economic growth are the incremental growth of exports, construction and services. Until recently, this transition was mainly guided by a generally liberal economic policy with minimal involvement of the state: virtually no economic subsidies were provided and the relevant institutional structures were underdeveloped. Hence, the goals of a complete transition to a new model of economic growth and attainment of a steady growth rates gain the importance

as a key long-term priority of Armenia's economic policy. In order to attain this priority, an institutional framework must be developed and efficiently introduced. Only this will form the basis of Armenia's economic development policy in the foreseeable future (Yeghiazaryan 2004).

1.2 International Trade: WTO Accession and Consequences

Armenia became a full member of the World Trade Organization on February 5, 2003. In the course of negotiations (application submitted in 1993), Armenia passed an extensive set of new laws to conform to WTO rules. The laws concern customs duties, taxes, intellectual property, export and import licensing and domestic market protection.

Among advantages of WTO membership are integration into the world economy, exports stimulation, investments attraction, and intensification of cooperation with international organizations. It was expected that WTO membership would give a further boost to the country's already fast-growing economy. Indeed, gross domestic product growth was 12.7% in 2002, 13.9% in 2003 and 11.4% in 2004 (NSS).

However, closer look at the commitments gives a different picture of possible consequences of their implementation for economy and society. Signed commitments may have controversial consequences, particularly, in agriculture. Among questions concerning agriculture, the central issue is agricultural domestic support.

To summarize, one of the commitments is to bind export subsidization at zero level, i.e. not to provide export subsidies for agricultural products. Also, aggregate measure of support (AMS) is bound at zero level, so Armenia cannot exceed "de minimis" level of support (product specific and non-product specific): ten per cent of total annual agricultural production until December 31, 2008 and five per cent after that.

Another commitment is to remove the existing exemption from the value added tax (VAT) on domestic agricultural products sold by producers and on sales of veterinary products starting on January 1, 2009. As regards market access, Armenia agreed to bind its tariffs at 15 per cent level on imports of all agricultural products except for few product lines (Gabrielyan 2003).

The WTO commitments' implementation has had a significant economic and social impact on Armenian economy. To make this impact manageable, legal, administrative, economic as well as social issues, posed by the commitments, should be addressed as soon as possible. These issues arose, because the Agreement on Agriculture does not include provisions on transition economies although it includes those for developing countries. Additionally, most of the measures of the Agreement were designed for developed market economies; it is remarkable that main players in the plurilateral negotiations with Armenia were Australia, Canada, the EU and the USA.

The central legal issue is clear specification of farmer's legal status. At present, farmer's status is indefinite: neither natural/legal person nor individual entrepreneur. This, as well as discrepancies between a number of legislative acts applicable to agriculture, confronts the imposition of the VAT.

Administrative issues first of all refer to enormous number of farmers (Table 4.2) compared with approximately 15 thousand current VAT payers. Completion of this task requires significant human resources and capital for registration, tax administration, and control and tax collection.

Economic issues are connected with increase of tax burden on farmers and, subsequently, increase of prices on agricultural products. Moreover, there may develop situation of double taxation in the chain of VAT, due to inclusion of veterinary drugs to agricultural producers in the list of products subject to VAT, and exclusion of phytoprotection chemicals, fertilizers and seeds. In Armenia's VAT system, some of the downstream products are VAT exempt, while others are taxed. In this case, farmers being unable to subtract the VAT paid to suppliers of chemicals or fertilizers will be double taxed. The additional problem here is the *de minimis* restriction that will not let the government compensate the increase of the tax burden on farmers through the provision of direct subsidies.

It should be noted that in the case of Armenia, having limited financial resources to support its farmers, the major portion of government support to the farmers are tax exemptions in the agricultural sector. The other types of support are investment and input subsidies provided through low interest loans, water price subsidies, and so called "seed loans" (falling under the "amber box" measures according to the Agreement on Agriculture). Particularly, sales of domestically produced basic agricultural products have been exempted from VAT, while imported agricultural products have been subject to value added tax. The WTO members argued that this violated the national treatment principle of the WTO, according to which imported and domestically produced goods shall be granted the same treatment in the domestic market of the importing country.

Social issues include possible rise of tension among farmers. Also, VAT requires complicated calculations and accounting that most farmers generally not familiar with tax legislation, will be most probably reluctant to do. This problem may be addressed by organizing farmers' training (Gabrielyan 2003).

2. Basic Reforms

A number of fundamental reforms have taken place in the Armenian agricultural sector. Their main goal is successful transition to the market economy.

2.1 Land Reform: First Years' Decollectivization and Current Need for Co-Operation

The principles of land privatization were set in four basic laws: Law on Peasant and Peasant Collective Farms (February 1991), Land Law (February 1991), Law on Privatization (June 1992), and Law of Entrepreneurship and Enterprises (March 1992). (Lerman and WB 1995).

The first principle defined the eligibility for land: land was distributed only to village residents, without any regard to former ownership claims. This principle was intended to eliminate the possibility of absentee owners and to ensure that land was distributed to households that could actually cultivate it for food production. This was an important consideration for improving food security, taking into account war and natural disasters. Although all village families had a home garden plot previously, and many would have undertaken seasonal work on collective farms, only a relatively small proportion of rural population has been permanently engaged in agriculture. Members of other occupations were also eligible to receive land. Former inhabitants of the village and other citizens resident in Armenia have the right to apply for remaining land after allocations to the village residents if they present evidence of their willingness to settle in a particular village or farm.

The second principle stipulated allocation of land according to family size. Families with up to three members received one unit of land; those with four to six members, two units; and those with seven or more members, three units. The size of a unit was calculated for each village

by dividing the available land by the number of entitlements. The calculations were carried out separately for arable irrigated land, arable unirrigated land, perennial plantings, and hay meadows. As a result, each family received several fragmented parcels of different kinds of land. Pastures were not privatized and remained in state ownership.

The third principle introduced the use of lottery to determine the actual location of the individual land units in the village. Finally, the fourth principle established that the recipients would have to pay for the land they received. The payment, however, was set at a very low level (70% of the "net profit" for two years, calculated on the basis of very lenient standards), and was generally regarded as purely symbolic. Despite the requirement to pay for land, an initial three-year moratorium was imposed on land sales. The moratorium expired in February 1994, after which it was legally allowed to sell and buy land.

As a result of land privatization, farm structure changed dramatically: hundreds of thousands small farms were created and state and collective farms seized to exist. There are about 100 state farms that control 2% of agricultural land. These state farms specialize in seed and livestock selection, which is legitimate public-good activity that the state retains in the new environment.

Generally, members of a state and collective farms had the option of maintaining the previous farm structure. Two thirds of state and collective farms' member voices were required to preserve, either fully or in part, the old structure. Only a few cases resulted in the retention of the state and collective farms structure, the rest were dismantled in 1992 and 1993. By mid-1993 most of the state and collective farms had been dismantled.

Table 4.1. Structure of land ownership in Armenia, 1997

	Total, thou ha	Private ownership		State and common ownership	
		thou ha	%	thou ha	%
All agricultural land	1391.4	446.5	33.5	944.9	67.9
Arable land	494.3	338.7	68.5	155.6	31.5
Perennials	63.8	47.2	74.0	16.6	26.0
Hay meadows	138.9	60.6	43.6	78.3	56.4
Pastures and other	694.4	-	-	694.4	-

Source: Lerman, Mirzakhanyan 2001

The process of land privatization in Armenia had largely been completed by the end of 1993 (Table 4.1). Out of 800 or so previously existing state and collective farms, less than 70 remain. Apart from this type of state owned agricultural land, a reserve of about 20% of the land in each village tract has been set aside, under the management of the village council, to allow for future expansion of the village settlement. The remainder has been allocated to local rural families for their own use. Official figures on the progress of privatization indicate that 94% of arable land had been privatized and 77% of perennial crop land, together with 61% of grassland, had been distributed by the end of 1993.

