

Ministry of Agriculture and Agrarian Reform

NAPC

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Supply Chain Coordination and Policy Implications

The Case of Dairy and Red Meat Products in Syria

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Foreword

The Working Paper series aims at supporting the Syrian development and modernization process by enriching public availability of documentation on agricultural economics and policy studies conducted at the National Agricultural Policy Center.

This paper was produced as result of the research activities carried out during the Individually Tailored Training phase conducted under the FAO Project GCP/SYR/006/ITA. “ASSISTANCE IN INSTITUTIONAL STRENGTHENING AND AGRICULTURAL POLICY” from September 2000 through April 2001 with the objective of letting trainees experiment how to prepare economic studies in the field of agricultural policy. This activity was the last phase of a three years long training program aiming at establishing a cadre of agricultural policy analysts for the NAPC and related institutions. In particular, the paper on “Supply chain co-ordination and policy implications: the case of dairy and red meat products in Syria” was produced by a team composed by Samir Grad (coordinator), Basima Atiya, Usama Sa,di, Bibers Abaza, Amal Nab,ah, Ghada Masri, Fayez Mansour, and Lina Sekker, working under the supervision of Mr Daniele Rama, professor at the University of Cremona (Italy) and international consultant for FAO.

The NAPC decided to publish this research under the Working Papers series in consideration of its contribution to a better understanding of supply chain co-ordination and policy implications with particular reference to Syria.

However, it is appropriate not to hide its limitations, which mainly stem from the prevalent training objective assumed for research activity, as well as from the lack of available statistical information and background literature specifically related to the subject of this study: to the best of our knowledge, no study has been carried out so far on sustainability of natural resources use. Moreover, time and financial resources constrained the possibility of carrying out an in-depth investigation. Nevertheless, we believe that it does not reduce its innovative value within Syria as a methodology and stimulus for further studies.

Individual contribution to text writing

The discussion of all the topics covered by the research, the identification of the outline, the discussion of the linkages among the different parts, most of data collection and elaboration, the comments on the progress draft and the final editing have been done by the team as a whole. In this common framework, each trainee was assigned an individual responsibility concerning specific parts. In particular, the individual contributions to the report, in term of redaction of single chapters or sections were as follows.

Chapter 1: Samir Grad

Chapter 2: Samir Grad

Chapter 3: Samir Grad, Basima Atiya, Usama Sadi, Bibers Abaza, Ghada Masri, Fayez Mansour, Lina Sekkar

Chapter 4 : Bibers Abaza, Ghada Masri, Amal Nab,ah, Samir Grad

Chapter 5 : Basima Atiya, Fayez Mansour, Lina Sekkar, Samir Grad

Chapter 6 : Samir Grad

Chapter 7 : Samir Grad

Data collection and printing: Samir Grad, Basima Atiya, Usama Sa'di, Bibers Abaz

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Chapter 1 – Objectives, Background and Justification of the Project

The agricultural sector in Syria is considered one of the most important sectors in the national economy for the following reasons:

It is one of the main sources generating GDP.

It covers the increasing food demand of population and food industry.

- It significantly contributes to support the balance of payments, the export ability, and the creation of new job opportunities.
- There is a strong interrelation among the activities of the agricultural sector and those of the other sectors of the national economy.

Accordingly, the social and economic development process in Syria has concentrated on the development of the agricultural two main sub-sectors: plant and animal production. This study will focus on animal production.

Man has always searched for suitable food to maintain his life and found that meat and dairy products are among the most valuable and nutritious foods for his body. Consequently, he has kept animals to get these products for his daily consumption. However, with the development of science and production technologies he started accumulating surplus production, which he processed to avoid losses and to increase income. Later, with the increasing development of new technologies, production became more complicated and accompanied by scarcity of available resources. Hence, the need for making an optimal use of resources emerged. Needless to say that achieving this aim requires an adequate resource management and a good coordination mechanism starting from farm till the product reaches the final consumer. There is also a need for an adequate coordination strategy among the various sectors of the economy in order to take the right decision.

The use of precise analysis tools will help achieve that aim. In this study such analysis methods represented in commodity chain analysis, balance sheet forecasting, partial

equilibrium analysis and sensitivity analysis were applied to sheep meat, cow meat, sheep milk and cow milk. It is important to highlight that the results of this study can be generalized and applied to all plant and animal products to contribute to the achievement of the strategic purposes that the Ministry of Agriculture aims at reaching by 2010.

The following chapter will be dedicated to the statement of study objectives and to the description of the theoretical approach followed in the study, in order to provide an analytical background and maintain the internal coherence of the different sections. The common objectives are: describing and analyzing the different aspects of the sector, identifying its critical areas, deducing policy implications, presenting the main characteristics of the Syrian livestock products sector and exploring its major issues and marketing problems.

1.1. Background and Justification of the Project

Animal production in Syria has a major role since it is considered a basic source of individual food consumption and energy requirements as well as a main source of income especially in Albadia (the Syrian steppe).

Clearly, the government planned to increase the efficiency of land use by developing animal production vertically and horizontally. Consequently, the share of gross agricultural production increased.

The strategy of the government up to 2010 aims at increasing animal production through the following actions:

- Expanding the production of vaccines, increasing vaccine production 5% annually up to 2005 to cover 50% of domestic need, and making surplus for export by 2010.
- The Ministry of Agriculture plans to establish a project to achieve this purpose.
- Improving green fodder supply and other fodder sources.
- Developing the rural industry for animal products and establishing industrial firms for animal products as well as for fodder through the provision of credit.

In 1999, the value of domestic agricultural production accounted for 233,064 Million SP. The plant sector accounted for 154,187.2 Million SP and animal production accounted for 78876.8 Million SP. Therefore, the proportion of plant production was 66.16% while animal production was 33.84%.

To be precise, the production value was 21651 Million SP for raw milk and 48283.7 Million SP for red meat. Thus, milk production accounted for 9.29% and red meat 20.72% of total agricultural production.

Table 1.2.1 shows the economic significance of raw milk and red meat production.

Table1.2.1: Economic importance of milk and red meat

Commodity	Value of production million SP	Share in Gross Agricultural Production %
Animal Production	78876.8	33.84
Red meat	48283.7	20.72
Milk	21651.0	9.29
Wheat	29330.8	12.58
Legume	1701.5	7.73
Industrial crops	31147.0	13.36
Vegetables	20977.4	9.00
Fruit	57011.0	20.17

- Following the increase in animal production (milk and red meat), it emerged the necessity of improving the marketing of these products. Indeed, improved marketing would serve in getting good raw material suitable for processing, improving quality of final product, minimizing losses and increasing the income of all economic agents dealing with animal products.
- Marketing of animal products is especially difficult because these products are very sensitive and need a special treatment. The current situation of marketing and production of animal products is inadequate technically and economically. This leads to losses and misallocation of resources at farm, marketing, and processing levels, and results in increasing costs at all stages of the chain.

• Hence, a need is arising for studying the current situation, identifying problems and finding solutions in order to achieve effective production and marketing. The main problems of marketing animal products can be summarized as follows:

- Transportation and distribution are ineffective for both inputs and outputs.
- Inefficiency of the production process, which negatively affects marketing efficiency.
- Geographical distribution of processing plants seems not respondent to distribution of production, despite government efforts in this direction.
- Deficiencies in the administrative organization of marketing animal products.
- Poor performance of public sector establishments.
- The marketing process is production-oriented and not market-oriented; therefore, not able to respond to new needs.
- Lack of marketing information.
- Weakness in scientific research and coordination of research activities.
- Production, processing and marketing of animal products do not comply with international standards.

1.2. Objectives, Expected Output and Structure of the Report

• The aim of this study is to carry out an analysis of the current situation of production, processing, and marketing of dairy and red meat products in Syria. Thus, the main constraints and weaknesses in the marketing chain can be identified in order to make policy recommendations for improving the chain's efficiency and highlighting the roles to be played by both private and public agents.

- The expected outputs of the research are:
- Evaluation of trade policies and exported goods in the light of international standards and international arrangements.
- Evaluation of the efficiency in the marketing channels and suggestions for improvements.
- Definition of the role of the government, especially in terms of monitoring, regulating and supplying marketing services.
- Simulation of policy options and sensitivity analysis for beef and sheep meat in the concerned chains.
- Policy recommendations concerning prices, credit, investments, production and processing, institutional arrangements, and reform of the marketing channels.
- This study is divided into seven chapters.
- The first chapter illustrates the objectives, background and justification of the project. It is dedicated to the statement of study objectives and to the description of the theoretical approach followed. It also presents the main characteristics of the Syrian livestock products sector and a preliminary recognition of its sensible issues and marketing problems.
- The second chapter describes the theoretical background of marketing. It presents the role that the marketing process can play in organizing the supply chains and explores the possible implications of these activities on production and market equilibrium as well as the economic background of marketing activities.

- The third chapter presents an analysis of the marketing chains. Following a synthetic presentation of the methodology followed in the marketing chain analysis, this chapter develops the analysis of the marketing chains for the four sub-sectors identified for the study. For each of them, the following points will be developed:
 - An identification of the different actors and a presentation of the main elements of their structure and their economic behavior.
 - A Quantification of the marketing flows in order to analyze the relative importance of the different channels and identify the actors who can determine the chain regulation.
 - An analysis of price and other contractual relations at the different trade levels and implications on margins of the different actors and their contribution to the value added.
 - The fourth chapter is dedicated to the presentation of the sources and utilization of the concerned products, in order to establish surplus or deficit situations and, through the estimation of trends for the corresponding variables, to make assessments of the expected evolution of these surplus-deficit positions.
 - The fifth chapter sets up a partial equilibrium model, estimating demand and supply functions and elasticity, limited to the red meats sub –sectors (beef and sheep meat). This model will be applied to different hypotheses of policy options in order to detect the sensitivity of market equilibrium.
 - The sixth chapter reviews the current Syrian policies affecting the concerned chains such as price policies, foreign trade regulating policies, marketing policies, input and credit policies, investment policies, and research and extension policies.
 - The seventh chapter is dedicated to suggestions of policy options and recommendations, which can be the springboard for formulating and applying effective strategies.

Chapter 2 -Theoretical Background on Marketing

This chapter will be dedicated to the presentation of the role that marketing process can play in organizing the supply chains and the possible implications of these activities for production and market equilibrium.

2.1. Role of Marketing in the Supply Chain

- Marketing dairy and red meat products can be defined firstly as all the activities associated with production, processing and distribution of these products to the final consumer, and secondly as an analysis of consumers' needs, motivations, purchasing and consumption behavior.
- Marketing is used to generate exchanges that satisfy the interested parties' objectives (producers, wholesalers, retailers and consumers) as well as to fill exchange gaps (separations) between producers and consumers.
- By bridging the market gaps, marketing generates benefit or value for the agents involved in trading activities. Both human needs and organizational needs can be met by four different utilities: form, place, time and possession. Physical utility regards the production of the commodity, the service, or the idea itself. Place utility implies placing the product within the reach of the consumers. Time utility implies providing the commodity whenever it is needed. Possession utility provides the product within the means of the consumers. "Put simply, the objective is to have the right product at the right place, at the right time, for the right person"(2).
- In general, marketing can be national, international, and global. National marketing addresses the country of origin. This program of marketing needs to be based on a proper market research. Products and marketing policies are confined to the internal market and export is placed next. Consequently, the search for sales on external markets is carried out only in case of surplus that hardly can be absorbed. International marketing relates to different markets and adapts to their specific requirements; it means expanding the national marketing methodology to every external market or group of markets. Global marketing obliges the enterprise to meet the world as a global market. The old borders are removed in favor of a new single one- the border of the world market, of the global village. The global marketing aims at scale economies, quality and standardization of products, specialization, international division of labor, more and better marketing information, and at the establishment of financial, production, and trade unions.
- The Marketing system has three broad functions: a logistical function, an informational function and a distributional function. These are crucial in determining how well the overall commodity chain operates, and in particular, for food commodities, how effectively the marketing system contributes towards maintaining food security. The logistical function can be sub divided into three aspects: transformation over space, transformation over time and

processing. Transformation over space is another way of saying that marketing systems transport food from point A where the food is in surplus, and, as a result, the price of the food commodity is low, to point B where the food commodity is scarce and the price is relatively high. Transformation over time or storing a commodity is the second logistic function. In most countries, harvest of a specific commodity takes place over a relatively short period, but the commodity is consumed throughout the year. Processing is the third function that a marketing system undertakes. Processing can be a very major part of the value of the final product. On the information side, markets are the channels for price signals, which harmonize supply and demand. If they don't function properly, then information may not reach the appropriate agents. Finally, markets and prices that arise from their operation are the basis for the distribution of benefits from production and from the exchange among producer, trader, processor and consumer. This distribution phase is one of the main reasons why governments become involved in the marketing system.

- To sum up, an effective marketing system is an important institution in terms of ensuring availability of food in different regions of a country at different times of the year, and with the degree of processing that the customer requires. It should also provide the information to ensure that there is some stability of supply on a year to year basis. Finally, it is important in ensuring economic access to population, both in terms of providing income for certain groups of the population and in terms of the level of the final consumer price.

- A market-oriented project should produce only according to demand. Unlike a product oriented one will not correspond to consumers' needs and will not be able to detect the required demand.

- The activities in the food commodity chain involve three stages, which are integrated and influence each other: the preparation, the production, and the marketing and distribution stage. The marketing and distribution stage has a central role compared with the other stages because it influences their outcome.

- The preparation stage includes all the activities that are needed for preparing production, processing, marketing and distribution in the short and long run. The short-run activities have the following main objectives: ensuring a rational and efficient use of labor, maintenance of assets (land, machinery), supplying firms with adequate inputs in quantity, quality, and time and maintaining attainable production, processing, and distribution levels. The main long-run activities include: scientific research, marketing research concerning demand, investment, training and consistent inputs supply.

- The food production stage follows directly the preparation stage. It can be divided into farm production and processing. The most relevant assets of the society are allocated in the production stage where inputs are transformed. Farm operations have to produce commodities such as milk, meat, crops etc. for final consumption and processing. Food processing is important in order to convert farm production into processed food, which is usually more stable and more marketable than the raw untreated commodity, at low prices for consumers, who couldn't otherwise have access to it. Moreover, food processing ensures year-round availability of seasonal perishable products such as processed tomatoes, processed meat, processed milk etc. Thus, the production stage has the following main objectives:

- Utilization of scientific research to increase the efficiency of production.
- Production of commodities of higher quality at the least cost according to demand.
- Ensuring a rational use of the factors of production in order to maintain firms' efficiency.
- The stage of production is strongly tied up with the preparation and marketing stages. The preparation stage has a great impact on the level of production in term of cost, productivity and quality. Again, in the production stage, a new knowledge is often gained; it will affect the

activities in the preparation stage. The production stage affects also the marketing stage through producing high quality products in time.

- Marketing is the linking ring between production and consumption. It is needed to detect consumer demand, to match supply with demand, to determine where to produce, and to benefit from price information.
- Consumption has a great effect on the stages of the food commodity chain.
- In his book “The wealth of nations”, published in 1776, Adam Smith wrote: ”consumption is the sole end and purpose of all production, and the interest of the producers ought to be attended to only so far as it may be necessary for promotion that of the consumers”(2).
- International trade and the new regulations set by the World Trade Organization will affect all activities in the food commodity chain and encourage them to produce at low costs and to comply with international standards of food quality and safety.

2.2. Actors of Marketing Activities

The actors in the marketing chain are farmers, processors and traders. They are included in the farming system, the processing units, the wholesalers and retailers activities.

The first actors in the marketing chain are the production activities, which represent the farming system. Accordingly, the agricultural sector represents one of the main sectors in the national economy. The responsibility of the agricultural sector, which consists of the sum of farms, is to produce agricultural commodities, including food commodities, for the population, the agro-industry, and for export. Thus, the main objective of farms is to supply a determined quantity of plant and animal products according to the quality needed and to their size. This function cannot be achieved without coordination with the other sectors of the economy especially the industrial and trade sectors. Agricultural products and the areas of agricultural production are much differentiated. However, the production of all farms should be complying at least with the aggregate demand for agricultural products. The farm produces its share from aggregate demand at the least costs according to the needs of society for food commodities, agricultural staples, and natural and economic conditions of production.

There are three types of farms in Syria: private farms, co-operatives, and state farms.

Private farms are farms that belong to private individuals. They can be divided according to their size into small, middle, and large size. Small size farms cannot benefit from economies of scale and achieve a balanced growth of plant and animal production. Private farms can be specialized or mixed (animal and plant activities). They work according to the general plan and strategy of the government for plant production.

The basis of most farmers’ co-operatives is to achieve economies of scale in transport and other services, and to raise the bargaining power of farmers over the price and other conditions of sales of their products and of farm inputs. The co-operatives in Syria work according to the general plan and strategy of the government to achieve the following main objectives:

- Developing production to improve the economic and social conditions of their members.
- Using modern technologies in agriculture.
- Organizing the planting of land collectively according to government plan.
- Organizing all kinds of credit according to needs.
- Management of land.
- Using modern machinery and managing it economically.

- Subsidizing rural processing.
- Marketing of agricultural products.
- Managing own production activities.
- The cooperatives can be categorized as follows:
- Multiple goal co-operatives: They provide the farmers with the following services:
- Supplying agricultural production inputs.
- Storing agricultural crops.
- Buying agricultural machinery and instruments.
- Marketing of agricultural crops.
- Credits.
- Education and training activities.
- Research.
- The number of multiple goal co-operatives in 1999 reached 4102 with a total holding number of 693414 members.
- Specialized co-operatives
- They are specialized in one kind of activity such as sheep raising, cow raising, sheep fattening, cow fattening, etc. In 1999 the number of specialized co-operatives was 1230 with a total holding number of 191127 members.
- Production co-operatives
- They can be specialized or mixed. Their activities include plant- production, cow keeping, and fishery. The number of production co-operatives was 5 with a total holding number of 597 members.

2.3. Marketing Co-Operatives

They are specialized in fruits, vegetables, and in animal products. In 1999 their number was 24, 2 for each governorate, with a total holding number of 17118 members.

Tables 2.2.1.1 and 2.2.2.2 in annex E show types of co-operatives, their members, their numbers, and their share. The tables show also that the highest share of farmers belongs to multiple goal co-operatives, animal keeping co-operatives, and fattening co-operatives.

State farms have a government management. All fixed assets and returns to factors of production belong to the government. Labor gets wages.

A second kind of actors is represented by processors. There are three types of processing:

Family level: This kind of processing provides a greater diet diversity giving consumers access to a wider range of products and, hence, vitamins and minerals. The most basic level is food preservation which, in various forms, has been traditionally practiced by families for generations. It helps provide food when other sources are scarce. Meat preservation through drying, salting, smoking, and dairy products processing such as cheese, yogurt, butter, etc. are few examples of processing at family level. This kind of processing is private.

Village level: Village-based processing includes basic transformation for which there is potentially a market. It can be done on individual or group basis and provides employment to millions of rural people and an additional income. Mostly, village – based processing takes place

when raw material is perishable cannot be stored for a long time, and needs transportation over long distances (as in the case of fresh meat and milk in Albadia). This kind of processing is private.

Large scale level: This kind of processing takes place where urban populations require processed foods in large quantities or spreads among rural communities where it offers the twin advantages of processing perishable crops and animal products; it is close to the sources of raw material and provides employment for rural people. Large scale processing is a mechanized process with high output capacities, which functions economically and efficiently. This kind of processing can be private and public. Public processing is usually inefficient because of high production and management costs.

- Finally, traders are the third kind of important actors in the chain. They can be wholesalers (including importers and exporters), retailers, and states institutions. They are called intermediaries.
- Intermediaries are important for the following two reasons:
- Farmers and processors cannot deal directly with ultimate consumers. They are not capable of producing, packaging, shelving, and selling to shoppers in stores at the same time.
- The costs of the intermediaries might seem high, but without intermediaries the costs of bringing buyers and sellers together would be even higher.

Wholesalers

A wholesaler is a business unit that buys and resells merchandise to retailers and other merchant and /or industrial, institutional, and commercial users. He doesn't sell in significant amounts to ultimate consumers. So, a wholesaler provides the following services:

For his manufacturers or suppliers he:

- Provides a sales force to sell goods to retailers and other buyers.
- Communicates manufacturers advertising deal and plan.
- Maintains inventory, thus reducing the level of the inventory suppliers have to carry.
- Arranges or undertakes transportation.
- Provides capital by paying cash or quick payments for goods.
- Provides suppliers with market information they can not afford or are unable to obtain by themselves.
- Undertakes credit risk by granting credit to customers and absorbing any bad debts, thus relieving the supplier from this burden.
- Assumes the risk for the product
- For his customers he:
- Buys goods the market will desire and make them available to customers.
- Maintains inventory, thus reducing customers' costs.
- Transports goods to customers quickly.
- Provides market information and business consulting services.
- Provides financing through granting credit to small retailers.
- Orders goods of the types and in the quantities desired by customers.

Retailers

Retailing, which is a dynamic marketing activity that attempts to satisfy the needs of consumers, has a major influence on the economy. Businesses whose sales come primarily from selling goods and services directly to consumers to satisfy their needs are called retailers. Retailers have the following functions:

For suppliers they:

- Anticipate ultimate customers' needs.
- Provide inventory storage and transportation.
- Finance inventories.
- Break bulk.
- Provide market information.
- Assume product risk.
- Provide personal selling and advertising effort.
- For ultimate consumers they:
 - Anticipate their product and service needs.
 - Provide product storage and delivery.
 - Break product bulk into acceptable size.
 - Provide credit.
 - Provide product and service information.
 - Assume risk by giving guarantees and after sale service.

States Institutions

They can perform the function of wholesaling and retailing, but they are inefficient. They are not as flexible as the private sector. Moreover, they have high management costs in comparison with the private sector.

2.4. Economic background of marketing activities

An efficient preparation stage will lead to the following important effects:

a- Accelerating the utilization of result of science in the production stage and shortening the time to achieve the optimal firm's capacity at the least cost. For example, a firm that cannot count on an experienced labor force will pay more than a firm counting on unexperienced laborers.

Figure 2

An efficient preparation stage will lead to the following important Effects:

b- Accelerating the utilization of result of science in the production stage and shortening the time to achieve the optimal firm's capacity at the least cost, for example, a firm, which don't have experienced labor, will pay more than a firm, which have experienced labor.

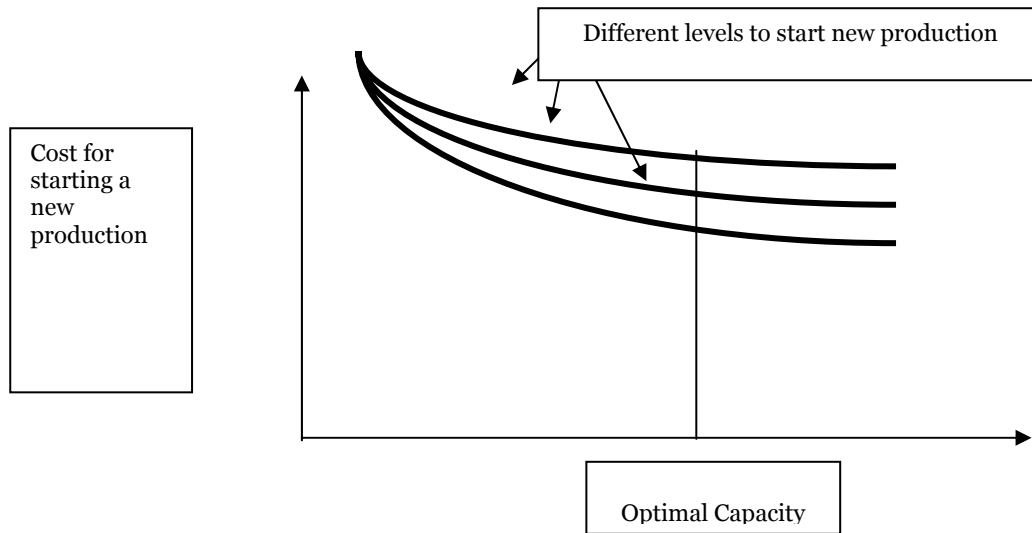


Figure2.3.1: different cost curves to start new production.

- B- All activities in the preparation stage are oriented to achieve the optimal production level the optimal productivity, and the least costs of production. This will lead to internal economies of scale in the long -run, and to specialization of the firms to achieve the optimal production size. This means, that the firms will produce at the long-run average cost curve

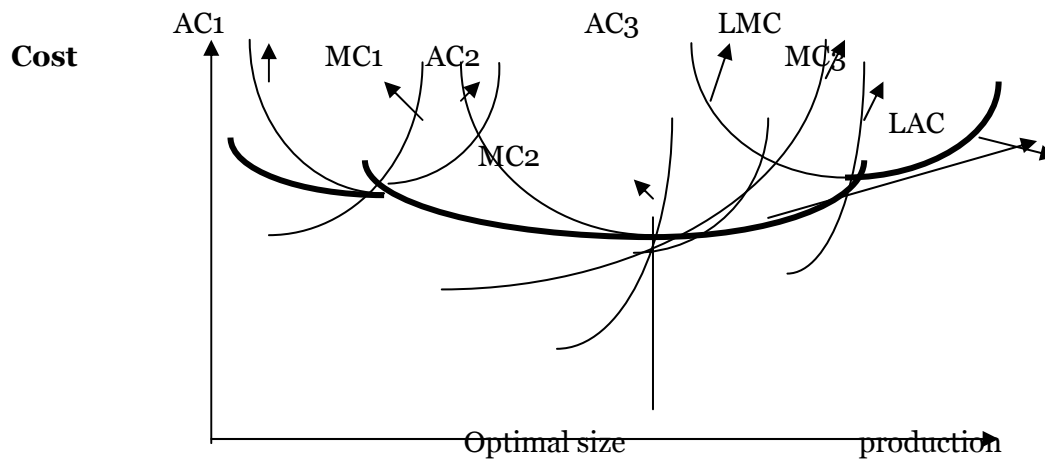


Figure2.3.2:Long-and short- run cost curves

- AC- short-run average cost curve
- MC-short-run marginal cost curve
- LAC-long-run average cost curve
- LMC-long-run marginal cost curve
- 1-3 firms

The appropriate coordination between the three stages(preparation, production, and marketing and distribution) of the food commodity chain will enable the firms to produce at the production possibility frontier. The production possibility frontier shows the maximum combination of outputs that the economy can produce using all available resources. The frontier represents a

trade off; [more of one commodity implies less of the other. Points such as H lying above the frontier are unattainable. Point such as G inside the frontier is inefficient. By fully utilization available resource the economy could expand output and produces on the frontier.

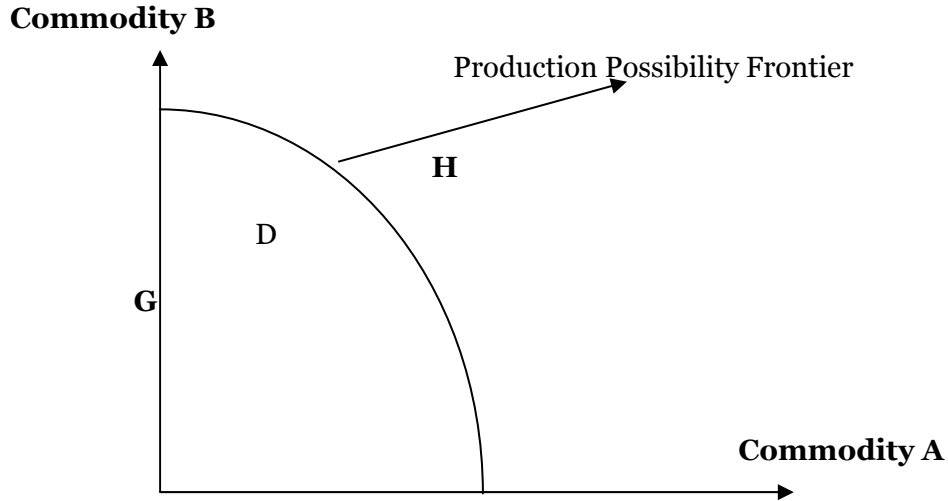


Figure 2.3.3: Production Possibility Frontier

International trade developed through international marketing will lead to the following main effects:

1. Specialization of the countries in the products in which they have comparative advantage. This will be beneficial for all countries.

The supply and demand curves will be used to illustrate gains from trade, and concepts of consumers and producers surplus will be used to quantify welfare gains and losses.

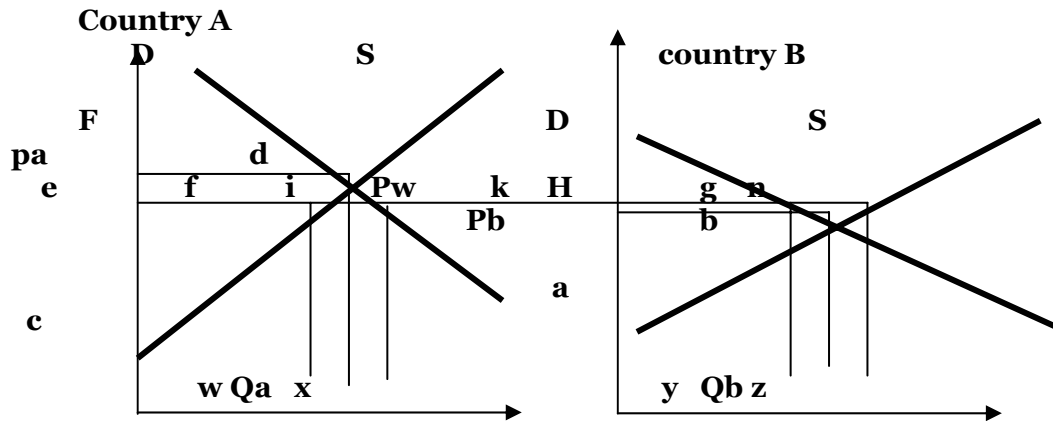


Figure2.3.4: Effects of Free Trade

S –supply Curve D-Demand Curve

Welfare gain = consumer surplus + government exp.+producer s

Before trade

Country A:

-Producers surplus : triangle Pa d c

-Consumers surplus: area F (above equilibrium and under demand Curve)

-Pa: equilibrium price (closed market equilibrium)

Country B:

-Producer surplus: triangle Pb a b

-Consumer surplus : area H (above equilibrium and under demand curve)

-Pb: equilibrium price (Closed market equilibrium)

After trade

-Prices both countries Pa and Pb before trade , equalize at Pw when trade is allowed.

-Country A,s imports (x-w) equal country B,s exports of (z-y)

-Country A,s producer surplus loss is the area (Pafef), and its consumer surplus gain is the area (Pafie),

-Country A,s net welfare gain is thus the triangle (dif),

-Country B,s producer surplus gain is the area (Pbbnk),and its consumer surplus loss is the area (Pbbgk),,

-Country B,s net welfare gain is thus the triangle (gnb).

2. International trade will encourage the firms to produce the highest production with the same costs or the same production at the least costs.

3. Improving efficiency according to international trade will lead to improving in production, processing, and marketing. This will generate additional resources to more improvement at all stages of the food commodity chain.

The transition from a traditional food system, which is production oriented, to a modern food system, which is market oriented can be seen as a consequence of the technological” Push” and of the “Pull” by consumers new needs. Moreover, the progress towards the goal of universal food security need a well functioning production, processing, marketing and distribution system to reduce costs and the final price to consumers as well as to ensure the highest possible food quality and safety. This will create more value added, more income, and more production with the available resources, so it will cause a shift in the supply and demand curve and a new equilibrium situation.

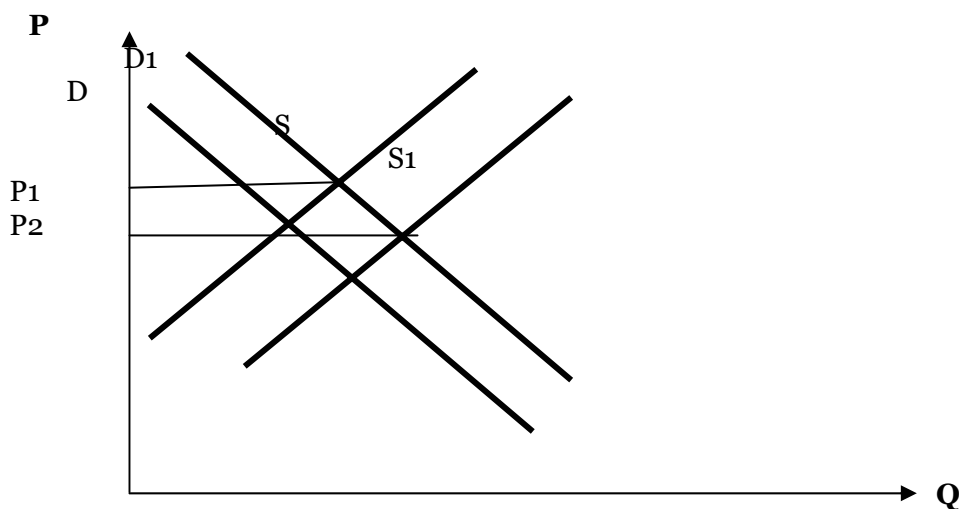


Figure2.3.5: Effect of modern food system

In a free market situation the role of government is to improve the market outcome. This means, that all market distortions should be removed to produce at the market equilibrium. So, the government can improve efficiency through the following interventions:

- Policies to ensure appropriate macro-economic environment, in which food products, traders, and processor can function, profitability,
- The scientific and marketing research,
- The infrastructure,
- The extension and education services,
- The provision of support services to private sector,
- The official food control,
- The market information,
- Investments (specialized marketing firms) and credits
- Institutions and regulations

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Chapter 3 -Analysis of Marketing Chains

- Following a synthetic presentation of the methodology followed in the marketing chain analysis, this chapter will develop the analysis of the marketing chains for the four
- sub-sectors identified in this study. For each of them, the following points will be developed:
- an identification of the different actors and presentation of the main elements of their structure and their economic behavior;
- a quantification of marketing flows in order to analyze the relative importance of the different channels and identify the actors who can determine chain regulation;
- an analysis of price and other contractual relations at different trade levels; implication for margins of the different actors and their contribution to the value added.

3.1. The Marketing Chain Analysis Approach

Economists take three approaches in analyzing the marketing sector of the national economy:

1 The functional approach

It looks at the basic activities (functions) that have to be performed in marketing agricultural commodities (vertical integration).

2 The systems or institutional approach

It is concerned with the number and kinds of business firms that perform the marketing task. The way firms are interrelated is called the structure of the marketing system (horizontal integration).

3 The individual commodity approach

It entails an analysis of marketing functions, system, and structure from the viewpoint of individual product (vertical plus horizontal integration).

In this chapter the third approach will be used to analyze the marketing of dairy and red meat products.

3.1.1. *Scope of the Marketing Chains*

- The marketing chain could be defined as the whole of agents participating in the production, processing, and marketing (storage, transportation, distribution, wholesalers, retailers) of a given commodity (or sum of commodities). The agents in the marketing chain may be individuals, groups, institutions or enterprises. Thus, a marketing chain includes all these economic activities:

- producing raw material (chain be the name of the raw material, for example, the milk chain, the meat chain, ...), or importing it from abroad;
- moving it to the processing units;
- processing it to make it usable by consumers or other processors that will transform it into a new product ;
- and eventually bringing it to the final “consumer” market through “wholesale “ or “ retail “ market, or foreign market.
- The chain describes, therefore, the different paths a commodity follows within an economy, from its origin as a primary product, through several transformations, up to its final destinations. In general, it can be said that the chain shows the gradual generation of the value added. Also, in practice, the different operations of production and consumption are connected with each other like the rings of a chain; so, the change in the behavior of one agent will lead to a change in the behavior of another agent or all other agents. In addition, the understanding of the functions, roles, and strategies of the agents in the different locations of the chain will facilitate the determination of bottlenecks (inefficient points in the chain) and the impacts of any policy on the chain. The analysis of the marketing chain studies moreover the expected impacts of a commodity or sum of commodities on the national economy and the different actors in the chain (farmers, wholesalers, retailers). The agents must not be taken as separate units, but as connected and integrated ones. It is also important for the analysis to divide the chain in different chains such as production of raw material, transportation, processing, etc., when the chain is very complicated. The marketing chain analysis is not complicated, but establishing an adequate flow matrix and making agents calculations requires much experience.
- The marketing chain analysis often suffers from theoretical and practical constraints. It doesn't give the full impact of economic changes on the national economy and the ability to predict the agent's behavior on price changes. Therefore, connecting marketing chain analysis with partial equilibrium analysis (PAM) will lead to more valuable results.
- The marketing chain analysis should involve the following steps:
 - 1- Drawing flow diagrams:

The first step in the analysis is the determination of the different operations, through which the main product moves, and the agents responsible for these operations. By determining agents and nature of flows among them, a flow diagram can be drawn to illustrate the relationship between the agents. The flow diagram is not the last step in the collection and analysis of the data, but it is a main step in the analysis. By examining the flow diagram several times, it can be detected when a new commodity appears or is used in the production of another commodity. Moreover, this will help determine the weaknesses and conflicts in the data, and the requirement of division of the chain in sub – chains. After finalizing the diagram, the in/out commodities and flow percentages should be determined through it.
 - 2- Construction of tables for basic data needed in the analysis.
 - While constructing the tables, the following remarks should be taken into account:
 - The data should be organized in logical order to facilitate calculations.
 - The same data should be entered in the baseline cell and in the current cell to have the ability to make scenarios. The changes should be made only in the current cell.
 - The baseline tables should contain:
 - Unit costs and output data for producers, processors, and traders.

- Processing rates.
 - Output and input prices for agents.
 - Waste and home or self-consumption.
 - Assumptions.
- 3- Calculating the budgets per farm and for the total number of farms.
- 4- Designing flow matrices for the agents (from, to, matrices) containing the needed calculations as follows:
- One flow matrix for flow coefficients among agents. The needed coefficients should be taken from the flow diagram.
 - One flow matrix for the flow of quantities among agents. The basic cell for the calculation is the supply cell and its distribution. When the supply cell is connected with the coefficient matrix, the flow matrix for the quantities will emerge.
 - One matrix for prices of purchases and sales. The prices needed are taken from the basic tables.
- 5- Calculating purchases, sales and marketing costs for the trader of raw material. All information needed is taken from the flow matrices.
- 6- Calculating purchases, sales and processing costs for processors.
- 7- Calculating purchases, sales and marketing costs for traders of processed products.
- 8- Calculating budget summary for the agents and for the total chain.
- 9- Analyzing the results of the marketing chain.

3.1.2. Indicators of marketing efficiency

Economic growth can be obtained either by moving from a less efficient to a more efficient use of existing resources, or by increasing the productivity of resources, so that more output can be obtained from a given level of resources. Efficiency refers to making the economic optimum use of a given set of national resources. Thus, efficiency includes the following concepts:

- Efficiency is the property of a resource allocation of maximizing the utility received by all members of society.
- Utility is maximized if nobody can be made better off without making someone else worse off (Pareto Optimality).
- Efficiency is achieved when goods are produced at the least cost and are consumed by the buyers who value them most highly.
- Efficient markets produce the quantity of goods that maximizes the sum of Consumer and Producer Surplus.”(12)
- The economic efficiency of a specific activity during a specific period of time is defined as the ratio between the output and the level of inputs used to achieve this output. It is to differentiate between the efficiency in consumption and the efficiency in production. It is also worth mentioning that efficiency should be expressed through several indicators that can help evaluate the production and marketing process from different perspectives.
- For marketing channels to work efficiently, there should be numerous traders operating at each level of the system, and information should be available to all participants. The approach used to evaluate the efficiency of marketing systems is called structure-conduct-performance.

“The structure determines the conduct of firms and therefore the final performance. But the conduct of firms (as well as performance) may also have a great influence on the structure itself” (1).