Family farms cultivate or use most of the available land resources through a combination of private ownership and leasing of state and common lands. Moreover, the government has begun to encourage the sale of state and common land to individuals. In the “second wave” of land privatization in Armenia, the large reserves of common land are being actively tendered by village councils. At this stage, land is not allotted free of charge any more: the interested individuals are expected to bid and pay for additional land from common and state reserves.

2.2 Development of Market Institutions

This is one of the most important goals of transition; their current state indicates the stage of transition and their ability to facilitate trade.

2.2.1 Sources and Availability of Agricultural Inputs: Machinery

In addition to the land, the buildings, machinery, and livestock previously owned by collectives and privatized state farms were also being sold at symbolic prices. A relatively high percentage (about 50%) of these privatized assets had been sold to newly formed collective farms, since many individuals were not interested in or were not in a position to use big farm buildings or machinery, or did not have stables to accommodate livestock. Individual land owner often established co-operative farms with the aim of demonstrating their capacity to make use of these assets.

The privatization of assets advanced slower than privatization of land, however. By early 1993, less than 50% of buildings and other fixed assets, compared to 87% of the land were earmarked for privatization. The main reason for this discrepancy is that the legal provisions for the privatization of land are much clearer than for the privatization of assets.

As a result, few farmers own, individually or jointly, farm machinery; most of farmers rent machinery. Rental markets for machinery and machine services apparently exist in rural Armenia, and this provides strong evidence of how functioning markets for equipment replace the traditional need to own farm machinery.

2.2.2 Sources and Availability of Agricultural Inputs: Chemicals and Seed

After the republic's only fertilizer plant went out of operation as a result of the 1988 earthquake (Armenian Technology Group), Armenian agriculture is characterized with limited

use of imported fertilizers. According to (Lerman, Mirzakhanyan 2001), half of the farmers purchase fertilizers, seeds, animal feeds, and one-third of farmers purchase plant protection chemicals.

2.2.3 Financial System: Development of Rural Micro-Finance

Co-operatives can provide economies of scale that small family farms lack. Co-operatives are useful for marketing and sales of agricultural product and well as for better quality control. They also help to solve technical problems such as buying fuel, fertilizers, other resources as well as machinery. Their recent growth is remarkable (Table 4.2). Objectives of co-operative may be formulated the following way: to sell the product on the most stable market and to buy necessary inputs at the best price, ultimately increasing the farmer's income. (Heboyan 2003) According to survey analysis by (Lerman, Mirzakhanyan 2001), almost 44% of family farmers cooperate in one form or another. The main area of cooperation is irrigation; others include joint use of farm machinery and equipment, sale of products, professional services, and notably agricultural production. The areas with least cooperation are processing, purchase of farm inputs, and mutual credit. Although formal cooperation in credit is not evident, farmers mainly borrow from relatives, friends, and neighbors. Thus there is a strong indication of credit cooperation on an interpersonal level in the village.

Obstacles to faster development of co-operatives include absence of a specific legislation that would provide legal basis for co-operatives activity (at present they are merely given definition by the Civil Code) as well as their taxation. Also, there is a problem of confidence in co-operatives as for most villagers they still associate with Soviet rule and methods.

Another form of co-operation is Farm Credit Unions, supported by United States Department of Agriculture (USDA) Marketing Assistance Project. Farmers receive non-interest loan as a group responsibility. The loan amount may be requested back if its spending does not serve the initial purpose.

Each member of a union makes a payment to the union's fund in advance, thus forming the fund of that union. Each year, union adds an amount to the fund that will be further used for the purposes of the union. As soon as amount in the union's fund equals amount of loan to the union, the union is considered established and mature to pay its expenses itself.

In the beginning of second quarter of 2004, in 10 marzes (regions) of Armenia work 52 Farm Credit Unions whose activity is regulated by the corresponding Law (2002). There are 829 family farmers – participants to the unions. The unions produce mainly tomato, potato, wheat, grapes, milk and other agricultural products, including fruit and vegetables.

Table 4.2. Number of Family Farms and Cooperatives (1998-2003)

	1998	1999	2000	2001	2002	2003
Family Farms	333810	335076	332598	334759	334688	337906
Co-operatives	10	10	10	99	110	131
Total	*333820*	*335086*	*332608*	*334858*	*334798*	*338037*

Source: National Statistical Service

Positive influence of Farm Credit Unions includes mitigation of member family farm financial difficulties, provides financial resources almost in the absence of banks and other credit

unions, enhancing organizational efficiency of farmers, providing economic stability of farms through mutual support, formation of private investment of member farms, help for continuation and successful economic activity both for unions and their members etc. Heboyan (2003) provides several examples of co-operatives that were able to decrease their cost of production by as much as 37%.

3. Irrigation

International as well as US-based organizations performed several projects in Armenia in different fields. The projects concerned both agricultural production itself and its marketing and sales. The greatest assistance to the former is given by World Bank through a number of Irrigation Projects, and the most influential project in Marketing and Sales field was performed in the USDA Marketing Assistance Project framework. Currently, irrigation water supply in Armenia is implemented through WSA and 12 Drainage and Irrigation Maintenance Agencies (DIMA).

3.1 Water and Irrigation in Armenia

Armenia has a long history of irrigation. Although about 100,000 ha were irrigated fifteen centuries ago, only about half of that area was still irrigated at the beginning of the century. Until recently, practically all of the area equipped for irrigation (the command area) has been irrigated. Because of the lack of energy, spare parts, pump replacement, and the war effects (when 18,400 ha were abandoned), the intensity of irrigation has declined by about 8%, compared with that of 1990.

Irrigation supplements rainfall and varies between 2000 to 10000 m^3/ha/year. Design delivery capacities (measured at the outlets) are generally about 0.85 liters per second. Overall

water use efficiency, from water source to crop, for gravity systems is not more than 30 to 35% of use. Improved systems and meticulous water scheduling could almost double the overall efficiency of use. Flow measurements are made at 3.621 locations all over the country and 64 of the stations are equipped with automatic recording devices. Measurement devices and control devices do not exist yet on farms that hampers the implementation and monitoring of water scheduling.

3.1.1 Surface Water

There is an average total annual volume of 2400 mm^3 is stored in 74 irrigation dams (900 mm^3 live storage) from the total run-off of 8700 mm^3/per year. Of this 8700, 1300 is usable by neighboring countries. Surface water is available in 18 principal river basins. However, only seven are particularly important. Most of the run-off, close to 60%, flows at the four largest rivers (Araks, Debed, Kasakh/Sevdjur and Akhuryan), and an additional 25% at the other three major rivers (Hrazdan, Arpa and Vorotan). The Araks river water is shared with Turkey.

3.1.2 Ground Water

Annual replenishment of groundwater is estimated at 4200 mm^3, of which about 1400 mm3 reappear as springs within the country. The rest, 2800 mm^3, is classified in three main categories: 1. groundwater resources, pumped by 2105 irrigation and drainage wells, most of which are in Ararat valley, 2. numerous industrial and municipal wells at various parts of the country, 3. springs and aquifers reappearing outside Armenian borders. At least 500 mm^3 (18%) of the 2800 mm^3 are still available, and could safely be used annually, without significantly reducing spring or river flows.