“The structure of marketing channels involves the number, size, and diversity of participants in the marketing system at different levels” (13).

Many indicators may be used for this aim:

- Size of the industry may be measured, for example, in terms of,
- Employment,
- Value added: Return to factors + taxes/subsidies + profit/losses,
- Shipment value and /or total sales,
- Number of establishments (plants, warehouses, stores, research and development centers, number of companies).
- Dimension of plants/establishments/companies may be measured by dividing measure of size of the industry by number of plants / establishments / companies.
- It is even more interesting, however, to gather information about the distribution of plants /companies by size.
- Given previous information it is interesting ranking firms in the industry by size and calculating any measure of concentration (sales, production, domestic or relevant market share), by using, for example, any concentration ratio.
- Location of plants and companies (and geographical specialization) is another interesting aspect to be described.
- Market regulations, market interventions (also along the marketing chain at different stages) and the institutional frameworks are other interesting points.
- Information about kinds of barrier to entry - if any- such as:
 - Institutional,
 - Technological,
 - Economical.
- Presence and extent of economies of scale.
- Presence and extent of economies of scope.
- Research and Development (R&D) expenditure at the industry level.
- Information about availability of new technologies”(1).

“The conduct of marketing enterprises involves the reliability, timeliness, quality control, standardization and so on by which marketing activities are undertaken”(13). The information, which is most closely related to this analysis, involves:

- 1 Product innovation: record of new products introduced in the industry each year.
- 2 Measure of specialization: diversification of firms operating in the sector.
- 3 R&D expenditure at the firm level as well as at the industry level.
- 4 Pricing strategies and product positioning.
- 5 Vertical coordination/ integration.

6 Specialization /diversification.

7 Expenditure for advertising /promotion activities”(1).

“The performance of the marketing system as a whole involves the speed and accuracy of price adjustment through the system, the stability of prices and margins, the technical and allocative efficiency of each stage, and the accuracy and adequacy of information flows through the system”(13). “One way of looking at performance is to measure profits and profit intensity at the firm and/or at the industry level”(1).

The following main indicators can be used to compare the efficiency of different structures in the chain:

1 Efficiency indicators derived from production value, sales, inputs value, salaries, and number of workers:

Production or sales value (1)

Inputs value (production requirements) (2)

Value added (gross domestic product) (3)

Salaries (4)

Number of workers (5)

Efficiency Indicators:

Average Salary = 4/5

Productivity = 3/5

Share of inputs to production or sales =2/1

2 Resource productivity indicator

Labor productivity =production value or sales value / number of workers or man/hr.

Fixed assets productivity =Production value or sales value / value of fixed assets

3 Profitability Indicators:

Labor profitability = profit, gross margin, value added/number of workers or man/hr.

Fixed assets profitability = profit, gross margin, value added/fixed assets value

Cost profitability = profit, gross margin, value added/costs

3.2. The Marketing Chain for Sheep Meat

Syria is famous for “Al Awas“ sheep keeping which is mostly concentrated in Albadia. Sheep meat is in fact the first source of meat for human consumption. It is to highlight the significance of sheep fattening for domestic consumption and for export. Hence, emerges the need to study the marketing chain for sheep meat. Table 3.2.1.3 in annex E presents the development of sheep meat production and its distribution according to governorates in 1999

3.2.1. Identification of Actors and Product Flows

Figure 3.2.1.1 represents the agents in the marketing chain for sheep meat, the in/out commodities for each agent, and the flow percentages among agents. The flow percentages were used to construct the matrix for flow percentages, which was used again to construct the matrix for flow quantities. In addition, a matrix for output prices was constructed to use it in budget calculations for the agents. Tables 3.2.1.1a, 3.2.1.1b and 3.2.1.1c in annex A present the above-mentioned matrices.

Production activities are considered the first agents in the marketing chain. They can be divided into private and co-operative sectors.

The share of private sector in meat production amounted to 92.4% in 1999. Fattening occurs in stalls. The private sector sells live sheep to live animal wholesalers according to supply and demand conditions and keep some sheep to slaughter them for home-consumption. The private holding number is 34267. It is worth mentioning that the small size holding between 10 and 24 heads is dominant. This results in non-utilization of economy of scale. The government subsidizes the private sector with veterinary services. There is also no governmental plan for production. The budget calculation for fattening is organized in the tables 3.2.1.2c, 3.2.1.3a in annex A.

The share of the co-operative sector in meat production reached 7.6% in 1999. Fattening occurs in stalls. The co-operative sector sells live sheep to live animal wholesalers according to supply and demand conditions and keeps some sheep to slaughter them for home- consumption. The co-operative holding number is 137070. It is worth mentioning that the small size holding between 10-24 heads is dominant which leads to non utilization of economies of scale. The government subsidizes the co-operative sector with veterinary services. There is also no governmental plan for production, but the co-operative sector is affiliated to the general farmers union. The budget calculation for fattening is organized in the tables 3.2.1.2b and 3.2.1.3b in annex A.

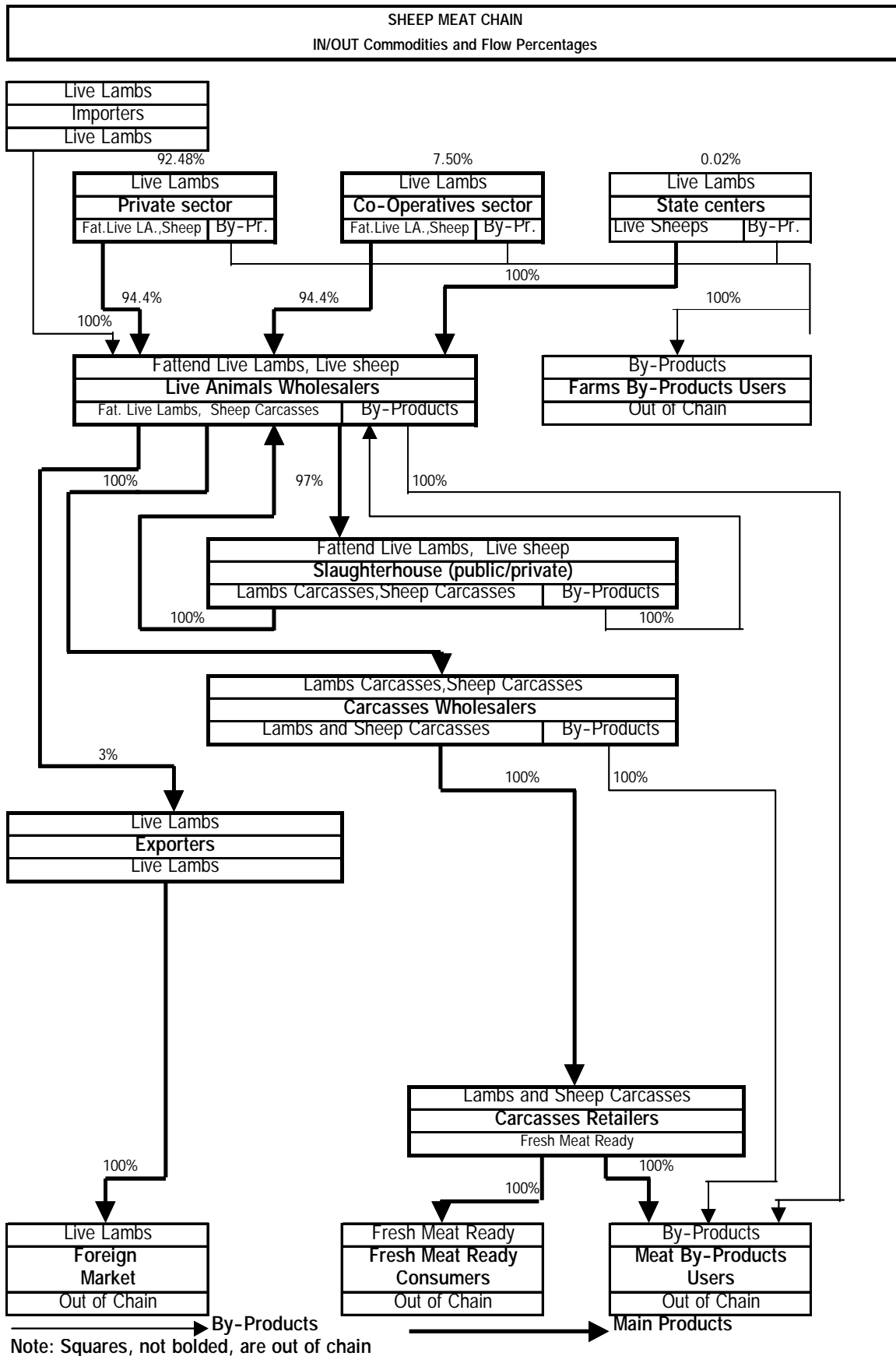
Co-operatives can be specialized and non-specialized. Table 3.2.1.1.4 in annex E shows numbers and members of sheep fattening specialized co-operatives and their share in total specialized co-operatives

Table 3.2.1. 3 in annex A shows total budget of sheep fattening for both sectors.

The second kind of actors is wholesalers. There are two kinds of wholesalers: live animal and carcasses wholesalers.

Live animal wholesalers purchase live animals from private and co-operative sectors at current prices according to supply and demand conditions. They slaughter animals in private and public slaughterhouses and sell them to carcasses wholesalers. By-products will be sold to by-products users. The Ministries of Supply, Local Management, and Health control them. There are no statistics about their number. They are specialized in this activity.

Carcasses wholesalers buy carcasses from live animal wholesalers and sell carcasses to carcasses retailers at current prices according to demand and supply conditions.



Figure(3.2.1.1): In/Out Commodities and Flow Percentages of the Sheep Meat Chain

Tables 3.2.1. ,4a, 3.2.1. 5a, 3.2.1.5b, 3.2.1.6a and 3.2.1.6b in annex A show the basic data needed for calculation and the budgets for both agents.

The third kind of agents is retailers. They buy carcasses from carcasses wholesalers at current prices and sell ready meat to consumers at current prices. The Ministries of Supply and Health control them. Sometimes, they buy live animals from live animal wholesalers in undetermined limited quantities. For this reason, it was assumed that all quantities come from carcasses wholesalers. They are specialized in this activity. There are no statistics about their number. Tables 3.2.1.4b, 3.2.1. 7a and 3.2.1.7b in annex A show the basic data needed for calculation and the agent budget.

The fourth kind of agents is importers. They buy live animals from the foreign market at current prices and sell them to live animal wholesalers at current prices. There are no statistics about their number. Tables 3.2.1.4b, 3.2.1.8a and 3.2.1.8b in annex A show the data needed for budget calculation.

The fifth kind of agents is exporters. They buy live animals from live animal wholesalers and export them to foreign market according to supply and demand conditions. In the past the general organization for meat was responsible for this activity. There is no statistics available about their number. Tables 3.2.1.4a, 3.2.1.9a and 3.2.1.9b in annex A show the basic data needed for the calculation and the agents' budget.

Finally, slaughterhouses are very important actors in the chain. They can be private or public. Both kinds of slaughterhouses provide services. Public slaughterhouses played a great role in the past because they were responsible for slaughtering and distributing carcasses for retailers market. Currently, private slaughterhouses compete strongly with public ones. Therefore, the public slaughterhouses work inefficiently. Tables 3.2.1.4b, 3.2.1.10a, 3.2.1.10b in annex A show the basic data needed for calculation and the agents' budget.

In addition, tables 3.2.1.11, 3.2.1.12a, 3.2.1.2b and 3.2.1.13 in annex A illustrate the assumptions and the output prices, which were used in the calculations.

Main finding: There is a lack of agents marketing information. Therefore, a need is emerging to build an agents database. There is also a need to reorganize the holding size.

3.2.2. Purchases and Sales, Costs and Revenues, and Value Added of the Operators in the Chain

Table 3.2.2.1 shows revenues and sales, purchases and costs, and value added of sheep meat according to each agent, the share of each agent in each item, and the efficiency indicators. The total revenues of the chain are 176529.51 Mill.SP

Table3.2.2.1.1:Revenues,Sales,Purchase,Cost,Gross Margin, Value Added,and Efficiency Indicators according to agents in the Sheep Meat Chain

Indicators	Revenues or Sales	Share	Purchase	Share	Cost	Share	Total Cost	Share	Gross Margin	Share	Value Added	Share	Efficiency Indicators	
													Shar of Cost to Revenues	Share of Value Added to Cost
Agent	Mill.SP	%	Mill.SP	%	Mill.SP	%	Mill.SP	%	Mill.SP	%	Mill.SP	%	%	%
Private Sector	22471.731	12.73		0.00	20822.242	73.45	20822.242	13.79	1649.49	6.46	3663.02	12.87	92.66	17.59
CO-operative Sector	7141.13	4.05		0.00	6637.58	23.41	6637.5833	4.40	503.55	1.97	1132.43	3.98	92.95	17.06
Total	29612.9	16.78	0.00	0.00	27459.8	96.86	27459.8	18.19	2153.04	8.43	4795.45	16.85	92.73	17.46
Live Animals Wholesalers	35465.557	20.09	28987.572	23.64	544.53	1.92	29532.106	19.56	5933.45	23.23	6045.65	21.24	83.27	20.47
Carcasses Wholesalers	33762.4	19.13	30880.244	25.18	161.87	0.57	31042.118	20.56	2720.28	10.65	2794.39	9.82	91.94	9.00
Total	69228.0	39.22	59867.8	48.82	706.41	2.49	60574.2	40.12	8653.73	33.88	8840.04	31.05	87.50	14.59
Carcasses Retailers	48249.249	27.33	33762.4	27.53	74.747	0.26	33837.147	22.41	14412.10	56.43	14453.276	50.77	70.13	42.71
Slaughterhouses	28321.39	16.04	28117.945	22.93	100.51	0.35	28218.453	18.69	102.94	0.40	156.08	0.55	99.64	0.55
Importers	28.6704	0.02	21.50	0.02	0.28	0.00	21.784594	0.01	6.89	0.03	7.01	0.02	75.98	32.20
Exporters	1089.3817	0.62	869.63	0.71	7.38	0.03	877.01147	0.58	212.37	0.83	215.75	0.76	80.51	24.60
Total	176530	100.00	122639	100.00	28349.2	100.00	150988	100.00	25541.1	100.00	28467.6	100.00	85.53	18.85

Table3.2.2.1.2: Share of Agents in revenues, Cost, and Value Added

Share	Share in Revenues %	Share in Cost %	Share in Value Added %
Agent			
Private Sector	12.73	13.79	12.87
CO-operative Sector	4.05	4.40	3.98
Live Animals Wholesalers	20.09	19.56	21.24
Carcasses Wholesalers	19.13	20.56	9.82
Carcasses Retailers	27.33	22.41	50.77
Slaughterhouses	16.04	18.69	0.55
Importers	0.02	0.01	0.02
Exporters	0.62	0.58	0.76
Total	100.00	100.00	100.00

50988.45 Mill.SP. Thus, the costs' share of revenues for the total chain is 85.53%, which means that the chain on average works efficiently. The highest share of revenues and cost was achieved by carcass-retailers and the least share by importers. Table 3.2.2.1 shows also that the most profitable activity is of carcass- retailers and the least profitable activity is slaughterhouses when the efficiency indicators, costs' share of revenues and value added share of cost, are taken into account. The costs' share of revenues is 70.13% for carcass- retailers and 99.64% for slaughterhouses. Also, the value added share of cost is 42.71% for carcass-retailers and 0.55% for slaughterhouses. Moreover, the table shows that trading activities are more profitable than production activities and the private sector is more profitable than the co-operative sector. It is to highlight that production activities and slaughterhouses are not profitable compared with the official interest rate. Thus, an improvement of input and production policies is needed.

Figures 3.2.2.1 and 3.2.2.2 represent, through revenues and costs, the shares of agents in the sheep meat marketing chain. The figures show that carcass wholesalers and slaughterhouses are cost-intensive activities.

Main finding: An improvement in input and production policies at production, slaughterhouse, and wholesale level are needed.

3.2.3. Value added chain

Table 3.2.3.1 shows output, inputs, and value added budget summary according to each agent, group of agents, and total chain. It is to highlight that the highest share of value added was achieved by carcass-retailers and the least share by importers. The total value added of the chain was 28496.28 Mill.SP.

Figures 3.2.3.1,3.2.3.2 represent the value added chain in percentages and values and the share of the agents in the value added. They show that carcass retailers achieve the highest share of value added.

3.3. The Marketing Chain for Beef

Beef is considered the second important source of meat after sheep meat in Syria. Thus, it is important to study the marketing chain for beef. Tables 3.2.1.3 in annex E shows the development of beef production.

3.3.1. Identification of Actors and Product Flows

Studying the agents in a chain and the flows among them is considered the most important step in the analysis. Figure 3.3.1.1 shows the agents participating in the beef chain, the flow percentages among the actors, and the in/out commodities for each agent. The flow percentages are related to the matrix of the flow percentages and transformed into flow quantities in the matrix of the flow quantities. In addition, a prices matrix was constructed to calculate the agents' budgets. Tables 3.3.1.1a, 3.3.1.1b and 3.3.1.1c in annex B show the structure of these matrices.

The agents in the beef chain can be classified as follows

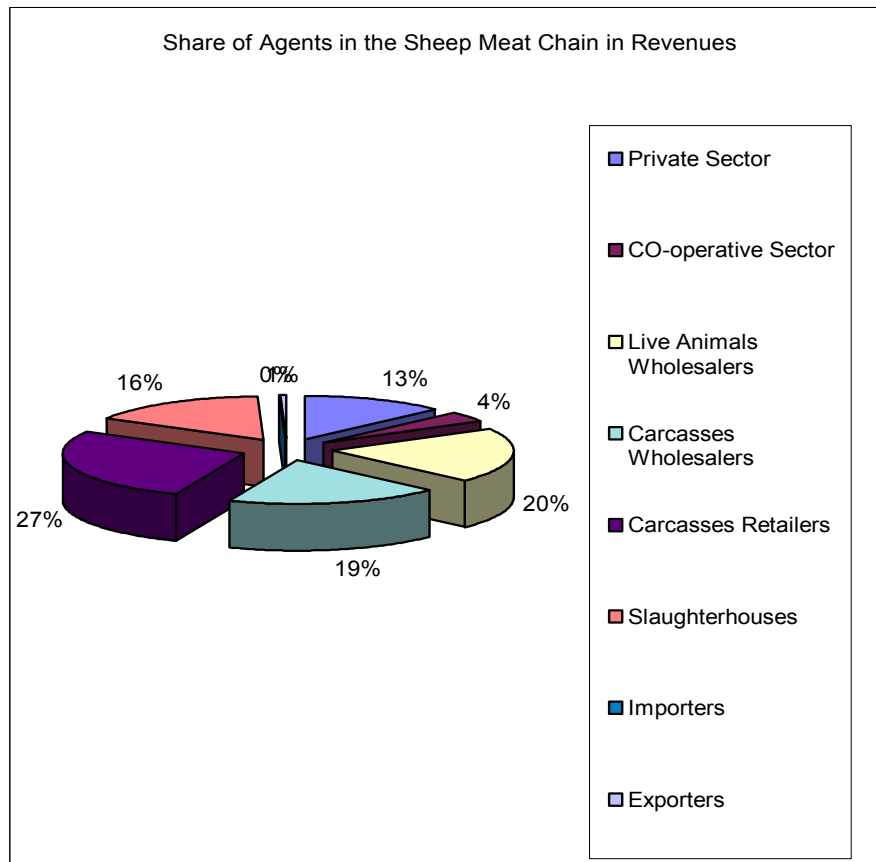


Figure3.2.2.1: Share of the Agents of Sheep Meat Chain in Revenues

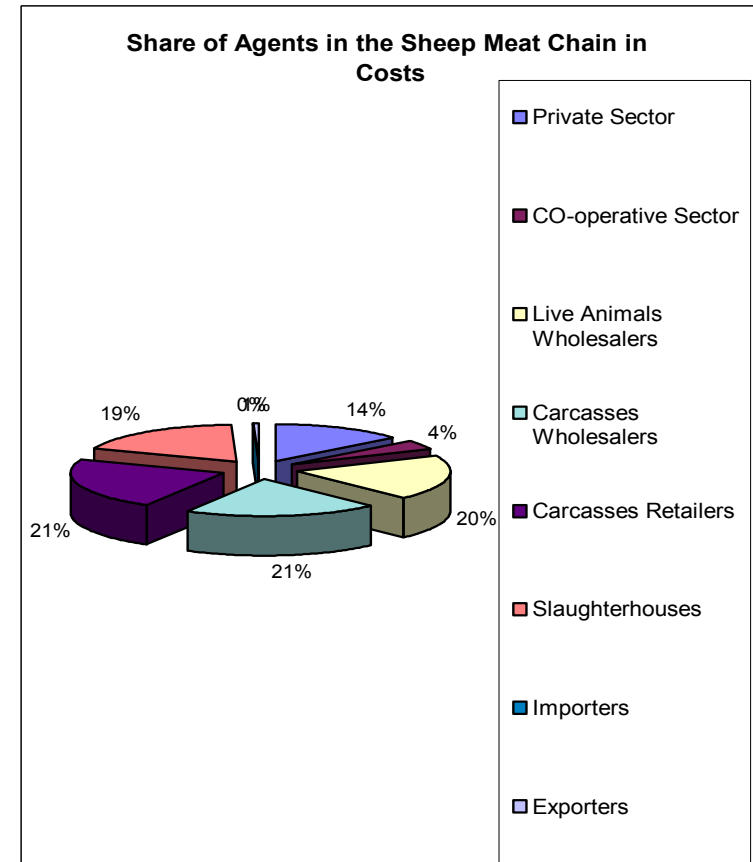
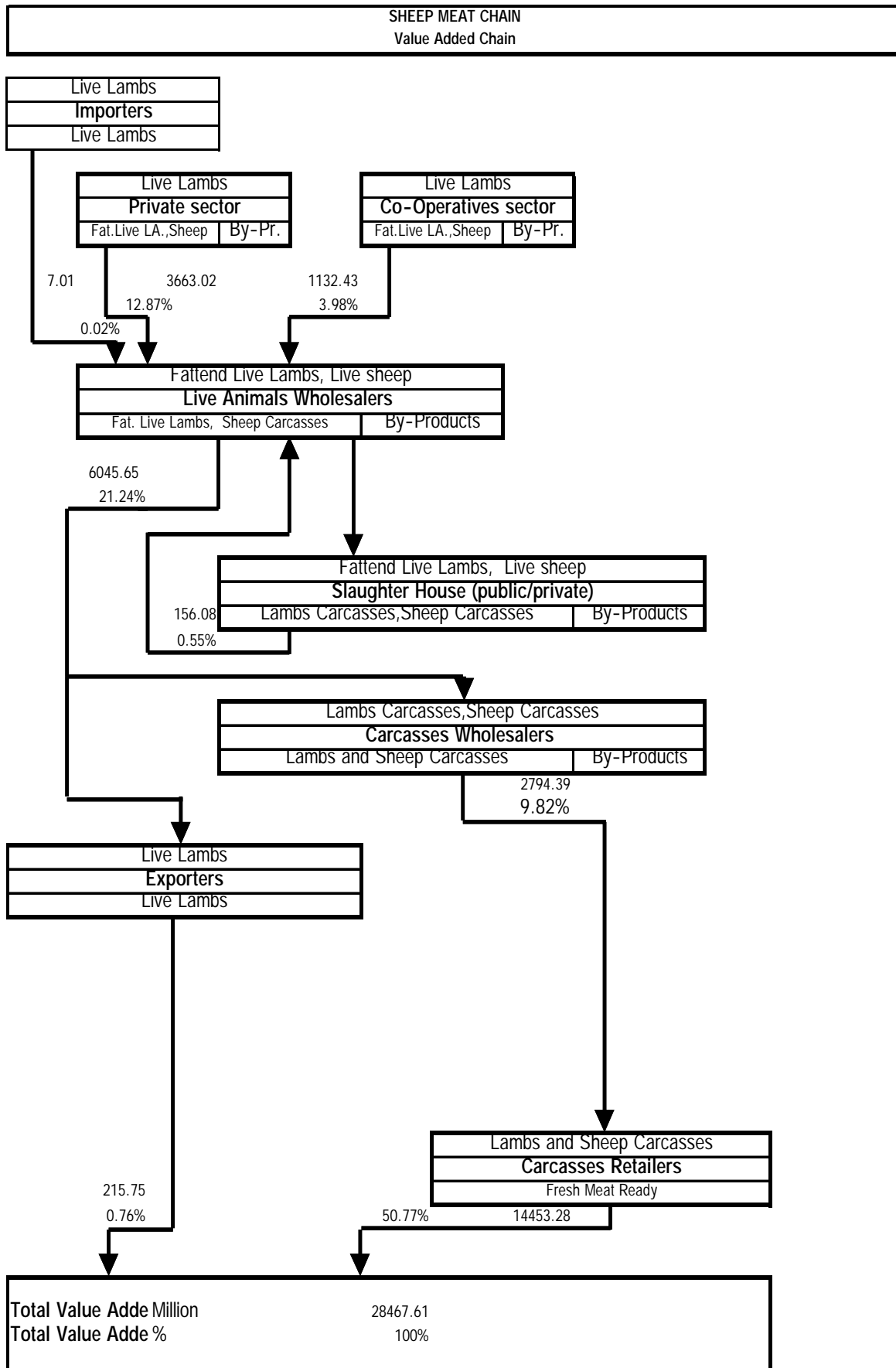


Figure3.2.2.2: Share of the Agents of Sheep Meat Chain in costs

Table3.2.3.1: Agents,Budget Summary in Million S.P of Sheep Meat

Agent	Sectors			SH	Traders						Total Chain
	PS	CS	Total		LWA	CWC	CR	IMP	EX	Total	
Outputs out of Chain											
Fresh Meat Ready/Carcasses Retailers			0.00				48204.1			48204.061	48204.1
Meat By-Products/Live Animals Wholesalers			0.00		3715.7					3715.7	3715.7
Meat By-Products/Carcasses Retailers			0.00				45.2			45.2	45.19
Farms By-Products/Private Sector	0.02		0.02							0	0.02
Farms By-Products/Co-operative Sector		0.14	0.14							0	0.14
Live Animals/Foreign Market			0.0						1089.4	1089.3817	1089.4
Total Outputs out of Chain	0.02	0.14	0.2	0.00	3715.7	0.0	48249.2		1089.4	53054.317	53054.5
Outputs within Chain											
Live Animals/Private Sector	22472		22472							0.0	22471.7
Live Animals/ Co-Operative Sector		7141.0	7141							0.0	7141.0
Live Animals/Live Animals Wholesalers			0		869.627			28.7		898.3	898.3
Carcasses/Live Animal Wholesalers			0		30880.2					30880.244	30880.2
Services/Slaughter House			0	203.45						0.0	203.4
Carcasses/Carcasses Wholesalers			0			33762.4				33762.4	33762.4
Total Outputs within Chain	22472	7141.0	29613	203.45	31749.9	33762.4	0.0	28.7	0.0	65540.942	95357.0853
Home Cosumption	1125	347	1472								1472
Total Home Cosumption	1125	346.6	1472	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1472
Total Outputs	23597	7488	31085	203	35466	33762	48249.2	28.7	1089	118595	149884
Inputs out of Chain											
Fodder	6023.3	1914.1	7937.4							0	7937.4
Veterinary expenses	153.60	48.81	202.4							0	202.4
Electricity, Fuel, Water	100.78	32.02	132.8							0	132.8
Services	95.91	30.48	126.4	19.43	0.47	0.16469	0.02	0.00	0.01	0.7	146.5
Transport			0.0	25.81	266.085	82.3473	30.8802	0.14	3.76	383.2	409.0
Live Lambs					28.67			21.5		50.17	50.2
Other expenses	208.27	69.94	278.2	2.13	10.6434	5.24964	2.68	0.01	0.24	18.817929	299.1
Total Inputs out of Chain	6581.9	2095.3	8677.2	47.4	305.9	87.8	33.6	21.7	4.0	452.9	9177.5
Inputs within Chain											
Lambs	12510	3975.39	16485							0	16485
Milk	691.295	219.68	911							0	911
Waste	150.815	64.93	216							0	216
Live Animals/Live Animal Wholesalers			0		28987.6				869.627	29857.199	29857
Slaughtering/Live Animals Wholesalers			0		126.468					126.46846	126
Carcasses/Carcasses Wholesalers			0			30880.2				30880.244	30880
Carcasses/Carcasses Retailers			0				33762.4			33762.4	33762
Total Inputs within Chain	13352	4260	17612	0.00	29114	30880.2	33762.4	0	869.6	94626.3	112238.5
Total Inputs	19934	6355	26289	47	29420	30968	33796.0	21.7	873.6	95079.2	121415.9
Total Value Added	3663	1132	4795	156.1	6046	2794	14453.3	7.0	215.8	23516.1	28467.6
Value Added Items											
Wages & Salaries	888.21	282.25	1170.46	53.14	140.868	74.1126	41.1737	0.13	3.4	259.7	1483
Profit,Taxes,Interest,Amortization,and Depreciat	2774.8	850.18	3624.98	102.94	5933.45	2720.28	14412.1	6.89	212.37	23285.1	27013
Total Value Added	3663.0	1132.4	4795.4	156.1	6074.3	2794.39	14453.3	7.0	215.8	23544.8	28496.3



Figure(3.2.3.1): Value Added Chain Of Sheep Meat

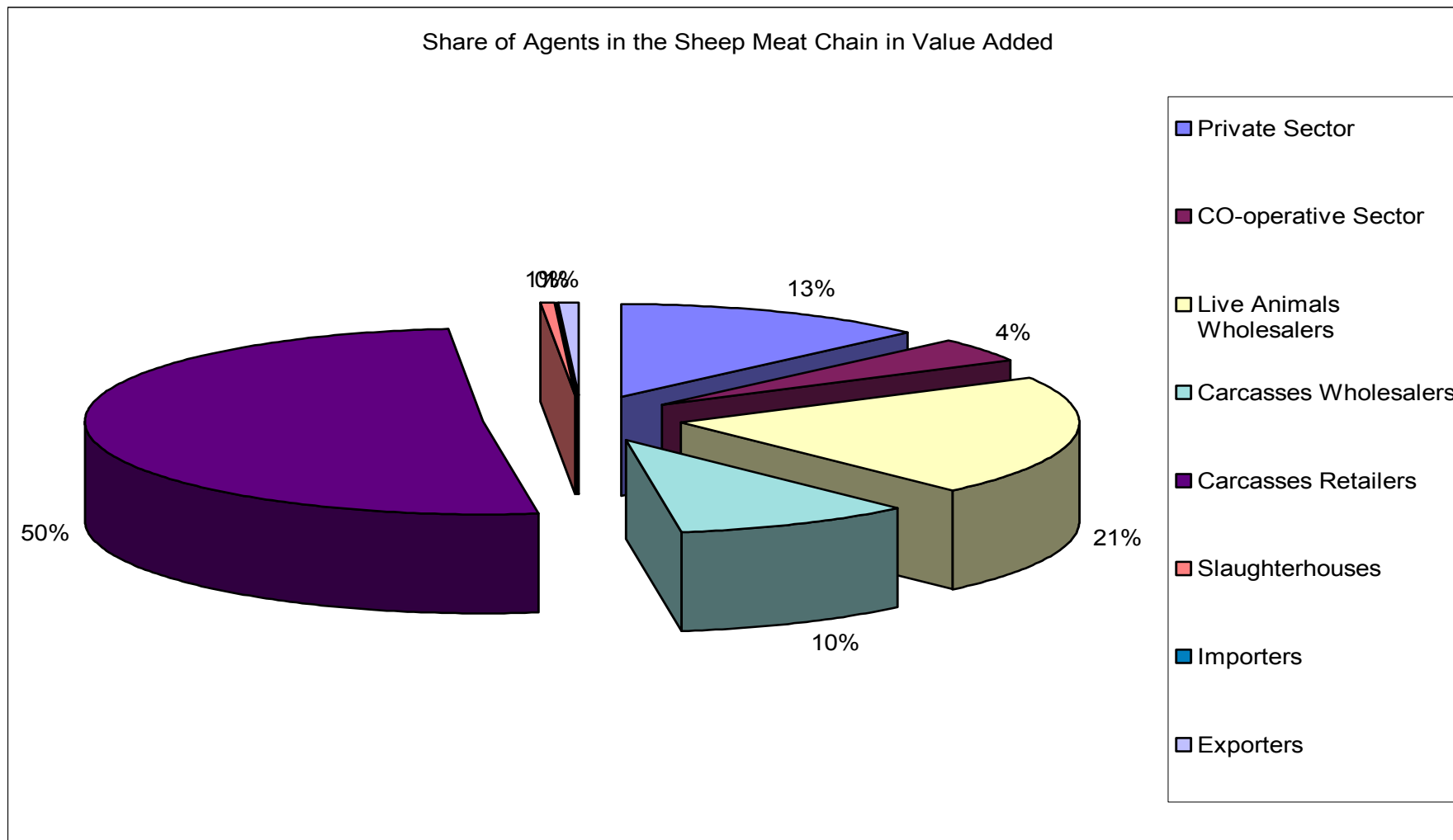


Figure3.2.3.2: Share of the Agents of Sheep Meat Chain in Value Added

1 Farms

Beef results from local, shami, improved and imported cows. Table 3.2.1.3 in annex E shows the share of the different types of cows in beef production. The farms in Syria can be divided into the following types:

State Farms

They account for 1.3% of beef production. Their aim is cows keeping and fattening, providing incentive to increase production and to cover domestic consumption at the least cost, supplying of production inputs, and providing services for farmers. There are 13 state firms with different performance in the various governorates. A commission that works out the plan according to state orientations manages state farms. The farms sell the production to the live animals wholesalers at current prices according to demand and supply conditions. They keep only imported cows. They fatten also steers of their own production and sell the rest of calves to the private and co-operative sectors. Tables 3.3.1.2a and 3.3.1.3a in annex B show the basic data needed for budget calculation and the final budget for state farms.

Private Farms

They account for 39.8% of beef production. They fatten local, shami, improved and imported steers. The number of holding whose size is between 1 and 50 heads reached 26722. Small -size holdings between 1 and 4 heads are dominant. This results in non-utilization of economies of scale. Fattening is concentrated in Homs, Hama, Tartus and Deir-Ezour. They produce according to their production possibilities. The government subsidizes them with veterinary services and does not plan their production. They sell their production to live animals wholesalers according to supply and demand conditions. Tables 3.3.1.2b, 3.3.1.3b in annex B show the basic data needed for budget calculation and the final budget.

Co-operative Farms

They account for 58.9% of beef production. They fatten local, shami, improved and imported steers. The number of holdings whose size is between 1 and 50 heads reaches 151426. Small sizes (1 to 4 heads) are dominant. This will result in non-utilization of economies of scale. Fattening is concentrated in Homs, Hama Tartous, and Deir-Ezour. The government does not plan their production, but these farms are affiliated to the General Farmers Union according to the law of co-operatives. They sell their products to live animal wholesalers according to demand and supply conditions. The government subsidizes them with veterinary services. They can be divided into specialized and non -specialized co-operatives. Table 3.3.1.1.5 in annex E shows the distribution of fattening co-operatives, their number of holdings and their share of total specialized co-operatives.

Tables 3.3.1.2c, 3.3.1.3c and 3.3.1.3d in annex B show the basic data needed for budget calculation and the final budget.

2 Wholesalers

As regards wholesalers, precise statistical information on their number is not available; anyhow, the tables provided in this chapter show the basic data needed for budget calculation and the final agents' budget.

The wholesalers' activity is controlled by the Ministries of Supply, Local Management and Health.

Live Animals Wholesalers

They purchase live animals from state, private and co-operative farms at current prices according to supply and demand conditions. They slaughter animals in private and public slaughterhouses and sell them to carcasses wholesalers. By-products are sold to by-products users. (See tables 3.3.1.4a, 3.3.1.5a and 3.3.1.5b in annex B)

Carcasses Wholesalers

They buy carcasses from live animal wholesalers and sell carcasses as well as ready meat to carcass retailers and processors at current prices according to demand and supply conditions. They provide processors with marketing information and do not transport meat with cool transportation vehicle. (See tables 3.3.1.4a, 3.3.1.6a and 3.3.1.6b in annex B)

Processed Meat Wholesalers

They buy processed meat from processors and sell it to processed meat retailers according to processor decision. There are about 85 wholesalers. They distribute the product in all Governorates and sell other processed products in addition to processed meat. Moreover, they provide processors with marketing information. (See tables 3.3.1.4a, 3.3.1.7a and 3.3.1.7b in annex B)

3 Retailers

Carcasses Retailers

They buy carcasses from carcasses wholesalers at current prices and sell ready meat to consumers at current prices. Sometimes, they buy live animals from live animal wholesalers in irregularly undetermined quantities. For this reason, it was assumed that all quantities come from carcasses wholesalers. They prepare also some sausages and hamburger but in undetermined limited quantities. The transport of carcasses is carried out in not cooled conditions. (See tables 3.3.1.4b, 3.3.1.8a and 3.3.1.8b in annex B)

Processed Meat Retailers

They buy the processed meat from processed meat wholesalers and sell it to consumers at prices determined by the Ministry of Supply. Moreover, they provide wholesalers with information about consumers' needs and problems. (See tables 3.3.1.4b, 3.3.1.9a and 3.3.1.9b in annex B)

4 Slaughterhouses

They are divided into public and private. Both kinds of slaughterhouses provide services to live animals wholesalers. Private slaughterhouses compete strongly with public slaughterhouses. Therefore, the slaughter capacity in public ones has been decreasing dramatically. (See tables 3.3.1.4b, 3.3.1.10a, 3.3.1.10b in annex B)

5 Processors

The main product is canned mortadella in two sizes for domestic consumption only and for low-income consumers. This means no product diversification and no high quality product as well as low performance. Production is industrialized.

The firms used imported meat in the past, which was pretty cheap in comparison with the local prices. Therefore extra profits were realized. However, following the ban on imported meat (mad cow problem), the profit of firms has decreased dramatically. It is also expected that the profit of firms will be continuously decreasing due to the low income of population.

Moreover, an inadequate quality certification system of most firms will negatively affect sales in the near future. Both the Ministry of Supply and the Ministry of Health control the quality of products.

The five dominant processing companies are Somar, Afia, Dairawan, Sairawan and Abud. They employ about 186 workers, and sales amount up to 250 Millions. All firms sell at the same price. Thus, competitiveness among processors is determined by the quality of products. Production is concentrated in Damascus. The firms sell their product to processed meat wholesalers.

Table 3.3.1.1 in annex F shows processed meat production methods. Figure 3.3.1.1 in annex F shows flow chart of canned mortadella. Tables 3.3.1.11a, 3.3.1.11b, 3.3.1.11c, 3.3.1.12a and 3.3.1.12b in annex B show the basic data needed for budget calculation and the final budget.

Tables 3.3.1.13a, 3.3.1.13b, 3.3.1.13c and 3.3.1.14 in annex B present the assumptions and the output prices used in the calculations.

All agents of the beef chain will be affected negatively by the mad cow disease in the near future.

Main finding: There is a need to construct a data base including agents marketing information, to build an adequate quality assurance system (cool transportation, quality control in firms), to take preventive measures against the mad cow disease, to remove price restrictions and to reorganize holding size

3.3.2 Purchases and Sales, Costs and Revenues, and Value Added of the Operators in the Chain

Table 3.3.2.1 shows revenues and sales, purchases and costs, and value added according to each agent as well as the share of each agent in each item and efficiency indicators of beef.