3.1.3 Water quality.

Water coming from Sevan Lake and Araks River are polluted and their quality is quite low. Over the country, man-made pollution is limited to some specific reaches of rivers and originates from industry, particularly mining, and introduction of sewage to the rivers. Groundwater quality is generally good except in some parts of the Ararat valley close to the Araks River and north of Artashat, where the level of salinity is problematic.

3.1.4 Irrigation Regions

The country is divided into six irrigation regions, together with the 38 different irrigation regimes for allocating water over Armenia. Practically, the regions are multi river basins. From agricultural and water management points of view, they are ideal homogenous units for planning and control of water schemes, as they share the same locations, climate, topography, altitudes, water resources and utilization systems.

3.1.5 Irrigation Infrastructure

Irrigation methods can be broadly classified as furrow systems (29%), border strip irrigation (10%), field flooding (41%), various sprinkler systems and pressure pipe systems (20%). All irrigation systems are designed for day and night operation. A summary of methods used and area equipped is provided.

A wide range of irrigation infrastructure exists in the country, including irrigation reservoirs, run-of-river schemes, pumping stations, tube wells, and surface and sprinkler irrigation systems. Mixed gravity/pumping systems exist in many of the irrigation schemes in Armenia. Surface run-off is stored in 83 reservoirs, 74 of which are designed for irrigation. These reservoirs have a total storage capacity of 977 mm^3 and cover 96,000 ha. The largest

existing reservoir, with 525 mm^3 capacity (Akhurian), is shared with Turkey and provides water for about 30000 ha in north western Armenia. Ten irrigation reservoirs are under construction with a capacity of 396 mm^3 and eight reservoirs with a capacity of 460 mm^3 have been designed for future construction. In addition, five reservoir sites have been identified for storage of a further 88 mm^3. If all 23 reservoirs were completed, an additional storage of 944 Mm would have been added to the existing 977 mm^3. Fifteen of the irrigation dams are considered in need of major repairs. The causes of their precautions condition include design errors, constitution faults, and lack of maintenance.

The run-of-river schemes irrigate about 54,000 ha. The biggest scheme is the Armavir (previously Oktemberian) at the Araks river (built in 1930), which provides 27 m^3 per second and covers about 30,000 ha in the Ararat valley. The Armavir intake could be increased to 53 m^3 per second based on 1979 interstate agreement between former Soviet Union and Turkey, thus providing an additional 26 m^3 per second for expanding the irrigated area.

There are 365 pumping stations for irrigating about 133,000 ha. These stations have about 900 individual pumps with an installed power of about 440 MW. Pumping station capacities range from 100 liters per second to 16,500 liters per second. In addition, there are a few pumping stations for lifting drainage water into gravity outflow canals. Pumps with installed capacities greater than 20 KW were imported from other republics of the FSU. All are electrically powered. More than 35% of them need to be rehabilitated or replaced.

The conveyance systems are served by about 21,300 km of main, branch, and secondary canals/pipes. Three fourth of the canals are lined with concrete or are pipes. Also, there are about 91,000 hydraulic structures. The conveyance systems are in a deteriorating condition. Many canals are older than 30 years and need rehabilitation.

Irrigation wells contribute about 12% to the overall water supply in the country and irrigate about 34,000 ha. A large part of the wells are part of gravity systems, and only a small number serves pipe irrigation. Groundwater is exploited by 2,105 wells, 40% artisan and the other 60% (1,276) need pumping. Of the latter, 76% (860 wells) are located in the Ararat valley. Part of the Ararat wells is used to add water to the flow of the irrigation canals. About 60 wells are used to control groundwater levels. With the new land reform more than 700,000 irrigated units now must be served all over the country. It will be particularly difficult to establish that number of outlets, combined with measurement devices and control devices.

Until 1960 little drainage work or reclamation of saline soils was done. Since then, about 60,000 ha have been drained and 4000 ha reclaimed (including drainage) – most of the area being located in Ararat valley. About 34,000 ha have underground clay pipes, 12,000 ha vertical drainage systems and the remainder 14,000 ha is open drains.

Irrigated agriculture is heavily dependent on electricity for pumping and to a lesser extent, on fuel for tractors, combines, and the transport of products to the market. The average annual pumping cost is estimated as 2,340 kwh/ha. At present, irrigation is subsidized. Because of a capricious topography, and the large scale use of groundwater and irrigating machines, irrigation uses excessive amount of energy (close to 500 M kwh/year).

3.2 World Bank Irrigation Projects

World Bank started several projects some of which are now in effect and some completed. The first project is Irrigation Rehabilitation Project.

3.2.1 Irrigation Rehabilitation Project

The Armenia Irrigation Rehabilitation Project, approved in 1994, addressed three major problems. First, following independence from the former Soviet Union and the macroeconomic crisis 1991-94, there was a marked reduction in the ability of the state to operate, manage and maintain irrigation infrastructure. The second was that inferior construction standards, materials and building quality during Soviet times made public-sector infrastructure liable to premature ageing and failure, a problem exacerbated by deferred maintenance. Third, there was a high reliance on cheap energy for pumping. The project's primary objective was to assist in maintaining the level of irrigated agricultural production over 164,700 ha or 60% of Armenia's irrigated lands. The secondary objective was to improve the country's water resources planning, paying particular attention to dam safety, hydropower and environmental concerns.

The outcome of the project was rated as satisfactory. The project substantially achieved most of its objectives, with few shortcomings. Following restructuring in its second year (when lower priority works were postponed to a second phase project), revised targets for irrigated area and physical rehabilitation were fully achieved. Primary and secondary canals and four dams were rehabilitated. Irrigation facilities needed for market-based privatized agriculture were completed satisfactorily. Operating costs were cut back primarily through reduction of energy consumption and water leakage. Flow measuring facilities were installed so that water volumes could be measured, accounted for and then sold. The International Fund for Agricultural Development's co-financing (US$8 million) successfully reconstructed tertiary level and on-farm irrigation infrastructure on over a fifth of the total project area. And within this 27,000 ha, over 380 km of tertiary and quaternary-level irrigation canals were realigned, rehabilitated and downsized as needed to efficiently serve the area covered by newly created water user groups.

Institutional development is rated as substantial. Technical assistance facilitated sound procurement and contract administration procedures, established a viable private sector contracting capability, built government's capacity to undertake financial and economic analysis of projects, and helped develop a rational basis for prioritizing projects for investment. This was a marked improvement over the ad hoc approach based on Soviet practice used before 1996.

The formation of pilot water user consumer cooperatives was initially successful but subsequently they were found to be too small to be effective. Even so, government expanded them nationally in 1998 long before the lessons from the pilots could be utilized to improve their design. Building on studies funded by the project and lessons learned from the Bank's global experience, in 2002 water user groups were enabled to form voluntary water user associations shortly after the project closure. The new associations merged dozens of cooperatives into viable management units of 3,000 to 6,000 ha that benefited from economies of scale and are adopting commercially-oriented financial management and cost recovery. Because this reorganization has not yet matured and government failed to revitalize its irrigation operation and management agency, only a quarter of the planned full recovery of operation and maintenance costs was achieved.

However, after project closure, and in response to conditions for further Bank lending, the government completely reorganized Armenia's water management into water supply and water service agencies. It is too early to judge their performance. A thoroughly modernized State Water Law was approved in 2002.

Sustainability was rated likely. There is greater clarity about the real costs and institutional reforms needed to make irrigation viable. The new water user associations (WUA) are adopting a pragmatic approach to reducing costs, as is the government with its strategy to

convert pumped irrigation to gravity supply where economically feasible. Improving cost recovery was high on the agenda.

Rapidly changing market conditions and Bank experience of Armenia's realities led to project restructuring in the second year. Supervision was exceedingly thorough, and policy advice was of very high quality, appropriate and effective in moving an agreed reform agenda forward. The pace and extent of reform in the irrigation sector is remarkable considering the chronic situation in 1994. Borrower performance was rated satisfactory (WB 2004).

The project experience offers four lessons.

Rehabilitation is only a partial solution for most irrigation projects because it is generally a symptom of inadequate management and insufficient maintenance funding. This project clearly demonstrates that rehabilitation should be supplemented by measures to foster creation of efficient institutions with the ability, inter alia, to measure and manage water and accurately cost operation and maintenance.

Some of the most effective and simple investments leading to higher levels of efficiency in irrigation projects are the installation of a large number of water and electricity flow measuring devices and consultation with stakeholders to agree on operating rules.

It is essential that adequate attention is given during appraisal to linking investments in agricultural technology with the measures to improve production and marketing of outputs. The absence of such complementary investment may jeopardize the ability of project beneficiaries to cover operation and maintenance costs and thus threaten sustainability.

Social assessment and interventions are needed particularly when there is a high level of rural poverty. Such assessment will help to ensure that infrastructure investment give adequate

attention to beneficiary ownership and their ability to contribute towards maintenance of facilities created. In the project, such an approach could have created smallholders' cooperatives or micro-credit groups that could have moved landowners beyond subsistence agriculture (WB 2004).

3.2.2 Dam Safety Project I

Three complete dam failures occurred in Armenia in 1974, 1979, and 1994 respectively. All reported accidents could have been avoided if proper surveillance and operation and maintenance procedures were in place. Such observations suggest that other failures cannot be ruled out if the situation of dam safety in Armenia is allowed to remain out of control. Considering that no dam is reported to have a functioning instrumentation system and that country-wide around 460,000 people are at risk, the situation should be regarded as an emergency. Accordingly, the Dam Safety Project aims to protect the population and the socio-economic infrastructure downstream of the dams facing the highest risk of failure.

This project has two main components. The first component supports repair work on primary irrigation dams including design and supervision, field tests, civil works, hydraulic steel structures. Rehabilitation consists of upstream protection works, spillway structural repairs, leakage reduction, and irrigation/bottom outlet repair. The second component prepares, operates, and supervises dam safety plans for operation and maintenance and an emergency preparedness plan; finances dam safety site installations, which include instruments and monitoring devices and early warning systems; strengthens the capacity of the Dam Maintenance Enterprise; and supports safety investigations into all remaining dams in Armenia.

3.2.3 Irrigation Development Project

The Irrigation Development Project aims at enhancing the profitability, and sustainability of irrigated agriculture, providing the basis for stabilizing irrigated agriculture as a predominant source of productive employment. The project components will: 1) support the rehabilitation of critical irrigation structures, by upgrading primary canal structures, and sections in deficient state, but critical for the effective operation of major irrigation water conveyance infrastructure systems. Aqueducts, and often siphon structures will undergo rehabilitation works, while specifically, the Armavir irrigation scheme will be improved, by expanding river intake schemes, the main conveyance canal, and secondary canal, and will include construction of sediment control facilities; 2) support the conversion from pump, to gravity irrigation, to reduce the reliance on high-cost energy-intensive irrigation, for those cases where clear technical, and economic viability can de demonstrated; and, 3) create conditions for effective operations, and maintenance (O&M) of the irrigation infrastructure through institutional strengthening, by supporting appropriate institutional reforms. In particular, the Water Supply Agency will be responsible for the O&M of facilities supplying water from major sources, and drainage and irrigation management agencies will be constituted as autonomous regional or scheme-level O&M enterprises. Additionally, independent consultative, assessment, and liaison contributions to system management will be provided by the Technical Consultative Commission on O&M of the irrigation, and drainage system, and the Irrigation Water Group, this last one to serve as the forum to assist stakeholders with information, conflict resolution, or performance issues.

3.2.4 Dam Safety Project II

The Second Irrigation Dam Safety Project, builds on priority areas indicated in the recent Poverty Reduction Strategy Paper (PRSP) namely, to improve infrastructure, and core public

sector functions, and as well, the project will contribute to the objectives of the FY01 Country Assistance Strategy (CAS) in terms of improving governance, and public services, and, creating jobs through private sector development, including human capital rebuilding. The first component - rehabilitation of dams - will support the engineering design of rehabilitation activities for 29 dams, and the preparation of an emergency preparedness plan for the Yerevan Lake Dam. In addition, implementation of rehabilitation works include 47 dams (i.e., design for 29 dams provided for under this project, and the already prepared design for 18 dams, under the first Dam Safety Project), construction supervision, and, installation of monitoring equipment devices on the 47 dams. The second component will ensure dam safety sustainability, through the installation of dams safety equipment (telecommunication equipment, sirens, searchlights, loud speakers), provision of technical assistance and equipment to the Water Supply Agency (WSA) for the design of an integrated telecommunication network for all dams, preparation of regulations, and operational procedures to guide all parties involved in the management of dams, and, implementation of annual independent audits on WSA operations and accounts. Moreover, an independent dam safety expert will ensure the provision of training in operation and management practices for staff involved at dam sites, and, equipment supply. Finally, the project management component will provide technical assistance, to coordinate project interventions, and support project implementation - procurement of goods and services, financial control, monitoring and evaluation, preparation of annual work plans, and reporting and auditing.

3.3 Impacts of Irrigation

According to survey by Lerman and Mirzakhanyan (2001), irrigation is an important factor in Armenian agriculture: 56% of respondents have an irrigation network, covering about half their farm area (0.68 ha). The frequency of irrigation varies across marzes, depending on

natural conditions. The highest incidence of irrigated farms is observed in the marzes (regions) of Armavir, Vaiots Dzor, Ararat, and to a lesser extent also Kotaik. Tavush, Lori, and Siunik are the least irrigated marzes.

Irrigated land is a scarce resource, and irrigated farms are significantly smaller than unirrigated farms: an average irrigated farm is 1.38 ha, while a farm without irrigation averages 3.17 ha. As a result, unirrigated farms, which are 44% of the total sample, account for 65% of all land in the survey. Even in irrigated farms not all the land is actually covered by an irrigation network, and only 18% of farm land, about half the holdings of irrigated farms, is watered. The benefits of irrigation in Armenia are clearly observed in the financial performance of farms.

Farms with irrigation generated sales of about 220,000 dram per hectare in 1997, compared to 71,000 dram per hectare for farms without irrigation (US$440 per ha and US$140 per ha, respectively). The level of costs, on the other hand, was substantially higher for farms without irrigation, reaching 70% of sales compared to only 50% for farms with irrigation. Farms with irrigation are thus substantially more productive and more profitable than farms without irrigation. Consistently with these findings, regression analysis shows that, for each combination of inputs and labor, farms with irrigation generate almost 60% more sales per hectare than farms without irrigation. The higher productivity of irrigated farms that emerges from financial data is explained by the substantially higher crop yields achieved under irrigation. Because of technical difficulties with calculation of yields as the ratio of harvest to cropped area, there are reports two different statistical measures of yields in kg/ha: the median yield (50% of farmers have yields not exceeding the median) and the weighted average yield (calculated for each crop as the ratio of total harvest to total crop land accumulated over all farms in the sample). The medians are more robust to the occurrence of extremely high and extremely low values that can result during the

calculation of harvest-to-land ratios in sample data containing unavoidable errors. The numerical values are different for the two measures, but irrigated yields are clearly higher for all crops. The results on higher profitability and higher yields achieved by irrigated farms can be used to assess the benefits of irrigation for Armenian farmers.