The total revenues of the chain were 32173.41 Mill.SP and the total costs were 27342.55 Mill.SP. Thus, the costs' share of revenue is 84.98%, which means that the beef chain on average works efficiently. The highest share of revenues and cost was achieved by carcass-retailers and the lowest share by processing meat plants. Table 3.3.2.1 shows also that the most profitable activities are farm activities and the least profitable activities are slaughterhouses, when the efficiency indicators, share of cost to revenues and share of value added to cost, are taken into account. Share of cost to revenues is 57.3% at farm level and 99.97% at slaughterhouse level. Also, the share of value added to cost is 85.59% at farm level and 0.33% at slaughterhouse level. Moreover, the table shows that production activities are more profitable than trading activities and the co-operative sector is more profitable than the private and public sectors. It is to highlight that slaughterhouses are not profitable compared with the official interest rate. Thus, an improvement of input and production policies is needed. Figures 3.3.2.1, 3.3.2.2 represent the shares of the agents in revenues and cost in the beef marketing chain and show that carcass wholesalers, processed meat wholesalers, carcass retailers, processed meat wholesalers, and slaughterhouses are cost intensive activities.

3.3.3 Value Added Chain

Table 3.3.3.1 shows output, inputs, and the value added budget summary according to each agent, group of agents, and total chain. It is to highlight that the highest share of value added was achieved by farms and the lowest share by slaughterhouses. The total value added of the chain was 5210.27 Mill.SP. Figures 3.3.3.1 and 3.3.3.2 represent the value added chain in percentages and values and the share of the agents in the value added of the beef chain and show again that the production activities achieve the highest share of value added.

Table3.3.2.1.1:Revenues ,Sales ,Purchase ,Cost ,Gross Margin , Value Added According to Agents in the Beef Chain,and efficiency indicators

Indicator	Reven. Or Sales	Share	Purchase	Share	Cost	Share	Total	Share	Gross	Share	Value	Share	Efficiency Indicators	
													Share of Cost to Revenues	Value Added to Cost
Agent	Mill.SP	%	Mill.SP	%	Mill.SP	%	Mill.SP	%	Mill.SP	%	Mill.SP	%	%	%
State Farms	54.02	0.17%			47.75	1.66%	47.75	0.17%	6.27	0.13%	8.91	0.17%	88.39	18.66
Private Farms	1763.38	5.48%			1011.74	35.08%	1011.74	3.70%	751.64	15.56%	864.86	16.60%	57.38	85.48
Co-operative Farms	2646.28	8.23%			1498.34	51.95%	1498.34	5.48%	1147.94	23.76%	1315.44	25.25%	56.62	87.79
Total Farms	4463.7	13.87%			2557.8	88.69%	2557.83	9.35%	1905.86	39.45%	2189.21	42.01%	57.30	85.59
Live Animal Wholesalers	6461.78	20.08%	5223.04	21.35%	153.99	5.34%	5377.03	19.67%	1084.75	22.45%	1124.59	21.58%	83.21	20.91
Carcasses Wholesalers	7153.59	22.23%	6362.01	26.01%	47.19	1.64%	6409.20	23.44%	744.39	15.41%	765.99	14.70%	89.59	11.95
Processed Meat Wholesalers	270.98	0.84%	226.35	0.93%	3.36	0.12%	229.71	0.84%	41.27	0.85%	41.53	0.80%	84.77	18.08
Total Wholesalers	13886.35	43.16%	11811.40	48.29%	204.54	7.09%	12015.95	43.95%	1870.41	38.72%	1932.11	37.08%	86.53	16.08
Carcasses Retailers	8020.93	24.93%	7035.54	28.77%	21.29	0.74%	7056.83	25.81%	964.10	19.96%	975.82	18.73%	87.98	13.83
Processed Meat Retailers	298.75	0.93%	270.98	1.11%	1.81	0.06%	272.79	1.00%	25.97	0.54%	26.03	0.50%	91.31	9.54
Total Retailers	8319.68	25.86%	7306.52	29.87%	23.10	0.80%	7329.62	26.81%	990.07	20.49%	1001.86	19.23%	88.10	13.67
Sluaghterhouse	5254.03	16.33%	5223.04	21.35%	29.30	1.02%	5252.34	19.21%	1.68	0.03%	17.17	0.33%	99.97	0.33
Processed Meat Plants	249.66	0.78%	117.64	0.48%	69.17	2.40%	186.81	0.68%	62.85	1.30%	70.22	1.35%	74.83	37.59
Total Agents	32173.41	100.00%	24458.61	100.00%	2883.95	100.00%	27342.55	100.00%	4830.86	100.00%	5210.57	100.00%	84.98	19.06

Table3.3.2.1.2: Share of Agent in revenues, Cost, Value Added

Agent	Share in revenues %	Share in Cost %	Share in Value Added %
State Farms	0.17%	0.17%	0.17%
Private Farms	5.48%	3.70%	16.60%
Co-operative Farms	8.23%	5.48%	25.25%
Live Animal Wholesalers	20.08%	19.67%	21.58%
Carcasses Wholesalers	22.23%	23.44%	14.70%
Processed Meat Wholesalers	0.84%	0.84%	0.80%
Carcasses Retailers	24.93%	25.81%	18.73%
Processed Meat Retailers	0.93%	1.00%	0.50%
Sluaghterhouse	16.33%	19.21%	0.33%
Processed Meat Plants	0.78%	0.68%	1.35%
Total	100.00%	100.00%	100.00%

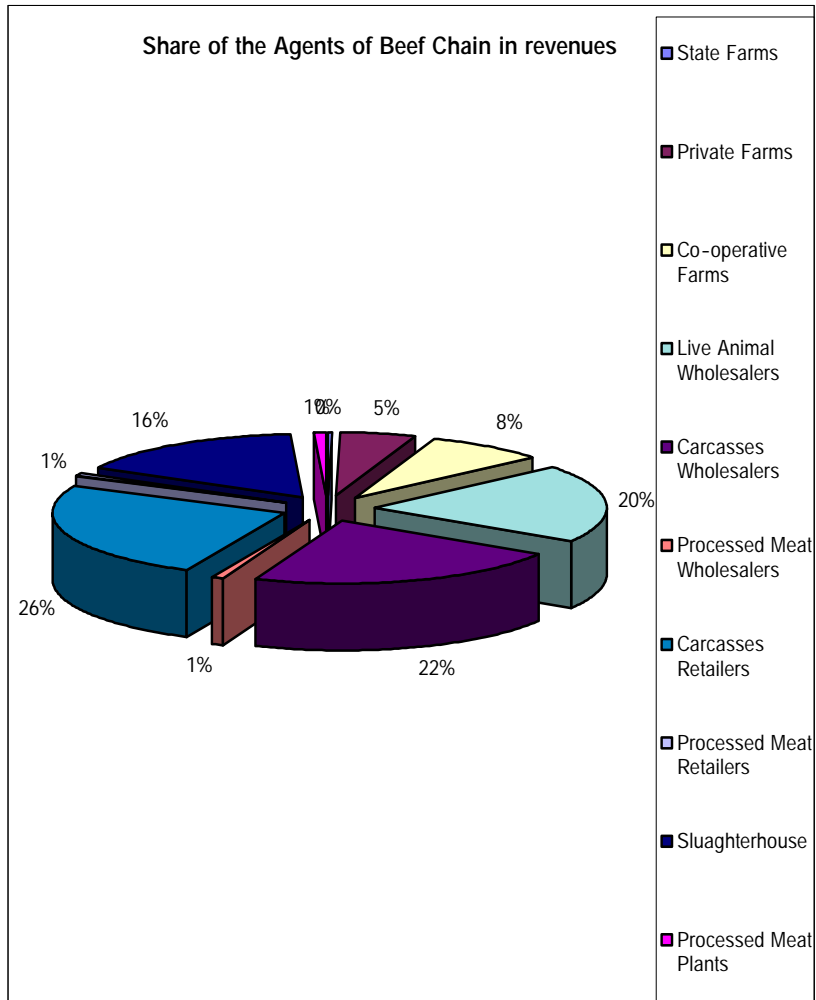


Figure 3.3.2.1: Share of the Agents of Beef Chain in Revenues

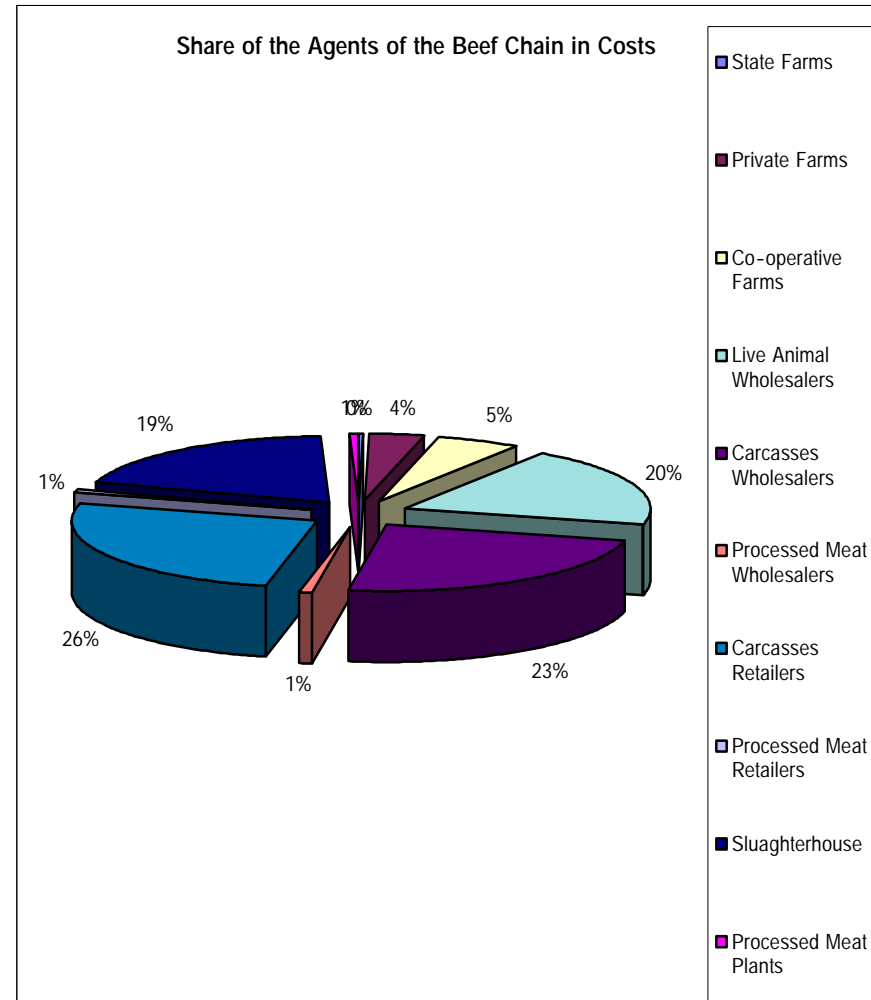


Figure 3.3.2.2: Share of the Agents of Beef Chain in Costs

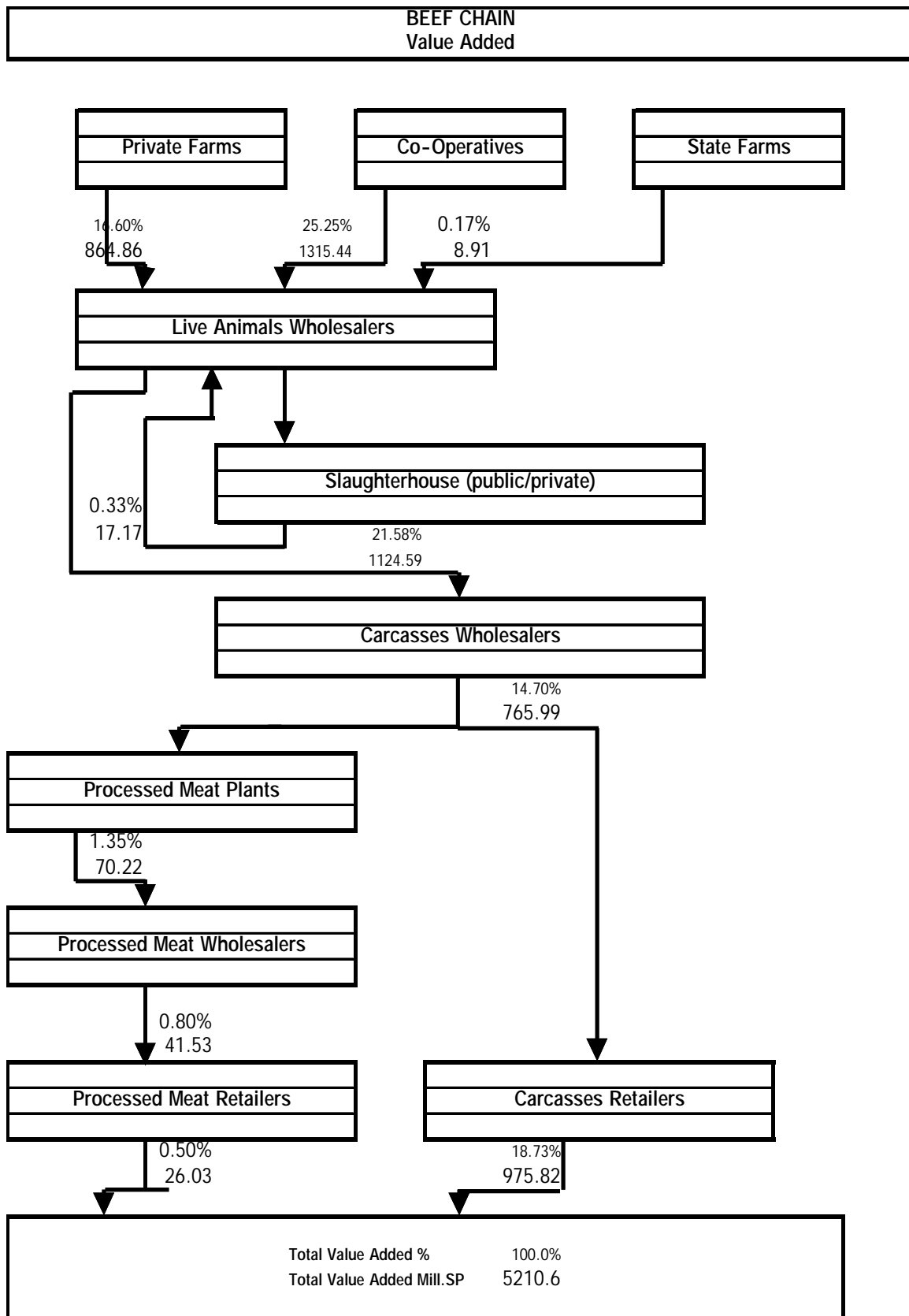


Figure 3.3.3.1: Value Added Chain of Beef

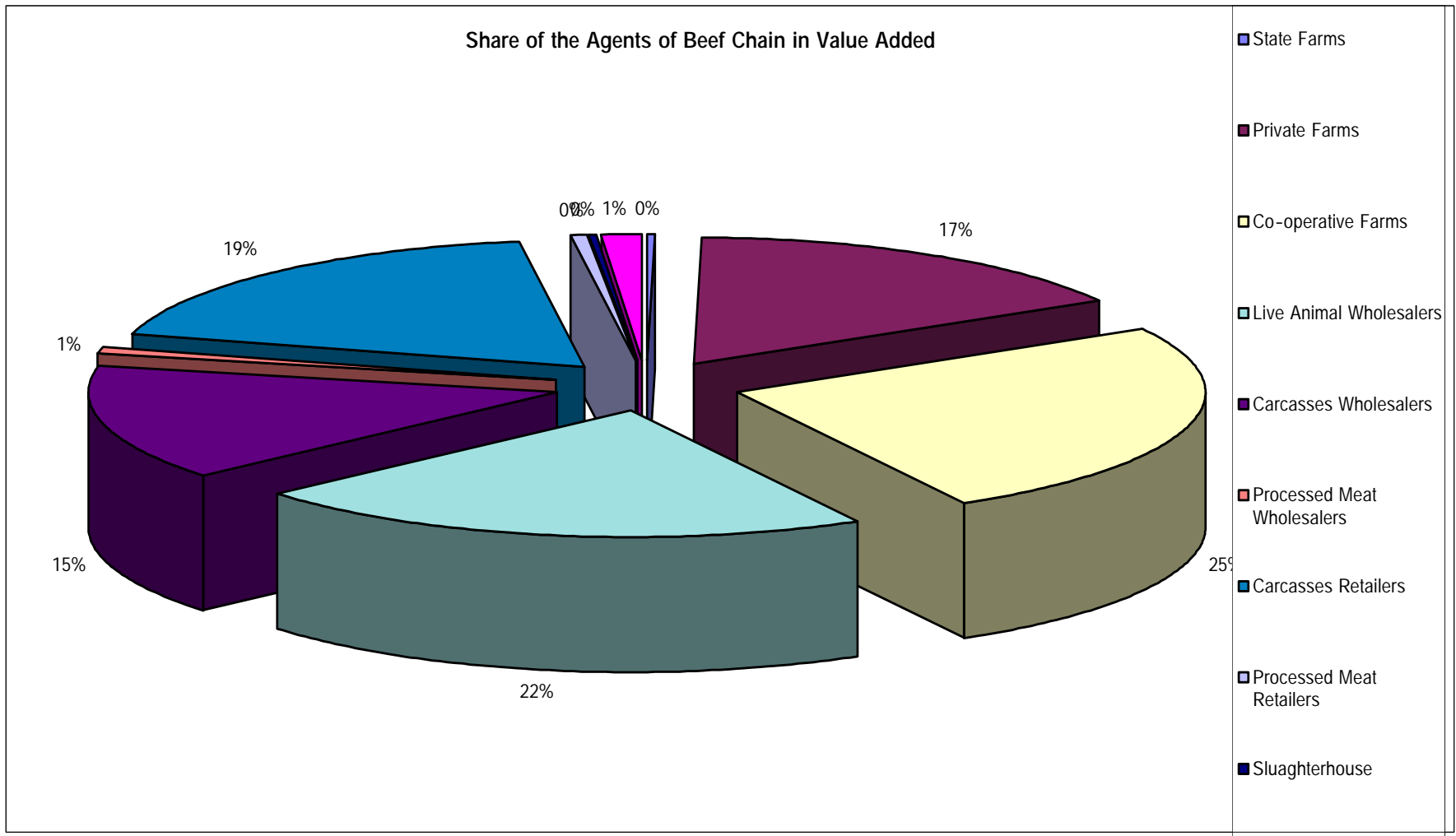


Figure3.3.3.2: Share of the Agents of Beef Chain in Value Added

Table 3.3.3.1: Agents, Budget Summary in Million S.P of the Beef Chain

	Farms				Slaughter House	Processed Meat Plants
	Private Farms	Co-oper. Farms	State Farms	Total		
Outputs out of Chain						
Fresh Meat Ready/Carcasses Retailers				0.00		
Processed Meat/Processed Meat Retailers				0.00		
Meat By-Products/Live Animals Wholesalers				0.00		
Meat By-Products/Carcasses Wholesalers				0.00		
Meat By-Products/Carcasses Retailers				0.00		
Farms By-Products/Private Farms	228.91			228.91		
Farms By-Products/Co-operative Farms		376.27		376.27		
Farms By-Products/State Farms			4.13	4.13		
Total Outputs out of Chain	228.91	376.27	4.13	609.32	0.00	0.00
Outputs within Chain						
Steers/Private Farms	1534.47			1534.47		
Steers/Co-operative Farms		2270.02		2270.02		
Steers/State Farms			49.89	49.89		
Carcasses/Live Animal Wholesalers				0.00		
Services/Slaughter House				0.00	30.98	
Meat Ready/Carcasses Wholesalers				0.00		
Carcasses/Carcasses Wholesalers				0.00		
Processed Meat/Processed Meat Plants				0.00		249.66
Processed Meat/Processed Meat Wholesalers				0.00		
Total Outputs within Chain	1534.47	2270.02	49.89	3854.38	30.98	249.66
Total Outputs	1763.38	2646.28	54.02	4463.69	30.98	249.66
Inputs out of Chain						
Ready made feed mixture	304.37	450.27	31.50	786.15		
Hay	185.89	275.00	0.00	460.89		
Milk	204.74	302.88	6.74	514.36		
Veterinary expenses	4.47	6.62	1.14	12.23		
Electricity, Fuel, Water	9.73	14.40	0.01	24.15		2.56
Wheat Starch				0.00		6.06
Potato Starch				0.00		0.80
Plant protin				0.00		4.19
Spices				0.00		3.40
Salt				0.00		0.10
Ice				0.00		0.46
Cans and packiging				0.00		40.74
Services	4.25	6.29	0.18	10.72	5.67	1.09
Nitrate+Phosphate				0.00		0.13
Transport				0.00	7.52	
Others	13.35	21.37	0.11	34.83	0.62	2.26
Total Inputs out of Chain	726.81	1076.83	39.68	1843.32	13.81	61.81
Inputs within Chain						
Steers/Private Farms	171.71			171.71		
Steers/Co-operative Farms		254.01		254.01		
Steers/State Farms			5.44	5.44		
Steers/Live Animal Wholesalers				0.00		
Slaughtering/Live Animals Wholesalers				0.00		
Carcasses/Carcasses Wholesalers				0.00		
Meat Ready/Processed Meat Plants				0.00		117.64
Carcasses/Carcasses Retailers				0.00		
Processed Meat/Processed Meat Wholesalers				0.00		
Processed Meat/Processed Meat Retailers				0.00		
Total Inputs within Chain	171.71	254.01	5.44	431.16	0.00	117.64
Total Inputs	898.52	1330.85	45.11	2274.48	13.81	179.45
Total Value Added	864.86	1315.44	8.91	2189.21	17.17	70.22
Value Added Items						
Wages & Salaries	113.22	167.49	2.64	283.35	15.49	7.37
Profit, Taxes, Interest, Amortization, and Depreciation	751.64	1147.94	6.27	1905.86	1.68	62.85
Total Value Added	864.86	1315.44	8.91	2189.21	17.17	70.22

Table 3.3.3.1: Agents, Budget Summary in Million S.P. of the Beef Chain

	Wholesalers				Retailers			Total	Total
	LAW	CW	PMW	Total	CR	PMR	Total	Traders	Chain
Outputs out of Chain									
Fresh Meat Ready/Carcasses Retailers				0.00	8,008.06		8,008.06	8,008.06	8,008.06
Processed Meat/Processed Meat Retailers				0.00		298.75	298.75	298.75	298.75
Meat By-Products/Live Animals Wholesalers	99.78			99.78			0.00	99.78	99.78
Meat By-Products/Carcasses Wholesalers		0.41		0.41			0.00	0.41	0.41
Meat By-Products/Carcasses Retailers				0.00	12.87		12.87	12.87	12.87
Farms By-Products/Private Farms				0.00			0.00	0.00	228.91
Farms By-Products/Co-operative Farms				0.00			0.00	0.00	376.27
Farms By-Products/State Farms				0.00			0.00	0.00	4.13
Total Outputs out of Chain	99.78	0.41	0.00	100.18	8,020.93	298.75	8,319.68	8,419.87	9,029.18
Outputs within Chain									
Steers/Private Farms				0.00			0.00	0.00	1,534.47
Steers/Co-operative Farms				0.00			0.00	0.00	2,270.02
Steers/State Farms				0.00			0.00	0.00	49.89
Carcasses/Live Animal Wholesalers	6362.01			6,362.01			0.00	6,362.01	6,362.01
Services/Slaughter House				0.00			0.00	0.00	30.98
Meat Ready/Carcasses Wholesalers		117.64		117.64			0.00	117.64	117.64
Carcasses/Carcasses Wholesalers		7,035.54		7,035.54			0.00	7,035.54	7,035.54
Processed Meat/Processed Meat Plants				0.00			0.00	0.00	249.66
Processed Meat/Processed Meat Wholesalers			270.98	270.98			0.00	270.98	270.98
Total Outputs within Chain	6362.01	7,153.18	270.98	13,786.17	0.00	0.00	0.00	13,786.17	17,921.19
Total Outputs	6461.78	7,153.59	270.98	13,886.35	8,020.93	298.75	8,319.68	22,206.04	26,950.37
Inputs out of Chain									
Ready made feed mixture				0.00			0.00	0.00	786.15
Hay				0.00			0.00	0.00	460.89
Milk				0.00			0.00	0.00	514.36
Veterinary expenses				0.00			0.00	0.00	12.23
Electricity, Fuel, Water				0.00			0.00	0.00	26.71
Wheat Starch				0.00			0.00	0.00	6.06
Potato Starch				0.00			0.00	0.00	0.80
Plant protin				0.00			0.00	0.00	4.19
Spices				0.00			0.00	0.00	3.40
Salt				0.00			0.00	0.00	0.10
Ice				0.00			0.00	0.00	0.46
Cans and packing				0.00			0.00	0.00	40.74
Services	0.13	0.05	0.13	0.31	0.00	0.06	0.07	0.38	17.85
Nitrate+Phosphate				0.00			0.00	0.00	0.13
Transport	75.25	24.01	2.91	102.16	8.79	1.61	10.41	112.57	120.10
Others	3.01	1.53	0.06	4.60	0.76	0.06	0.83	5.43	43.14
Total Inputs out of Chain	78.39	25.59	3.10	107.08	9.56	1.74	11.31	118.38	2037.32
Inputs within Chain									
Steers/Private Farms				0.00			0.00	0.00	171.71
Steers/Private Farms				0.00			0.00	0.00	254.01
Steers/Private Farms				0.00			0.00	0.00	5.44
Steers/Live Animal Wholesalers	5223.04			5223.04			0.00	5223.04	5223.04
Slaughtering/Live Animals Wholesalers	35.76			35.76			0.00	35.76	35.76
Carcasses/Carcasses Wholesalers		6362.01		6362.01			0.00	6362.01	6362.01
Meat Ready/Processed Meat Plants				0.00			0.00	0.00	117.64
Carcasses/Carcasses Retailers				0.00	7035.54		7035.54	7035.54	7035.54
Processed Meat/Processed Meat Wholesalers			226.35	226.35			0.00	226.35	226.35
Processed Meat/Processed Meat Retailers				0.00		270.98	270.98	270.98	270.98
Total Inputs within Chain	5258.81	6362.01	226.35	11847.17	7035.54	270.98	7306.52	19153.69	19702.49
Total Inputs	5337.20	6387.59	229.45	11954.24	7045.10	272.72	7317.83	19272.07	21739.81
Total Value Added	1124.59	765.99	41.53	1932.11	975.82	26.03	1001.86	2933.97	5210.57
Value Added Items									
Wages & Salaries	39.84	21.61	0.26	61.70	11.73	0.06	11.79	73.49	379.70
Profit,Taxes,Interest,Amortization,and Depreciation	1084.75	744.39	41.27	1870.41	964.10	25.97	990.07	2860.47	4830.86
Total Value Added	1124.59	765.99	41.53	1932.11	975.82	26.03	1001.86	2933.97	5210.57

3.4. The Marketing Chain for Sheep Milk

Sheep milk is considered as the second important source of milk for human consumption in Syria, but it is the main source in Albadia. Part of it is consumed fresh, but the main produced quantity is transformed into dairy products such as ghee, butter, cheese and yogurt to avoid waste. Table 3.4.1.6 in annex E shows the development of milk production and its products as well as their distribution according to governorates in 1999. Moreover, table 3.4.2.7 in annex E shows the development of the number of sheep and their distribution according to governorates in 1999.

3.4.1. Identification of Actors and Product Flows

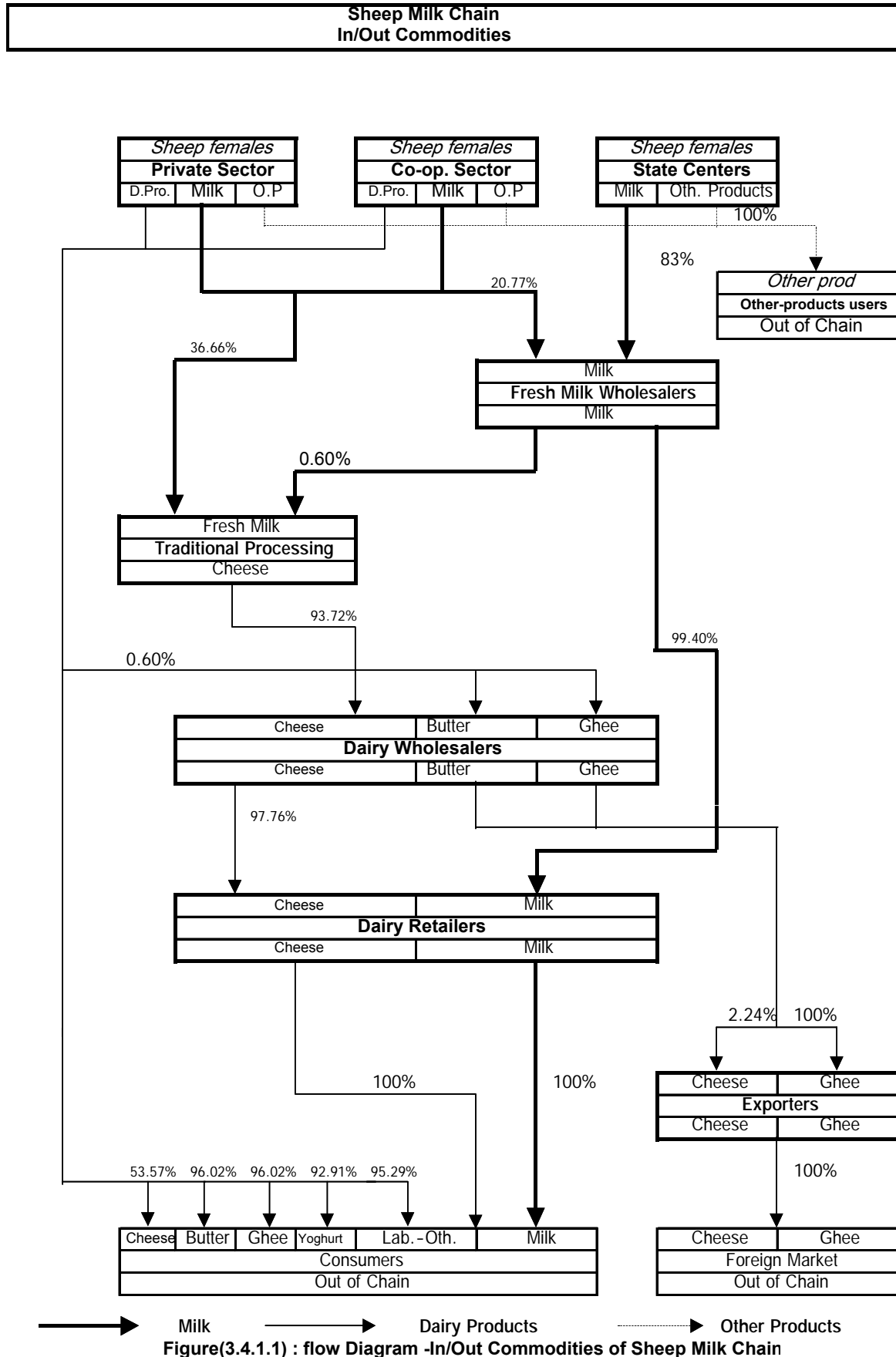
Figure 3.4.1.1 shows the actors in the sheep milk chain, the in/out commodities for each agent, and the flow percentages among the agents. The flow percentages were used to construct the matrix of flow percentages, which, in turn, was the basis for the matrix of flow quantities. Moreover, a matrix for output prices was constructed to be used in the calculations for the agent's budgets. Tables 3.4.1.1a, 3.4.1.1b and 3.4.1.1c in annex C show the structure of these matrices.

The private, co-operative and public sectors represent the production activities in the sheep milk chain.

The private sector accounts for 13% of milk production. The number of holdings is 34267 and the holding size between 10 and 24. It means that the small holding is dominant, which leads to non-utilization of economies of scale. The private sector keeps the required quantity for self-consumption and sells fresh milk to fresh milk wholesalers and to traditional processing units at current prices according to supply and demand conditions. Moreover, the private sector produces dairy products such as ghee, butter, cheese, yogurt, labneh and others (labneh without fat -Kariesh). However, production methods are inadequate. Again, after keeping the required quantities for human consumption, it sells the processed products to consumers and to dairy wholesalers at current prices. The government subsidizes farmers with veterinary services, but does not plan production. It is worth mentioning that there are no accurate statistics on holding number and size. Tables 3.4.1.2a and 3.4.1.3a in annex C show the basic data needed for the calculation of agents' budgets and the final budget for the private sector.

The co-operative sector accounts for 86.96% of milk production. The number of holdings is 137070 and the holding size is between 10 and 24 heads. The small holding size leads to non-utilization of economies of scale. Some milk remains with the producers for self-consumption and the rest is sold to fresh milk wholesalers and traditional processing units at current prices. Producers produce also ghee, butter, cheese, yogurt, labneh, and others (labneh without fat-kariesh), but production is inadequate. After keeping the required quantities for their home consumption, the rest is sold to consumers and dairy wholesalers at current prices. The government subsidizes co-operatives with veterinary services, but does not plan production. However, they are affiliates with the General Farmers Union. There is no accurate data about holding number and size.

Co-operatives can be specialized and non-specialized. The number of specialized co-operatives



is 404 with a holding number of 56268. Table 3.4.1.1.8 in annex E shows the number and members of specialized sheep co-operatives and their share in the total specialized ones as well as the production data about specialized and non-specialized co-operatives. Tables 3.4.1.2b, 3.4.1.3b in annex C show the basic data needed for the calculation of agents' budget and the final budget for the co-operative sector.

State centers account for 0.04% of milk production. They produce according to the plan of the Ministry of Agriculture. In addition to milk production, they function as research centers for sheep. Productivity in these centers is low in comparison with both the private and co-operative sectors. There are 10 centers that are distributed over Albadia in the various Governorates. They sell milk to fresh milk wholesalers at current prices.

Tables 3.4.1.2c and 3.4.1.3c in annex C show the basic data needed for the calculation of agents' budget and the final budget for state centers.

Table 3.4.1.3d in annex C shows the total budget for the three sectors.

Fresh milk and dairy wholesalers represent the other kind of agents.

Fresh milk wholesalers buy milk from the above-mentioned sectors and sell it to traditional processing units and mostly to dairy retailers at current prices. The transportation of milk is inadequate because of non-cooling transportation and small containers. This will increase the microbiological capacity and decrease the processing ability. Moreover, milk production is widely scattered, making milk collection more difficult. Therefore, it is very important to transport milk in big cooled containers and to collect it in collection centers. There is no data about the number of milk wholesalers. Fresh milk wholesalers are specialized in this activity. Tables 3.4.1.4, 3.4.1.5a and 3.4.1.5b in annex C show the basic data needed for the calculation of agents' budget and the final budget for fresh milk wholesalers.

Dairy wholesalers purchase cheese from traditional processing units and ghee and butter from private and co-operative sectors at current prices, and sell their products to dairy retailers and exporters at current prices as well. They are specialized in this activity. There are no statistics about their number. Tables 3.4.1.4, 3.4.1.6a and 3.4.1.6b in annex C show the basic data needed for the calculation of agents' budget and the final budget for dairy wholesalers.

Dairy retailers are also important agents in the chain. They buy milk and dairy products from fresh milk wholesalers and dairy wholesalers at current prices and sell their products to consumers also at current prices. They are non-specialized in this activity. There are no statistics about their number. Tables 3.4.1.4, 3.4.1.7a, 3.4.1.7b in annex C show the basic data needed for the calculation of agents' budget and the final budget for dairy retailers.

Dairy exporters likewise play an important role in the chain. They purchase cheese, ghee and butter from dairy wholesalers at current prices and sell their products in foreign markets at current prices. There are no statistics about their number. They are specialized in this activity. Tables 3.4.1.4, 3.4.1.8a, 3.4.1.8b in annex C show the basic data needed for the calculation of agents' budget and the final budget for exporters.

Finally, traditional processing units can have a great role in preventing milk losses in the chain. They purchase fresh milk from fresh milk wholesalers and private and co-operative sectors at current prices and sell their products to dairy wholesalers at current prices. They produce only white cheese and are specialized in this activity. It is worth mentioning that traditional processing is inadequate in comparison with the industrial one. It is also lacking in product diversification, which results in poor performance. It has been recognized that high quality products can be produced. Thus, this requires to strengthen the extension service to help achieve this objective and to provide the rural industry with credit. There are no statistics about the number of traditional processing units. Tables 3.4.1.9, 3.4.1.9a and 3.4.1.9b in annex C show the required basic data for the calculation of agents' budget and the final budget for traditional

processing units. Tables 3.4.1.10 and 3.4.1.11 in annex C present the assumptions and the output prices used in the calculations.

Main finding: There is a need to build an adequate data base of the agents in the chain, to transport milk in big cooled containers, to collect milk in collection centers, to strengthen extension services for adequate and diversified processing, to provide rural industry with credit, and to reorganize holding size.

3.4.2. Purchases and Sales, Costs and Revenues, and Value Added Of the Operators in the Chain

Table 3.4.2.1 shows revenues and sales, purchases and costs, and value added according to each agent as well as the share of each agent in each item. The total revenues of the chain are 43582.37 Mill.SP and the total costs are 29844.95

Mill.SP. Thus, the share of costs to revenues is 68.48%, which means that the chain on average works efficiently. The highest share of revenues and cost was achieved by production and the lowest share by export. Table 3.4.2.1 shows also that the most profitable activities are farm activities and the least profitable activities is dairy wholesale, when the efficiency indicator share of costs to revenues is taken into account. Share of costs to revenues is 61.43% at production level and 98.01% at dairy wholesale level. Moreover, the table shows that production activities are more profitable than trading activities, and the private sector is more profitable than the co-operative and public sectors. It is to highlight that dairy wholesalers are not profitable. So, an improvement of marketing policies is needed. Figures 3.4.2.1 and 3.4.2.2 represent the shares of agents in the sheep milk marketing chain in revenues and cost. The figures show that fresh milk wholesale, dairy retail, export, and traditional processing are cost intensive activities.

3.4.3 Value Added Chain

Table 3.4.3.1 shows output, inputs, and the value added budget summary according to each agent, group of agents, and total chain. It is to highlight that the highest share of value added was achieved by the co-operative sector and the lowest share by dairy export. The total value added of the chain was 20704.4 Mill.SP. Figures 3.4.3.1 and 3.4.3.2 represent the value added chain in percentages and values and the share of the agents in the value added and show that production activities generate the highest share of value added.