The yields achieved under irrigation are not much lower than the projections developed in 1996 as part of the World Bank Irrigation Rehabilitation Project. The projections envisaged irrigated yields of 12,000 kg/ha for vegetables, 7,000 kg/ha for fruits, 6,000 kg/ha for grapes, and 8,000 kg/ha for hay and grasses. These projected yields are fairly close to the actual yields. The projected wheat yields of 2,500 kg/ha are practically equal to the achieved yields in the sample. To assess the concrete impacts of the project, it is advisable to conduct a special "before-and-after" study of yields in the villages with rehabilitated irrigation networks. Virtually the entire area under the irrigation network received water in 1997: only about 5% of respondents could not water the full irrigation-ready area. However, only half the respondents with an irrigation network are satisfied with water deliveries: these respondents report receiving all the water they needed at the right time. The other half is dissatisfied with the quantity and timeliness of water deliveries. The majority of farmers classifies the condition of the irrigation system in the village as poor and indicates that they are dissatisfied with the organization of the water delivery system.

Although 23% of respondents report that the main village canal never dried out in 1997, fully 65% could not get water from the village canal once or twice a month. Despite reported problems with water flow in the village canal, more than half the farmers managed to water their vegetables between 3 and 8 times during the 1997 growing season, and nearly one-third actually applied 10-15 waterings. Half the respondents with irrigation receive water from the village council, and another 35% from the local water enterprise. The on-farm irrigation equipment is

the property of the village council or the local water enterprise (40% of respondents in each case). Water user associations are reported by only 10% of respondents, and an even smaller percentage of farmers (6%) report that irrigation is their own responsibility. The main source of water is the tertiary canal, which serves 50% of farms with irrigation. One-third of the farms pump water from a well or another source while about 10% use gravity flow from a river or a lake. Although the village council and the local water enterprise control the water sources and the irrigation equipment, in 50%-60% of the cases it is the farmer himself or jointly with neighbors who decide when to turn the water on (Lerman, Mirzakhanyan 2001).

Officials of the village council or the water enterprise fulfill these farm-level functions in 40% of cases. The split responsibility for the irrigation system between farmers and water authorities naturally has a detrimental effect on maintenance. The majority of respondents evaluate the physical condition of the system and the service as poor and unsatisfactory, but only 40% report that some maintenance or repair work was done on the irrigation system in 1997. The maintenance work was shared by the farmers and the water authorities. While fully 50% of irrigating farmers have heard of water user associations, only 10% are actually members of these associations, mainly because there are still no water user associations in most villages. There is clearly a need for an intensive information campaign if water user associations are to become an established phenomenon in Armenia.

Informal cooperation in irrigation is quite common, however. Half the farmers who irrigate cooperate with between 1 and 6 neighbors; 25% cooperate with groups of 10-20 neighbors; fewer than 20% report that they do not cooperate with anybody. Total water deliveries averaged 3,400 m^3 per irrigating farm. Given an irrigated area of 0.65 ha per farm, this is equivalent to water usage at a rate of 5,200 m^3 per hectare in the sample (national data indicate

water usage of 3,600 m^3 per ha). About 55% of respondents paid substantially less than half the amount billed, and moreover one-third of the partial payment was in kind. The main reported reason for arrears is insufficient funds (Lerman, Mirzakhanyan 2001).

4. Marketing and Sales

After the Soviet Union collapse, farmers faced the necessity of creating new system of marketing and sales that would work in the new, unexplored and still unstable reality. At present, the main part of agricultural produce is exchanged, barter traded, given as payment for services performed for farm, is given away for another produce, and is consumed or stored at the farm. The rest is sold in two ways. One way is to sell it directly in the market, to processing organizations or to the state, through state purchasing organizations. Second, intermediaries are used. Intermediaries include wholesalers as well as individual re-sellers. A tendency to sell through co-operatives formed in Armenia recently. Export of agricultural produce is also performed through them as well as through re-sellers and wholesalers.

According to (Lerman, Mirzakhanyan 2001), 22% to 38% of family farm output is sold while 40% to 50% of farmers are selling at least some of their output.

According to CBA research (Table 4.3), more than 50% of produced wheat is consumed or accumulated by the farms and the rest is sold. Low level of sales of wheat and potatoes is result of their dominant role in many families' diets and their use for sowing. Percentage of tomatoes sold to processing organizations is high because tomatoes are produced in Ararat and Armavir marzes (regions) and processing of tomatoes is mainly concentrated in those marzes. Most of enterprises that buy grapes are wineries. Beef and pork produced in Armenia are sold through intermediaries and individual re-sellers. Role of intermediaries is also significant in milk

sales; intermediaries are represented mainly by recently created co-operatives and milk collection stations.

Nowadays, there are many intermediaries and between farmer and farm produce final consumer. Development of shorter and more functional “producer-consumer” chain is one of current challenges for Armenian agriculture. The scheme of sales changed also. Previously produce was sold to state purchasing organizations and distributed to pre-approved retailers, now the final receiver is not determined in advance and flows are much more flexible.

Marketing constraints are possibly the main obstacle to increasing farm income and the most difficult obstacles for food processing companies to overcome. The bulk of the population has very limited purchasing power, and auto-consumption and barter probably account for up to two-thirds of consumption of all domestic produce. The geopolitical constraints,, (pending resolution of the issue of Nagorno-Karabakh), and the uncertain timing of arrival and of transshipment of goods at port of Poti, make export of fresh produce virtually impossible, except by air, and that of processed products expensive.

Despite progress in re-establishing some agro-processing capacity in the last few years, a large number of food products, including fruit, tomato and milk processed products are not competitive in price or quality for the export markets. Appropriate marketing and transport infrastructure for small farmers is lacking. Roads are poor and transport is expensive. As a result, there are seasonal surpluses of perishable produce (e.g. of apricots), while shortages persist elsewhere. Barter dominates farmers' transactions at the farm level. Moreover, there is no market information system, with the result that many farmers in an area tend to produce the same crops if they were previously profitable, causing a glut.

In order to assess what is happening in rural marketing of agricultural products since privatization and identify marketing needs of small-scale farms, a survey was conducted in different regions of Armenia. The survey showed that on average farm households have a land holding of 4.9 hectares, of which 74% is arable, 13% is under perennials (orchards and vineyards), and 13% is under hay meadows and pasture. The average family size is 5.6 members and the average farm employs two to three members of the immediate family, mostly on a part-time basis.

Table 4.3. Sales of Agricultural Produce in Armenia.

(%, as of November 2002)

	Sold			Consumption within the farm	Storing within the farm
	Market	Intermediary	Processing organization		
Wheat	8.5	34.2	6.7	30.3	20.3
Potato	10.4	34.4	0.0	19.5	35.7
Tomato	10.2	16.6	71.4	1.8	0.0
Cucumber	50.5	16.2	30.3	3.0	0.0
Cabbage	31.0	26.7	0.0	7.8	34.5
Grapes	8.0	14.0	64.0	12.0	2.0
Fruit	6.8	39.3	6.0	11.6	36.3
Beef	20.7	56.3	0.5	7.9	14.6
Pork	20.2	48.5	0.0	10.3	21.0
Milk	5.1	40.1	13.4	37.8	3.6

Source: Heboyan 2003

Farms in the survey produce grain, fruits, vegetables and potatoes. Correspondingly, 21.8% and 18.2% of respondents are involved in livestock and dairy.