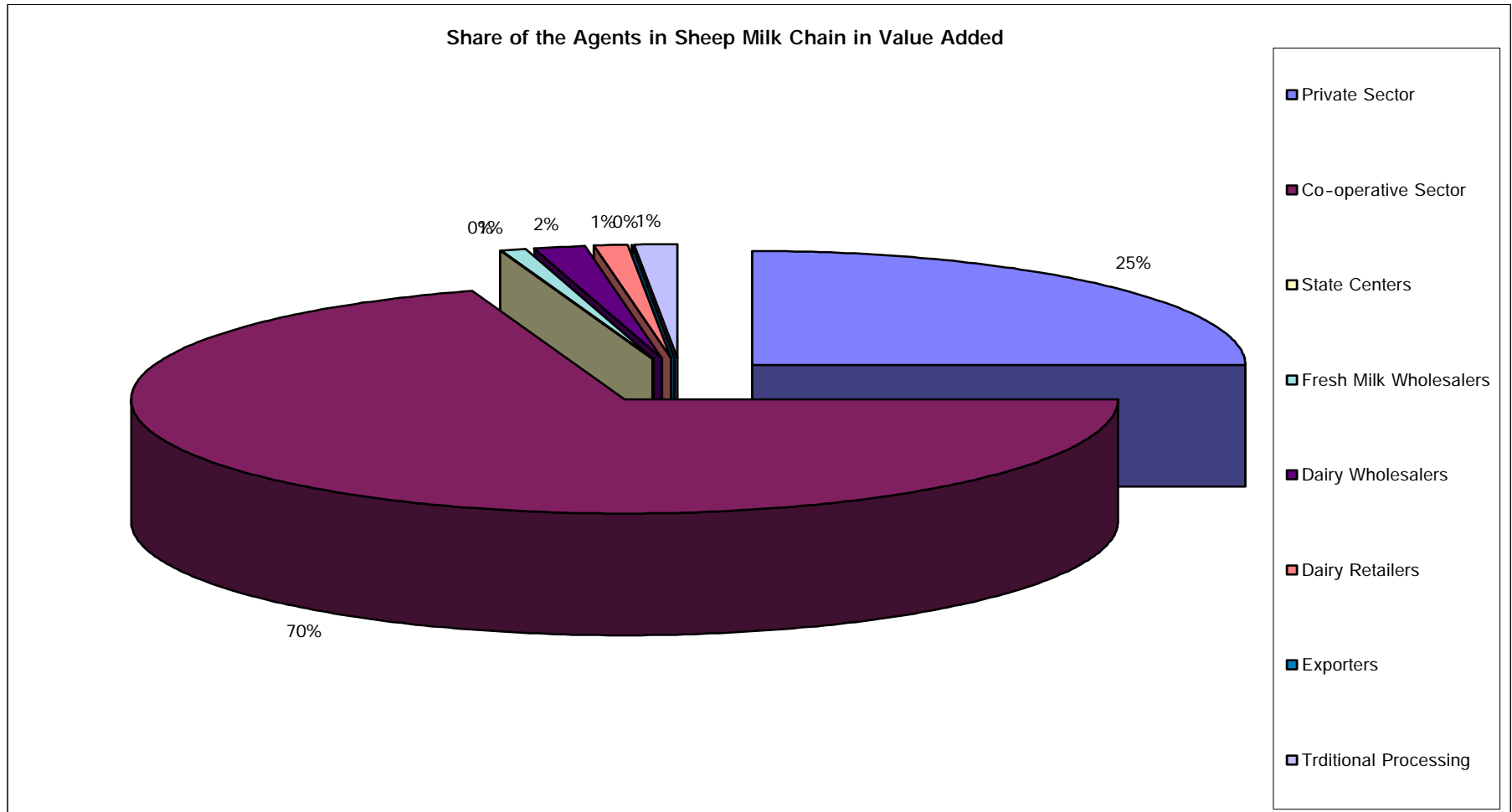


Figure 3.4.3.2: Share of the Agents in the Sheep Milk Chain in Value Added

3.5. The Marketing Chain for Cow Milk

Cow milk is considered as the first source of milk for human consumption in Syria. It is consumed fresh and transformed mostly into dairy products such as ghee, butter, cheese and yogurt. Table 3.4.1.6 in annex E shows the development of cow milk production and its derivatives as well as the distribution of products over the governorates in 1999.

Table 3.4.2.7 in annex E shows the development of the number of cattle and its distribution according to governorates in 1999.

3.5.1. Identification of Actors and Product Flows

Figure 3.5.1.1 shows the actors in the cow milk chain, the in/out commodities for each agent, and the flow percentages among agents. The flow percentages were used to construct the matrix of the flow percentages, which in turn was used to construct the matrix of the flow quantities. In addition, a matrix for output prices was constructed to use it in the calculation of agents' budgets. Tables 3.5.1.1a, 3.5.1.1b and 3.5.1.1c in annex D show the structure of these matrices.

The production activities in the cow milk chain are carried out in private, co-operative and state farms.

Private farms' contribution account for 16.78% of cow milk production. The holding number is 26722 and the holding size is 3 -4 heads. The small holding size leads to non-utilization of economies of scale. Private farms keep the milk quantity required for self- consumption and sell the rest at current prices to home processing, fresh milk wholesalers, and consumers. They produce ghee, butter, cheese yogurt, labneh, and similar products (Labneh without fat - Kariesh). However, production methods are inadequate in comparison with industrial firms. Again, they keep part of their products for home consumption and sell the rest at current prices to dairy retailers. The government subsidizes farmers with veterinary services, but does not plan their production. There is no accurate data about holding number and size. Tables 3.5.1.2a and 3.5.1.3a in annex D show the basic data needed for the calculation of agents' budgets and the final budget for private farms.

Co-operative farms account for 81.62% of cow milk production. The holding number is 151426 and the holding size is 3-4 heads. The small size holding results in non-utilization of economies of scale. Co-operative farms keep the milk quantity required for self- consumption and sell the rest at current prices to home-processing, fresh milk wholesalers, and consumers. They produce ghee, butter, cheese, yogurt, labneh, and others (labneh without fat-kariesh), but in an inadequate way in comparison with industrial firms. Again, they keep part of their products for home consumption and sell the rest at current prices to dairy retailers. The government subsidizes the farmers with veterinary services, but does not plan their production. However, they are affiliated with the General Farmers Union. There is no accurate data about the holding number and size. Table 3.5.1.9 in annex E shows the structure of specialized cow keeping co-operatives and their share of total specialized ones. Tables 3.5.1.2b and 3.5.1.3b in annex D show the needed basic data for the calculation of agents' budget and the final budget for co-operative farms.

Table 3.5.1.10 in annex E shows the structure and performance data of state farms according to Governorates in 1999. The table shows that there is a great productivity difference between the various farms, most of which are in deficit position. Yet, it is worth mentioning that they have a higher productivity level than the private and co-operative sectors. This fact should be considered for research purposes. State farms keep only cows imported from foreign markets and sell milk to state dairy companies.

Tables 3.5.1.2c and 3.5.1.3c in annex D show the basic data needed for the calculation of agents' budget and the final budget for state farms.

Table 3.5.1.3d in annex D shows the total budget for all farms.

Fresh milk wholesalers buy milk from private and co-operative sectors and sell it to traditional processing units, private dairy firms, state dairy firms and mostly to dairy retailers at current prices. The transportation of milk is inadequate because of non-cooled transportation and the smaller containers. This increases the microbiological capacity and decreases the processing ability. Moreover, milk production is strongly scattered, making milk collection more difficult. Therefore, it is very important to transport milk in big cooled containers and to collect it in collection centers. There is no data about the number of milk wholesalers. Fresh milk wholesalers are specialized in this activity. Tables 3.5.1.4, 3.5.1.5a and 3.5.1.5b in annex D show the basic data needed for the calculation of agents' budget and the final agent's budget.

Dairy wholesalers purchase dairy products from importers, traditional processing units, private dairy firms and state dairy firms at current prices and sell their products to dairy retailers at current prices. They are specialized in this activity. There are no statistics about their number. Tables 3.5.1.4, 3.5.1.6a and 3.5.1.6b in annex D show the basic data needed for the calculation of agents' budget and the final budget for dairy wholesalers.

Dairy retailers are also important agents in the chain. They buy milk and dairy products from fresh milk wholesalers, dairy wholesalers, and private and co-operative farms at current prices and sell their products to consumers in the final from Ministry of Supply determined prices. They are non-specialized in this activity. There are no statistics about their number. Tables 3.5.1.4, 3.5.1.7a and 3.5.1.7b in annex D show the basic data needed for the calculation of agents' budget and the final budget for dairy retailers.

Dairy importers play an important role in the chain. They purchase dry milk, ghee and butter from foreign markets at current prices and sell their products to dairy wholesalers and private dairy firms at current prices. There are no statistics about their number. They are specialized in this activity. Tables 3.5.1.4, 3.5.1.8a, 3.5.1.8b in annex D show the basic data needed for the calculation of agents' budget and the final budget for importers.

Finally, the processors in the chain are divided into home-processors, traditional processors, private dairy firms and state dairy firms.

The aim of home-processing is to buy fresh milk from private and co-operative farms at current prices and transform it into cheese, butter, ghee, yogurt, labneh, and other products. Home-processing is very primitive and inadequate compared with industrial processing. Extension service is needed to improve this kind of processing. Home -processing sells its products directly to consumers at current prices. There are no statistics about this kind of processing. Tables 3.5.1.9, 3.5.1.10a and 3.5.1.10b in annex D show the basic data needed for the calculation of agents' budget and the final budget for home processing.

Traditional processing agents buy fresh milk from wholesalers and transform it into cheese, cream, yogurt, labneh, and others. Traditional processing is inadequate compared with the industrial one. Hence, extension service is needed to improve this kind of processing. Traditional processing agents sell their products to dairy wholesalers at current prices. There are no statistics about this kind of processing. Tables 3.5.1.9, 3.5.1.11a and 3.5.1.11b in annex D show the basic data needed for the calculation of agents' budget and the final budget for traditional processing.

Private dairy companies have a production capacity of about 75000 ton of milk; they are distributed in southern, central, and northern areas, the leading companies being: Karam, Syrian Finish Company, Al Mourouje and Syrian-Saoudi. These companies have a production capacity of 17688 ton milk per year and 272 employees. They produce cheese, sterilized and pasteurized milk, yogurt, labne and sell their products to dairy wholesalers at the prices determined by the Ministry of Supply. The main problem for these companies lies in the high

microbiological capacity and the inadequate transportation and collection of milk. Therefore, there is a need to provide extension service at farm level to help improve the milking process. Moreover, these companies do not function efficiently in spite of their capacity. Tables 3.5.1.9, 3.5.1.12a and 3.5.1.12b in annex D show the basic data needed for the calculation of agents' budget and the final budget for private dairy companies.

There are three state dairy companies located in Damascus, Homs and Aleppo. Their production capacity is 44500 ton per year. The processed milk quantity in 1999 was 26251 tons. Therefore, the milk processing industry is inadequate considering its capacity. The number of employees is 500. They produce cheese, sterilized and pasteurized milk, ghee and butter and sell their products at the prices determined by the Ministry of Supply. They purchase fresh milk from state farms and fresh milk wholesalers at current prices. However, butter and powder milk are purchased from the foreign market at current prices. They suffer from the same inadequacy problem of private companies. Tables 3.5.1.9 and 3.5.1.13a and 3.5.1.13b in annex D present the basic data needed for the agents' budget calculation and the final budget for state companies.

Tables 3.5.1.14 and 3.5.1.15 in annex D present the assumptions and output prices used in calculations.

Note: Table 3.5.1.2 in annex F gives a brief description of dairy products processing methods.

Main finding: There is a need to build an agents data base, to improve extension services, to provide credit for rural industry, to remove price restrictions and to improve milk transportation and collection.

3.5.2. Purchases and Sales, Costs and Revenues, and Value Added of the Operators in the Chain

Table 3.5.2.1 presents revenues and sales, purchases and costs, and value added as to each agent as well as the share of each agent in each item. The total revenues of the chain are 59882.2

Mill.SP and the total costs amount to 34500.25 Mill.SP. Thus, the share of costs to revenues is 57.61%, which means that the chain on average works efficiently. As for revenues, the highest share was achieved by dairy retailers and the lowest by private dairy firms. As for costs, the highest share was reached by production activities and the lowest by state farms. Table 3.5.2.1 also indicates that the most profitable activity is dairy retail and the least profitable activity is fresh milk wholesale when the efficiency indicators, share of cost to revenues and share of value added to cost, are taken into account. Share of cost to revenues is 2.5% for dairy retailers and 98.49% for fresh milk wholesalers. The share of value added to cost is 389.04% for dairy retailers and 2.57% for fresh milk wholesalers. Moreover, the table shows that trading activities are more profitable than production activities and the private sector is more profitable than the co-operative and public sectors. Figures 3.5.2.1 and 3.5.2.2 represent the shares of the agents in revenues and costs in the cow milk marketing chain. They show that co-operatives, fresh milk wholesalers, dairy importers, state dairy firms, and private dairy firms are cost intensive activities.

3.5.3. Value Added Chain

Table 3.5.3.1 provides figures on output, input, and the value added budget summary as to each agent, group of agents, and total chain. It is to highlight that the highest share of value added was achieved by dairy retailers and the lowest share by fresh milk wholesalers. The total value added of the chain was 6800.7 Mill.SP. Figures 3.5.3.1 and 3.5.3.2 represent the value added chain in percentage and values, and the share of agents in the value added of the cow milk chain. The highest share of value added is achieved by dairy retailers

3.6. Comparison between Marketing Chains Characteristics and Their Efficiency

This chapter is dedicated to the comparison of the structure and the efficiency of marketing chains.

Structure

Beef and cow milk chains involve more actors than the sheep meat and sheep milk chains due to the processing activities supplied in the cow chains. Processing creates relatively more value added than production of raw products. Moreover, there are neither exporters nor importers in the beef chain, things that affect negatively the performance of this chain.

It is necessary to highlight that sub-sectors do not have options as to marketing. This entails a kind of monopoly in the marketing chains, which reduces competitiveness in the marketing chain.

Efficiency Indicators:

Table 3.6.1 allows for making a comparison of the efficiencies of the four respective chains.

Beef Chain against Sheep Meat Chain

At farm level, the share of cost to revenue in the beef chain is 57.3% while that of sheep meat is 92.73%. Moreover, the share of value added to cost in the beef chain is 85.59% while that of the sheep meat chain is 17.46%. This signifies that, at farm level, the activities in the beef chain are more profitable than in the sheep meat chain.

At the wholesale level, the share of cost to revenue as for sheep meat chain is 87.5% while as for beef chain is 86.53%. Moreover, the share of value added to cost of sheep meat is 14.59% while for beef is 16.08%. This means that the performance of the wholesaling activity in the beef chain is better than in the sheep meat chain

At retail level, the share of cost to revenue in the sheep meat chain is 70.13% against 88.1% in the beef chain. Moreover, the share of value added to cost is 42.71%, 13.67% respectively. This means that retail activities in the sheep meat chain are more profitable than in the beef chain.

At slaughterhouse level, the share of cost to revenue in the sheep meat chain is 99.64% against 99.97% in the beef chain. Moreover, the share of value added to cost is 0.55%, 0.33% respectively. This means that the profitability in the sheep meat chain is higher than that in the beef chain.

Cow milk against Sheep milk

At farm level, the share of cost to revenue is 87.95% in the cow milk chain against 61.43% in the sheep milk chain and the share of value added to cost is 13.72%, 89.08 respectively. Thus, these figures show clearly that the sheep milk chain is undoubtedly more efficient than the cow milk chain.

At the wholesale level, the share of cost to revenue in the cow milk chain is 59.22% against 94.54% in the sheep milk chain. Moreover, the share of value added to cost is 6.04% and 44.72% respectively. This means that the share of cost to revenue is better in the cow milk chain whereas the share of the value added to cost is better in the sheep milk chain.

At the retail level, the share of cost to revenue in the cow milk chain is 9.89% while in the sheep milk chain is 93.92%, and the share of value added to cost is 99.69% and 6.60%, respectively. This means that the cow milk chain is more efficient than the sheep milk chain.

Milk chain against Meat chain

To compare the activities involved in the milk and meat chains, it is necessary to calculate total revenue, total cost and total value added in both activities.

At farm level the share of cost to revenue and the share of value added to cost are 70.50% and 57.05%, respectively in the milk chains, against 88.10% and 23.27% respectively in the meat chains. This indicates that milk chains have better performance than meat chains.

At the wholesaler level, the share of cost to revenue and the share of value added to cost are 65.50% and 15.96%, respectively in the milk chain, against 87.34% and 14.88% in the meat chain. This equally proves that the performance in the milk chain is better than in the meat chain.

At the retail level the share of cost to revenue and the share of value added to cost are 19.93% and 45.45%, respectively in the milk chains, against 72.77% and 37.54% in the meat chains. This signifies that milk chains are better than meat chains at retail level

In conclusion, the milk chain is more profitable than the meat chain. The shares of cost to revenue and of value added to cost in the milk chain are 62.09% and 41.4% respectively, whereas those of the meat chain are 85.45%, 18.89% respectively.

Chapter 4 -Domestic Supply Balance Sheets: Present Situation and Perspectives

National balances are tools to control main economic indicators in the national economy. Among the several kinds of national balances, commodity balances play a very important role. In view of the commodity balances, sources and utilization of the corresponding commodity will be compared to identify surplus or deficit situation. In addition, trend estimation will be made to forecast the evolution of these surplus-deficit positions.

4.1. Scope of the Supply Balance Sheets Analysis

The supply balance sheet is a framework for analyzing a sector or a sub-sector, focusing on the different sources and destinations of a given commodity. The flows of a given commodity in a given period of time are recorded to describe a current situation or forecast using different policy options and/or different scenarios”(11).

- Normally, supply and utilization should balance in each period.
- On the supply side: Domestic production + Imports + Restocking
- On the utilization side: Domestic consumption + Exports + Stocking + Waste
- Domestic consumption = Food demand + Industrial demand + Seeds + Animal feed demand.
- Waste equals all quantities of the commodity lost during the harvest, transport, processing, stocking etc.”(11).
- By forecasting supply balance sheets for policy analysis the following guidelines should be taken into account:
 - Forecasting is to be drawn as to final domestic demand, domestic production and international trade.
 - Demand is analyzed in view of the role of prices, income, population and tastes.
 - Domestic production is analyzed in view of the impact of prices, availability of inputs, prices of outputs and marketing opportunities.
 - The interaction between domestic demand, domestic supply, and international trade is analyzed in the context of a partial equilibrium framework (11).
 - Forecasting is necessary because of the increasing resource scarcity and the complexity involved in production, processing and marketing. Thus, the decision-making process will have a long-run feature to solve the bottlenecks and to increase the efficiency of the activities in the marketing chain. Forecasting is realized on the basis of estimated trends. Trend estimation will

be made through a linear regression model ($Y = a + b t$) based on time series data. In the light of the trend model, the fitted values will be calculated. In case of data correction, a dummy variable will be used (dummy variables are qualitative variables that take the values one or zero, where one indicates the existence of the attribute and zero indicates the absence of the attribute). Then, the regression model takes the following form: $Y = a + b t + c D$, whereby a = intercept, b = slope, c = slope, t = time, D = dummy variable.

4.2. Supply Balance Sheets for Sheep Meat

Table 4.2.1 shows the development of production, imports, exports, total supply, and the fitted values of production and total supply of sheep meat.

Production forecasting of and total supply show that there will be a surplus position of 672.7 thousand heads by the year 2010 because the total supply growth rate is lower than the production growth rate. The growth rate of total supply and of production accounted for 2.6% and 2.74%, respectively. However, when the population growth and a hypothetical per capita consumption increase of 1% are taken into account, there will be a deficit position of 3308.5 thousand heads. Accordingly, the self-sufficiency ratio will decrease to 87.2%. This means that the deficit has to be covered through imports or through an increase of domestic production. Otherwise, it will not be possible to have a regular development of domestic consumption. Figure 4.2.1 represents the trend curves of production and total supply of sheep meat.

4.3. Supply Balance Sheets for Beef

Table 4.3.1 shows the development of production, imports, exports, total supply, and the fitted values of production and total supply of beef.

Forecasting of production and total supply shows that there will be a deficit position of 13.8 thousand heads by the year 2010 because the growth rate of total supply is slightly higher than the growth rate of production; anyway, the self-sufficiency rate will remain very high, being reduced from 98,9% to 98,8%. The annual growth rate of total supply and production reached 1.52% and 1.49%, respectively. However, the deficit will increase to 1024.35 thousand heads when population growth and increase of per capita consumption (1% increase) are taken into account. This will also reduce the self-sufficiency rate to 52.19%. This means that the deficit has to be covered through imports or through an increase of domestic production. Figure 4.3.1 represents the trend curves of production and total supply of beef.

4.4. Supply balance sheets for fresh milk

Table 4.4.1 traces the development of production and the fitted value of supply of fresh milk. It is to highlight that the fresh milk market is almost closed to foreign trade except for some quantities imported as milk powder (currently about 9304.4 tons).

Figure 4.4.1 represents the trend curves of fresh milk production and total supply.

The consumption of fresh milk is driven by production. Forecasting of fresh milk shows that if population growth and a 1% increase of per capita consumption are considered, there will be a deficit position of 540.4 thousand tons by the year 2010. This will reduce the self-sufficiency rate to 78.6%. Assuming that half of milk powder imports are used for the processing industry and half for fresh consumption, these imports at their present level could cover only 7-8% of the forecasted deficit. Accordingly, the technical production possibilities should be improved to cover the increasing demand.

4.5. Comparison among Supply Balance Sheets in Different Sub-Sectors

It is to highlight that a deficit position is to be expected in all chains in view of future perspectives, moderate increased consumption and population growth. The expected population and consumption growth is 2.45% and 1% respectively. This implies a 3.47% growth of total market needs. As for sheep meat, production will cover demand, assuming that consumption behavior keeps unchanged. However, beef is in a bad position because it is expected that beef consumption will increase. Demand and supply of fresh milk will equalize when consumption remains unchanged. As a result, production and productivity increase and the promotion of external trade policies is needed to balance this deficit position. Consumption and waste policies can also play a great role in achieving this goal. However, this deficit status will be further clarified by partial equilibrium analysis.

Table4.2.1:Forecasting Supply Balance Sheet for Sheep Meat

Unit:000 Heads

Year	Supply Balance Sheet				Time x	Dummy1 D1	Dummy2 D2	Fitted Production Y1	Fitted Total Supply Y2	fitted dem. per capita demand stable	fitted dem. per capita demand +1% per year
	Production	Imports	Exports	Total Supply (Demand)							
	y1			y2							
1980	9301	0.3	0	9301.3	1	1	0	10042.7	10146.9	9301.3	9301.3
1981	10504	0.6	0	10504.6	2	1	0	10740.5	10759.5	9529.2	9624.5
1982	11403	0.2	0	11403.2	3	1	0	11438.4	11372.2	9762.6	9958.9
1983	13291	0.2	0.2	13291.0	4	1	0	12136.3	11984.9	10001.8	10304.9
1984	12693	24	356	12361.0	5	1	0	12834.2	12597.6	10246.9	10662.9
1985	10993	554	168	11379.0	6	0	1	10980.9	11296.0	10497.9	11033.4
1986	11657	0	74	11583.0	7	0	1	11678.8	11908.7	10755.1	11416.8
1987	12668	0.003	0	12668.0	8	0	1	12376.7	12521.4	11018.6	11813.5
1988	13691	0	0.3	13690.7	9	0	1	13074.6	13134.1	11288.6	12223.9
1989	14011	0.5	0.914	14010.6	10	0	1	13772.4	13746.8	11565.2	12648.6
1990	14509	80	807	13782.0	11	0	1	14470.3	14359.4	11848.5	13088.1
1991	15194	1113	1190	15117.0	12	0	1	15168.2	14972.1	12138.8	13542.9
1992	14665	1801	1173	15293.0	13	0	1	15866.1	15584.8	12436.2	14013.4
1993	10147	2341	1045	11443.0	14	0	0	10742.1	11517.7	12740.9	14500.3
1994	11257	1950	806	12401.0	15	0	0	11440.0	12130.3	13053.0	15004.1
1995	12075	1087	901	12261.0	16	0	0	12137.8	12743.0	13372.8	15525.4
1996	13119	1215	524	13810.0	17	0	0	12835.7	13355.7	13700.5	16064.9
1997	13829	844	451	14222.0	18	0	0	13533.6	13968.4	14036.1	16623.0
1998	15425	406	686	15145.0	19	0	0	14231.5	14581.1	14380.0	17200.6
1999	13998	651	441	14208.0	20	0	0	14929.3	15193.8	14732.3	17798.2
2000					21			15627.2	15806.5	15093.3	18416.6
2001					22			16325.1	16419.1	15463.0	19056.5
2002					23			17023.0	17031.8	15841.9	19718.6
2003					24			17720.8	17644.5	16230.0	20403.8
2004					25			18418.7	18257.2	16627.6	21112.7
2005					26			19116.6	18869.9	17035.0	21846.3
2006					27			19814.5	19482.6	17452.4	22605.3
2007					28			20512.3	20095.2	17880.0	23390.7
2008					29			21210.2	20707.9	18318.0	24203.4
2009					30			21908.1	21320.6	18766.8	25044.4
2010					31			22606.0	21933.3	19226.6	25914.6
Growth Rate								2.74%	2.60%	2.45%	3.47%
	Intercept	b1	b2	b3	R-Square						
Production	971.83929	697.87	8372.94	5821.85	0.88						
T.Supply	2940.08	612.68	6594.08	4679.83	0.89						
P-values Production	0.45	4.904E-08	9.112E-07	1.038E-07	Y1=971.84+697.87*X+8372.94*D1+5821.85*D2						
P-values Total Supply	0.019	5.904E-08	4.174E-06	4.023E-07	Y2=2940.08+612.68*X+6594.08*D1+4679.83*D2						

Figure4.2.1:Forecasting Production and Total Supply of Sheep

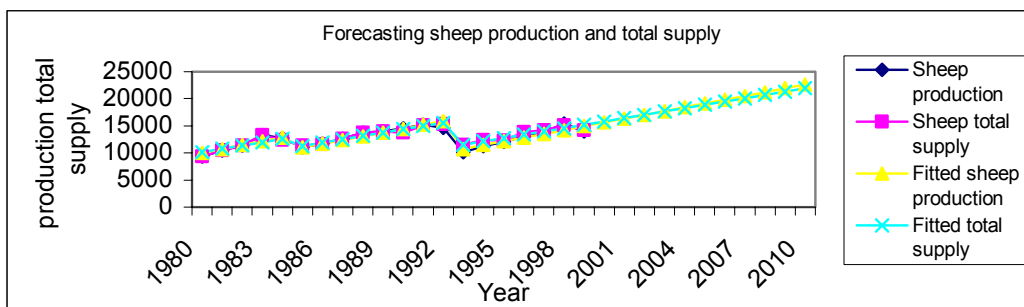


Table 4.3.1: Forecasting Supply Balance Sheet of beef

years	Supply Balance Sheet				Time x	Dummy1 D1	Dummy2 D2	Fitted Production Y1	Fitted Total Supply Y2	Fitted Demand per capita stable	Fitted Demand per capita 1% increase
	Production	Imports	Exports	Total Supply (Demand) y2							
	y1										
1980	769.0	0.01	0	769.0	1	1	0	716.9	719.9	769.0	769.0
1981	807.0	0.02	0	807.0	2	1	0	737.6	741.0	787.8	795.7
1982	791.0	0	0	791.0	3	1	0	758.3	762.1	807.1	823.4
1983	767.0	0	0.1	766.9	4	1	0	779.0	783.2	826.9	852.0
1984	736.0	23	0	759.0	5	1	0	799.7	804.3	847.2	881.6
1985	742.0	1	0	743.0	6	1	0	820.4	825.4	867.9	912.2
1986	704.4	0	0	704.4	7	0	1	695.7	696.9	889.2	943.9
1987	710.0	11	0	721.0	8	0	1	716.4	718.0	911.0	976.7
1988	763.0	0.001	0	763.0	9	0	1	737.1	739.1	933.3	1010.6
1989	804.0	0	0	804.0	10	0	1	757.8	760.2	956.2	1045.8
1990	786.0	1	0	787.0	11	0	1	778.5	781.3	979.6	1082.1
1991	771.0	0	0	771.0	12	0	1	799.2	802.4	1003.6	1119.7
1992	766.0	5	0	771.0	13	0	1	819.8	823.5	1028.2	1158.6
1993	707.0	7	0	714.0	14	0	0	766.5	773.2	1053.4	1198.9
1994	721.0	19	0	740.0	15	0	0	787.2	794.3	1079.2	1240.5
1995	775.0	2	0	777.0	16	0	0	807.9	815.4	1105.6	1283.6
1996	810.0	6	0.2	815.8	17	0	0	828.6	836.5	1132.7	1328.2
1997	857.0	2	0	859.0	18	0	0	849.3	857.6	1160.5	1374.4
1998	932.0	0.3	0	932.3	19	0	0	870.0	878.7	1188.9	1422.1
1999	998.0	19.4	0	1017.4	20	0	0	890.6	899.8	1218.0	1471.5
2000					21			911.3	920.9	1247.9	1522.6
2001					22			932.0	942.0	1278.4	1575.5
2002					23			952.7	963.2	1309.8	1630.3
2003					24			973.4	984.3	1341.8	1686.9
2004					25			994.1	1005.4	1374.7	1745.5
2005					26			1014.8	1026.5	1408.4	1806.2
2006					27			1035.5	1047.6	1442.9	1869.0
2007					28			1056.2	1068.7	1478.3	1933.9
2008					29			1076.9	1089.8	1514.5	2001.1
2009					30			1097.6	1110.9	1551.6	2070.6
2010					31			1118.2	1132.0	1589.6	2142.6
Growth Rate								1.49%	1.52%	2.45%	3.47%
	Intercept	b1	b2	b3	R-Square						
Production	476.82	20.69	219.43	74.04	0.51						
T. Supply	477.65	21.11	221.12	71.46	0.54						
P-values Production	0.00067	0.00606	0.032502	0.19524	Y1=476.82+20.69*X+219.43*D1+74.04*D2						
P-values Total Supply	0.00053	0.00451	0.028082	0.20041	Y2=477.65+21.11*X+221.12*D1+71.46*D2						

Figure 4.3.1: Forecasting production and Total Supply of Beef

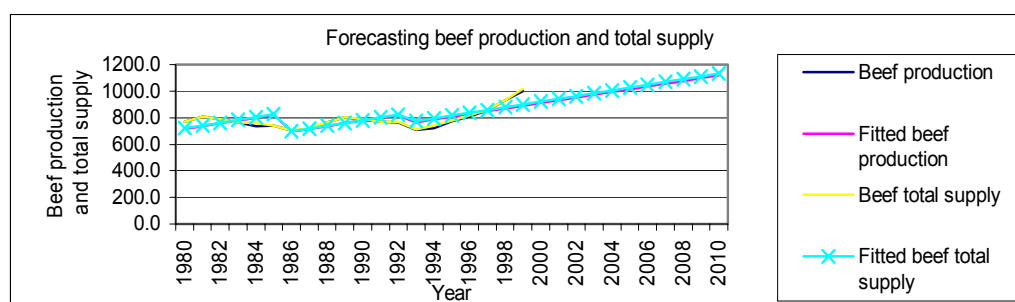


Table4.4.1: Forecasting of Milk Production and Demand

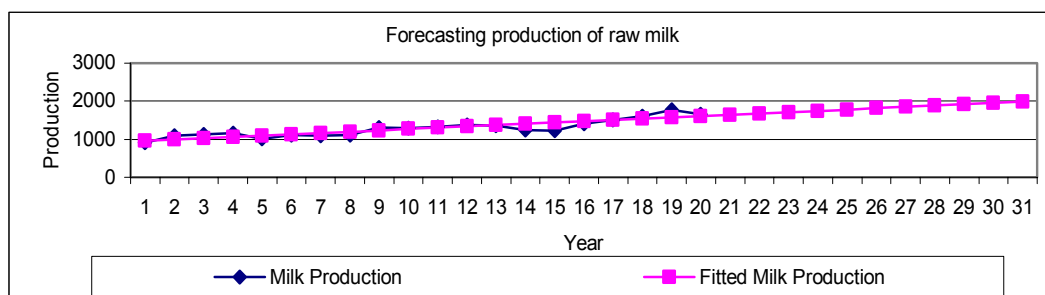
years	Production 1000MT y	Time X	Population 1000	Production Trend(Fitted Value) 1000MT Y1	Demand Fitt.Value per capita stable 1000MT Y2	Demand Fitt. per capita 1% increase Y3
1980	907	1	8692	961.4	907.0	907
1981	1097	2	9017	995.6	929.2	938.5
1982	1132	3	9342	1029.7	952.0	971.1
1983	1158	4	9678	1063.9	975.3	1004.9
1984	1006	5	10026	1098.1	999.2	1039.8
1985	1116	6	10267	1132.3	1023.7	1075.9
1986	1102	7	10613	1166.4	1048.8	1113.3
1987	1108	8	10970	1200.6	1074.5	1152.0
1988	1317	9	11340	1234.8	1100.8	1192.0
1989	1288	10	11722	1269.0	1127.8	1233.4
1990	1331	11	12116	1303.1	1155.4	1276.3
1991	1370	12	12529	1337.3	1183.7	1320.6
1992	1351	13	12958	1371.5	1212.7	1366.5
1993	1244	14	13393	1405.7	1242.4	1414.0
1994	1226	15	13782	1439.8	1272.8	1463.1
1995	1414	16	14285	1474.0	1304.0	1513.9
1996	1508	17	14670	1508.2	1336.0	1566.5
1997	1600	18	15066	1542.4	1368.7	1621.0
1998	1780	19	15473	1576.5	1402.2	1677.3
1999	1656	20	15891	1610.7	1436.6	1735.6
2000		21		1644.9	1471.8	1795.9
2001		22		1679.0	1507.9	1858.3
2002		23		1713.2	1544.8	1922.8
2003		24		1747.4	1582.6	1989.6
2004		25		1781.6	1621.4	2058.8
2005		26		1815.7	1661.1	2130.3
2006		27		1849.9	1701.8	2204.3
2007		28		1884.1	1743.5	2280.9
2008		29		1918.3	1786.3	2360.2
2009		30		1952.4	1830.0	2442.2
2010		31		1986.6	1874.8	2527.0
Growth Rate			3.23%	2.45%	2.45%	3.47%

Note: There is no exports or imports of roh milk

	Intercept	Coefficient	R-Square
	927.23	34.17	0.806020133
P-Value	1.3788E-13	7.93999E-08	

$Y1=927.23+34.17 \times X$

Figure4.4.1: Forecasting production of Raw Milk



Chapter 5 -Partial Equilibrium Models and Sensitivity Analysis

A partial equilibrium model will be set, estimating demand and supply functions and elasticity, limited to the red meat sub-sector (beef and sheep meat). Through the formulation of possible scenarios and/or forecasts of exogenous variables, this model will be applied to different hypotheses of policy options in order to show the sensitivity of the market equilibrium according to the extent of policy interventions.

5.1. Scope of the Partial Equilibrium Analysis and Elements of Methodology

One aim of the partial equilibrium analysis is to estimate supply and demand functions according to the main determinant of each one respectively and to match supply with demand in order to find the equilibrium price and quantity, which maximizes the utility of producers and consumers together. PE is an equilibrium price because at this price all buyers are able to buy as much as they like and all suppliers are able to sell as much as they like. The second purpose is to estimate the elasticity of supply and demand in order to determine the supply and demand response. Another purpose of the model is to identify supply and demand shifters. Demand shifters are population, per capita income, prices of related goods, and consumer's preferences. Supply shifters are number of sellers, input prices, weather and technology. Finally, the partial equilibrium approach can be used to analyze the impact of various government interventions - such as: pan-territorial prices, price stabilization, food self-sufficiency, transportation and infrastructural policies- on consumers, producers, government budget, and external trade as well as the impact of different kinds of markets such as isolated markets, integration of several markets, and full market integration, on producer and consumer surplus of different regional markets.

According to the various factors affecting supply and demand, a multiple regression model is needed to estimate supply and demand function.

To estimate the supply function the following formula can be established according to determinant:

$$Y_s = f(P_{t-1}, y_{t-1}, P_{sc}, P_i, T)$$

Y_s -Supply (fitted value)

P_{t-1} - Farm gate price or wholesale price in the past year (positively correlated)

y_{t-1} - Production in the past year (positively correlated)

$t-1$ - Means time lag variables: Because farmers take decision according to the prices and production prevailing in the past year and it takes time to change their behavior

P_{sc} - Price of substitute and complementary commodities (negatively correlated)

P_i - Inputs prices (negatively correlated)

T - Technology (positively correlated)

Because in this study the stand of technology is constant, inputs prices did not affect the supply function, and there is no substitute product. Therefore, the following supply function was established for the estimation:

$$Y_s = a + b P_{t-1} + c y_{t-1}$$

a- Intercept

b- Slope for P_{t-1}

c- P_{t-1} - Price of beef or sheep meat

y_{t-1} - Beef or sheep meat production in past year

a- Slope for y_{t-1}

In addition, because the cause effect relationship is not always proportional, as it can be progressive or digressive, the potential function can be used for the estimation.

$$Y_s = a (P_{t-1})^b (y_{t-1})^c$$

When also a correction in the data exists, a dummy variable will be taken into account:

$$Y_s = a + b P_{t-1} + c y_{t-1} + d D$$

D- dummy variable

d- Slope for the dummy variable.

When the residual ($R = y - Y_s$) between the actual and estimated value is related to time, a trend component can be established in the regression model:

$$Y_s = a + b P_{t-1} + c y_{t-1} + d D + e t$$

t- Time

Twenty-one- Slope

For demand estimation we refer to the following formula:

$$Y_d = f(P, y_{t-1}, I, P_s, \dots)$$

Y_d - Demand

P - Retail price (negatively correlated)

y_{t-1} - Consumption in past year (positively correlated)

I - Income or private consumption (positively correlated)

P_s - Price for substitute commodities (negatively correlated)

For the study is to establish:

$$Y_d = a + b P + c y_{t-1} + d I + e P_s$$

Y_d - demand

a - Intercept

b - Slope

P - Price of beef or sheep meat

c, d, e - Slope

y_{t-1} - Consumption in past year

I - Private consumption

Ps - Price of beef or sheep meat

The short-run price elasticity of supply and demand can be calculated as follows:

$$e = dQ/dP * P/Q$$

e - Short-run price elasticity of supply or demand

dQ/dP - The first derivative of supply or demand function according to price

P - Average price of the time period

Average quantity of the time period.

The long-run elasticity can be calculated from short-run elasticity as follows:

$$El = e/1-b$$

El- long-run elasticity

Price is the main factor affecting supply and demand. Thus, the following simple model will be used to estimate the equilibrium price and quantity.

$$Q_d = a_d + b_d P_d$$

$$Q_s = a_s + b_s P_s$$

Q_d, Q_s - Quantity demanded or supplied

P_d, P_s - Price of the quantity demanded or supplied

a_d, a_s - Intercept

b_d, b_s - Slope

d - Demand

s - Supply

Equilibrium condition:

$$P_d = P_s = P \text{ and } Q_d = Q_s = Q$$

$$P = (a_d - a_s) / (b_s - b_d)$$

$$Q_s = a_s + b_s P$$

$$Q_d = a_d + b_d P$$

Notes:

1. The assumptions made in relation with supply estimation can be applied to demand estimation.
2. A good supply and demand estimation need at least 6-8 times more observations than the number of the independent variables.
3. When financial values are used, it is better to do the estimation by deflated prices in addition to current prices.

5.2. Analysis of Supply

Supply estimations were established according to lag wholesale prices of the commodity, lag production, and cost of production (fodder, wages). Moreover, the estimation was established according to linear and exponential regression. The regression model was best fitted with linear regression according to price of the commodity and the lag production variable.

5.2.1. *Supply Function Estimation for Beef*

Table 5.2.1.1 shows the calculation of expected supply values and figure 5.2.1.1 represents the beef supply function. From the model the long run and the short run elasticity were calculated. The long run elasticity was 0.070229 and the short run elasticity was 0.070227. This means that the supply is rigid with respect to price changes in the short and long run, but the supply response is higher in the long run.

5.2.2. *Supply Function Estimation for Sheep Meat*

Table 5.2.2.1 shows the calculation of expected supply values, and figure 5.2.2.1 represents the sheep meat supply function. From the model the long run and the short run elasticity were calculated. The long run elasticity was 0.119022 and the short run elasticity was 0.118. This means that the supply is rigid with respect to price changes in the long and short run, but the supply response is higher in the

5.3. **Analysis of Demand**

Demand estimations were established according to retail prices of the commodity lag private consumption, and price of substitute commodities (beef, sheep, chicken). Moreover, the estimation was established according to linear and exponential regression. The regression model was best fitted with linear regression according to price of commodities, and lag and private consumption.

5.3.1. *Demand Function Estimation for Beef*

Table 5.3.1.1 shows the calculation of expected demand values and figure 5.3.1.1 represents the beef demand function. From the model the long run and the short run elasticity was calculated. The long run elasticity was 0.23378 and the short run elasticity was 0.23375. This means that the demand is rigid to price changes in the long and short run, but the demand response is higher in the long run.

5.3.2. *Demand Function Estimation for Sheep Meat*

Table 5.3.2.1 shows the calculation of expected demand values and figure 5.3.2.1 represents the sheep meat demand function. From the model the long run and the short run elasticity was calculated. The long run elasticity was (0.025876) and the short run elasticity was (0.025875). This means that the demand is rigid to price changes in the long and short run, but the demand response is higher in the long run.

5.4. **Price Determination Models and Sensitivity Analysis**

Price will be determined through matching supply and demand functions. Accordingly, equilibrium price and quantity will be identified.

Sensitivity analysis means reevaluation with the assumption that some negative or positive changes (or both) will be occurring. Negative changes could be cost increase, price decrease, production decrease etc. Positive changes could be cost decrease, price increase, production increase etc.

The equilibrium conditions of beef are $Q^* = 43$ thousand tons and $P^* = 84499$ Sp/Ton whereby Q^* is the equilibrium quantity and P^* is the equilibrium price. This means that exports oriented policies and processing policies are needed as well as cost decreasing policies. Table 5.4.1 shows the data needed for equilibrium model and the equilibrium conditions of beef. Figure 5.4.1 shows the equilibrium model.

The equilibrium conditions of sheep meat are $Q^* = 154$ thousand tons and $P^* = 120260$ Sp/Ton. This means that exports oriented policies and processing policies are needed as well as cost decreasing policies. Table 5.4.2 shows the data needed for equilibrium model and the equilibrium conditions of beef. Figure 5.4.2 shows the equilibrium model.

By applying the equilibrium conditions on the chains the sensitivity or reaction of the agents to these conditions can be determined. Another scenario can be determining the effects of demand and supply increasing combined with population growth on marketing agents according to forecasting results. Moreover, another interesting scenario is measuring the effects of external trade on the marketing chains by variations of world prices or applying of import and export tariffs.

By applying the equilibrium conditions on beef and sheep meat chain with the assumption that the margins remain unchanged, the state farms were affected negatively in the beef chain and the production activities in the sheep meat chain. Tables 5.4.3 and 5.4.4 represent the changes after equilibrium applying on both chains. Moreover, table 5.4.5 shows the results of sensitivity analysis for beef and sheep meat according to various scenarios. The equilibrium price was determined by different production and consumption changes. It was assumed that the production remains constant or varies by 5%, 10%, and 15% and consumption remains constant or varies by 10%, 20% and 30%. According to the rigidity of demand, variations in consumption will lead to high price variations. The effects on beef prices however are much lower than sheep meat prices. For example, 10% increase in production and 20% increase in consumption will change the prices of beef by 65% and of sheep meat by 400%

Chapter 6 -Review of Current Sectoral Policies

In this chapter, a review of current Syrian policies affecting the concerned products will be developed. The following issues will be analyzed: direct price policies, foreign trade regulating policies (like import taxes or subsidies, quantitative restrictions on imports, export taxes), marketing policies (parastatals, farmers co-operatives, traders licensing, market information services, quality standards, physical market facilities), input and credit policies, research and extension policies. These policies can be considered as management tools to increase the efficiency of the marketing chain.

6.1. Price Policies

A good functioning price policy according to market mechanism will lead to an efficient and well functioning marketing chain. The functions of price policies are three-folds: reallocation of resources, income distribution, and encouraging investments and capital formation. Thus, the main objectives of price policies are: increasing outputs, stabilizing prices and income, achieving self-sufficiency and food security, and generating or saving foreign exchange. Such direct price policies lead to price distortions and social losses.

Buying and selling activities in the concerned chains functions according to market forces except for the processed products of industrial firms, whose prices are determined by the Ministry of Supply.

Main finding: Consumer price liberalization

6.2. Trade Policies

Trade policies play an important role in determining structure and performance of the marketing chain. Trade will be beneficial for all countries because it leads to specialization of countries in the products in which they have comparative advantages as well as to a transition of the traditional food system, which is production-oriented, towards a modern food system, which is market-oriented.

A country in an open market position can be:

- in excess supply (it exports commodities);
- in excess demand (it imports commodities);
- closed to the international market (domestic price is prevailing).

Import and export policies are the main components of trade policies. Trade policies, which are import-oriented, cause an exclusion of local commodities in favor of imported ones. Overvalued exchange rate will lead also to such policies. Of course, no government prefers imported commodities over local produced ones. Thus, import should occur for a certain time of the year

to meet domestic demand when domestic supply is unable to cover it, and in combination with export policies. Import policies in Syria emphasize the added role of the private sector in ensuring market efficiency. In addition to the public sector, the private sector is allowed to import animals and animal products such as sheep, powder milk, ghee and butter. However, import financing should occur through export earning. When import occurs, a custom tariff and a unified tax should be paid. In this context, it is relevant to highlight that the Syrian government accelerates liberalization of import and exchange rate to avoid the negative effects of import restrictions or motivations. Accordingly, figure 6.2.1.1 shows the negative effects of an import tax. It is also worth mentioning the establishment of a strict control on the boarder to prevent smuggling of foreign beef, which could be infected.

Export policies aim at making a positive balance of external trade and of foreign exchange earning. Devalued exchange rate will lead to export promotion. Syria export policies highlight the added role of the private sector in export earning. The private sector is allowed to export animals and animal products as sheep, cheese, and butter. The current export policy establishes. To export what can be exported instead of exporting what is available for export. In addition, the government goes forward in liberalizing the exchange rate to achieve the equilibrium price. Otherwise, there are no export restrictions; up to year 2000 a restriction was applied on export of local breed sheep (Alawas) in order to maintain the local genetic potential. Accordingly, figure 6.2.1.2 shows also the negative effects of an export tax.

Main finding: Removing all import and export restriction and going forward with the liberalization and privatization process. Moreover, preventing smuggling of foreign beef.

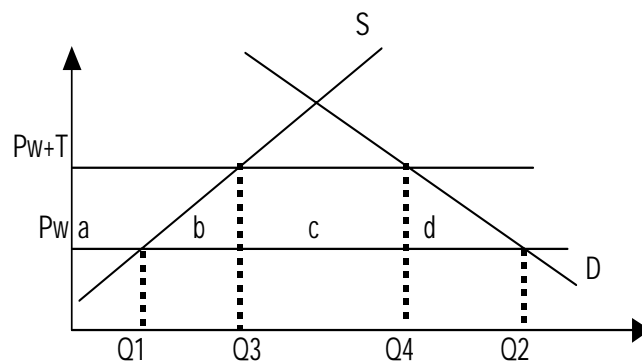


Figure 6.2.1.1 : Effects of an Import Tax

Figure 6.2.1.1 illustrate a government policy which applies a tax on imports. Thus, the domestic price will be (P_w+T) instead of the world price (P_w) when the government does not intervene in market mechanism. Following the price increase, imports will decrease from (Q_2-Q_1) to (Q_4-Q_3) and the government revenues will increase to $((Q_4-Q_3)*T)$. When welfare analysis is used to measure the impact of this government intervention on society, it will result:

Consumers surplus: $-(a+b+c+d)$

Producers surplus: a

Government gain: c

Social loss: $b+d$

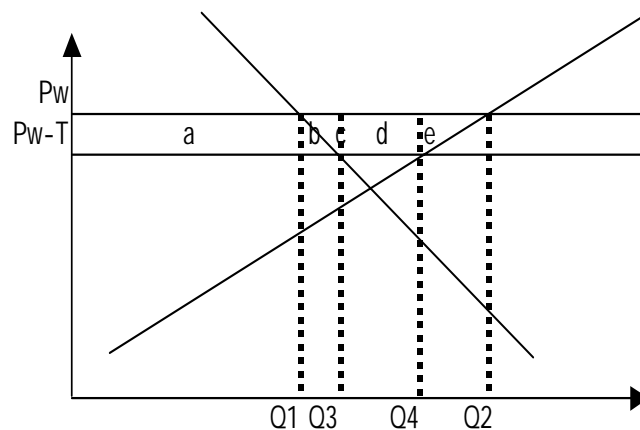


Figure 6.2.1.2: Effect of an export Tax

Figure 6.2.1.2 shows the impact of a government policy which applies a tax on export to make the product available for domestic consumption. The domestic price will be (P_w-T) instead of P_w after taxation. Thus, the exported quantity decreases from (Q_2-Q_1) to (Q_4-Q_3) . The government revenues will be $(Q_4-Q_3)*T$. According to, welfare analysis the following effects can be identified:

Consumers surplus: $a+b$

Producers surplus: $-(a+b+c+d+e)$

Governments Gain: d

Social loss: $c+e$

P_w -World price

T -Tax

6.3. Marketing Policies

- The main function of marketing policies is the transmission of price signals between producers and consumers as well as of commodities in appearance, space, and time with the objective of:

- Protecting producers and consumers from parasitic traders.
- Stabilizing or increase firm-gate prices.
- Reducing the marketing margins.
- Improving quality and minimum standards.
- Increasing food security.

- The above-mentioned objectives are achieved through the activity of parastatals, farmers co-operatives, traders licensing, through the provision of market information services, and through the improvement of quality standards, and physical markets facilities. Accordingly, it is worth mentioning that there are often inefficiencies in marketing board activities. Excluding state monopoly is risky because of the consequent creation of marketing vacuums in the period of time needed to build private trading networks. Moreover, a competition on equal footing between private and public traders is needed which is achieved through progressive withdrawal of subsidies to public marketing agencies.

- For the analysis of the efficiency of the marketing system, trends and correlation coefficients of prices across geographical space and over time are used. Market integration is present when trends are positive and correlation coefficients are equal to 1. Market segmentation is present when the value of antagonistic trends and correlation coefficients is 0.

- The application of a market integration technique on the Syrian white cheese creates market segmentation among the various Governorates. Figure 6.3.1 shows that prices in some Governorates are going up, whereas in others are going down. This means that the markets in the different Governorates are segmented. Therefore, the efficiency of marketing will be negatively affected.

- The Syrian marketing policies have the following objectives:

- Identifying the demand of domestic market and covering it with food stuff at reasonable prices through domestic production or import.
- Achieving equilibrium between demand and supply in most agricultural commodities.
- Achieving an export surplus through the export of what can be exported.
- Connection of imports with exports.
- Transferring public and co-operative marketing to private individuals.

- There are several institutions which are concerned with marketing of dairy and red meat products such as: the General Organization of Food Industry, the General Organization of Meat, the General Organization of Cows, agricultural rooms, industrial rooms, trade rooms, the Ministry of Economy and External Trade, the Ministry of Supply, the Ministry of Agriculture, the General Organization of Standards, the Ministry of Finance, private exporters, private importers, private wholesalers and retailers.

- The Syrian government promotes marketing activities through the improvement of:
 - Marketing standards

- The production and handling of food should occur under hygienic conditions to prevent microbiological and chemical contamination as well as losses. This goal will be achieved through the application of strict food standards, which are necessary for domestic and international trade. The general organization of standards should apply not only quality control standards but also quality assurance standards such as HACCP and ISO9000, even when they are not strictly required. Many steps were done in this direction, but they are not enough. Quality control means setting standards for the final product only. Quality assurance means setting standards to control the process as well as the final product. Moreover, standards should be set for all levels of the marketing chain and in an integrated matter to avoid losses and health problems. For example, when milk at farm level has a high bacteriological capacity, it leads to inadequate processing which causes high waste rate at firm level and health problems to the final consumers. Another example: when the transportation is inadequate (not cool, transportation in small containers, dirty containers), leads also to the same results. In addition, the government promotes the establishment of specialized marketing firms, which lead to an improvement of the standardized level.

- Physical marketing facilities

- The government promotes the establishment of adequate storage places, which leads to an effective marketing. Moreover, the government has increased dramatically the expenditure for the establishment of rural roads that facilitate marketing and increase the performance of the marketing chains. The government's expenditure for rural roads was 115 Mill.SP in 1991 and 703 Mill.SP in 2000. Accordingly, the annual growth rate of expenditure for rural roads is 22.3 %.

- Marketing information

- The government has started to establish a national network for marketing in cooperation among the Ministry of Agriculture, the Ministry of Supply, and the European Union. This is a good step, but it is not enough to supply the needed information for all marketing activities in the right time. Thus, coordination among all information sources is needed to improve the availability of marketing information.

- In conclusion, there is a need for a gradual passage of public and co-operative marketing agencies to private individuals and the promotion of competition between public and private agencies on equal footing. In the past the General Organization of Meat was responsible for slaughtering, distributing, and exporting sheep meat. Currently, the private sector is allowed to carry out the same activities. Also, all public marketing agencies function recently according to market conditions without any subsidy from the government.

Main finding: Establishing and enforcing standards at all marketing levels; improving marketing information; privatization; promotion of specialized marketing firms.

6.4. Input, Credit, and Investment Policies

- The dimensions of input policies are price level, delivery system, and information flows. These policies have the objective of adopting new technology and increasing efficiency of production.

- The main Syrian input policies regard fodder, vaccines and veterinary services.

- The General Organization of Fodder was established according to law number 390 in 1974 with the objective of:

- Supervising current fodder firms and establishing new fodder firms to cover the demand of all kinds of fodder.

- Establishing storage fodder capacities in all governorates.

- Marketing fodder domestically and internationally.
- Supervising the distribution of fodder.
- There is also a central laboratory for fodder analysis belonging to the Ministry of Agriculture. In this direction, it is necessary to highlight the establishment of strict fodder control to avoid the negative effects of inadequate fodder quality, especially the disease of the mad cow.
- The government has liberalized fodder and, thus, constant prices for this product were achieved.
- The government manages vaccines and vaccination because the private sector is currently unable to deliver such services.
- Credit is used to accelerate the development process and to raise farms' income in order to achieve a high standard of living through the following:
 - Increase of invested capital.
 - Maintenance of the size of a profitable activity.
 - Increase the efficiency of production.
 - Improvement of the ability to face variable economic conditions.
 - Improvement of the capacity to face seasonal variations between costs and revenues.
 - Protection from bad natural conditions.
- Improvement of the coordination between the various services (extension services, marketing services, etc.), which leads to increase efficiency
- Credit is provided in Syria to producers at a low interest rate to achieve national production objectives and programs. It is provided in cash and in kind for short, medium, and long terms. The interest rate varies between 4 and 7.5% according to period and sector (private, co-operative, public). The period of repayment is one year for short term, five years for medium term, and 10 years for long term credits. Short-term credits are provided for animal fattening; medium-term credits are provided for machinery; long-term credits are provided for establishment of livestock farms. Table 6.4.1 shows the development of credit financing according to sectors. The table shows also that the highest share of credits is short term and for the private sector. Therefore, the share of long-term credits should be increased.
- Investment policies are also a good tool to push the social and economic development process of the national economy. To achieve efficient investment policies the government should not invest in direct production activities and should leave the production activities to private sector investments. Thus, all public investments should aim at the establishment of research centers to improve standards, product quality and productivity. Accordingly, the Syrian government has published law number 10 in 1991 to promote private investments. However, this law needs further improvements.
- In this section, it has been highlighted that low interest rates lead to distortions and social losses as well as to a decrease of the efficiency of invested capital. It is also worth mentioning that an accurate credit and investment follow up program should be established in order to identify the effectiveness of the invested capital.

Main finding: Liberalization of input, credit, and investment. Strict fodder control, and follow up program of investment and credits. Increasing long term credits.

Unit: Thusand SP

Table 6.4.1.1: Development Of Credits according to term

Year	Total Credits				Private Sector				Co-operative Sector				Public Sector			
	Short	Middle	Long	Total	Short	Middle	Long	Total	Short	Middle	Long	Total	Short	Middle	Long	Total
1989	5445077	1155150	245715	6845942	2721875	653073	97613	3472561	2570195	502077	148102	3220374	153007	0	0	153007
1990	6552466	1762754	279470	8594690	3383828	1032866	98958	4515652	3045721	729888	180512	3956121	122917	0	0	122917
1991	8059420	3416893	208857	11685170	4078907	2018276	64706	6161889	3843201	1398617	144151	5385969	137312	0	0	137312
1992	9632340	3541241	144446	13318027	5317783	2107360	49217	7474360	4187338	1433881	95229	5716448	127219	0	0	127219
1993	10583957	2829479	123282	13536718	5842100	1767556	42844	7652500	4651748	1061923	80438	5794109	90109	0	0	90109
1994	11537934	2806018	137050	14481002	6111570	1662132	37891	7811593	5316734	1143886	99159	6559779	109630	0	0	109630
1995	12597779	2678752	243378	15519909	6511965	1533572	88532	8134069	5828127	1145180	154846	7128153	257687	0	0	257687
1996	12516485	2303823	241946	15062254	6530703	1302350	98463	7931516	5775253	1001473	143483	6920209	210529	0	0	210529
1997	9966158	1881432	253674	12101264	5115818	1060223	108191	6284232	4621090	813403	145483	5579976	229250	7800	0	237050
1998	10715226	1743400	181241	12639867	5593416	1073142	93236	6759794	4909793	668758	88005	5666556	212017	1500	0	213517

Table 6.4.1.2: Share Of Credits according to term

Unit:%

Year	Total Credits				Private Sector				Co-operative Sector				Public Sector			
	Short	Middle	Long	Total	Short	Middle	Long	Total	Short	Middle	Long	Total	Short	Middle	Long	Total
1989	79.54	16.87	3.59	100	49.99	56.54	39.73	50.72	47.20	43.46	60.27	47.04	2.81	0.00	0.00	2.24
1990	76.24	20.51	3.25	100	51.64	58.59	35.41	52.54	46.48	41.41	64.59	46.03	1.88	0.00	0.00	1.43
1991	68.97	29.24	1.79	100	50.61	59.07	30.98	52.73	47.69	40.93	69.02	46.09	1.70	0.00	0.00	1.18
1992	72.33	26.59	1.08	100	55.21	59.51	34.07	56.12	43.47	40.49	65.93	42.92	1.32	0.00	0.00	0.96
1993	78.19	20.90	0.91	100	55.20	62.47	34.75	56.53	43.95	37.53	65.25	42.80	0.85	0.00	0.00	0.67
1994	79.68	19.38	0.95	100	52.97	59.23	27.65	53.94	46.08	40.77	72.35	45.30	0.95	0.00	0.00	0.76
1995	81.17	17.26	1.57	100	51.69	57.25	36.38	52.41	46.26	42.75	63.62	45.93	2.05	0.00	0.00	1.66
1996	83.10	15.30	1.61	100	52.18	56.53	40.70	52.66	46.14	43.47	59.30	45.94	1.68	0.00	0.00	1.40
1997	82.36	15.55	2.10	100	51.33	56.35	42.65	51.93	46.37	43.23	57.35	46.11	2.30	0.41	0.00	1.96
1998	84.77	13.79	1.43	100	52.20	61.55	51.44	53.48	45.82	38.36	48.56	44.83	1.98	0.09	0.00	1.69

6.5. Research and Extension Policies

• Research and extension services are basic elements increasing the efficiency of marketing chains because they generate and transfer new technologies to production activities. The effectiveness of research and extension policies relies on several factors:

- The forces which determine the selection of topics.
- The institutional organizations.
- The resource allocation.
- The management.
- The efficiency of investments dedicated to research and extension depends on several criteria:
 - Priority setting. Priority setting can be calculated according to the commodity congruity index as follows:
 - $I = 1 - \sum (C_i - R_i)^2$
 - C_i - Share of the commodity in agricultural GDP
 - R_i - Share of commodity i in the total budget allocated to commodity research
 - I should be equal to 1.
 - Economic evaluation of impact of research and extension services.
 - Evaluation occurs according to factors determining economic growth such as output growth, resource use efficiency and employment.
 - GDP growth per unit of investment
 - $C = dGDP/I$
 - GDP growth per unit of investment
 - $dGDP$ - GDP growth in absolute term
 - Value of investment
 - Labor saving effect
 - Absolute: $DL = L_0 - L_1$
 - Absolute Saving of labor in Man, Man day, hours
 - L_0 - Labor requirements before investment
 - L_1 - Labor requirements after investment
 - Relative: $DLr = L_0 * P_i - L_1$
 - DLr - Relative saving of labor according to productivity increase
 - P_i - Productivity or production index (productivity or production after investment divided by productivity or production before investment)
 - Cost saving effect
 - Absolute: $DC = C_0 - C_1$
 - Absolute saving of cost

- Co- Cost before investment
- C1- Cost after investment
- Relative: $DCr = Co \cdot Pi - C1$
- DCr- Relative saving of cost
- Share of different agents in research and extension services: The actors concerned with research and extension activities can be the government, the co-operative sector, the private sector, and others. The greater the coordination among these actors, the better is the effectiveness of the results of scientific research and extension services.
- The government should carry out the non-salable research products. However, the other actors should carry out salable research products.
- Research and extension in Syria played a crucial role in productivity and economic growth. The results of this success rely on the activities of several agents. However, coordination among these agents is still inadequate. Therefore, the government has established a general organization, which coordinates all research activities in Syria.
- The share of animal production in gross agriculture production is 33.84%; the share of invested capital for extension and animal research programs in the investment budget of the Ministry of Agriculture is 26.54%. Thus, the commodity congruity index is 0.99, which means that more investments in this direction are needed. Moreover, there are no programs, which identify the effectiveness of invested capital in research and extension. In addition, marketing research is very weak.

Main finding: Priority setting in research; programs to identify the effectiveness of research and extension; strengthening the marketing research.

6.6. Evaluation of Internal Coherence of Sectoral Policies

Sectoral policies have done well to develop domestic animal production especially by improving the productivity of local dairy cows, decreasing the animal disease level, and integrating plant and animal production. However, some indicators can be used to establish an adequate evaluation of the impact of sectoral policies on economic growth.

Table 6.6.1 shows the growth rate of some indicators for the period 1993-1999 to identify the impact of sectoral policies.

Table 6.6.1: Growth rate for the period 1993-1999 of some indicators

Sector	Number of heads %	Number of heads per capita %	Milk production %	Milk production per capita %	Productivity %	Meat %	Meat per capita %	Population %
Cattle	5.55	2.59	7.47	4.45	-1.8	8.5	5.45	2.89
Sheep	5.51	2.54	0.35	-2.47	2.39	11.47	8.34	

From table 6.6.1 it can be seen that sectoral policies have a positive impact on cattle and sheep sectors in comparison with the population growth rate. However, there are inefficiencies according to productivity and number of cattle per capita. The production of cattle is more horizontal than vertical. As for the sheep sector, there are inefficiencies at the level of production, milk production per capita, and productivity in comparison with population growth.

Therefore, there is a need to increase productivity and research activities in this direction. Moreover, productivity is very low in comparison with the international level.

In general, there is coherence in sectoral policies, but it is not enough. Moreover, a general framework with more indicators is needed to evaluate the impact of sectoral policies more accurately.

Main finding: More research to increase productivity; general framework with more indicators to evaluate sectoral policies.

Policy options and recommendations can be made for all chains and for individual chains.

1 For all chains

- Establishing a database on marketing to improve marketing information.
- Applying quality assurance standards at all levels of the marketing chains to comply with international standards, even when they are not strictly required.
- Improving fodder supply, promoting the establishing of modern fodder firms, and applying strict fodder control to avoid the mad cow.
- Improving veterinary services.
- Establishing a follow up program to assess the effectiveness of credits and investments, providing credits for rural industry and increasing long-term credits
- Removing all imports and exports restrictions and subsidies.
- Going forward with the privatization and liberalization process.
- Promoting the establishment of firms that are specialized in marketing.
- Improving research and extension services and their coordination as well as setting priorities in both areas.
- Promoting marketing research and policies.
- Enforcing cool transportation.
- Improving education and promotion of product diversification programs.
- Reorganizing the holding size to benefit from economies of scale to increase productivity and decrease costs.
- Promoting processing as well as export-oriented policies.
- Reorganizing public establishments to carry out only research objectives.
- Transferring salable research products to the private sector.
- Applying the commodity chain analysis and the partial equilibrium approach to assess the impact of various market organizations and government interventions on the agents of the concerned chains in the different regions.

2 For meat chains

- Strict control at the borders to prevent smuggling of foreign meat.

3 For milk chains

- Improving the productivity of domestic cattle.

- Promoting the use of modern milking technologies to decrease the microbiological capacity of milk.
- Promoting the establishment of milk collection centers.
- Promoting the use of suitable bulk transportation.
- Improving the rural dairy industry through extension services.
- Promoting the establishment of dairy firms in high production areas.

ANNEXES

ANNEX A Complementary tables for sheep meat chain

Basic Data					
ANNEX A					
Sectors					
Table 3.2.1.2a: Unit cost and Revenue Items for fattening (1)Ton Lambs live weight of state centers					
	Unit	Baseline		Current	
		Quantity	Price s.p	Quantity	Price s.p
Total Revenue Items					
Live Sheep Sales	Ton	65.7	75	65.7	75
Cost Items per one Ton Fattened Live Weight					

Table 3.2.1.2b: Unit cost and Revenue Items for fattening (1)Ton lambs live weight of co-operative sector

	Unit	Baseline		Current	
		Quantity	Price s.p	Quantity	Price s.p
Total Revenue Items					
Production	Ton	20060.61		20060.61	
Fattend lambs sales	Ton	19860	97	19860	97
Manure	M3	480	300	480	300
Cost Items per one Ton Fattened Live Weight					
lambs for fattening			54000		54000
Fodder			26000		26000
Milk			2984		2984
Veterinary expenses			663		663
Electricity, Fuel, Water			435		435
Services			414		414
Waste			882		882
Hired labor			2454		2454
Family Labor			1380		1380
Other expenses			950		950

Table 3.2.1.2c: Unit cost and Revenue Items for fattening (1)Ton lambs live weight of private Sector

	Unit	Baseline		Current	
		Quantity	Price	Quantity	Price
Total Revenue Items					
Production	Ton	245410.1		245410.1	
Fattend lambs sales	Ton	242956	97	242956	97
Manure	M3	64	300	64	300
Cost Items per one Ton Fattened Live Weight					
lambs for fattening			54000		54000
Fodder			26000		26000
Milk			2984		2984
Veterinary expenses			663		663
Electricity, Fuel, Water			435		435
Services			414		414
Waste			651		651
Hired labor			2454		2454
Family Labor			1380		1380
Other expenses			899		899

Table3.2.1.3a: Private Sector - Lambs Fattining Budget

ANNEX A

	Unit	Baseline			Current		
		Quantity	Price	Value Mill.s.p	Quantity	Price	Value Mill.s.p
1- Revenues							
Fattend Lambs Production - Live Weight	Ton	245410			245410		
Sheeps Meat Production* - Live Weight	Ton	7766			7766		
Total Meat Production - Live Weight	Ton	253176			253176		
Waste	Ton	1963			1963		
Home Consumption	Ton	11780			11780		
Fattend Lambs Sales - Live Weight	Ton	231667	97000.0	22471.7	231667	97000.0	22471.7
Manure Sales	M3	64	300.0	0.02	64	300.0	0.02
Total Sales				22471.7			22471.7
2.Variable Cost**							
lambs for fattening	Ton	231667	54000	12510.0	231667	54000	12510.0
Fodder	Ton	231667	26000	6023.3	231667	26000	6023.3
Milk	Ton	231667	2984	691.3	231667	2984	691.3
Veterinary expenses	Ton	231667	663	153.6	231667	663	153.6
Electricity, Fuel, Water	Ton	231667	435	100.8	231667	435	100.8
Services	Ton	231667	414	95.9	231667	414	95.9
Waste	Ton	231667	651	150.8	231667	651	150.8
Hired labor	Ton	231667	2454	568.5	231667	2454	568.5
Family Labor	Ton	231667	1380	319.7	231667	1380	319.7
Other expenses	Ton	231667	899	208.3	231667	899	208.3
Total Variable Cost				20822.2			20822.2
3.Value Added				2426.3			2426.3

* Cow Meat Production refers to Milk Farms

** Variable Cost are calculated per ton of meat sales- Interest , taxes,rent, and depreciation are not included within because they are part of the value added

Table3.2.1.3b: Co-Operative Sector -Lambs Fattening Budget

ANNEX A

	Unit	Baseline			Current		
		Quantity	Price	Value Mill.s.p	Quantity	Price	Value Mill.s.p
1- Revenues							
Fattend Lambs Production - Live Weight	Ton	20061			20060.6		
SheepS Meat Production* - Live Weight	Ton	57925			57925		
Total Meat Production - Live Weight	Ton	77986			77985.6		
Waste	Ton	624			624		
Home Consumption	Ton	3743			3743		
Fattend Lambs Sales - Live Weight	Ton	73618	97000	7141.0	73618	97000	7141.0
Manure Sales	M3	480	300	0.1	480	300	0.1
Total Sales				7141.1			7141.1
2.Variable Cost**							
lambs for fattening	Ton	73618.4	54000	3975.4	73618.4	54000	3975.4
Fodder	Ton	73618.4	26000	1914.1	73618.4	26000	1914.1
Milk	Ton	73618.4	2984	219.7	73618.4	2984	219.7
Veterinary expenses	Ton	73618.4	663	48.8	73618.4	663	48.8
Electricity, Fuel, Water	Ton	73618.4	435	32.0	73618.4	435	32.0
Services	Ton	73618.4	414	30.5	73618.4	414	30.5
Waste	Ton	73618.4	882	64.9	73618.4	882	64.9
Hired labor	Ton	73618.4	2454	180.7	73618.4	2454	180.7
Family Labor	Ton	73618.4	1380	101.6	73618.4	1380	101.6
Other expenses	Ton	73618.4	950	69.9	73618.4	950	69.9
Total Variable Cost				6637.6			6637.6
3.Value Added				754.1			754.1

* Cow Meat Production refers to Milk Farms

** Variable Cost are calculated per ton of meat sales- Interest , taxes,rent, and depreciation are not included within because they are part of the value added

Table3.2.1.3c: Sectors -Total- Lambs Fattining Budget

ANNEX A

	Unit	Baseline			Current		
		Quantity	Price	Value Mill.s.p	Quantity	Price	Value Mill.s.p
1- Revenues							
Fattend Lambs Production - Live Weight	Ton	265471			265471		
Sheeps Meat Production* - Live Weight	Ton	65691			65691		
Total Meat Production - Live Weight	Ton	331162			331162		
Waste	Ton	2587			2587		
Home Consumption	Ton	15523			15523		
Fattend Lambs Sales - Live Weight	Ton	247361		29612.7	247361		29612.7
Manure Sales	M3	544		0.2	544		0.2
Total Sales				29612.9			29612.9
2.Variable Cost**							
lambs for fattening	Ton	247361		16485.4	247361		16485.4
Fodder	Ton	247361		7937.4	247361		7937.4
Milk	Ton	247361		911.0	247361		911.0
Veterinary expenses	Ton	247361		202.4	247361		202.4
Electricity, Fuel, Water	Ton	247361		132.8	247361		132.8
Services	Ton	247361		126.4	247361		126.4
Waste	Ton	247361		215.7	247361		215.7
Hired labor	Ton	247361		749.2	247361		749.2
Family Labor	Ton	247361		421.3	247361		421.3
Other expenses	Ton	247361		278.2	247361		278.2
Total Variable Cost				27459.8			27459.8
3.Value Added				3180.4			3180.4

* Cow Meat Production refers to Milk Farms

** Variable Cost are calculated per ton of meat sales- Interest , taxes,rent, and depreciation are not included within because they are part of the value added

ANNEX A

Traders and Slaughterhouse

Table3.2.1.4a:Unit Marketing Cost of Wholesalers

	Live Animal WHS		Carcasses WHS		Exporters	
	Baseline Price(sp)	Current Price(Sp)	Baseline Price(sp)	Current Price(Sp)	Baseline Price(sp)	Current Price(Sp)
Slaughtering	404	404				
Transport	850	850	400	400	400	400
Wages	450	450	360	360	360	360
Services	1.5	1.5	0.8	0.8	0.8	0.8
Others	34	34	25.5	25.5	25.5	25.5

WHS:Wholesalers

Table3.2.1.4b:Unit Marketing Cost of Importers Retailers and Slaughterhouse

	Importers		Slaughterhouse		Carcasses RT	
	Baseline Price(sp)	Current Price(Sp)	Baseline Price(sp)	Current Price(Sp)	Baseline Price(sp)	Current Price(Sp)
Slaughtering						
Transport	400	400	85	85	150	150
Wages	360	360	175	175	200	200
Services	0.8	0.8	64	64	0.08	0.08
Others	25.5	25.5	7	7	13	13

RT:Retailers

- Note:
- 1.Costs for live animal wholesaler (live Animal WHS) are given per 1Ton live animal
 - 2.Costs for Carcasses wholesaler are given per 1Ton carcasses
 - 3.Costs for Exporters are given per 1 Ton Live Weight
 - 4.Costs for Carcasses Retailers(RT) are given per 1Ton fresh meat ready
 - 5.Costs for slaughterhouse are given per 1Ton live weight
 - 6.Costs for importers are given per one Ton live weight

Live Animals Wholesalers

ANNEX A

Table 3.2.1.5a : Live Animals Wholesalers - Purchases & Sales

		Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase:	Sectors	313041	92600	28987.6
	Importers	358.38	80000	28.6704
				29016.2
Sales to :	Carcasses Wholesalers	205868	150000	30880.2
	By-Products Users	97781	38000	3715.7
	Exporters	9391	92600	869.6
	Total	313041		35465.6

Table 3.2.1.5 b : Live Animals Wholesalers - Marketing Costs

	Baseline			Current		
	Unit Cost	Flows	Total Cost	Unit Cost	Flows	Total Cost
	S.P/Ton	Ton	Mill.S.P	S.P/Ton	Ton	Mill.S.P
Slaughtering	404	313041	126.5	404	313041	126.5
Transport	850	313041	266.1	850	313041	266.1
Wages	450	313041	140.9	450	313041	140.9
Services	1.5	313041	0.5	1.5	313041	0.5
Others	34	313041	10.6	34	313041	10.6
Total			544.5			544.5

ANNEX A

Carcasses Wholesalers

Table 3.2.1.6a : Carcasses Wholesalers - Purchases & Sales

		Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase:	Live Animals Wholesalers	205868	150000	30880.2
Sales to :	Carcasses Retailers	205868	164000	33762.4

Table 3.2.1.6 b : Carcasses Wholesalers - Marketing Costs

	Baseline			Current		
	Unit Cost	Flows	Total Cost	Unit Cost	Flows	Total Cost
	S.P/Ton	Ton	Mill.S.P	S.P/Ton	Ton	Mill.S.P
Slaughtering	0	205868	0.0	0	205868	0.0
Transport	400	205868	82.3	400	205868	82.3
Wages	360	205868	74.1	360	205868	74.1
Services	0.8	205868	0.2	0.8	205868	0.2
Others	25.5	205868	5.2	25.5	205868	5.2
Total			161.9			161.9

ANNEX A

Carcasses Retailers

Table 3.2.1.7a :Carcasses Retailers - Purchases & Sales

		Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase:	Carcasses Wholesalers	205868	164000	33762.4
Sales to :	Consumers	160680	300000	48204.1
	By-Products Users	45188	1000	45.2
	Total	205868		48249.2

Table 3.2.1.7 b : Carcasses Retailers - Marketing Costs

	Baseline			Current		
	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P
Slaughtering	0	205868	0.0	0	205868	0.0
Transport	150	205868	30.9	150	205868	30.9
Wages	200	205868	41.2	200	205868	41.2
Services	0.08	205868	0.0	0.08	205868	0.02
Others	13	205868	2.7	13	205868	2.7
Total			74.7			74.7

Importers

Table 3.2.1.8a :Importers - Purchases & Sales

		Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase:	Foreign Market	358	60000	21.5
Sales to :	Live Animals Wholesalers	358	80000	28.7

Table 3.2.1.8 b : Importers - Marketing Costs

	Baseline			Current		
	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P
Slaughtering	0	358	0.00	0	358	0.00
Transport	400	358	0.14	400	358	0.14
Wages	360	358	0.13	360	358	0.13
Services	0.8	358	0.00	0.8	358	0.00
Others	25.5	358	0.01	25.5	358	0.01
Total			0.28			0.28

ANNEX A

Exporters

Table 3.2.1.9a :Exporters - Purchases & Sales

		Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase:	Live Animals Wholesalers	9391	92600	869.6
Sales to :	Foreign Market	9391	116000	1089.4

Table 3.2.1.9 b : Exporters - Marketing Costs

	Baseline			Current		
	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P
Slaughtering	0	9391	0.0	0	9391	0.0
Transport	400	9391	3.8	400	9391	3.8
Wages	360	9391	3.4	360	9391	3.4
Services	0.8	9391	0.0	0.8	9391	0.0
Others	25.5	9391	0.2	25.5	9391	0.2
Total			7.4			7.4

Slaughterhouse

Table 3.2.1.10a : Slaughterhouse - Purchases & Sales

		Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase:	Live Animal Wholesalers	303650	92600	28117.9
Sales to :	Live Animal Wholesalers	303650	93270	28321.4

Table 3.2.1.10 b : Slaughterhouse - Slaughtering Costs

	Baseline			Current		
	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P
Slaughtering	0	303650	0.0	0	303650	0.0
Transport	85	303650	25.8	85	303650	25.8
Wages	175	303650	53.1	175	303650	53.1
Services	64	303650	19.4	64	303650	19.4
Others	7	303650	2.1	7	303650	2.1
Total			100.5			100.5

Waste & Self Consumption							
Table3.2.1.11: Waste & Self Consumption Coefficients					ANNEX A		
	Output Input	Baseline			Current		
		Waste	S.Cons	Net Flows	Waste	S.Cons	Net Flows
Sectors	lams	1%	4.8%	94.2%	1%	5%	94.2%
	sheep	0%	0%	100%	0%	0%	99.6%
	Average	0.8%	4.8%	94.4%	0.8%	4.8%	94.4%
	By-Product	0%	0%	100%	1%	0%	100%
Live Animals Wholesaler	Lams	0%	0%	100%	0%	0%	100%
	Sheeps	0%	0%	100%	0%	0%	100%
	Carcasses	0%	0%	100%	0%	0%	100%
	By-Product	0%	0%	100%	0%	0%	100%
Slaughterhouse	Carcasses	0%	0%	100%	0%	0%	100%
	By-Product	0%	0%	100%	0%	0%	100%
Carcasses Wholesaler	Carcasses	0%	0%	100%	0%	0%	100%
	Meat R	0.0%	0%	99.90%	0.0%	0%	99.90%
	By-Product	0%	0%	100%	0%	0%	100%
Carcasses Retailers	Fr.Meat R	0%	0%	100%	0%	0%	100%
	Bons	0%	0%	100%	0%	0%	100%
Exporters	Lams	0%	0%	100%	0%	0%	100%
Importers	Lams	0%	0%	100%	0%	0%	100%

Table3.2.1.12a: Assumptions, Slaughter Rates for Sheep

	Baseline	Current
Slaughterhouse		
Carcass	67.80%	67.80%
By-product	32.20%	32.20%
Carcasses Retailers		
Meat Ready	78%	78%
Bons	22%	22%

Table3.2.1.12b: Assumptions, Slaughter Rates for sheep

Animal Parts Share According to the Live Weight	%
Carcass Weight	88.80%
Carcass emptied	67.80%
Hear and Head	7.40%
Intestine and Stomach	10.20%
Blod	4.10%
Bons	13.60%
Meat	41.80%
Eatable Fat	11.00%
Ineatable Fat	4.00%
Skin	7.90%
Bons according to Carcass emptied	22.00%
Fattend Lamb Weight	kg 45