About 75% of farms in the survey indicated that they received income from sales of agricultural produce. Among these 20% had sales between 50,000-100,000 drams (or about

US$90.09 to US$180.20) per annum, 35% had 100-200,000 (about US$180.20 to US$360.40) and 18% had over 200,000 (over US$360.40).

Inadequate transport and access to markets remain major obstacles to development and employment. Appropriate market information and assembly and storage infrastructure for small farmers is lacking. Marketing activities which would improve farm products' marketing are shown in Chart 4.2.

A total of 15.4% of the respondents indicate transportation to the market as being most important, assembly and storage were mentioned by about 12.6% of the surveyed farmers.

The most common response to the question "What do you feel should be done to improve the marketing of your farm products?" was accumulation points and wholesale markets (38.41% of respondents), 7.51% indicated contract buyers.

To the question "What are the two greatest obstacles in marketing your farm, products?", the greatest obstacle was transportation followed by market outlets, distance from market, lack of buyers, and wholesale markets.

Farmers have several options in the use of their milk:

- feed it to calves and consume it in the farm household - 45%;
- retail the milk directly to the consumers -16%;
- process the milk into cheese and sell the cheese only - 28%; and
- only 11% (three) - sell the whole milk to dairy processors.

Armenia has quite a few diversified farms, which grow five or more crops and have two or more animal species. The crop and livestock systems are fully integrated. The wastes from the cropping systems are fed to the livestock and the wastes from the livestock used to fertilize the crops.

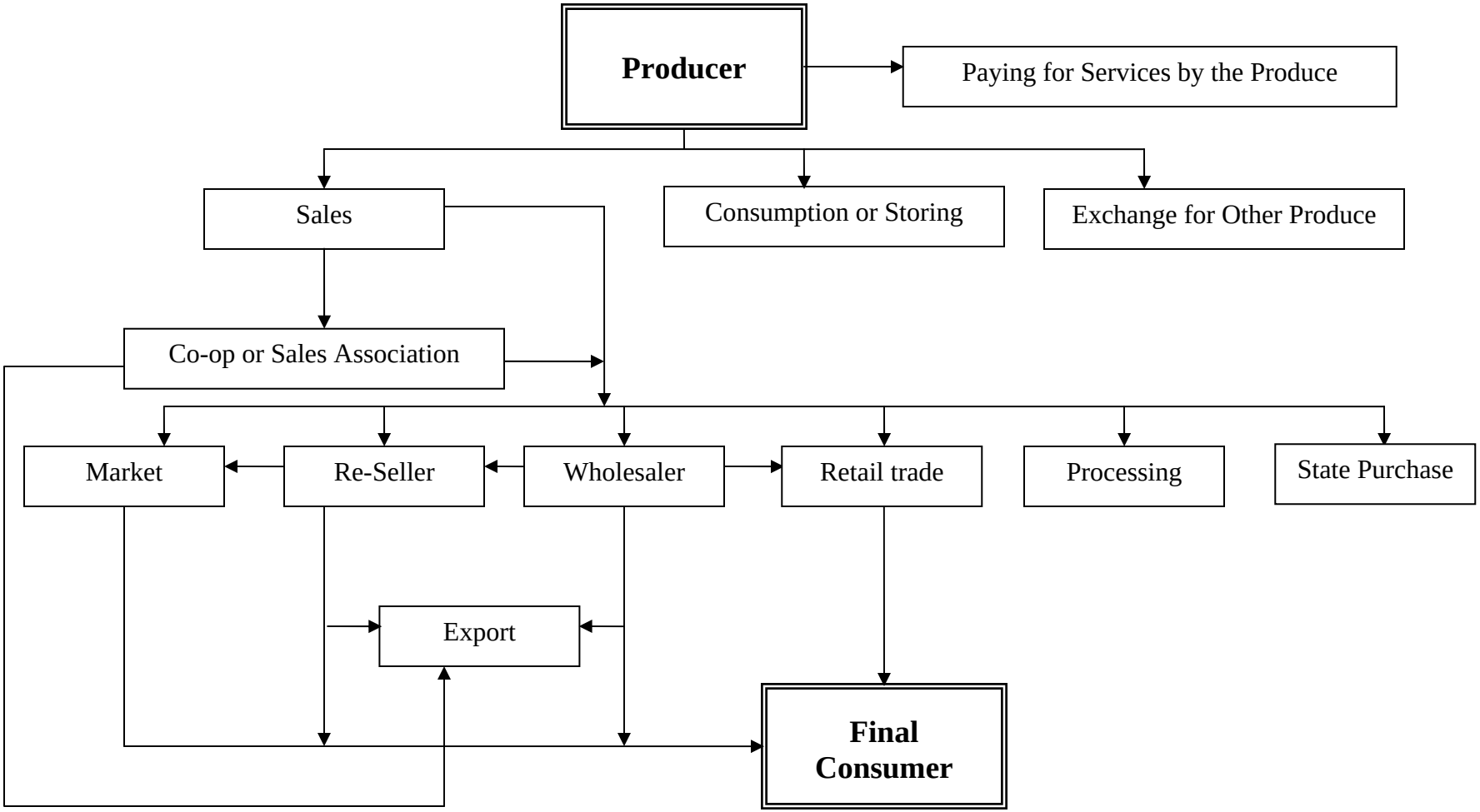

Figure 4.2. Farm Sales of Agricultural Produce in Armenia.

Source: Heboyan 2003

Such a diversity keeps diseases in check and provides a natural habitat that will harbor the species that help control insect pests. In other words, today we have a farm production system in which nature's own ecosystem services provide the majority of the fertility and pest and disease control that optimizes production.

The demographic situation and farming system require that Armenia employs the principles of diversity, variability and integration, rather than the principles of specialization, standardization and centralization in Armenia. In contrast to huge farms and cattle ranches in developed countries, if we managed our farms by these ecological principles they would look very different from the industrial farms that now dominate the marketplace. (Sardaryan 2002)

5. USDA Marketing Assistance Project

Armenian diary industry development provides another example of new linkages formation in an economy based on the activity of USDA /MAP Project in Armenia.

The dairy industry is the largest agricultural industry in Armenia. There are approximately 450,000 head of cattle in the country – production is consumed both domestically and exported. Imported product constitutes 25% of local consumption in dairy products. A looming threat to the industry is the recent membership to the World Trade Organization that could possibly further flood the local market with imported product.

Like many transition countries the Armenian dairy industry has been hampered with low quality product, subsequent low prices, poor infrastructure, lack of credit, lack of transportation, and low levels of human capital required for modern business and technical management. Development has been further restricted by a lack of hope and despair following the harsh conditions of transition, a lack of trust inherited from the Soviet system, a land market

characterized by many small parcels of land scattered across the country, and finally increasing requirements to compete both domestically with imported product and internationally. This is resulting in low profitability for both farmers and processing firms and extreme difficultly for the industry to upgrade sufficiently to meet requirements of the global food industry.

USDA Marketing Assistance Project (MAP) conducted a survey in late 1998 of farmers all over Armenia. The three principle things that farmers were wanting and felt they lacked were (in order of importance): the need for an accumulation center to deliver products to, transportation, and credit.

The USDA MAP recognized that the formation of an association had to be driven from the villagers themselves and not dictated by a centralized governmental or aid agency plan and that farmers need to come together on the basis of common economic interests (Surukhanyan, et al, 2002). Thus talks of forming a milk marketing association begin when representatives from a village approach USDA MAP. This begins the first of a series of meetings between the USDA MAP and village representatives to discuss how the association would work and responsibilities and benefits to each party. This culminates in the village voting for or against forming the association.