Output Prices

ANNEX A

Table3.2.1.13:Output prices s.p per unit

Agents	Unit	Baseline Price	Current Price
Sectors			
Fattend lambs Meat- Live Weight	kg	97	97
sheep Meat- Live Weight	kg	75	75
Mixed Meat (lambs+sheep)-Live Weight	kg	92.6	92.6
Manure of private and co-operative sector	M3	300	300
Lambs for fattening	Calve	3000	3000
Ready made feed mixure for private	kg	7.1	7.1
Ready made feed mixure for co-operative	kg	7.1	7.1
Ready made feed mixure for state	kg	13.93	13.93
Hay	kg	4	4
Traders			
Carcass/ live animals Wholesalers	kg	150	150
By-Product/Live Animal Wholesalers	kg	38	38
Carcass/ carcasses Wholesalers	kg	164	164
Fresh meat ready / Carcasses retailers	kg	300	300
Meat By-Products	kg	800	800
Bons	kg	1	1
Exporters	kg	83	83
Slaughterhouse			
Service/ slaughterhouse	kg	0.67	0.67
Carcasses and By-Products/ slaughterhouse	kg	93.27	93.27
Exporters			
Live Animal	kg	116	116
Importers			
live Lamps(Purchase)	kg	60	60
live Lamps(Sale)	kg	80	80

ANNEX B Complementary tables for beef chain

ANNEX B

Farms					
Table 3.3.1.2a: Unit cost and Revenue Items for fattening (1)Ton Steers live weight of state farms					
	Unit	Baseline		Current	
		Quantity	Price s.p	Quantity	Price s.p
Total Revenue Items					
Production	Ton	791.9		791.9	
Live Steers sales	Ton	712.7	70000	712.7	70000
Manure	M3	27565	150	27565	150
Cost Items per one Ton Fattened Live Weight					
Steers for fattening			7630		7630
Ready made feed mixture			44200		44200
Hay					
Milk			9450		9450
Veterinary expenses			1600		1600
Electricity, Fuel, Water			20		20
Services			250		250
Hired labor			3700		3700
Other expenses			150		150
Family labor			0		0
Table 3.3.1.2c: Unit cost and Revenue Items for fattening (1)Ton Steers live weight of co-operative farms					
	Unit	Baseline		Current	
		Quantity	Price s.p	Quantity	Price s.p
Total Revenue Items					
Production	Ton	36032		36032	
Fattend Steers sales	Ton	32428.8	70	32428.8	70
Manure	M3	1254227	300	1254227	300
Cost Items per one Ton Fattened Live Weight					
Steers for fattening			7833		7833
Ready made feed mixture			13885		13885
Hay			8480		8480
Milk			9340		9340
Veterinary expenses			204		204
Electricity, Fuel, Water			444		444
Services			194		194
Hired labor			1963		1963
Other expenses			659		659
Family labor			3202		3202
Table 3.3.1.2b: Unit cost and Revenue Items for fattening (1)on Steers live weight of private farms					
	Unit	Baseline		Current	
		Quantity	Price	Quantity	Price
Total Revenue Items					
Production	Ton	24356.7		24356.7	
Fattend Steers sales	Ton	21921	70	21921	70
Manure	M3	763041	300	763041	300
Cost Items per one Ton Fattened Live Weight					
Steers for fattening			7833		7833
Ready made feed mixture			13885		13885
Hay			8480		8480
Milk			9340		9340
Veterinary expenses			204		204
Electricity, Fuel, Water			444		444
Services			194		194
Hired labor			1963		1963
Other expenses			609		609
Family labor			3202		3202

Table3.3.1.3a: State Farms – Steers Fattening Budget

ANNEX B

	Unit	Baseline			Current		
		Quantity	Price	Value Mill.s.p	Quantity	Price	Value Mill.s.p
1- Revenues							
Fattend Steers Production - Live Weight	Ton	791.9			791.9		
Cows Meat Production* - Live Weight	Ton	433.1			433.1		
Total Meat Production - Live Weight	Ton	1225.0			1225.0		
Waste	Ton	79.3			79.3		
Home Consumption	Ton	0.0			0.0		
Fattend Steers Sales - Live Weight	Ton	712.7	70000	49.9	712.7	70000	49.9
Manure Sales	M3	27565.0	150	4.1	27565.0	150	4.1
Total Sales				54.0			54.0
2.Variable Cost**							
Steers for fattening	Ton	712.7	7630	5.4	712.7	7630	5.4
Ready made feed mixture	Ton	712.7	44200	31.5	712.7	44200	31.5
Hay	Ton	712.7	0	0.0	712.7	0	0.0
Milk	Ton	712.7	9450	6.7	712.7	9450	6.7
Veterinary expenses	Ton	712.7	1600	1.1	712.7	1600	1.1
Electricity, Fuel, Water	Ton	712.7	20	0.0	712.7	20	0.0
Services	Ton	712.7	250	0.2	712.7	250	0.2
Hired labor	Ton	712.7	3700	2.6	712.7	3700	2.6
Other expenses	Ton	712.7	150	0.1	712.7	150	0.1
Family labor	Ton	712.7	0	0.0	712.7	0	0.0
Total Variable Cost				47.8			47.8
3.Value Added				8.9			8.9

* Cow Meat Production refers to Milk Farms

** Variable Cost are calculated per ton of meat sales- Interest , taxes,rent, and depreciation are not included within because they are part of the value added

Table3.3.1.3b: Private Farms - Steers Fattening Budget

ANNEX B

	Unit	Baseline			Current		
		Quantity	Price	Value Mill.s.p	Quantity	Price	Value Mill.s.p
1- Revenues							
Fattend Steers Production - Live Weight	Ton	24357			24357		
Cows Meat Production* - Live Weight	Ton	13325			13325		
Total Meat Production - Live Weight	Ton	37682			37682		
Waste	Ton	2438			2438		
Home Consumption	Ton	0			0		
Fattend Steers Sales - Live Weight	Ton	21921	70000.0	1534.5	21921	70000.0	1534.5
Manure Sales	M3	763041	300.0	228.9	763041	300.0	228.9
Total Sales				1763.4			1763.4
2.Variable Cost**							
Steers for fattening	Ton	21921	7833	171.7	21921	7833	171.7
Ready made feed mixture	Ton	21921	13885	304.4	21921	13885	304.4
Hay	Ton	21921	8480	185.9	21921	8480	185.9
Milk	Ton	21921	9340	204.7	21921	9340	204.7
Veterinary expenses	Ton	21921	204	4.5	21921	204	4.5
Electricity, Fuel, Water	Ton	21921	444	9.7	21921	444	9.7
Services	Ton	21921	194	4.3	21921	194	4.3
Hired labor	Ton	21921	1963	43.0	21921	1963	43.0
Other expenses	Ton	21921	609	13.3	21921	609	13.3
Family labor	Ton	21921	3202	70.2	21921	3202	70.2
Total Variable Cost				1011.7			1011.7
3.Value Added				864.9			864.9

* Cow Meat Production refers to Milk Farms

** Variable Cost are calculated per ton of meat sales- Interest , taxes,rent, and depreciation are not included within because they are part of the value added

Table3.3.1.3d: Farms -Total- Steers Fattening Budget

ANNEX B

	Unit	Baseline			Current		
		Quantity	Price	Value Mill.s.p	Quantity	Price	Value Mill.s.p
1- Revenues							
Fattend Steers Production - Live Weight	Ton	61180.6			61180.6		
Cows Meat Production* - Live Weight	Ton	33469.4			33469.4		
Total Meat Production - Live Weight	Ton	94650.0			94650.0		
Waste	Ton	6123.9			6123.9		
Home Consumption	Ton	0.0			0.0		
Fattend Steers Sales - Live Weight	Ton	55063		3854.4	55063		3854.4
Manure Sales	M3	2044833		609.3	2044833		609.3
Total Sales				4463.7			4463.7
2. Variable Cost**							
Steers for fattening	Ton	55062.5		431.2	55062.5		431.2
Ready made feed mixure	Ton	55062.5		786.1	55062.5		786.1
Hay	Ton	55062.5		460.9	55062.5		460.9
Milk	Ton	55062.5		514.4	55062.5		514.4
Veterinary expenses	Ton	55062.5		12.2	55062.5		12.2
Electricity, Fuel, Water	Ton	55062.5		24.1	55062.5		24.1
Services	Ton	55062.5		10.7	55062.5		10.7
Hired labor	Ton	55062.5		109.3	55062.5		109.3
Other expenses	Ton	55062.5		34.8	55062.5		34.8
Family labor	Ton	55062.5		174.0	55062.5		174.0
Total Variable Cost				2557.8			2557.8
3. Value Added				2189.2			

* Cow Meat Production refers to Milk Farms

** Variable Cost are calculated per ton of meat sales- Interest , taxes,rent, and depreciation are not included within because they are part of the value added

ANNEX B

Traders and Slaughterhouse

Table3.3.1.4a:Unit Marketing Cost of Wholesalers

	Live Animal WHS		Carcasses WHS		Pr.Meat WHS	
	Baseline	Current	Baseline	Current	Baseline	Current
	Price(sp)	Price(Sp)	Price(sp)	Price(Sp)	Price(sp)	Price(Sp)
Slaughtering	404	404				
Transport	850	850	400	400	0.45	0.45
Wages	450	450	360	360	0.04	0.04
Services	1.5	1.5	0.8	0.8	0.02	0.02
Others	34	34	25.5	25.5	0.01	0.01

WHS:Wholesalers

Pr.:Processed

Table3.3.1.4b:Unit Marketing Cost of Retailers and Slaughterhouse

	Slaughterhouse		Carcasses RT		Pr.Meat RT	
	Baseline	Current	Baseline	Current	Baseline	Current
	Price(sp)	Price(Sp)	Price(sp)	Price(Sp)	Price(sp)	Price(Sp)
Slaughtering						
Transport	85	85	150	150	0.25	0.25
Wages	175	175	200	200	0.01	0.01
Services	64	64	0.08	0.08	0.01	0.01
Others	7	7	13	13	0.01	0.01

RT:Retailers

- Note:
- 1.Costs for live animal wholesaler (live Animal WHS) are given per 1Ton live animal
 - 2.Costs for Carcasses wholesaler are given per 1Ton carcasses
 - 3.Costs for processed meat wholesaler (Pr.Meat WHS) are given per one can
 - 4.Costs for Carcasses Retailers are given per 1Ton fresh meat ready
 - 5.Costs for processed meat retailer(Pr.meat retailer) are given per one can
 - 6.Costs for slaughterhouse are given per 1Ton live weight

Live Animals Wholesalers

ANNEX B

Table 3.3.1.5a : Live Animals Wholesalers - Purchases & Sales

		Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase:	Farms	88526	59000	5223.0
Sales to :	Carcasses Wholesalers	60019	106000	6362.0
	By-Products Users	28507	3500	99.8
	Total	88526		6461.8

Table 3.3.1.5 b : Live Animals Wholesalers - Marketing Costs

	Baseline			Current		
	Unit Cost	Flows Ton	Total Cost Mill. S.P	Unit Cost	Flows Ton	Total Cost Mill. S.P
	S.P/Ton			S.P/Ton		
Slaughtering	404	88526	35.8	404	88526	35.8
Transport	850	88526	75.2	850	88526	75.2
Wages	450	88526	39.8	450	88526	39.8
Services	1.5	88526	0.1	1.5	88526	0.1
Others	34	88526	3.0	34	88526	3.0
Total			154.0			154.0

Carcasses Wholesalers

ANNEX B

Table 3.3.1.6a :Carcasses Wholesalers - Purchases & Sales

		Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase:	Live Animals Wholesalers	60019	106000	6362.0
Sales to :	Processed Meat Plants	980	120000	117.6
	Carcasses Retailers	58630	120000	7035.5
	By-Products Users	408	1000	0.4
	Total	60018		7153.6

Table 3.3.1.6 b : Carcasses Wholesalers - Marketing Costs

	Baseline			Current		
	Unit Cost	Flows Ton	Total Cost Mill. S.P	Unit Cost	Flows Ton	Total Cost Mill. S.P
	S.P/Ton			S.P/Ton		
Slaughtering	0	60018	0.0	0	60018	0.0
Transport	400	60018	24.0	400	60018	24.0
Wages	360	60018	21.6	360	60018	21.6
Services	0.8	60018	0.0	0.8	60018	0.0
Others	25.5	60018	1.5	25.5	60018	1.5
Total			47.2			47.2

Processed Meat Wholesalers

ANNEX B

Table 3.3.1.7a : Processed Meat Wholesalers - Purchases & Sales

		Flow Can	Price S.P/Can	Value Mill S.P
Purchase:	Processed Meat Plants			
	Small Cans	3370857	25	84.3
	Big Cans	3088699	46	142.1
	Total			226.4
Sales to :	Processed Meat Retailers	6459557	42	271.0

Table 3.3.1.7 b : Processed Meat Wholesalers - Marketing Costs

	Baseline			Current		
	Unit Cost	Flows	Total Cost	Unit Cost	Flows	Total Cost
	S.P/Can	Can	Mill.S.P	S.P/Can	Can	Mill.S.P
Slaughtering	0	6459557	0.0	0	6459557	0.0
Transport	0.45	6459557	2.9	0.45	6459557	2.9
Wages	0.04	6459557	0.3	0.04	6459557	0.3
Services	0.02	6459557	0.1	0.02	6459557	0.1
Others	0.01	6459557	0.1	0.01	6459557	0.1
Total			3.4			3.4

Carcasses Retailers

Table 3.3.1.8a : Carcasses Retailers - Purchases & Sales

		Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase:	Carcasses Wholesalers	58630	120000	7035.5
Sales to :	Consumers	45760	175000	8008.1
	By-Products Users	12869	1000	12.9
	Total	58630		8020.9

Table 3.3.1.8 b : Carcasses Retailers - Marketing Costs

	Baseline			Current		
	Unit Cost	Flows	Total Cost	Unit Cost	Flows	Total Cost
	S.P/Ton	Ton	Mill.S.P	S.P/Ton	Ton	Mill.S.P
Slaughtering	0	58630	0.0	0	58630	0.0
Transport	150	58630	8.8	150	58630	8.8
Wages	200	58630	11.7	200	58630	11.7
Services	0.08	58630	0.0	0.08	58630	0.00
Others	13	58630	0.8	13	58630	0.8
Total			21.3			21.3

ANNEX B

Processors

Table 3.3.1.11a :Unit Cost and Revenue Items for processing (828) small cans

	Unit	Baseline		Current	
		Quantity	Price s.p	Quantity	Price s.p
Total Revenue Items					
Small cans production	can	3381000		3381000	
Small cans sales	can	3370857	25	3370857	25
Cost Items per (828) cans					
Fresh Meat ready	kg	84	120	84	120
Wheat Starch	kg	18	26	18	26
Potato Starch	kg	2	31	2	31
Plant protin	kg	3.6	90	3.6	90
Spices	kg	1.5	175	1.5	175
Salt	kg	2	4	2	4
Ice	kg	31	1.15	31	1.15
Salaries	s.p		569		569
Electricity, Fuel, Water	s.p		198		198
Cans and packiging	s.p		4244		4244
Services	s.p		84		84
Nitrate+Phosphate	s.p		10		10
Other expenses	s.p		103		103

Table 3.3.1.11b :Unit Cost and Revenue Items for processing(411) big cans

	Unit	Baseline		Current	
		Quantity	Price s.p	Quantity	Price s.p
Total Revenue Items					
Big cans production	can	3116750		3116750	
Big cans sales	can	3088699.25	46	3088699.25	46
Cost Items per (411) cans					
Fresh Meat ready	kg	84	120	84	120
Wheat Starch	kg	18	26	18	26
Potato Starch	kg	2	31	2	31
Plant protin	kg	3.6	90	3.6	90
Spices	kg	1.5	175	1.5	175
Salt	kg	2	4	2	4
Ice	kg	31	1.15	31	1.15
Salaries	s.p		569		569
Electricity, Fuel, Water	s.p		198		198
Cans and packiging	s.p		2854		2854
Services	s.p		84		84
Nitrate+Phosphate	s.p		10		10
Other expenses	s.p		194		194

ANNEX B

Table 3.3.1.11c :Unit Cost for processing one Can without Meat Cost

	Baseline S.P	Current S.P
Wheat Starch	0.94	0.94
Potato Starch	0.12	0.12
Plant protin	0.65	0.65
Spices	0.53	0.53
Salt	0.02	0.02
Ice	0.07	0.07
Salaries	1.14	1.14
Electricity, Fuel, Water	0.40	0.40
Cans and packiging	6.31	6.31
Services	0.17	0.17
Nitrate+Phosphate	0.02	0.02
Other expenses	0.35	0.35

Waste & Self Consumption							
Table3.3.1.13a: Waste & Self Consumption Coefficients					ANNEX B		
	Output Input	Baseline			Current		
		Waste	S.Cons	Net Flows	Waste	S.Cons	Net Flows
Farms	Steers	10%	0%	90%	10%	0%	90%
	Cows	0%	0%	100%	0%	0%	100%
	Average	6%	0%	94%	6%	0%	94%
	By-Product	0%	0%	100%	0%	0%	100%
Live Animals Wholesaler	Steers	0%	0%	100%	0%	0%	100%
	cows	0%	0%	100%	0%	0%	100%
	Carcasses	0%	0%	100%	0%	0%	100%
	By-Product	0%	0%	100%	0%	0%	100%
Slaughterhouse	Carcasses	0%	0%	100%	0%	0%	100%
	By-Product	0%	0%	100%	0%	0%	100%
Carcasses Wholesaler	Carcasses	0%	0%	100%	0%	0%	100%
	Meat R	0.10%	0%	99.90%	0.10%	0%	99.90%
	By-Product	0%	0%	100%	0%	0%	100%
Processing Meat Plants	Small C.E	0.80%	0%	99.20%	0.80%	0%	99.20%
	Small C.R	0.30%	0%	99.70%	0.30%	0%	99.70%
	Big Cans E	0.60%	0%	99.40%	0.60%	0%	99.40%
	Big Cans R	0.90%	0%	99.10%	0.90%	0%	99.10%
Carcasses Retailers	Fr.Meat R	0%	0%	100%	0%	0%	100%
	Bons	0%	0%	100%	0%	0%	100%
Processed Meat Wholesalers	Pr.Meat	0%	0%	100%	0%	0%	100%
Processed Meat Retailers	Pr.Meat	0%	0%	100%	0%	0%	100%

S.Con.:Human an farm Consumption

C.R:Ready Cans

R:Ready

Fr.:Fresh

C.E:Empty Cans

Pr.:Processed

Table3.3.1.13b:Assumptions, Slughtering and Processing Rates for Beef

ANNEX B

	Baseline	Current
Slaughterhouse		
Carcass	67.80%	67.80%
By-product	32.20%	32.20%
Carcasses Wholesalers		
Cows Meat Ready	1.64%	1.64%
Carcasses	97.69%	97.69%
Bons	0.68%	0.68%
Carcasses Retailers		
Meat Ready	78%	78%
Bons	22%	22%
Processing (1)kg Meat to Cans		
Small Cans (Nr.)	9.85384	9.85384
Big Cans (Nr.)	4.89	4.891217
Processing Rate		
Small Cans	35%	35%
Big Cans	65%	65%

Table3.3.1.13c:Assumptions, Slaughter and Processing Rates for Beef

ANNEX B

Animal Parts Share According to the Live Weight			%
Carcass Weight			88.80%
Carcass emptied			67.80%
Hear and Head			7.40%
Intestine and Stomach			10.20%
Blod			4.10%
Bons			13.60%
Meat			41.80%
Eatable Fat			11.00%
Ineatable Fat			4.00%
Skin			7.90%
Bons according to Carcass emptied			22.00%
Fattend Steer,s Weight	kg	425	
Steer,s fattening :Increased return to scale			
Processing:Constant return to scale according to inputs use			
For Processing (411) big cans or (828) small cans the following materials are needed :			
	Unit	Quantity	
Meat ready	kg	84	
Wheat starch	kg	18	
Spices	kg	1.5	
Water	kg	12	
Ice	kg	31	
Nitrate	kg	0.035	
Potato starch	kg	2	
Salt	kg	2	
Plant protin	kg	3.6	
Processing Meat Ready to Cans			
Small Cans			9.86
Big Cans			4.89

Output and Input Prices

ANNEX B

Table3.3.1.14:Output and Input prices s.p per unit

Agents	Unit	Baseline Price	Current Price
Farms			
Fattend Steer Meat- Live Weight	kg	70	70
Cow Meat- Live Weight	kg	40	40
Mixed Meat (Steers+Cows)-Live Weight	kg	59	59
Manure of state farms	M3	150	150
Manure of private and co-operative farms	M3	300	300
Calves for fattening	Calve	3000	3000
Ready made feed mixure for private	kg	7.1	7.1
Ready made feed mixure for co-operative	kg	7.1	7.1
Ready made feed mixure for state	kg	13.93	13.93
Hay	kg	4	4
Processors			
Small can ready	can	25	25
Big can ready	can	46	46
Meat ready	kg	120	120
Plant Protin	kg	90	90
Eis	kg	1.15	1.15
Wheat starch	kg	26	26
Potato starch	kg	31	31
Spices	kg	175	175
Salt	kg	4	4
Nitrete	kg	75	75
Phosphate	kg	40	40
Empty small cans	can	4.85	4.85
Empty big cans	can	6.4	6.4
Traders			
Carcass/ live animals Wholesalers	kg	106	106
Carcass/ carcasses Wholesalers	kg	120	120
Meat Ready/carcasses Wholesalers	kg	120	120
Processed meat wholesaler			
Small cans ready	can	27	27
Big cans ready	can	50	50
Processed meat retailer			
Small cans ready	can	30	30
Big cans ready	can	55	55
Fresh meat ready / Carcasses retailers	kg	175	175
Meat By-Products	kg	3.5	3.5
Bons	kg	1	1
Slaughterhouse			
Service/ slaughter house	kg	0.35	0.35
Meat/ slaughter huse	kg	59.35	59.35

ANNEX C Complementary tables for sheep milk chain

Table 3.4.1.1a: Matrix of Flow Coefficients (%)

ANNEX C

From			Supply		Producers												Trader		Tradit. Process.		Traders				
					Private Sector						Co-operative Sector						FWHS	TPM	TPCH	DWHSC	DWHSG	DRTS	EXCH	EXGB	
To	Domestic Production			Import	PS	PSM	PSGB	PSCH	PSY	PSLO	CS	CSM	CSGB	CSCH	CSY	CSLO									SCM
	PS	CS	SC																						
Milk Producers	Private Sector (PS)	Milk	100%			-100%																			
	Private Sector (PSM)	Milk				57.4%	-100%																		
	Private Sector(PSGB)	Ghee,Butter				1.50%	-100%																		
	Private Sector(PSCH)	Cheese				1.39%		-100%																	
	Private Sector(PSY)	Yoghurt				5.36%			-100%																
	Private Sector (PSLO)	Lab.,Oth.				8.4%				-100%															
	Co-op.Sector (CS)	Milk		100%							-100%														
	Co-op.Sector (CSM)	Milk									57.4%	-100%													
	Co-op. Sector (CSGB)	Ghee,Butter									1.50%		-100%												
	Co-op.S(CSCH)	Cheese									1.39%			-100%											
CO-op.Sector(CSY)	Yoghurt									5.36%				-100%											
Co-op.Sector (CSLO)	Lab.,Oth.									8.43%					-100%										
State Centers (SCM)	Milk			100%												-100%									
Trader	Fr. Milk Wholes.(FWHS)	Milk					20.8%									83.0%	-100%								
Processors	Trad.Processing(TPM)	Milk					36.7%										0.6%	-100%							
	Trad.Processing(TPCH)	Cheese																28.7%	-100%						
Traders	Dairy Wholesalers(DWHSC)	Cheese																	93.7%	-100%					
	Dairy Wholesalers(DWHSG)	Ghee,Butter										0.60%									-100%				
	Dairy Retailers (DRTS)	Dairy Products															99.4%			97.8%		-100%			
	Dairy Exporters(EXCH)	Cheese																			2.2%		-100%		
	Dairy Exporters(EXGB)	Ghee,Butter																				100%		-100%	
Consumption	Consumers	Dairy Products						96.0%	53.6%	92.9%	95.3%			96.0%	53.6%	92.9%	95.3%						100%		
	Foreign Market																							100%	
Sub Total			100%	100%	100%			-43%	-3.4%	-46%	-7.1%	-4.7%		-43%	-3.4%	-46%	-7.1%	-4.7%	-17%	0.0%		-6.3%	0.0%	0.0%	0.0%
Waste							0.36%	0%	0%	0%	0%		0.36%	0%	0%	0%	0%	0.41%	0%	1%	0%	0%	0%	0%	
Home Consum.							42.2%	3.4%	46.4%	7.09%	4.71%		42.2%	3.4%	46.4%	7.1%	4.7%	16.6%	0%	19.8%	5.3%	0%	0%	0%	
Sub Total							42.6%	3.4%	46.4%	7.09%	4.71%		42.6%	3.4%	46.4%	7.1%	4.7%	17.0%	0%	6.3%	0%	0%	0%	0%	
Grand Total							0.0%	0.0%	0.0%	0.0%	0.0%		0.0%	0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0%	0%	0%	

Table3.4.1.1b:Matrix of Flow Quantities (000Tons):Inflow(-),Outflow(+)

ANNEX C

From		Supply														Producers						Trade/ Tradit. Process.				Traders					Total
		Domestic Production			Import	Private Sector					Co-operative Sector					SCM	FWHS	TPM	TPCH	DWSCH	DWSGB	DRTS	EXCH	EXGB							
		PS	CS	SC		PS	PSM	PSGB	PSCH	PSY	PSLO	CS	CSM	CSGB	CSCH										CSY	CSLO					
Milk Producers	Private Sector (PS)	Milk	142.2				-142.2																				0.0				
	Private Sector (PSM)	Milk					81.6	-81.6																				0.0			
	Private Sector(PSGB)	Ghee,Butter					2.1		-2.1																			0.0			
	Private Sector(PSCH)	Cheese					2.0			-2.0																		0.0			
	Private Sector(PSY)	Yoghurt					7.6				-7.6																	0.0			
	Private Sector (PSLO)	Lab.,Oth.					12.0																						0.0		
	Co-op.Sector (CS)	Milk		401																									0.0		
	Co-op.Sector (CSM)	Milk																											0.0		
	Co-op. Sector (CSGB)	Ghee,Butter																											0.0		
	Co-op.S(CSCH)	Cheese																											0.0		
	CO-op.Sector(CSY)	Yoghurt																											0.0		
Co-op.Sector (CSLO)	Lab.,Oth.																											0.0			
State Centers (SCM)	Milk			0.4																								0.0			
Trader	Fr. Milk Wholes.(FWHS)	Milk															0.36		-65.2									0.0			
Processors	Trad.Processing(TPM)	Milk																0.4		-115								0.0			
	Trad.Processing(TPCH)	Cheese																		32.9		-32.9						0.0			
Traders	Dairy Wholesalers(DWSCH)	Cheese																			30.9		-31					0.0			
	Dairy Wholesalers(DWSGB)	Ghee,Butter																						-0.05				0.0			
	Dairy Retailers (DRTS)	Dairy Products																	64.8				30.2		-95.0		0.0				
	Dairy Exporters(EXCH)	Cheese																					0.69			-0.69	0.0				
	Dairy Exporters(EXGB)	Ghee,Butter																						0.05			-0.05	0.0			
Consumption	Consumers	Dairy Products																										177.6			
	Foreign Market																											0.74			
Sub Total			142	401	0.4			-34.8	-0.1	-0.9	-0.5	-0.6																			
Waste																															
Home Consum.																															
Sub Total																															
Grand Total																															

Table 3.4.1.1c: Matrix of Prices of Purchase(-) and Sales(+)

ANNEX C

From			Supply		Producers													Trader		Tradit.		Traders																						
					Private Sector						Co-operative Sector							FWHS	TPM	TPCH	DWHSCH	DWHSGB	DRTS	EXCH	EXGB																			
			Domestic Production			Import	PS	PSM	PSGB	PSCH	PSY	PSLO	CS	CSM	CSGB	CSCH	CSY									CSLO	SCM	Process.																
			PS	CS	SC													TPM	TPCH																									
Milk Producers	Private Sector (PS)	Milk																																										
	Private Sector (PSM)	Milk																																										
	Private Sector(PSGB)	Ghee,Butter																																										
	Private Sector(PSCH)	Cheese																																										
	Private Sector(PSY)	Yoghurt																																										
	Private Sector (PSLO)	Lab.,Oth.																																										
	Co-op.Sector (CS)	Milk																																										
	Co-op.Sector (CSM)	Milk																																										
	Co-op. Sector (CSGB)	Ghee,Butter																																										
	Co-op.S(CSCH)	Cheese																																										
	CO-op.Sector(CSY)	Yoghurt																																										
	Co-op.Sector (CSLO)	Lab.,Oth.																																										
	State Centers (SCM)	Milk																																										
Trader	Fr. Milk Wholes (FWHS)	Milk																																										
Processors	Trad.Processing(TPM)	Milk																																										
	Trad.Processing(TPCH)	Cheese																																										
Traders	Dairy Wholesalers(DWHSCH)	Cheese																																										
	Dairy Wholesalers(DWHSGB)	Ghee,Butter																																										
	Dairy Retailers (DRTS)	Dairy Products																																										
	Dairy Exporters(EXCH)	Cheese																																										
	Dairy Exporters(EXGB)	Ghee,Butter																																										
Consumption	Consumers	Dairy Products																																										
	Foreign Market																																											
Waste																																												
Home Consum.																																												

Table 3.4.1.2a: Unit cost and Revenue Items for Keeping/100/ Ews in Private sector

ANNEX C

	Unit	Baseline		Current	
		Quantity	Price S.p	Quantity	Price S.p
Total Revenue Items					
Milk Production	Kg	6050		6050	
keeping milk consumption	Kg	974		974	
Waste	Kg	22		22	
Milk sales	Kg	3474.04	16	3474.04	16
Lambs	Nr.	72	2900	72	2900
Replacement	Kg	800	75	800	75
Manure	M3	10	350	10	350
Ghee Production	kg	76.27		76.27	
Ghee home consumption	kg	2.58		2.58	
Ghee Sales	kg	73.69	325	73.7	325
Butter Production	kg	14.3		14.3	
Butter home consumption	kg	0.48		0.48	
Butter Sales	kg	13.82	325	13.82	325
Cheese Production	kg	84		84	
Cheese home consumption	kg	39		39	
Cheese Sales	kg	45	80	45	80
Labneh Production	kg	110		110	
Labneh home consumption	kg	9		9	
Labneh Sales	kg	101	60	101	60
Yoghurt Production	kg	324.4		324.4	
Yoghurt home consumption	kg	23		23	
Yoghurt Sales	kg	301.4	26	301.4	26
Milk home Consumption	kg	90		90	
Other Products	kg	400		400	
Other Products home consumption	kg	15		15	
Other Products Sales	kg	385	40	385	40
Total Number of Ews	Nr.	2350000		2350000	
Cost Items per 10 Heads					
Fodder	S.p	1	108463	1	108463
Milk	Kg	974	16	974	16
Veterinary expenses	100	1	3120	1	3120
Fuel-Water-Electricity	100	1	750	1	750
Maintenance	100	1	950	1	950
Waste	Kg	22	16	22	16
Replacement	Nr.	20	2900	20	2900
Others	100	1	2340	1	2340
Hired labor	Month	4	4000	4	4000
Family labor	Month	6	4000	6	4000

Table3.4.1.3a:Milk Private Sector Budget

ANNEX C

	Unit	Baseline			Current		
		Quantity	Price	Value Mill.s.p	Quantity	Price	Value Mill.s.p
1- Revenues							
Milk Production	Ton	142175			142175		
keeping milk consumption	Ton	22889			22889		
Waste	Ton	517			517		
Ghee Production	Ton	1792			1792		
Butter Production	Ton	336			336		
Cheese Production	Ton	1974			1974		
Labneh Production	Ton	2585			2585		
Yoghurt Production	Ton	7623			7623		
Other Products	Ton	9400			9400		
Milk home Consumption	Ton	2115			2115		
Ghee home consumption	Ton	61			61		
Butter home consumption	Ton	11			11		
Cheese home consumption	Ton	917			917		
Labneh home consumption	Ton	212			212		
Yoghurt home consumption	Ton	541			541		
Other Products home consumption	Ton	353			353		
Milk sales	Ton	81639.9	16000	1306.24	81639.9	16000	1306.24
Ghee Sales	Ton	1732	275000	476.22	1732	275000	476.22
Butter Sales	Ton	325	275000	89.31	325	275000	89.31
Cheese Sales	Ton	1058	65000	68.74	1058	65000	68.74
Labneh Sales	Ton	2374	50000	118.68	2374	50000	118.68
Yoghurt Sales	Ton	7083	20000	141.66	7083	20000	141.66
Other Products Sales	Ton	9048	35000	316.66	9048	35000	316.66
Lambs	Nr.	1692000	2900	4906.80	1692000	2900	4906.80
Replacement	Ton	18800	75000	1410.00	18800	75000	1410.00
Manure	M3	235000	350	82.25	235000	350	82.25
Total Sales				8916.55			8916.55
2.Variable Cost**							
Fodder	Nr.	2350000	1085	2548.9	2350000	1085	2548.9
Milk	Ton	22889	16000	366.2	22889	16000	366.2
Veterinary expenses	Nr.	2350000	31	73.3	2350000	31	73.3
Fuel-Water-Electricity	Nr.	2350000	8	17.6	2350000	8	17.6
Maintenance	Nr.	2350000	10	22.3	2350000	10	22.3
Waste	Ton	517	16000	8.3	517	16000	8.3
Others	Nr.	2350000	23	55.0	2350000	23	55.0
Replacement	Nr.	470000	2900	1363.0	470000	2900	1363.0
Hired labor	Month	94000	4000	376.0	94000	4000	376.0
Family labor	000Day	141000	4000	564.0	141000	4000	564.0
Total Variable Cost				5394.6			5394.6
3.Value Added				3521.9			3521.9

** Interest , taxes,rent, and depreciation are not included within because they are part of the value added

Budget calculation : Farm gate prices

ANNEX C

Table 3.4.1.2b: Unit cost and Revenue Items for Keeping/100/ Ews in Co-operative Sector

	Unit	Baseline		Current	
		Quantity	Price S.p	Quantity	Price S.p
Total Revenue Items					
Milk Production	Kg	6050		6050	
keeping milk consumption	Kg	974		974	
Waste	Kg	22		22	
Milk sales	Kg	3474.04	16	3474.04	16
Lambs	Nr.	72	2900	72	2900
Replacement	Kg	800	75	800	75
Manure	M3	10	350	10	350
Ghee Production	kg	76.27		76.27	
Ghee home consumption	kg	2.58		2.58	
Ghee Sales	kg	73.69	325	73.69	325
Butter Production	kg	14.3		14.3	
Butter home consumption	kg	0.48		0.48	
Butter Sales	kg	13.82	325	13.82	325
Cheese Production	kg	84		84	
Cheese home consumption	kg	39		39	
Cheese Sales	kg	45	80	45	80
Labneh Production	kg	110		110	
Labneh home consumption	kg	9		9	
Labneh Sales	kg	101	60	101	60
Yoghurt Production	kg	324.4		324.4	
Yoghurt home consumption	kg	23		23	
Yoghurt Sales	kg	301.4	26	301.4	26
Milk home Consumption	kg	90		90	
Other Products	kg	400		400	
Other Products home consumption	kg	15		15	
Other Products Sales	kg	385	50	385	50
Total Number of Ews	Nr.	6635000		6635000	
Cost Items per 100 Ews					
Fodder	S.p	1	108463	1	108463
Milk	Kg	974	16	974	16
Veterinary expenses	100	1	3350	1	3350
Fuel-Water-Electricity	100	1	850	1	850
Maintenance	100	1	790	1	790
Waste	Kg	22	16	22	16
Replacement	Nr.	20	2900	20	2900
Others	100	1	2890	1	2890
Hired labor	Month	4.07	4000	4.07	4000
Family labor	Month	6.93	4000	6.93	4000

Table3.4.1.3b:Milk Co-operative Sector Budget

ANNEX C

	Unit	Baseline			Current		
		Quantity	Price	Value Mill.s.p	Quantity	Price	Value Mill.s.p
1- Revenues							
Milk Production	Ton	401417.5			401417.5		
keeping milk consumption	Ton	64624.9			64624.9		
Waste	Ton	1459.7			1459.7		
Ghee Production	Ton	5061			5061		
Butter Production	Ton	949			949		
Cheese Production	Ton	5573			5573		
Labneh Production	Ton	7299			7299		
Yoghurt Production	Ton	21524			21524		
Other Products	Ton	26540			26540		
Milk home Consumption	Ton	5972			5972		
Ghee home consumption	Ton	171			171		
Butter home consumption	Ton	32			32		
Cheese home consumption	Ton	2588			2588		
Labneh home consumption	Ton	597			597		
Yoghurt home consumption	Ton	1526			1526		
Other Products home consumption	Ton	995			995		
Milk sales	Ton	230502.35	16000	3688.0377	230502.35	16000	3688.0377
Ghee Sales	Ton	4889	275000	1344.57	4889	275000	1344.57
Butter Sales	Ton	917	275000	252.16	917	275000	252.16
Cheese Sales	Ton	2986	65000	194.07	2986	65000	194.07
Labneh Sales	Ton	6701	50000	335.07	6701	50000	335.07
Yoghurt Sales	Ton	19998	20000	399.96	19998	20000	399.96
Other Products Sales	Ton	25545	35000	894.07	25545	35000	894.07
Lambs	Nr.	4777200	2900	13853.88	4777200	2900	13853.88
Replacement	Ton	53080	75000	3981.00	53080	75000	3981.00
Manure	M3	663500	350	232.23	663500	350	232.23
Total Sales				25175.037			25175.037
2.Variable Cost**							
Fodder	Nr.	6635000	1085	7196.5	6635000	1085	7196.5
Milk	Ton	64625	16000	1034.0	64625	16000	1034.0
Veterinary expenses	Nr.	6635000	34	222.3	6635000	34	222.3
Fuel-Water-Electricity	Nr.	6635000	9	56.4	6635000	9	56.4
Maintenance	Nr.	6635000	8	52.4	6635000	8	52.4
Waste	Ton	1460	16000	23.4	1460	16000	23.4
Others	Nr.	6635000	29	191.8	6635000	29	191.8
Replacement	Nr.	1327000	2900	3848.3	1327000	2900	3848.3
Hired labor	Month	270045	4000	1080.2	270045	4000	1080.2
Family labor	Month	459806	4000	1839.2	459806	4000	1839.2
Total Variable Cost				15544.4			15544.4
3.Value Added				9630.6			

** Interest , taxes,rent, and depreciation are not included within because they are part of the value added

Budget calculation : Farm gate prices

Basic Data					
ANNEX C					
Sectors					
Table 3.4.1.2c: Unit cost and Revenue Items for Keeping/100/ Ews in state Centers					
	Unit	Baseline		Current	
		Quantity	Price s.p	Quantity	Price s.p
Total Revenue Items					
Milk Production	Kg	5422		5422	
keeping milk consumption	Kg	900	15	900	15
Waste	Kg	22		22	
Milk sales	Kg	4500	15	4500	15
lambs	Nr.	72	2900	72	2900
Replacement	Kg	800	75	800	75
Manure	M3	10	350	10	350
Total Number of Ews	Nr.	8000		8000	
Cost Items per 100 Ews					
Fodder	S.p	1	108463	1	108463
Milk	kg	900	15	900	15
Veterinary expenses	100	1	3240	1	3240
Fuel-Water-Electricity	100	1	1700	1	1700
Maintenance	100	1	4874	1	4874
Waste	Kg	22	15	22	15
Others	100	1	2609	1	2609
Replacement	Nr.	20	2900	20	2900
Hired labor	month	11	4000	11	4000
Family labor	month	0	4000	0	4000

Table3.4.1.3c:Milk State Centers Budget

ANNEX C

	Unit	Baseline			Current		
		Quantity	Price s.p	Value Mill.s.p	Quantity	Price s.p	Value Mill.s.p
1- Revenues							
Milk Production	Ton	434			434		
keeping milk consumption	Ton	72			72		
Waste	Ton	2			2		
Milk sales	Ton	360	15000	5.4	360	15000	5.4
Lambs	Nr.	5760	2900	16.70	5760	2900	16.70
Replacement	Ton	64	75000	4.80	64	75000	4.80
Manure	M3	800	350	0.28	800	350	0.28
Total Sales				27.18			27.18
2.Variable Cost**							
Fodder	Nr.	8000	1085	8.7	8000	1085	8.7
Milk	Ton	72	15000	1.1	72	15000	1.1
Veterinary expenses	Nr.	8000	32	0.3	8000	32	0.3
Fuel-Water-Electricity	Nr.	8000	17	0.1	8000	17	0.1
Maintenance	Nr.	8000	49	0.4	8000	49	0.4
Waste	Ton	2	15000	0.03	2	15000	0.03
Others	Nr.	8000	26	0.2	8000	26	0.2
Replacement	Nr.	1600	2900	4.6	1600	2900	4.6
Hired labor	Month	880	4000	3.5	880	4000	3.5
Family labor	Month	0	4000	0.0	0	4000	0.0
Total Variable Cost				18.9			18.9
3.Value Added				12.9			12.9

** Interest , taxes,rent, and depreciation are not included within because they are part of the value added

Budget calculation : Farm gate prices

Table 3.4.1.3d:Milk -Total Budget

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	Unit	Baseline			Current		
		Quantity	Price	Value Mill.s.p	Quantity	Price	Value Mill.s.p
1- Revenues							
Milk Production	000Ton	544.0			544.0		
keeping milk consumption	000Ton	87.6			87.6		
Waste	000Ton	2.0			2.0		
Ghee Production	000Ton	7.2			7.2		
Butter Production	000Ton	7.0			7.0		
Cheese Production	000Ton	7.6			7.6		
Labneh Production	000Ton	10.7			10.7		
Yoghurt Production	000Ton	29.1			29.1		
Other Products	000Ton	35.9			35.9		
Milk home Consumption	000Ton	16.1			16.1		
Butter home consumption	000Ton	0.1			0.1		
Cheese home consumption	000Ton	11.5			11.5		
Labneh home consumption	000Ton	8.8			8.8		
Yoghurt home consumption	000Ton	10.1			10.1		
Other Products home consumption	000Ton	1.3			1.3		
Milk sales	000Ton	320.1		4994.5	320.1		4994.5
Ghee Sales	000Ton	8.2		1825.4	8.2		1825.4
Butter Sales	000Ton	2.1		345.0	2.1		345.0
Cheese Sales	000Ton	4.0		262.8	4.0		262.8
Labneh Sales	000Ton	9.1		472.7	9.1		472.7
Yoghurt Sales	000Ton	27.1		554.5	27.1		554.5
Other Products Sales	000Ton	34.6		1210.7	34.6		1210.7
Calfs	1000	6469.2		18760.7	6469.2		18760.7
Replacement	000Ton	71.9		5391.0	71.9		5391.0
Manure	000M3	898.5		314.5	898.5		314.5
Total Sales				34131.784			34131.784
2.Variable Cost**							
Fodder	000Ton	8993.0		9754	8993.0		9754
Milk	000Ton	87.6		1401	87.6		1401
Veterinary expenses	000 Cows	89930.0		296	89930.0		296
Fuel-Water-Electricity	000Cows	89930.0		74	89930.0		74
Maintenance	000 Cows	89930.0		75	89930.0		75
Waste	000Ton	2.0		32	2.0		32
Others	000 Cows	89930.0		247	89930.0		247
Calfs	000Nr.	1798.6		5216	1798.6		5216
Hired labor	000Day	364924.5		1460	364924.5		1460
Family labor	000Day	600805.5		2403	600805.5		2403
Total Variable Cost				20958.0			20958.0
3.Value Added				13173.8			13173.8

** Interest , taxes,rent, and depreciation are not included within because they are part of the value added

Budget calculation : Farm gate prices

ANNEX C

Processors

Table3.4.1. 9 :Unit Cost for processing one Ton Milk

	Traditional Processing	
	Baseline	Current
	S.P	S.P
Inputs Commodities	127.00	127.00
Fuel,Water,Electricity	65.00	65.00
Maintenance		
Packaging	260.00	260.00
Services		
Others	19.00	19.00
Waste	160.00	160.00
Wages and Salaries	500.00	500.00

Traders

Table3.4.1. 4:Unit Marketing Cost of Traders

	Exporters		Milk Wholesalers		Dairy Wholesalers		Dairy Retailers	
	Baseline	Current	Baseline	Current	Baseline	Current	Baseline	Current
	Price(sp)	Price(Sp)	Price(sp)	Price(Sp)	Price(sp)	Price(Sp)	Price(sp)	Price(Sp)
Transport	325	325	425	425	250	250	100	100
Wages	317	317	125	125	200	200	50	50
Services	97	97	150	150	150	150	50	50
Others	74	74	14	14	55	55	20	20

Table3.4.1.4: Export

	Unit	Baseline	Current
Cheese	Ton	691.4	691.4
Ghee and Butter	Ton	48.1	48.1

Fresh Milk Wholesalers

Table3.4.1.5a :Fresh Milk wholesalers - Purchases & Sales

			Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase from:	Private Sector	Milk	16953	16000	271.2
	Co-operative Sector	Milk	47865	16000	765.8
	State Centers	Milk	360	15000	5.4
	Total		65179		1042.5
Sales to:	Traditional Processing	Milk	391	19000	7.4
	Dairy Retailers	Milk	64787	19000	1231.0
	Total		65179		1238.4

Table3.4.1. 5 b : Fresh Milk Wholesalers- Marketing Costs

	Baseline			Current		
	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P
	Transport	425	65179	27.7	425	65179
Wages	125	65179	8.1	125	65179	8.1
Services	150	65179	9.8	150	65179	9.8
Others	14	65179	0.9	14	65179	0.9
Total			46.5			46.5

Dairy Wholesalers

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Table3.4.1.6a :Dairy wholesalers - Purchases & Sales

			Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase from:	Private Sector	Ghee and Butter	13	275000	3.5
	Co-operative Sector	Ghee and Butter	36	275000	9.9
	Traditional Processing	Cheese	30856	65000	2005.6
	Total		30904		2019.0
Sales to :	Dairy Retailers	Cheese	30165	76000	2292.5
	Dairy Exporters	Cheese	691	76000	52.5
		Ghee and Butter	49	300000	14.6
	Total		30904		2359.7

Table 3.4.1.6b : Dairy Wholesalers- Marketing Costs

	Baseline			Current		
	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P
	Transport	250	30904	7.7	250	30904
Wages	200	30904	6.2	200	30904	6.2
Services	150	30904	4.6	150	30904	4.6
Others	55	30904	1.7	55	30904	1.7
Total			20.2			20.2

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Dairy Retailers

Table3.4.1.7a :Dairy Retailers - Purchases & Sales

			Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase from:	Dairy Wholesalers	Cheese	30165	76000	2292.5
	Fresh Milk Wholesalers	Milk	64787	19000	1231.0
	Total		94952		3523.5
Sales to:	Consumers	cheese	30165	80000	2413.2
		Milk	64787	21000	1360.5
		Total	94952		3773.7

Table3.4.1. 7b : Dairy Retailers- Marketing Costs

	Baseline			Current		
	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P
	Transport	100	94952	9.5	100	94952
Wages	50	94952	4.7	50	94952	4.7
Services	50	94952	4.7	50	94952	4.7
Others	20	94952	1.9	20	94952	1.9
Total			20.9			20.9

Dairy Exporters

Table3.4.18a :Dairy Exporters - Purchases & Sales

			Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase from:	Dairy Wholesalers	Ghee and Butter	49	300000	14.6
		Cheese	691	76000	52.5
		Total	740		67.2
Sales to :	Foreign Market	Ghee and Butter	49	350000	17.1
		Cheese	691	100000	69.1
		Total	740		86.2

Table3.4.1. 8b : Dairy Exporters- Marketing Costs

	Baseline			Current		
	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P
	Transport	325	740	0.2	325	740
Wages	317	740	0.2	317	740	0.2
Services	97	740	0.1	97	740	0.1
Others	74	740	0.1	74	740	0.1
Total			0.6			0.6

Traditional Processing

ANNEX C

Table 3.4.1.9a : Traditional Processing - Purchases & Sales

			Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase from:	Private Sector	Milk	29926	16000	478.8
	Co-operative Sector	Milk	84494	16000	1351.9
	Fresh Milk Wholesalers	Milk	391	19000	7.4
	Total		114811		1838.2
Sales to :	Dairy Wholesalers	Cheese	30856	65000	2005.6

Table 3.4.1.9 b : Traditional Processing - Processing Costs

	Baseline			Current		
	Unit Cost	Flows Ton	Total Cost	Unit Cost	Flows Ton	Total Cost
	S.P/Ton		Mill.S.P	S.P/Ton		Mill.S.P
Inputs Commodities	127.00	30856	3.9	127.00	30856	3.9
Fuel,Water,Electricity	65.00	30856	2.0	65.00	30856	2.0
Maintenance	0.00	30856	0.0	0.00	30856	0.0
Packaging	260.00	30856	8.0	260.00	30856	8.0
Services	0.00	30856	0.0	0.00	30856	0.0
Others	19.00	30856	0.6	19.00	30856	0.6
Waste	160.00	30856	4.9	160.00	30856	4.9
Wages and Salaries	500.00	30856	15.4	500.00	30856	15.4
Total			34.9			34.9

ANNEX D Complementary tables for cow milk chain

Table 3.5.1.1a: Matrix of Flow Coefficients (%)

ANNEX D

From			Supply					Producer										SFM			
			Domestic Production			Import		Private Farms					Co-operative Farms								
To			PF	CF	SF	MP	B,G	PF	PFM	PFGB	PFCH	PFY	PFLO	CF	CFM	CFGB	CFCH	CFY	CFLO	SFM	
Milk Producers	Private Farms (PF)	Milk	100%					-100%													
	Private Farms (PFM)	Milk						84.3%	-100%												
	Private Farms(PFGB)	Ghee,Butter						0.09%		-100%											
	Private Farms(PFCH)	Cheese						0.36%			-100%										
	Private Farms(PFY)	Yoghurt						2.73%				-100%									
	Private Farms (PFLO)	Lab.,Oth.						0.60%					-100%								
	Co-op.Farms (CF)	Milk		100%										-100%							
	Co-op.Farms (CFM)	Cream												84.5%	-100%						
	Co-op.Farms (CFGB)	Ghee,Butter												0.12%		-100%					
	Co-op.Farms(CFCH)	Cheese												0.46%			-100%				
CO-op.Farms(CFY)	Yoghurt												3.54%				-100%				
Co-op.Farms (CFLO)	Lab.,Oth.												0.78%						-100%		
State Farms (SFM)	Milk				100%															-100%	
Traders	Dairy Importers(DIMP)	Milk powder					92%														
	Dairy Importers(DIPGB)	Ghee,Butter					30.76%														
	Fr. Milk Wholes.(FWHS)	Milk						68.3%							68.4%						
Processors	Home Processing(HPM)	Milk							14%						14%						
	Home Processing(HPGB)	Butter,Ghee																			
	Home Processing(HPCH)	Cheese																			
	Home Processing(HPY)	Yoghurt																			
	Home Processing(HPLO)	Lab.,Oth.																			
	Trad.Processing(TPM)	Milk																			
	Trad.Processing(TPC)																				
	Trad.Processing(TPCH)	Cheese																			
	Trad.Processing(TPY)	Yoghurt																			
	Trad.Processing(TPLC)	Lab.,Cream																			
	State Dairy Firms(SDM)	Milk					8.0%														91.7%
	State Dairy Firms(SDSPM)	Steril.P. Milk						69.2%													
	State Dairy Firms(SDGB)	Ghee,Butter																			
	State Dairy Firms(SDCH)	Cheese																			
	State Dairy Firms(SDY)	Yoghurt																			
	State Dairy Firms(SDLO)	Lab.,Oth.																			
	Private Dairy Firms(PDM)	Milk																			
Private Dairy Firms(PDSPM)	Steril.P. Milk																				
Private DairyFirms(PDCH)	Cheese																				
Private DairyFirms(PDY)	Yoghurt																				
Private Dairy Firms(PDLO)	Lab.,Others																				
Traders	Dairy Wholesalers(DWHS)	Dairy Products								93.2%	89.2%	90.7%	89.4%								
	Dairy Retailers (DRTS)	Dairy Products																			
Consumption	Consumers	Dairy Products							2%						2%						
Sub Total			100%	100%	100%	100%	100%		-15.7%	-6.8%	-10.8%	-9.33%	-10.59%		-15.6%	-6.8%	-10.8%	-9.3%	-10.6%	-8.3%	
Waste									0.4%	0%	0%	0%	0%		0.43%	0%	0%	0%	0%	0%	0.46%
Home Consum.									15.3%	6.8%	10.8%	9.33%	10.59%		15.1%	6.8%	10.8%	9.3%	10.6%	7.84%	
Sub Total									15.7%	6.8%	10.8%	9.33%	10.59%		15.5%	6.8%	10.8%	9.3%	10.6%	8.30%	
Grand Total									0.0%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	

Table 3.5.1.1b:Matrix of Flow Quantities (000Tons):Inflow(-),Outflow(+)

From		Supply						Producer														
		Domestic Production			Import			Private Farms					Co-operative Farms									
		PF	CF	SF	MP	B,G	PF	PFM	PFGB	PFCH	PFY	PFL0	CF	CFM	CFGB	CFCH	CFY	CFLO	SFM			
Milk Producers	Private Farms (PF)	Milk	220.69																			
	Private Farms (PFM)	Milk																				
	Private Farms(PFGB)	Ghee,Butter																				
	Private Farms(PFCH)	Cheese																				
	Private Farms(PFY)	Yoghurt																				
	Private Farms (PFL0)	Lab.,Oth.																				
	Co-op.Farms (CF)	Milk		1073.73																		
	Co-op.Farms (CFM)	Cream																				
	Co-op.Farms (CFGB)	Ghee,Butter																				
	Co-op.Farms(CFCH)	Cheese																				
CO-op.Farms(CFY)	Yoghurt																					
Co-op.Farms (CFLO)	Lab.,Oth.																					
State Farms (SFM)	Milk			21.17																		
Traders	Dairy Importers(DIPMP)	Milk powder				8.56																
	Dairy Importers(DIPGB)	Ghee,Butter						0.44														
	Fr. Milk Wholes.(FWHS)	Milk									127.04			620.51								
Processors	Home Processing(HPM)	Milk																				
	Home Processing(HPGB)	Butter.Ghee																				
	Home Processing(HPCH)	Cheese																				
	Home Processing(HPY)	Yoghurt																				
	Home Processing(HPLO)	Lab.,Oth.																				
	Trad.Processing(TPM)	Milk																				
	Trad.Processing(TPC)																					
	Trad.Processing(TPCH)	Cheese																				
	Trad.Processing(TPY)	Yoghurt																				
	Trad.Processing(TPLC)	Lab.,Cream																				
	State Dairy Firms(SDM)	Milk				0.74																
	State Dairy Firms(SDSPM)	Steril.P. Milk																				
	State Dairy Firms(SDGB)	Ghee,Butter																				
	State Dairy Firms(SDCH)	Cheese						0.98														
State Dairy Firms(SDY)	Yoghurt																					
State Dairy Firms(SDLO)	Lab.,Oth.																					
Private Dairy Firms(PDM)	Milk																					
Private Dairy Firms(PDSPM)	Steril.P. Milk																					
Private DairyFirms(PDCH)	Cheese																					
Private DairyFirms(PDY)	Yoghurt																					
Private Dairy Firms(PDLO)	Lab.,Others																					
Traders	Dairy Wholesalers(DWHS)	Dairy Products																				
	Dairy Retailers (DRTS)	Dairy Products																				
Consumption	Consumers	Dairy Products																				
Sub Total			220.69	1073.73	21.17	9.30	1.42				-29.23	-0.01	-0.08	-0.56	-0.14		-141.19	-0.09	-0.53	-3.54	-0.89	-1.76
Waste											0.74	0.00	0.00	0.00	0.00		3.93	0%	0.00	0.00	0.00	0.10
Home Consum.											28.48	0.01	0.08	0.56	0.14		137.07	0.09	0.53	3.54	0.89	1.66
Sub Total											29.22	0.01	0.08	0.56	0.14		140.99	0.09	0.53	3.54	0.89	1.76
Grand Total											-0.01	0.00	0.00	0.00	0.00		-0.19	0.00	0.00	0.00	0.00	0.00

Table3.5.1.1a:Matrix of Flow Coefficients (%)

ANNEX D

From			Processors																								Traders	
			Traders			Home Processing					Traditional Processing					State Dairy Firms					Private Dairy Firms					DWHS	DRTS	
			DIPMP	DIPGB	FWHS	HPM	HPGB	HPCH	HPY	HPLO	TPM	TPC	TPCH	TPY	TPLO	SDM	SDSPM	SDGB	SDCH	SDY	SDLO	PDM	PDSPM	PDCH	PDY			PDLO
To			Home Processing					Traditional Processing					State Dairy Firms					Private Dairy Firms										
Milk Producers	Private Farms (PF)	Milk																										
	Private Farms (PFM)	Milk																										
	Private Farms(PFGB)	Ghee,Butter																										
	Private Fams(PFCH)	Cheese																										
	Private Fams(PFY)	Yoghurt																										
	Private Fams (PFLO)	Lab.,Oth.																										
	Co-op.Farms (CF)	Milk																										
	Co-op.Farms (CFM)	Milk																										
	Co-op. Fams (CFGB)	Ghee,Butter																										
	Co-op.Fams(CFCH)	Cheese																										
CO-op.Fams(CFY)	Yoghurt																											
Co-op.Fams (CFLO)	Lab.,Oth.																											
State Fams (SFM)	Milk																											
Traders	Dairy Importers(DIPMP)	Milk powder	-100%																									
	Dairy Importers(DIPGB)	Ghee,Butter		-100%																								
	Fr. Milk Wholes.(FWHS)	Milk			-100%																							
Processors	Home Processing(HPM)	Milk				-100%																						
	Home Processing(HPGB)	Butter,Ghee				1.05%	-100%																					
	Home Processing(HPCH)	Cheese				6.20%		-100%																				
	Home Processing(HPY)	Yoghurt				40.8%			-100%																			
	Home Processing(HPLO)	Lab.,Oth.				2.01%				-100%																		
	Trad.Processing(TPM)	Milk			40.3%					-100%																		
	Trad.Processing(TPC)	Cream								1.04%	-100%																	
	Trad.Processing(TPCH)	Cheese								6.85%		-100%																
	Trad.Processing(TPY)	Yoghurt								43.8%			-100%															
	Trad.Processing(TPLO)	Lab.,oth.								2.01%				-100%														
	State Dairy Firms(SDM)	Milk			0.9%										-100%													
	State Dairy Firms(SDSPM)	Steril.P. Milk													34.0%	-100%												
	State Dairy Firms(SDGB)	Ghee,Butter															-100%											
	State Dairy Firms(SDCH)	Cheese																-100%										
	State Dairy Firms(SDY)	Yoghurt																	-100%									
State Dairy Firms(SDLO)	Lab.,Oth.																		-100%									
Private Dairy Firms	Private Dairy Firms(PDM)	Milk	11%		4.2%																-100%							
	Private Dairy Firms(PDSPM)	Steril.P. Milk																			34.6%	-100%						
	Private DairyFirms(PDCH)	Cheese																				3.02%		-100%				
	Private DairyFirms(PDY)	Yoghurt																					17.6%		-100%			
	Private Dairy Firms(PDLO)	Lab.,Others																					4.23%		-100%			
Traders	Dairy Wholesalers(DWHS)	Dairy Products	89%	100%							95.6%	93.7%	93.8%	93.7%		99%	99%	99%	99%	99%		99%	99%	99%	99%	-100%		
	Dairy Retailers (DRTS)	Dairy Products			54.6%																					100%		
Consumption	Consumers	Dairy Products				96.6%	94.7%	94.8%	94.7%																	100%		
Sub Total			0.0%	0.0%	0.0%		-3.4%	-5.3%	-5.2%	-5.3%		-4.4%	-6.3%	-6.2%	-6.3%		-1.0%	-1.0%	-1.0%	-1.0%	-1.0%		-1.0%	-1.0%	-1.0%	0.0%		
Waste			0%	0%	0%		0%	0%	0%		1%	1%	1%	1%		1%	1%	1%	1%	1%		1%	1%	1%	1%	0%		
Home Consum.			0%	0%	0%	19.8%	3.4%	5.3%	5.2%	5.3%	19.8%	3.4%	5.3%	5.2%	5.3%		0%	0%	0%	0%		0%	0%	0%	0%	0%		
Sub Total			0%	0%	0%		3.4%	5.3%	5.2%	5.3%		4.4%	6.3%	6.2%	6.3%		1%	1%	1%	1%	1%		1%	1%	1%	0%		
Grand Total			0%	0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%	0.0%		0.0%	0.0%	0.0%	0.0%		

Table 3.5.1.1b: Matrix of Flow of Quantities (000Tons):Inflow(-),Outflow(+)

From			Traders			Processors																Traders		Total							
			DIPMP	DIPGB	FWHS	Home Processing				Traditional Processing				State Dairy Firms				Private Dairy Firms				DWHS	DRTS								
To						HPM	HPGB	HPCH	HPY	HPLO	TPM	TPC	TPCH	TPY	TPLO	SDM	SDSPM	SDGB	SDCH	SDY	SDLO	PDM	PDSPM	PDCH	PDY	PDLO					
Milk Producers	Private Farms (PF)	Milk																												0.00	
	Private Farms (PFM)	Milk																												0.00	
	Private Farms(PFGB)	Ghee,Butter																												0.00	
	Private Farms(PFCH)	Cheese																												0.00	
	Private Farms(PFY)	Yoghurt																												0.00	
	Private Farms (PFLO)	Lab.,Oth.																													0.00
	Co-op.Farms (CF)	Milk																													0.00
	Co-op.Farms (CFM)	Milk																													0.00
	Co-op. Farms (CFGB)	Ghee,Butter																													0.00
	Co-op.Farms(CFCH)	Cheese																													0.00
CO-op.Farms(CFY)	Yoghurt																													0.00	
Co-op.Farms (CFLO)	Lab.,Oth.																													0.00	
State Farms (SFM)	Milk																													0.00	
Traders	Dairy Importers(DIPMP)	Milk powder	-8.56																											0.00	
	Dairy Importers(DIPGB)	Ghee,Butter		-0.44																										0.00	
	Fr. Milk Wholes.(FWHS)	Milk			-747.56																									0.00	
Processors	Home Processing(HPM)	Milk				-152.99																								0.00	
	Home Processing(HPGB)	Butter,Ghee				1.61	-1.61																							0.00	
	Home Processing(HPCH)	Cheese				9.49		-9.49																						0.00	
	Home Processing(HPY)	Yoghurt				62.42			-62.42																					0.00	
	Home Processing(HPLO)	Lab.,Oth.				3.08				-3.08																				0.00	
	Trad.Processing(TPM)	Milk			301.04						-301.04																			0.00	
	Trad.Processing(TPC)	Cream									3.12	-3.12																		0.00	
	Trad.Processing(TPCH)	Cheese									20.61		-20.61																	0.00	
	Trad.Processing(TPY)	Yoghurt									131.97			-131.97																	0.00
	Trad.Processing(TPLO)	Lab.,oth.									6.05				-6.05																0.00
	State Dairy Firms(SDM)	Milk			6.88												-27.03													0.00	
	State Dairy Firms(SDSPM)	Steril.P. Milk															9.20	-9.20												0.00	
	State Dairy Firms(SDGB)	Ghee,Butter																-0.98												0.00	
	State Dairy Firms(SDCH)	Cheese															0.80		-0.80											0.00	
	State Dairy Firms(SDY)	Yoghurt															4.7			-4.67										0.00	
State Dairy Firms(SDLO)	Lab.,Oth.															1.12				-1.12									0.00		
Private Dairy Firms	PDM	Milk	0.94		31.55																	-32.49							0.00		
	PDSPM	Steril.P. Milk																				11.26	-11.26						0.00		
	PDCH	Cheese																				0.98		-0.98					0.00		
	PDY	Yoghurt																				5.72			-5.72				0.00		
	PDLO	Lab.,Others																				1.37				-1.37			0.00		
Traders	Dairy Wholesalers(DWHS)	Dairy Products	7.62	0.44							2.98	19.32	123.77	5.67			9.11	0.97	0.80	4.63	1.11		11.14	0.97	5.66	1.36	-195.55		0.00		
	Dairy Retailers (DRTS)	Dairy Products			408.09																						195.55	-658.7	0.00		
Consumption	Consumers	Dairy Products					1.55	8.98	59.17	2.91																			658.74	753.21	
Sub Total			0.00	0.00	0.00		-0.06	-0.50	-3.25	-0.16		-0.14	-1.29	-8.20	-0.38		-0.09	-0.01	-0.01	-0.05	-0.01		-0.11	-0.01	-0.06	-0.01	0.00	0.00			
Waste			0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.03	0.21	1.32	0.06	0.27	0.09	0.01	0.01	0.05	0.01	0.32	0.11	0.01	0.06	0.01	0.00	0.00			
Home Consum.			0.00	0.00	0.00	30.29	0.06	0.50	3.25	0.16	59.61	0.11	1.09	6.88	0.32		0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00			
Sub Total			0.00	0.00	0.00		0.06	0.50	3.25	0.16		0.14	1.29	8.20	0.38		0.09	0.01	0.01	0.05	0.01		0.11	0.01	0.06	0.01	0.00	0.00			
Grand Total			0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00			

Table 3.5.1.1c: Matrix of Prices of Purchases(-) and Sales(+)

ANNEX D

Price:S.P per Ton

From			Supply					Producer														
			Domestic Production			Import		Private Farms						Co-operative Farms						SFM		
			PF	CF	SF	MP	B,G	PF	PFM	PFGB	PFCH	PFY	PFLO	CF	CFM	CFGB	CFCH	CFY	CFLO			
Milk Producers	Private Farms (PF) Private Farms (PFM) Private Farms(PFGB) Private Farms(PFCH) Private Farms(PFY) Private Farms (PFLO) Co-op.Farms (CF) Co-op.Farms (CFM) Co-op. Farms (CFGB) Co-op.Farms(CFCH) CO-op.Farms(CFY) Co-op.Farms (CFLO) State Farms (SFM)	Milk Milk Ghee,Butter Cheese Yoghurt Lab.,Oth. Milk Cream Ghee,Butter Cheese Yoghurt Lab.,Oth. Milk							11400	245000	68000	18000	53000		11400	245000	68000	18000	53000	13000		
Traders	Dairy Importers(DIPMP) Dairy Importers(DIPGB) Fr. Milk Wholes.(FWHS)	Milk powder Ghee,Butter Milk				-150000	-180000															
Processors	Home Processing(HPM) Home Processing(HPGB) Home Processing(HPCH) Home Processing(HPY) Home Processing(HPLO) Trad.Processing(TPM) Trad.Processing(TPC) Trad.Processing(TPCH) Trad.Processing(TPY) Trad.Processing(TPLC) State Dairy Firms(SDM) State Dairy Firms(SDSPM) State Dairy Firms(SDGB) State Dairy Firms(SDCH) State Dairy Firms(SDY) State Dairy Firms(SDLO) Private Dairy Firms(PDM) Private Dairy Firms(PDSPM) Private DairyFirms(PDCH) Private DairyFirms(PDY) Private Dairy Firms(PDLO)	Milk Butter.Ghee Cheese Yoghurt Lab.,Oth. Milk Cream Cheese Yoghurt Lab.,Cream Milk Steril.P. Milk Ghee,Butter Cheese Yoghurt Lab.,Oth. Milk Steril.P. Milk Cheese Yoghurt Lab.,Others				-125000	-170000		-12000						-12000						-13000	
Traders	Dairy Wholesalers(DWHS) Dairy Retailers (DRTS)	Dairy Products Dairy Products									-245000	-68000	-18000	-53000			-245000	-68000	-18000	-53000		
Consumption	Consumers	Dairy Products									-14000	-268000	-73000	-20000	-68000		-14000	-268000	-73000	-20000	-68000	
Sub Total																						
Waste Home Consum.											11400	245000	68000	18000	53000		11400	245000	68000	18000	53000	13000

Table 3.5.1.1c: Matrix of Prices of Purchases(-) and Sales(+)

ANNEX D

Price: S.P per Ton

From			Traders			Processors										Traders															
			DIPMP	DIPGB	FWHS	Home Processing					Traditional Processing				State Dairy Firms					Private Dairy Firms					DWHS	DRTS					
To						HPM	HPGB	HPCH	HPY	HPLO	TPM	TPC	TPCH	TPY	TPLO	SDM	SDSPM	SDGB	SDCH	SDY	SDLO	PDM	PDSPM	PDCH	PDY	PDLO					
Milk Producers	Private Farms (PF)	Milk																													
	Private Farms (PFM)	Milk																													
	Private Farms(PFGB)	Ghee,Butter																													
	Private Farms(PFCH)	Cheese																													
	Private Farms(PFY)	Yoghurt																													
	Private Farms (PFLO)	Lab.,Oth.																													
	Co-op.Farms (CF)	Milk																													
	Co-op.Farms (CFM)	Milk																													
	Co-op.Farms (CFGB)	Ghee,Butter																													
	Co-op.Farms(CFCH)	Cheese																													
CO-op.Farms(CFY)	Yoghurt																														
Co-op.Farms (CFLO)	Lab.,Oth.																														
State Farms (SFM)	Milk																														
Traders	Dairy Importers(DIMP)	Milk powder	170000																												
	Dairy Importers(DIPGB)	Ghee,Butter		195000																											
	Fr. Milk Wholes.(FWHS)	Milk			12300																										
Processors	Home Processing(HPM)	Milk																													
	Home Processing(HPGB)	Butter,Ghee					268000																								
	Home Processing(HPCH)	Cheese						73000																							
	Home Processing(HPY)	Yoghurt							20000																						
	Home Processing(HPLO)	Lab.,Oth.								68000																					
	Trad.Processing(TPM)	Milk			-12300																										
	Trad.Processing(TPC)	Cream									140000																				
	Trad.Processing(TPCH)	Cheese										65000																			
	Trad.Processing(TPY)	Yoghurt											17000																		
	Trad.Processing(TPLO)	Lab.,oth.												60000																	
	State Dairy Firms(SDM)	Milk			-12300											12880															
	State Dairy Firms(SDSPM)	Steril.P. Milk															25000														
	State Dairy Firms(SDGB)	Ghee,Butter																190000													
	State Dairy Firms(SDCH)	Cheese																	190000												
State Dairy Firms(SDY)	Yoghurt																			22000											
State Dairy Firms(SDLO)	Lab.,Oth.																				70000										
Private Dairy Firms(PDM)	Milk		-125000		-12300																	12300									
Private Dairy Firms(PDSPM)	Steril.P. Milk																						25000								
Private DairyFirms(PDCH)	Cheese																							190000							
Private DairyFirms(PDY)	Yoghurt																									22000					
Private Dairy Firms(PDLO)	Lab.,Others																										70000				
Traders	Dairy Wholesalers(DWHS)	Dairy Products	-170000	-195000								-140000	-65000	-17000	-60000		-25000	-190000	-190000	-22000	-70000		-25000	-190000	-22000	-70000					
	Dairy Retailers (DRTS)	Dairy Products	-187000	-205000	-12300							-180000	-68000	-18000	-63000		-27000	-205000	-200000	-23000	-73000		-27000	-200000	-23000	-73000					
Consumption	Consumers	Dairy Products			-14000		-268000	-73000	-20000	-68000		-210000	-73000	-20000	-68000		-30000	-225000	-215000	-25000	-78000		-30000	-215000	-25000	-78000					
Sub Total																															
Waste																															
Home Consum.						12000	268000	73000	20000	68000	12300	140000	65000	17000	60000																

ANNEX D

Table3.5.1. 2a: Unit cost and Revenue Items for Keeping/10/ Heads of Dairy Cows in Private Farms

	Unit	Baseline		Current	
		Quantity	Price s.p	Quantity	Price s.p
Total Revenue Items					
Milk Production	Kg	36544		36544	
keeping milk consumption	Kg	2802		2802	
Waste	Kg	146		146	
Milk sales	Kg	30804.2	65	30804.2	65
Calfs	Nr.	10	3000	10	3000
Replacement	Kg	958	40	958	40
Manure	M3	63	300	63	300
Ghee Production	kg	24.0		24	
Ghee home consumption	kg	1.6		1.6	
Ghee Sales	kg	22.4	225	22.4	225
Butter Production	kg	10		10	
Butter home consumption	kg	0.7		0.7	
Butter Sales	kg	9.3	225	9.3	225
Cheese Production	kg	130		130	
Cheese home consumption	kg	14		14	
Cheese Sales	kg	116	65	116	65
Labneh Production	kg	20		20	
Labneh home consumption	kg	2.6		2.6	
Labneh Sales	kg	17.4	60	17.4	60
Yoghurt Production	kg	997		997	
Yoghurt home consumption	kg	93		93	
Yoghurt Sales	kg	904	17	904	17
Milk home Consumption	kg	198		198	
Other Products	kg	200		200	
Other Products home consumption	kg	20.7		20.7	
Other Products Sales	kg	179.3	40	179.3	40
Total Number of Cows	Nr.	60391		60391	
Cost Items per 10 Heads					
Fodder	Kg	64560	2.78	64560	2.78
Milk	Kg	3600	11.4	3600	11.4
Veterinary expenses	10 Cows	1	9544	1	9544
Fuel-Water-Electricity	10 Cows	1	3870	1	3870
Maintenance	10 Cows	1	790	1	790
Waste	Kg	146	11.4	146	11.4
Calfs	Nr.	2	3000	2	3000
Others	10 Cows	1	27500	1	27500
Hired labor	Day	54	170	54	170
Family labor	Day	385	170	385	170

Table3.5.1.3a:Milk Private Farms Budget

ANNEX D

	Unit	Baseline			Current		
		Quantity	Price	Value Mill.s.p	Quantity	Price	Value Mill.s.p
1- Revenues							
Milk Production	Ton	220693			220693		
keeping milk consumption	Ton	16922			16922		
Waste	Ton	882			882		
Ghee Production	Ton	145			145		
Butter Production	Ton	60			60		
Cheese Production	Ton	785			785		
Labneh Production	Ton	121			121		
Yoghurt Production	Ton	6021			6021		
Other Products	Ton	1208			1208		
Milk home Consumption	Ton	1196			1196		
Ghee home consumption	Ton	10			10		
Butter home consumption	Ton	4			4		
Cheese home consumption	Ton	85			85		
Labneh home consumption	Ton	16			16		
Yoghurt home consumption	Ton	562			562		
Other Products home consumption	Ton	125			125		
Milk sales	Ton	186030	11400	2120.74	186030	11400	2120.74
Ghee Sales	Ton	135	225000	30.44	135	225000	30.44
Butter Sales	Ton	56	225000	12.64	56	225000	12.64
Cheese Sales	Ton	701	65000	45.53	701	65000	45.53
Labneh Sales	Ton	105	60000	6.30	105	60000	6.30
Yoghurt Sales	Ton	5459	17000	92.81	5459	17000	92.81
Other Products Sales	Ton	1083	40000	43.31	1083	40000	43.31
Calfs	Nr.	60391	3000	181.17	60391	3000	181.17
Replacement	Ton	5785	40000	231.42	5785	40000	231.42
Manure	M3	380463	300	114.14	380463	300	114.14
Total Sales				2878.5			2878.5
2.Variable Cost**							
Fodder	Ton	389884	2780	1083.9	389884	2780	1083.9
Milk	Ton	21741	11400	247.8	21741	11400	247.8
Veterinary expenses	10 ows	6039	9544	57.6	6039	9544	57.6
Fuel-Water-Electricity	10 ows	6039	3870	23.4	6039	3870	23.4
Maintenance	10 ows	6039	790	4.8	6039	790	4.8
Waste	Ton	882	11400	10.1	882	11400	10.1
Others	10 ows	6039	27500	166.1	6039	27500	166.1
Calfs	Nr.	12078	3000	36.2	12078	3000	36.2
Hired labor	000Day	326	170000	55.4	326	170000	55.4
Family labor	000Day	2325	170000	395.3	2325	170000	395.3
Total Variable Cost				2080.6			2080.6
3.Value Added				797.9			797.9

** Interest , taxes,rent, and depreciation are not included within because they are part of the value added

Budget calculation : Farm gate prices

Table3.5.1.3b:Milk Co-operative Farms Budget

ANNEX D

	Unit	Baseline			Current		
		Quantity	Price	Value Mill.s.p	Quantity	Price	Value Mill.s.p
1- Revenues							
Milk Production	Ton	1073734			1073734		
keeping milk consumption	Ton	55930.8			55930.8		
Waste	Ton	4648.2			4648.2		
Ghee Production	Ton	914			914		
Butter Production	Ton	381			381		
Cheese Production	Ton	4953			4953		
Labneh Production	Ton	762			762		
Yoghurt Production	Ton	37986			37986		
Other Products	Ton	7620			7620		
Milk home Consumption	Ton	7544			7544		
Ghee home consumption	Ton	60.96			60.96		
Butter home consumption	Ton	27			27		
Cheese home consumption	Ton	533			533		
Labneh home consumption	Ton	99			99		
Yoghurt home consumption	Ton	3543			3543		
Other Products home consumption	Ton	789			789		
Milk sales	Ton	906780	11400	10337.3	906780	11400	10337.3
Ghee Sales	Ton	853	225000	192.02	853	225000	192.02
Butter Sales	Ton	354	225000	79.72	354	225000	79.72
Cheese Sales	Ton	4420	65000	287.27	4420	65000	287.27
Labneh Sales	Ton	663	60000	39.78	663	60000	39.78
Yoghurt Sales	Ton	34442	17000	585.52	34442	17000	585.52
Other Products Sales	Ton	6831	40000	273.25	6831	40000	273.25
Calfs	Nr.	381000	3000	1143.00	381000	3000	1143.00
Replacement	Ton	19711	40000	788.44	19711	40000	788.44
Manure	M3	2400300	300	720.09	2400300	300	720.09
Total Sales				14446.4			14446.4
2.Variable Cost**							
Fodder	Ton	2459736	2780	6838.1	2459736	2780	6838.1
Milk	Ton	137160	11400	1563.6	137160	11400	1563.6
Veterinary expenses	10 ows	38100	10000	381.0	38100	10000	381.0
Fuel-Water-Electricity	10 ows	38100	4500	171.5	38100	4500	171.5
Maintenance	10 ows	38100	790	30.1	38100	790	30.1
Waste	Ton	4648	11400	53.0	4648	11400	53.0
Others	10 ows	38100	28000	1066.8	38100	28000	1066.8
Calfs	Nr.	76200	3000	228.6	76200	3000	228.6
Hired labor	000Day	2057	170000	349.8	2057	170000	349.8
Family labor	000Day	14669	170000	2493.6	14669	170000	2493.6
Total Variable Cost				13176.0			13176.0
3.Value Added				1270.4			1270.4