The major initial attraction to the village is a milk cooling tank that is loaned by USDA MAP for the first four months. The steering committee involved in the initial meetings becomes the board of directors with the mayor often becoming manager and/or president of the association. USDA MAP focuses a great deal of attention on the identification and development of a leader that everyone in the village respects and trusts. Once the village votes for the association the legal process of registering the association begins and a site and building are identified and renovated. The milk cooling tank is located in a central location where village

members can bring their milk. The village finds and negotiates their own upstream market, USDA MAP will only get involved if need be as a facilitator.

By loaning the tank to the association for the first four months USDA MAP facilitates the payment of expenses (including payment to association members), allows management to gain experience in a new market environment, and allows the current members and the village to see if the association is worthwhile. The benefits gained from a rent free tank builds immediate private enforcement capital between the association and USDA MAP. The self enforcing range of the relationship between the association and members is widened through timely payment to members as is the self enforcing range between the processor and the association through timely delivery and improved quality. Generally the numbers of farmers increases substantially over the initial period as they see that members are being paid.

Once the first four months are past and the association is a registered legal entity they begin paying the leasing payments for the milk cooling tank. A leasing company 'Agroleasing' – formed and owned by USDA MAP – leases the milk cooling tank to the association. Ownership of the tank stays with Agro-leasing until the lease is repaid. The interest rate is between five and 10% compared with 15% to 35% in Armenian banks with a repayment period of three – five years.

Seminars are conducted by USDA MAP consultants and specialists from the Armenian Agricultural Academy on milk quality at the farm level, dairy herd management, herd health, cow feeding, and calf rearing. Over the winter of 2002/2003 an Artificial Insemination program was initiated using imported genetics from the United States. These factors make it easier for farmers to meet project requirements thus widening the self-enforcing range between the association and processing firm.

When the farmer brings the milk into the collection center he/she watches it being tested and then signs a book to say that the test is accurate and that they witnessed it. The length between testing stretches from daily to weekly to randomly as private enforcement capital is built between the farmers and the association. One association and some processing firms are incorporating quality into their payment schemes to create financial incentives to increase quality.

Lack of credit in Armenia due to reluctance by Armenian banks to lend to businesses outside of the capital Yerevan, high collateral requirements, and high interest rates has restricted the ability of farmers to invest in inputs for production. This prompted USDA MAP to facilitate the formation of mutual liability, no collateral 'credit clubs' with groups of farmers to purchase inputs such as fertilizer, forage, seeds, livestock etc. Production loans are granted that are repaid within one year or less, upon which new loans are granted. Members deposit funds into the credit club annually up to the point that they can use their own funds to fund further investment and USDA MAP can withdraw their involvement. Thus, the external facilitation of USDA MAP allows farmers a sustainable credit source that would otherwise be unavailable.

USDA MAP staff constantly stress the importance of leadership, transparency, and building trust as critical to the sustainability of the program. They realize they can provide a great deal of technical, marketing, and financial assistance but if the associations are to be sustainable there needs to be a self enforcing range sufficiently wide to prevent opportunistic behavior and exit of members from the association. To achieve this requires strong leadership, governance, democracy, transparency, and the development of trust between the association and the members and between the members themselves. Strong leaders are identified, there is coaching on how to conduct democratic board meetings, and on transparency and interaction

with members. USDA MAP has monthly visits with each of the associations to assess and assist with finances, milk records, and the preparation of the monthly accounts.

Social capital among various associations and processing companies was recently developed through a conference of milk marketing associations. This was an opportunity for association board members and processing firms to get to know each other and share their problems and successes. Plans are in place for forming a national association of milk marketing associations as are discussions for forming a national association of dairy quality and starting an Armenian quality accreditation scheme.

There are now approximately 2,000 farmers with 2,200 cows delivering milk to collection sites operated by eight milk marketing associations. Some of the associations are planning to offer additional services to their members such as input supply. Several associations have leased trucks for milk transportation which gives them more marketing options. One association in the north of the country has returned to its members the equivalent of 1/3 of the cash flow of the communities supplying the milk (accounting for the role of barter in the economy). A spillover effect of this has seen the mayor of one of the villages carrying out renovations on the local school with the additional taxes collected (Cocks, Gow, Dunn 2003).

6. Agricultural Enterprises

Armenia has a fast growing food processing sector with great export potential, based on domestic ecologically clean agricultural products and excellent climatic conditions.

Fruits and vegetables grown in Armenia are distinguished by taste and absence of chemical fertilizers. Grain crops, vegetables and fruits including grapes, figs, pomegranates, apricots, peaches, potatoes, sugar beets, tobacco, cotton, specific oils (such as geranium),

peppermint, and special teas are cultivated in Armenia. The proof of the quality of Armenian foodstuff is shown by the growth of exports (see Figure 4.3).

Since 1995 food processing has been one of the leading industrial sectors, constituting 37% of gross industrial production. Armenia's fruit and vegetable products have great potential for international markets (Armenian Development Agency).

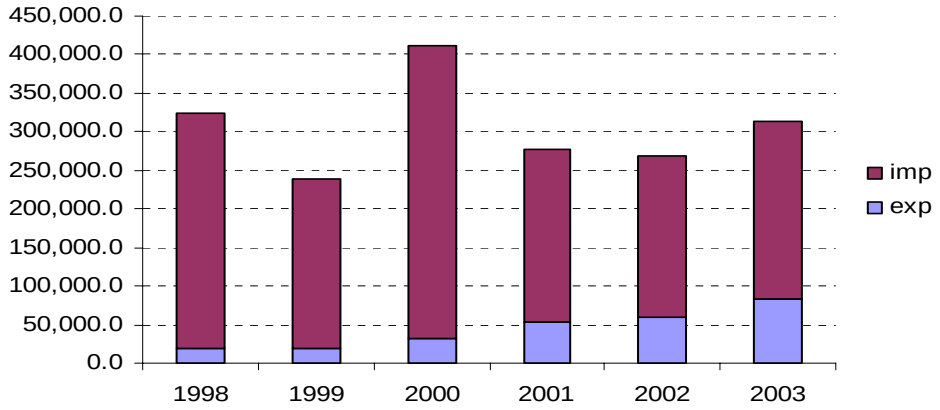

Figure 4.3. Export and Import of Agricultural Produce

Source: estimated using NSS data

Food processing enterprises mainly specialize in fruit and vegetable canning (fruit juices, jams, tomato paste, marinade, child nutrition etc); beverages (wines, beer, champagne, mineral water, etc.); meat and meat products (smoked meat, sausages etc.); milk and other dairy products (different types of cheese, sour-cream, matsun (yogurt), curd, ice-cream, etc.); flour and bread; tobacco and cigarettes. Large growth has been recorded in fishing, sausages, alcoholic and non-alcoholic beverages.

Fast growth in the agricultural sector has led to import substitution by domestic production during the last number of years.

Investing in food processing will give foreign investors the opportunity to enter the CIS market, and to enjoy the “high quality - low cost - high profit triangle”.

Brandy

In 1998, the Yerevan Brandy Company (YBC) became part of the International Group Pernod Ricard. YBC brandies are exported to more than 20 foreign countries and are well recognized not only in Russia, but also in the USA, Canada, Japan, France, Germany, Israel, and the Baltic States. The sales are expected to increase and reach 6.5 million bottles in 2002 (6.1 million in 2001). The YBC Armenian brandies have been awarded more than 160 medals in international exhibitions and tastings. They received the Armenian government award for quality in 2000, and ARARAT 3 Stars brandy was awarded "Product of the Year" in Russia 3 years in a row in 1999, 2000 and 2001. Ararat 5 Stars was awarded "Product of the Year".

Other Beverages

Another French Company, Castel, established two joint ventures in 1997 to produce mineral water “Bjni” and beer “Kotayk”. Today, Castel owns 71% of the shares of the Abovian Brewery. These two Companies successfully operate in the domestic market as well as export their products to neighboring markets.

Coca-Cola Company was among the first to enter the Armenian market and opened a bottling plant near Yerevan in 1996.

Tobacco

In 1997, “Grand Tobacco” an Armenian-Canadian JV was established. The production capacity is 9 billion cigarettes per year. Today, output is exported to Georgia, Russia, the USA, Ukraine and the countries of the Middle East. In 2000, “Grand Tobacco” was awarded the ISO

9002. Grand Tobacco is also planning a joint venture with a Russian firm to produce cigarette packaging, instead of importing it as at present. An Armenian-Greek tobacco processing joint venture, Masis-Tabak, started operations in January 2000 to supply Grand Tobacco with fermented tobacco. Masis-Tabak achieved full capacity of 13,000-15,000 tonnes in 2001, processing both imported and locally grown tobacco. Most of the products will be exported, mainly to Russia. Masis-Tabak also plans to set up another fermentation and blending plant in Nagorno-Karabakh.

Another company of in this sector is SPS Cigaronne Co. Ltd., which produces luxury cigarettes. They quickly occupied a niche in the world market. The product's outstanding feature is the 70 mm long hard filter holder, which has been specially developed in Great Britain.

Candies

In 2000, Grand Tobacco and Brogus, a Russian company, set up Grand Candy, a JV based on the former Armconfection Factory. Today, there are more than two hundred types of confectionery in the Grand Candy assortment. Grand Candy has four main production departments: the hard candy department, the chocolate department, the biscuit department and the ice-cream department. Grand Candy products are very popular both in the domestic market and abroad. A large quantity of production has already been exported to the USA, Canada, Russia, Iran, Georgia and Lebanon. The Company intends to increase its sales in the domestic market, and to gain the market in Arabic countries.

Mineral Waters

Armenia has about 500 natural springs, the most famous of which are Jermuk, Arzni, Dilijan, Bjni, Hankavan and Sevan. Less than 1/5 of the springs have been studied and

recommended for use as drinking water. Eight are licensed for production. Armenian mineral waters have medicinal qualities and the potential to become an important export item. After increasing by almost 65% in 2000, mineral waters production grows steadily. The companies centered in Jermuk produce about 20 million bottles per year. The largest are Jermuk Group and Jermuk JSC, exporting their production to CIS, the Middle East, and the US. Another exporter is Bjni bottling plant, a joint venture with BGI a member of the Castel Group (France). Coca Cola Company is also an exporter of local water, bottled under the brand name Bonaqua.

Beer

Castel Company established a joint venture to produce “Kotayk” beer that is successfully consumed in the local market and exported. In November 1999, another beer producer, the Yerevan Brewery, won the Gold Star at the Geneva Brewers’ Competition, beating breweries from 54 other countries for its “Kilikia” brand name.

The juice processing industry has seen the highest growth rate in Armenia. Several plants have been renovated in recent years installing new processing and packaging lines. The major private firms are: Sardarapat, which produces 4,500 1-liter packs of juice per hour; and Euroterm, which produces fruit concentrates and juices, processing up to 15,000 tones of fruit annually.

Diary

At present, there are almost 38 milk processing enterprises producing 320 thousand tones of dairy products and 22 thousand tones of cheese annually. With the financial support of the American organization UMCOR, Akhurian, Kapan and Yerevan milk plants and Aparan, Goris and Tavush cheese plants are continuously increasing their production capacity. Production of

Dutch, Swiss and Rochford types of cheese has been re-established. Grant funds received from the government of Holland are being used to upgrade Tashir and Stepanavan cheese plants.

Ice-cream production in Armenia was successfully developed in the late 1990s. Since then imports of ice cream have been substituted by local production.

Meat

Stockbreeding and meat processing have improved since the 1990s. Currently, 5 private major enterprises (in Gavar, Yerevan, Vanadzor, and Gyumri) operate in this area with a total annual capacity of 34 thousand tones of meat and sausage production.

7. Transition Challenges

Despite the strong macroeconomic performance and recent progress on sectoral reforms, transition challenges remain in further advancing structural reforms and improving the business environment. While most of the privatization has been completed, post-privatization restructuring has lagged behind. In the financial sector, while banking sector reform is progressing, the sector is still underdeveloped and financial intermediation is limited. Despite some improvements, the business environment remains complex. Other constraints affecting private sector development and FDI include the small size of the Armenian market, and the country's partial isolation from neighboring markets.

Under these circumstances, Armenia's main transition challenges are to: (i) improve the business environment, which continues to suffer from weaknesses in the legal system and widespread corruption; (ii) improve efficiency and credibility of the financial sector through consolidation and institutional capacity-building; (iii) promote commercialization of public infrastructure by establishing market-based institutions with appropriate governance structures;

(iv) finalize privatization and accelerate post-privatization restructuring; and (v) ensure debt sustainability.

The Bank is committed to supporting the transition process in Armenia, and notwithstanding the challenges of the local business environment, will endeavor to deepen and broaden its activities in the country. The Bank's activities over the coming Strategy period will focus primarily on support targeting the development of the private sector, including through an intensified policy dialogue with the authorities on measures to improve the business environment. In view of Armenia's limited sovereign borrowing capacity, the Bank does not anticipate pursuing any new infrastructure projects on a sovereign-guaranteed basis, unless these involve adequate grant co-financing. (EBRD)

CHAPTER 5

CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

1. Conclusions

The Armenian government was successful in terms of land reform, however their success was not complete in terms of sales organization. While generally there are many implicit subsidies to agriculture, the WTO agreement will eliminate them in near future. Due to this reality, we came to the following conclusions:

1. there is lack of state regulation and support in agriculture on the farm level; this includes first of all water user associations development and support of sales co-operatives;
2. steps should be taken to accommodate Armenian agriculture to approaching WTO agreement realities, particularly, VAT accounting within a family farm may become one of the main difficulties to overcome;
3. information flow to family farmers should be improved; there is little doubt that many of them are artificially restricted in their choices due to the lack of legal and state policy information.

The main problem that the government may experience during the mentioned problems resolution is lack of co-operation of family farms; the basic pre-conditions for the success are:

- Appropriate regulatory and legal framework
- Adopted unequivocal state policy

2. Suggestions for Further Research

Deeper research may be performed though surveys conducted on site. This method of collecting the data is the most relevant to the current situation due to lack of adequate statistics and eclectic literature on transition in agriculture.

Central issues of research may become the problems mentioned above as well as extent to which farmers are ready to co-operate with the government. An obvious observation here is that some time of active government performance is needed and that farmer's doubts will turn to confidence when success will follow.

Another issue is projecting the future structure of Armenian agricultural market. There are some pre-requisites that make change of the market's present structure possible in several following years. As mentioned earlier, there are many links in the sales chain leading from farmer to final consumer. Most of reseller links may be eliminated by improving transportation within the country. In this regard, road construction works are conducted throughout Armenia. Another process is process of agricultural co-operative development. These structures, providing economies of scale and co-operation experience for farmers, will possibly play greater role in Armenian agriculture of tomorrow.

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