** Interest , taxes,rent, and depreciation are not included within because they are part of the value added

Budget calculation : Farm gate prices

ANNEX D

Basic Data					
Farms					
Table 3.5.1.2c: Unit cost and Revenue Items for Keeping/10/ Heads of imported Dairy Cows in state Farms					
	Unit	Baseline		Current	
		Quantity	Price s.p	Quantity	Price s.p
Total Revenue Items					
Milk Production	Kg	45931		45931	
keeping milk consumption	Kg	3600	13	3600	13
Waste	Kg	211		211	
Milk sales	Kg	42120	13	42120	13
Calfs	Nr.	10	3000	10	3000
Replacement	Kg	940	40	940	40
Manure	M3	63	150	63	150
Total Number of Cows	Nr.	4609		4609	
Cost Items per 10 Heads					
Fodder	Kg	80351	3.94	80351	3.94
Milk	kg	3600	13	3600	13
Veterinary expenses	10 Cows	1	10530	1	10530
Fuel-Water-Electricity	10Cows	1	10109	1	10109
Maintenance	10 Cows	1	11794	1	11794
Waste	Kg	211	13	211	13
Others	10 Cows	1	18954	1	18954
Calfs	Nr.	2	3000	2	3000
Hired labor	10 Cows	1	82976	1	82976
Family labor	10 Cows	0	0	0	0

Table3.5.1.3c:Milk State Farms Budget

ANNEX D

	Unit	Baseline			Current		
		Quantity	Price	Value Mill.s.p	Quantity	Price	Value Mill.s.p
1- Revenues							
Milk Production	Ton	21170			21170		
keeping milk consumption	Ton	1659			1659		
Waste	Ton	97			97		
Milk sales	Ton	19413	13000	252.37	19413	13000	252.37
Calfs	Nr.	4609	3000	13.83	4609	3000	13.83
Replacement	Ton	433	40000	17.33	433	40000	17.33
Manure	M3	29037	150	4.36	29037	150	4.36
Total Sales				287.88			287.88
2. Variable Cost**							
Fodder	Ton	37034	3940	145.9	37034	3940	145.9
Milk	Ton	1659	13000	21.6	1659	13000	21.6
Veterinary expenses	10 ows	461	10530	4.9	461	10530	4.9
Fuel-Water-Electricity	10 ows	461	10109	4.7	461	10109	4.7
Maintenance	10 ows	461	11794	5.4	461	11794	5.4
Waste	Ton	97	13000	1.3	97	13000	1.3
Others	10 ows	461	18954	8.7	461	18954	8.7
Calfs	Nr.	922	3000	2.8	922	3000	2.8
Hired labor	10 ows	461	82976	38.2	461	82976	38.2
Family labor	10 Cows	0	0	0.0	0	0	0.0
Total Variable Cost				233.4			233.4
3. Value Added				57.2			57.2

** Interest , taxes,rent, and depreciation are not included within because they are part of the value added

Budget calculation : Farm gate prices

Table3.5.1.3d:Milk Farms -Total Budget

ANNEX D

	Unit	Baseline			Current		
		Quantity	Price	Value Mill.s.p	Quantity	Price	Value Mill.s.p
1- Revenues							
Milk Production	000Ton	1315.6			1315.6		
keeping milk consumption	000Ton	74.5			74.5		
Waste	000Ton	5.6			5.6		
Ghee Production	000Ton	20.5			20.5		
Butter Production	000Ton	5.1			5.1		
Cheese Production	000Ton	6.2			6.2		
Labneh Production	000Ton	29.9			29.9		
Yoghurt Production	000Ton	44.0			44.0		
Other Products	000Ton	8.8			8.8		
Milk home Consumption	000Ton	45.8			45.8		
Butter home consumption	000Ton	1.7			1.7		
Cheese home consumption	000Ton	1.1			1.1		
Labneh home consumption	000Ton	0.6			0.6		
Yoghurt home consumption	000Ton	4.6			4.6		
Other Products home consumption	000Ton	1.0			1.0		
Milk sales	000Ton	1093.3		12710.4	1093.3		12710.4
Ghee Sales	000Ton	1.9		222.5	1.9		222.5
Butter Sales	000Ton	0.9		92.4	0.9		92.4
Cheese Sales	000Ton	5.1		332.8	5.1		332.8
Labneh Sales	000Ton	0.8		46.1	0.8		46.1
Yoghurt Sales	000Ton	39.9		678.3	39.9		678.3
Other Products Sales	000Ton	7.9		316.6	7.9		316.6
Calfs	1000	441.4		1338.0	441.4		1338.0
Replacement	000Ton	25.5		1037.2	25.5		1037.2
Manure	000M3	2780.8		838.6	2780.8		838.6
Total Sales				17612.8			17612.8
2.Variable Cost**							
Fodder	000Ton	2886.7		8068	2886.7		8068
Milk	000Ton	160.6		1833	160.6		1833
Veterinary expenses	000 Cows	446.0		443	446.0		443
Fuel-Water-Electricity	000Cows	446.0		199	446.0		199
Maintenance	000 Cows	446.0		40	446.0		40
Waste	000Ton	5.6		64	5.6		64
Others	000 Cows	446.0		1242	446.0		1242
Calfs	000Nr.	89.2		268	89.2		268
Hired labor	000Day	2844.4		443	2844.4		443
Family labor	000Day	16993.6		2889	16993.6		2889
Total Variable Cost				15490.0			15490.0
3.Value Added				2122.7			2122.7

** Interest , taxes,rent, and depreciation are not included within because they are part of the value added

Budget calculation : Farm gate prices

ANNEX D

Processors

Table 3.5.1.9 :Unit Cost for processing one Ton Milk

	Home Processing		Traditional Processing		Private Dairy Firms		State Dairy Firms	
	Baseline S.P	Current S.P	Baseline S.P	Current S.P	Baseline S.P	Current S.P	Baseline S.P	Current S.P
Inputs Commodities	127.00	127.00	127.00	127.00	178	178	177	177
Fuel,Water,Electricity	65.00	65.00	65.00	65.00	175	175	185	185
Maintenance					178	178	200	200
Packaging			800.00	800.00	2100	2100	2500	2500
Services					436	436	570	570
Others	10.00	10.00	50.00	50.00	15	15	33	33
Wages and Salaries	500.00	500.00	500.00	500.00	725	725	790	790

Traders

Table3.5.1.4:Unit Marketing Cost of Traders

	Importers		Milk Wholesalers		Dairy Wholesalers		Dairy Retailers	
	Baseline Price(sp)	Current Price(Sp)	Baseline Price(sp)	Current Price(Sp)	Baseline Price(sp)	Current Price(Sp)	Baseline Price(sp)	Current Price(Sp)
Transport	325	325	425	425	250	250	100	100
Wages	317	317	125	125	200	200	50	50
Services	97	97	150	150	150	150	50	50
Others	74	74	14	14	55	55	20	20

Table3.5.1.4: Imports

	Unit	Baseline	Current
Milk Powder Import	Ton	9304.4	9304.4
Ghee,Butter Import	Ton	1416.7	1416.7

ANNEX D

Dairy Importers

Table 3.5.1.8a : Dairy Importers - Purchases & Sales

	Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase from: Rest of the World			
Milk Powder for Dairy Wholesalers	7618	150000	1142.8
Milk Powder for Private Firms	942	110000	103.6
Ghee and Butter	436	180000	78.4
Total	8996		1324.8
Sales to : Dairy Wholesalers			
Milk Powder	7618	170000	1295.1
Ghee and Butter	436	195000	85.0
Private Firms			
Milk Powder	942	125000	117.7
Total	8996		1497.8

Table 3.5.1.8b : Dairy Importers- Marketing Costs

	Baseline			Current		
	Unit Cost	Flows	Total Cost	Unit Cost	Flows	Total Cost
	S.P/Ton	Ton	Mill.S.P	S.P/Ton	Ton	Mill.S.P
Transport	325	8996	2.9	325	8996	2.9
Wages	317	8996	2.9	317	8996	2.9
Services	97	8996	0.9	97	8996	0.9
Others	74	8996	0.7	74	8996	0.7
Total			7.3			7.3

Fresh Milk Wholesalers

Table 3.5.1.5a : Fresh Milk wholesalers - Purchases & Sales

	Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase from: Private Farms	127040	11400	1448.3
Co-operative Farms	620510	11400	7073.8
Total	747549		8522.1
Sales to : Traditional Processing	301038	12300	3702.8
Private Dairy Firms	31547	12300	388.0
State Dairy Firms	6877	12300	84.6
Dairy Retailers	408087	12300	5019.5
Total	747549		9194.9

Table 3.5.1.5 b : Fresh Milk Wholesalers- Marketing Costs

	Baseline			Current		
	Unit Cost	Flows	Total Cost	Unit Cost	Flows	Total Cost
	S.P/Ton	Ton	Mill.S.P	S.P/Ton	Ton	Mill.S.P
Transport	425	747549	317.7	425	747549	317.7
Wages	125	747549	93.4	125	747549	93.4
Services	150	747549	112.1	150	747549	112.1
Others	14	747549	10.5	14	747549	10.5
Total			533.8			533.8

ANNEX D

Dairy Retailers

Table3.5.1.7a :Dairy Retailers - Purchases & Sales

	Flow Ton	Price S.P/ton	Value Mill S.P
Purchase from:			
Private Farms			
Ghee and Butter	191	245000	46.9
Cheese	701	68000	47.6
Yoghurt	5459	18000	98.3
Labneh and Others	1188	53000	63.0
Total	7539		255.8
Co-operative Farms			
Ghee and Butter	1208	245000	295.9
Cheese	4420	68000	300.5
Yoghurt	34442	18000	620.0
Labneh and Others	7494	53000	397.2
Total	47564		1613.6
Fresh Milk Wholesalers	408087.1	12300	5019.5
Dairy Wholesalers			
Sterilized and Pastaurized Milk	20250	27000	546.7
Ghee and Butter	1407	205000	288.4
Cream	2979	180000	536.2
Cheese (Traditional)	19319	68000	1313.7
Cheese from State and Private Dairy Firms	1768	200000	353.6
Yoghurt(Traditional)	123773	18000	2227.9
Yoghurt from Private and State Dairy Firms	10291	23000	236.7
Labneh and Others(Traditional)	5671	63000	357.3
Labneh and Others from Private and State Dairy Firms	2474	73000	180.6
Milk Powder	7618	187000	1424.6
Total	195549		7465.7
Grand Total	658739		14355
Sales to :			
Consumers			
Sterilized and Pastaurized Milk	20250	30000	607.5
Ghee and Butter from Co-operative and Private Farms	1399	268000	375.0
Ghee and Butter from State and Private Dairy Firms	1407	225000	316.6
Cream	2979	210000	625.5
Cheese from Co-operative and Private Dairy Firms	5120	73000	373.8
Cheese (Traditional)	19319	73000	1410.3
Cheese from State and Private Dairy Firms	1768	215000	380.1
Yoghurt from Private and Co-operative Farms	39902	20000	798.0
Yoghurt(Traditional)	123773	20000	2475.5
Yoghurt from Private and State Dairy Firms	10291	25000	257.3
Labneh and Others(Traditional)	5671	68000	385.6
Labneh and Others from Private and State Dairy Firms	2474	78000	192.9
Labneh and Others from Private and Co-operative Farms	8682	68000	590.4
Milk Powder	7618	200000	1523.7
Fresh Milk	408087	14000	5713.2
Total	658739		16025

Table3.5.1.7b : Dairy Retailers- Marketing Costs

	Baseline			Current		
	Unit Cost S.P/ton	Flows Ton	Total Cost Mill.S.P	Unit Cost S.P/ton	Flows Ton	Total Cost Mill.S.P
Transport	100	658739	65.9	100	658739	65.9
Wages	50	658739	32.9	50	658739	32.9
Services	50	658739	32.9	50	658739	32.9
Others	20	658739	13.2	20	658739	13.2
Total			144.9			144.9

Home Processing

ANNEX D

Table 3.5.1.10a : Home Processing - Purchases & Sales

	Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase from: Farms	152993	12000	1835.9
Sales to : Consumers			
Ghee and Butter	1551	268000	415.7
Cheese	8985	73000	655.9
Yoghurt	59169	20000	1183.4
Labneh and Others	2913	68000	198.1
Total			2453.1

Table 3.5.1.10 b : Home Processing - Processing Costs

	Baseline			Current		
	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P
Inputs Commodities	127.00	122701	15.6	127.00	122701	15.6
Fuel,Water,Electricity	65.00	122701	8.0	65.00	122701	8.0
Maintenance	0.00	122701	0.0	0.00	122701	0.0
Packaging	0.00	122701	0.0	0.00	122701	0.0
Services	0.00	122701	0.0	0.00	122701	0.0
Others	10.00	122701	1.2	10.00	122701	1.2
Wages and Salaries	500.00	122701	61.4	500.00	122701	61.4
Total			86.1			86.1

Traditional Processing

Table3.5.1.11a : Traditional Processing - Purchases & Sales

	Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase from: Fresh Milk Wholesalers	301038	12300	3702.8
Sales to : Dairy Wholesalers			
Cream	2979	140000	417.0
Cheese	19319	65000	1255.7
Yoghurt	123773	17000	2104.1
Labneh and Others	5671	60000	340.3
Total			4117.1

Table3.5.1.11 b : Traditional Processing - Processing Costs

	Baseline			Current		
	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P
Inputs Commodities	127.00	241433	30.7	127.00	241433	30.7
Fuel,Water,Electricity	65.00	241433	15.7	65.00	241433	15.7
Maintenance	0.00	241433	0.0	0.00	241433	0.0
Packaging	800.00	241433	193.1	800.00	241433	193.1
Services	0.00	241433	0.0	0.00	241433	0.0
Others	50.00	241433	12.1	50.00	241433	12.1
Waste	185.00	241433	44.7	185.00	241433	44.7
Wages and Salaries	500.00	241433	120.7	500.00	241433	120.7
Total			417.0			417.0

ANNEX D

State Dairy Firms

Table 3.5.1.13a : State Dairy Firms - Purchases & Sales

		Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase from:	State Farms	19413	13000	252.4
	Fresh Milk Wholesalers	6877	12300	84.6
	Rest of the World			
	Milk Powder	744	125000	93.0
	Ghee and Butter	981	170000	166.8
	Total			596.8
Sales to :	Dairy Wholesalers			
	Sterilized and Pataurized Milk	9107	25000	227.7
	Ghee and Butter	971	190000	184.5
	Cheese	795	190000	151.1
	Yoghurt	4628	22000	101.8
	Labneh and Others	1112	70000	77.9
	Total			742.9

Table 3.5.1.13 b : State Dairy Firms - Processing Costs

	Baseline			Current		
	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P
Inputs Commodities	177.00	27034	4.8	177.00	27034	4.8
Fuel,Water,Electricity	185.00	27034	5.0	185.00	27034	5.0
Maintenance	200.00	27034	5.4	200.00	27034	5.4
Packaging	2500.00	27034	67.6	2500.00	27034	67.6
Services	570.00	27034	15.4	570.00	27034	15.4
Others	33.00	27034	0.9	33.00	27034	0.9
Waste	406.00	27034	11.0	406.00	27034	11.0
Wages and Salaries	190.00	27034	21.4	190.00	27034	21.4
Total			131.4			131.4

Private Dairy Firms

Table 3.5.1.12a : Private Dairy Firms - Purchases & Sales

		Flow Ton	Price S.P/Ton	Value Mill S.P
Purchase from:	Fresh Milk Wholesalers	31547	12300	388.0
	Dairy Importers	942	125000	117.7
	Total			505.7
Sales to :	Dairy Wholesalers			
	Sterilized and Pastaurized Milk	11143	25000	278.6
	Cheese	973	190000	184.8
	Yoghurt	5663	22000	124.6
	Labneh and Others	1361	70000	95.3
	Total			683.3

Table 3.5.1.12 b : Private Dairy Firms- Processing Costs

	Baseline			Current		
	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P	Unit Cost S.P/Ton	Flows Ton	Total Cost Mill.S.P
Inputs Commodities	178.00	32488	5.8	178.00	32488	5.8
Fuel,Water,Electricity	175.00	32488	5.7	175.00	32488	5.7
Maintenance	178.00	32488	5.8	178.00	32488	5.8
Packaging	2100.00	32488	68.2	2100.00	32488	68.2
Services	436.00	32488	14.2	436.00	32488	14.2
Others	15.00	32488	0.5	15.00	32488	0.5
Waste	335.00	32488	10.9	335.00	32488	10.9
Wages and Salaries	125.00	32488	23.6	125.00	32488	23.6
Total			134.6			134.6

ANNEX D

Waste & Self Consumption							
Table3.5.1.14: Waste & Self Consumption Coefficients							
	Output Input	Baseline			Current		
		Waste	S.Cons	Net Flows	Waste	S.Cons	Net Flows
Private Farms	Milk	0.40%	15.31%	84.29%	0.4%	15.31%	84.29%
	But.,Gh.	0%	6.76%	93.24%	0%	6.76%	93.24%
	Cheese	0%	10.77%	89.23%	0%	10.77%	89.23%
	Yoghurt	0%	9.33%	90.67%	0%	9.33%	90.67%
	Lab.,Oth.	0%	10.59%	89.41%	0%	10.59%	89.41%
Co-Operatives Farms	Milk	0.43%	15.12%	84.45%	0.43%	15.12%	84.45%
	But.,Gh.	0%	6.76%	93.24%	0%	6.76%	93.24%
	Cheese	0%	10.77%	89.23%	0%	10.77%	89.23%
	Yoghurt	0%	9.33%	90.67%	0%	9.33%	90.67%
	Lab.,Oth.	0%	10.59%	89.41%	0%	10.59%	89.41%
State Farms	Milk	0.46%	7.84%	91.70%	0.46%	7.84%	91.70%
Dairy Importers	Milk Powder	0%	0%	100%	0%	0%	100%
	Ghee,Butter	0%	0%	100%	0%	0%	100%
Fresh Milk Wholesaler	Milk	0%	0%	100%	0%	0%	100%
Home Processing	Milk	0%	19.8%	80.2%	0%	19.8%	80.2%
	But.,Gh.	0%	3.44%	96.56%	0%	3.44%	96.56%
	Cheese	0%	5.28%	94.72%	0%	5.28%	94.72%
	Yoghurt	0%	5.21%	94.79%	0%	5.21%	94.79%
	Lab.,Oth.	0%	5.28%	94.72%	0%	5.28%	94.72%
Tradetional Processing	Milk	0%	0%	100%	0%	0%	100%
	Cream	1%	3.40%	95.60%	1%	3.40%	95.60%
	Cheese	1%	5.28%	93.72%	1%	5.28%	93.72%
	Yoghurt	1%	5.21%	93.79%	1%	5.21%	93.79%
	Lab.,Oth.	1%	5.28%	93.72%	1%	5.28%	93.72%
State Dairy Firms	Milk	1%	0%	99%	1%	0%	99%
	St.P.Milk	1%	0%	99%	1%	0%	99%
	Cheese	1%	0%	99%	1%	0%	99%
	Yoghurt	1%	0%	99%	1%	0%	99%
	Lab.,Oth.	1%	0%	99%	1%	0%	99%
	But.,Gh.	1%	0%	99%	1%	0%	99%
Private Dairy Firms	Milk	1%	0%	99%	1%	0%	99%
	St.P.Milk	1%	0%	99%	1%	0%	99%
	Cheese	1%	0%	99%	1%	0%	99%
	Yoghurt	1%	0%	99%	1%	0%	99%
	Lab.,Oth.	1%	0%	99%	1%	0%	99%
	Dairy Wholesalers	Dairy Prod.	0%	0%	100%	0%	0%
Dairy Retailers	Dairy Prod.	0%	0%	100%	0%	0%	100%

ANNEX D

Output and Input Prices

Table3.5.1.15:Output and Input prices

Agents	Unit	Baseline Price S.P	Current Price S.P
State Farms			
Milk farm gate prices	kg	13	13
Calf	Nr	3000	3000
Cow Meat - Live Weight	kg	40	40
Manure	M3	150	150
Fodder	Kg	3.94	3.94
Co-Operative and Private Farms			
Milk farm gate prices	kg	11.4	11.4
Milk Wholesale Prices	kg	12	12
Milk Retail Prices	kg	14	14
Calf	Nr.	3000	3000
Cow Meat - Live Weight	kg	40	40
Manure	M3	300	300
Fodder	kg	2.78	2.78
Ghee and Butter Farm gate price	kg	225	225
Ghee and Butter Wholesale Price	kg	245	245
Ghee and Butter Retail Price	kg	268	268
Cheese Farm gate Price	kg	65	65
Cheese Wholesale Price	kg	68	68
Cheese Retail Price	kg	73	73
Cream Farm gate Price	kg	140	140
Cream Wholesale Price	kg	145	145
Cream Retail Price	kg	160	160
Labneh Farm gate price	kg	60	60
Labneh Wholesale price	kg	63	63
Labneh Retail price	kg	70	70
Yoghurt Farm gate price	kg	17	17
Yoghurt Wholesale price	kg	18	18
YoghurtRetail price	kg	20	20
Other Products Farm gate prices	kg	40	40
Other Products Wholesale prices	kg	43	43
Other Products Retail prices	kg	50	50
Labneh and other Products Farm gate prices	kg	45	45
Labneh and other Products Wholesale Prices	kg	53	53
Labneh and other Products Retail prices	kg	68	68
Importers			
Milk Powder purchased for Private Firms	kg	110	110
Milk Powder saled to Private Firms	kg	125	125
Milk Powder purchased	kg	150	150
Milk Powder saled	kg	170	170
Ghee and butter purchased	kg	180	180
Ghee and Butter saled	kg	195	195
Fresh Milk Wholesalers			
Milk	kg	12.3	12.3
Home Processing			
Milk	kg	12	12
Ghee and Butter	kg	268	268
Cheese	kg	73	73
Yoghurt	kg	20	20
Labneh and Others	kg	68	68
Traditional Processing			
Milk	kg	12.3	12.3
Cream	kg	140	140
Cheese	kg	65	65
Yoghurt	kg	17	17
Labneh and Others	kg	60	60

ANNEX E Additional complementary tables and figures

Table 2.2.1.1: The structure of co-operative sector according to governorates in 1999

ANNEX E

Kind of Co-operative Governorate	Total number	Total members	Production Co-op.		Animal Keeping Co.		Fattening Co.		Marketing Co.		Multiple Goal Co.		Other Co-operatives	
			Number	members	Number	members	Number	members	Number	members	Number	members	Number	members
Damascus	320	84564	1	32	66	13579	8	647	1	1035	225	64829	19	4442
Aleppo	1032	107063			103	11014	7	1242	2	2183	915	91611	5	1013
Homs	627	82033			225	26053	36	4335	2	1399	344	48299	20	1947
Hama	429	78218			39	19949	11	2000	2	2896	373	52940	4	433
Latakia	488	85940	1	37	62	4570			2	201	421	80808	2	324
Idleb	475	81468			37	8920	27	2515	2	381	406	69172	3	480
Deir-ez-zour	227	75623	1	258	119	30891	8	1744	2	3547	94	39042	3	141
Al-Hasakeh	632	104485			100	30891	3	500	2	365	522	72377	5	352
Al-Raka	413	69936			191	25209	1	92	2	1725	212	42050	7	860
Al-Sweda	172	40773			54	6732			2	112	115	33112	1	817
Dara	156	45289			46	8502			2	241	104	36147	4	399
Tartous	353	75939	1	35					2	2762	347	72176	3	966
Al-Quneitra	69	13212	1	231					1	38	67	12943		
Total	5393	944543	5	593	1042	186310	101	13075	24	16885	4145	715506	76	12174

ANNEX E

Table 3.2.1.3: Development of Beef and Sheep Meat Production

Production: Ton

Year	Local Cows	Shami Cows	Improved Cows	Imported Cows	Total	Share%				Sheeps Meat
						Local	Shami	Improved	Imported	
1990	5005	2060	10520	14713	32298	15.50	6.38	32.57	45.55	113805
1991	4116	701	13556	14247	32620	12.62	2.15	41.56	43.68	124336
1992	3880	585	12620	11557	28642	13.55	2.04	44.06	40.35	113001
1993	3958	358	14477	9854	28647	13.82	1.25	50.54	34.40	92125
1994	4786	374	15106	10229	30495	15.69	1.23	49.54	33.54	120163
1995	3796	449	16206	13408	33859	11.21	1.33	47.86	39.60	130732
1996	3720	400	21696	14184	40000	9.30	1.00	54.24	35.46	142912
1997	3311	423	17468	20603	41805.3	7.92	1.01	41.78	49.28	148353
1998	3517	1234	26353	12128	43232	8.14	2.85	60.96	28.05	154234
1999	3272	1034	29509	12927	46742	7.00	2.21	63.13	27.66	176744
Govrnarate in 1999										
Sweida	8	0	426	128	562	1.42	0.00	75.80	22.78	3316
Dara	104	0	2065	973	3142	3.31	0.00	65.72	30.97	5726
Quneitra	46	2	749	323	1120	4.11	0.18	66.88	28.84	1377
Dam.Rural	8	24	6531	5906	12469	0.06	0.19	52.38	47.37	16136
Dam.City	0	35	4132	652	4819	0.00	0.73	85.74	13.53	59
Homs	0	0	4238	50	4288	0.00	0.00	98.83	1.17	26335
Hama	6	0	1194	618	1818	0.33	0.00	65.68	33.99	19603
Ghab	52	0	650	1396	2098	2.48	0.00	30.98	66.54	770
Idleb	160	3	1569	0	1732	9.24	0.17	90.59	0.00	6158
Tartous	98	0	2707	69	2874	3.41	0.00	94.19	2.40	197
Lattakia	234	0	500	145	879	26.62	0.00	56.88	16.50	115
Aleppo	502	10	474	2003	2989	16.79	0.33	15.86	67.01	29187
Assad Est.	0	0	0	25	25	0.00	0.00	0.00	100.00	68
Al-Rakka	111	13	0	59	183	60.66	7.10	0.00	32.24	20211
G.A.D.E.B.	0	0	0	38	38	0.00	0.00	0.00	100.00	44
Dair-Ezzor	647	424	4108	244	5423	11.93	7.82	75.75	4.50	28053
Al-Hassaka	1296	523	166	298	2283	56.77	22.91	7.27	13.05	19389
Total	3272	1034	29509	12927	46742	7.00	2.21	63.13	27.66	176744

Table3.4.1.6:Main Dairy Products of Cow and Sheep Milk

ANNEX E

Year	Cow Milk						Sheep Milk					
	Total Milk	Consumed Fresh	Ghee 4%	Butter 6%	Cheese 17%	Jughort	Total Milk	Consumed Fresh	Ghee 6%	Butter 8%	Cheese 20%	Jughort
1990	770688	395083	2873	1547	19157	160092	497127	69222	9462	1776	42043	48344
1991	798814	391513	3225	1689	23242	158350	513219	62716	9897	1050	48236	53445
1992	775785	391284	3433	1687	20205	115822	512076	66213	9627	1061	48547	51841
1993	742153	384317	2823	1407	22181	146992	436713	87269	4818	2309	32313	90615
1994	764126	386537	2697	2173	22620	154628	395447	64385	6063	1696	36553	45043
1995	888838	452822	2862	766	25920	181567	453843	67005	7713	1791	35478	48094
1996	934357	464821	4131	1531	28239	174638	498728	93958	6841	1039	42096	86420
1997	1008719	513609	3476	1390	31270	211066	523755	82584	8538	1125	50241	56437
1998	1118775	542411	4059	1733	36481	234363	581939	100655	7731	1585	54763	83789
1999	1143423	533471	4327	1895	37632	248847	445913	72874	6853	1285	40471	58798
Governarates												
Sweida	20446	10667	134	19	493	3230	9247	747	367	31	304	615
Dara	62574	21942	303	34	865	27402	16881	2009	588	38	853	718
Quneitra	19136	6698	31	69	488	7654	3697	333	36	59	42	1840
Dam. Rural	292962	181556	0	0	9715	54260	40558	7881	72	23	5698	5298
Dam. City	34228	34228	0	0	0	0	179	179	0	0	0	0
Homs	151862	47805	1122	530	5950	32172	69253	9297	1747	65	4562	9300
Hama	74778	9883	813	70	4012	19793	59275	3122	858	22	6928	10083
Ghab	61640	18180	214	207	4854	6127	2490	562	17	10	286	220
Idleb	38234	10659	75	65	2544	9642	23010	2065	151	62	2668	5521
Tartous	61835	32917	228	228	327	17493	779	630	2	2	18	7
Lattakia	63200	63200	0	0	0	0	514	514	0	0	0	0
Aleppo	98833	44790	410	322	2761	22170	90126	17746	890	226	7554	20383
Assad Est.	732	732	0	0	0	0	0	0	0	0	0	0
Al-Rakka	6293	4822	26	6	126	0	50521	8955	769	432	5136	0
G.A.D.E.B.	2189	2189	0	0	0	0	239	239	0	0	0	0
Dair-Ezzor	116904	27267	827	345	4884	34475	29025	3482	610	116	2554	2323
Al-Hassaka	37577	15936	144	0	613	14429	50119	15113	747	199	3868	2490
Total	1143423	533471	4327	1895	37632	248847	445913	72874	6854	1285	40471	58798

Table 3.4.2.7: Development of Number of Cattle and Sheep

ANNEX E

Unit: Thousand heads

Year	Local Cows					Shami Cows					Improved Cows					Imported Cows					Total Cows					Sheep		
	O	C	M	N.M	Total	O	C	M	N.M	Total	O	C	M	N.M	Total	O	C	M	N.M	Total	O	C	M	N.M	Total	M	NM	Total
1990	6.9	69	96.5	94.2	267	0.85	19.3	20.9	8.69	49.8	4.06	68.5	114	61	248	2.46	64.2	98.9	57.5	223	14.3	221	331	221	787	8928	5581	14509
1991	5.09	49	79	84.9	218	0.19	6.75	8.13	3.13	18.2	4.29	101	139	69.2	313	2.29	68	107	44.8	222	11.9	224	333	202	771	9498	5695	15194
1992	5.51	50.9	77.6	81.6	216	0.2	6.16	6.46	2.33	15.2	4.21	101	141	71.8	318	2.66	66.5	104	43.7	216	12.6	224	329	199	765	9275	5390	14665
1993	7.26	80.6	72.8	60.7	221	0.08	2.4	2.96	2.8	8.24	3.6	87.5	162	69.9	323	1.51	45.4	79	29.1	155	12.5	216	316	162	707	6396	3750	10147
1994	6.55	75.9	75.3	68.2	226	0.21	2.85	2.73	3.04	8.83	3.47	97.4	141	76.4	319	1.27	46.5	84.5	34.9	167	11.5	223	304	183	721	7144	4112	11257
1995	6.6	35.8	101	64.3	208	0.28	1.97	3.66	3.14	9.05	3.68	108	169	91.6	372	1.3	54	92.7	37.7	186	11.9	200	367	197	775	7820	4255	12075
1996	6.49	62.6	80.7	53.8	204	0.32	3.15	4.21	2.18	9.85	3.66	124	199	83.8	411	1.53	54.5	90.5	39.7	186	12	244	375	179	810	8507	4613	13119
1997	6.25	61.9	67	64.8	200	0.33	3.65	4.63	2.42	11	4.19	132	219	91.3	446	1.63	57.4	100	40.7	200	12.4	255	390	199	857	8980	4849	13829
1998	3.95	73.8	62.2	40.3	180	0.27	10.8	10.5	4.22	25.8	2.09	149	284	115	550	0.95	47.5	91.1	36.1	176	7.27	281	448	196	932	####	5350	15425
1999	3.69	77.7	62.7	38.2	182	0.15	8.42	8.41	3.55	20.5	2.29	169	294	117	582	1.03	54.5	100	37.7	193	7.16	310	465	196	978	8993	5005	13998
Governarates in 1999																												
Sweida	0	0.07	0.24	0.02	0.32	0	0.01	0.02	0	0.03	0	1.93	5.35	1.48	8.76	0	0.98	1.84	0.49	3.31	0	2.99	7.44	2	12.4	201	61.2	262
Dara	0.02	0.57	1.4	0.83	2.82	0	0	0	0	0	0.02	5.51	16.2	5.51	27.2	0	1.07	6.98	2.76	10.8	0.04	7.14	24.5	9.1	40.8	295	158	453
Quneitra	0.05	0.48	0.62	0.93	2.08	0	0	0.01	0.01	0.03	0.3	3.5	4.78	3.37	12	0	1.07	1.52	1.21	3.8	0.35	5.05	6.93	5.52	17.9	61.6	47.4	109
Dam.Rural	0.01	0.06	0.1	0.03	0.2	0.02	0.15	0.23	0.09	0.49	1.01	30.3	51.1	19.8	102	0.4	23.2	33.6	13.7	70.9	1.44	53.7	85.1	33.6	174	759	518	1277
Dam.City	0	0	0	0	0	0	0.03	0.07	0.03	0.13	0.31	3.38	7.81	3.83	15.3	0.07	2.05	3.28	1.59	6.99	0.39	5.45	11.2	5.45	22.5	3	1.67	4.67
Homs	0	0	0	0	0	0	0	0	0	0	0.08	29.5	79.5	41.3	150	0.01	0.14	0.31	0.29	0.74	0.08	29.6	79.8	41.5	151	1154	930	2084
Hama	0	0.04	0.15	0.05	0.24	0	0	0.01	0	0.01	0.01	8.5	24.6	5.28	38.4	0.05	4.99	8.81	0.71	14.6	0.06	13.5	33.6	6.04	53.2	997	554	1552
Ghab	0.01	0.79	0.65	0.85	2.3	0	0	0	0	0	0.02	3.31	6.23	3.39	13	0.05	6.12	10.3	7.6	24.1	0.08	10.2	17.2	11.8	39.3	40.8	20.1	61
Idleb	0.02	1.26	2.08	1.16	4.52	0	0.01	0.02	0.01	0.04	0.04	9.41	16.7	10.8	37	0	0.25	0.31	0.13	0.69	0.06	10.9	19.1	12.1	42.2	355	132	487
Tartous	0.2	1.24	2.1	0.66	4.19	0	0	0	0	0	0.16	18.7	22.8	4.94	46.6	0	0.34	0.61	0.24	1.19	0.36	20.2	25.5	5.84	51.9	9.34	6.22	15.6
Lattakia	0.59	3.78	5.94	2.49	12.8	0	0	0	0	0	0.28	10.5	14.8	4.1	29.7	0.2	2.8	4.8	1.47	9.26	1.07	17	25.6	8.05	51.7	5.13	3.98	9.11
Aleppo	0.13	1.6	5.04	2.47	9.24	0	0.05	0.09	0.03	0.17	0.06	1.45	6.65	1.12	9.27	0.16	6.44	21.5	4.45	32.5	0.34	9.53	33.2	8.06	51.2	1617	693	2310
Assad Est.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0.18	0.08	0.57	0	0.3	0.18	0.08	0.57	3.6	1.76	5.37
Al-Rakka	0.33	0.84	4.07	1.7	6.94	0.01	0.05	0.23	0.05	0.33	0	0	0	0	0	0.03	0.16	0.71	0.3	1.19	0.37	1.05	5	2.05	8.46	1040	560	1600
G.A.D.E.B.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.53	0.59	0.09	1.22	0	0.53	0.59	0.09	1.22	5.2	7.69	12.9
Dair-Ezzor	0.83	46.8	24.1	10.8	82.5	0.13	4.95	4.23	1.27	10.6	0	39.1	32.8	9.84	81.7	0.05	2.17	2.31	0.94	5.48	1.01	93	63.5	22.8	180	1445	775	2220
Al-Hassaka	1.49	20.2	16.2	16.2	54.1	0	3.17	3.5	2.07	8.74	0	4.26	4.22	2.07	10.6	0	1.9	2.42	1.64	5.96	1.5	29.5	26.4	22	79.3	1001	534	1535
Total	3.69	77.7	62.7	38.2	182	0.15	8.42	8.41	3.55	20.5	2.29	169	294	117	582	1.03	54.5	100	37.7	193	7.16	310	465	196	978	8993	5005	####

Table3.4.1.1.8: The structure of Sheep Animal Keeping co-operative sector according to governorates in 1999

Governorate	Total Specialized Co-operatives		Animal Keeping Sheep Co-operatives		Share%		Specialized Sheep Co-operatives			Unspecialized Sheep Co-operatives		
	number	members	Number	members	Number	members	Milk Prod.	Milked Head	Productivity kg/Head	Milk Prod. Ton	Milked Head	Productivity kg/Head
							Ton	Head	kg/Head	Ton	Head	kg/Head
Damascus	320	84564	10	1522	3.13	1.80	24390	590000	41.3	5352	95000	56.3
Aleppo	1032	107063	78	6711	7.56	6.27	45328	898000	50.5	29382	490000	60.0
Homs	627	82033	71	8098	11.32	9.87	80541	1343000	60.0	8949	149000	60.1
Hama	429	78218	8	5485	1.86	7.01	74318	1223000	60.8	0	0	#DIV/0!
Latakia	488	85940	0	0	0.00	0.00	0	0	#DIV/0!	341	3000	113.7
Idleb	475	81468	27	3700	5.68	4.54	0	0	#DIV/0!	14437	240000	60.2
Deir-ez-zour	227	75623	0	0	0.00	0.00	94021	1571000	59.8	4001	65000	61.6
Al-Hasakeh	632	104485	60	9529	9.49	9.12	11998	200000	60.0	15836	264000	60.0
Al-Raka	413	69936	73	8604	17.68	12.30	44642	893000	50.0	0	0	#DIV/0!
Al-Sweda	172	40773	33	4872	19.19	11.95	6196	104000	59.6	2382	40000	59.6
Dara	156	45289	44	7747	28.21	17.11	7638	127000	60.1	8774	146000	60.1
Tartous	353	75939	0	0	0.00	0.00	0	0	#DIV/0!	640	8000	80.0
Al-Quneitra	69	13212	0	0	0.00	0.00	0	0	#DIV/0!	4004	67000	59.8
Total	5393	944543	404	56268	7.49	5.96	389072	6949000	56.0	94098	1567000	60.0

Table3.5.1.9.: The structure of Cows Animal Keeping co-operative sector according to governorates in 1999

ANNEX E

Kind of Co-operative Governorate	Total Specialized Co-operatives		Animal Keeping Cows Co-operatives		Share%		Specialized Cow Co-operatives			Unspecialized Cow Co-operatives		
	number	members	Number	members	Number	members	Milk Prod.	Milked	Productivity	Milk Prod.	Milked	Productivity
							Ton	Head	kg/Head	Ton	Head	kg/Head
Damascus	320	84564	22	6200	6.88	7.33	61827	18783	3291.6	235003	63456	3703.4
Aleppo	1032	107063	3	384	0.29	0.36	9120	2400	3800.0	26334	10457	2518.3
Homs	627	82033	27	3797	4.31	4.63	19329	15220	1270.0	77368	60900	1270.4
Hama	429	78218	0	0	0.00	0.00	0	0		94804	36095	2626.5
Latakia	488	85940	62	4570	12.70	5.32	0	0		48678	20358	2391.1
Idleb	475	81468	3	320	0.63	0.39	0	0		21706	11361	1910.6
Deir-ez-zour	227	75623	17	4239	7.49	5.61	15172	9702	1563.8	76615	53559	1430.5
Al-Hasakeh	632	104485	0	0	0.00	0.00	0	0		15685	10843	1446.6
Al-Raka	413	69936	1	135	0.24	0.19	0	0		3202	2500	1280.8
Al-Sweda	172	40773	0	0	0.00	0.00	0	0		14354	4833	2970.0
Dara	156	45289	0	0	0.00	0.00	0	0		48187	21227	2270.1
Tartous	353	75939	0	0	0.00	0.00	0	0		57735	24354	2370.7
Al-Quneitra	69	13212	1	231	1.45	1.75	5556	1393	3988.5	11918	5202	2291.0
Total	5393	944543	136	19876	2.52	2.10	111004	47498	2337.0	731589	325145	2250.0

Table 3.5.1.10: Structure and Performance data of State Farms

ANNEX E

Farm Name	Governorate	Milk Productivity per Cow kg	Milk Production Ton	Meat Production Ton	Calfs Number	Labor Man	Average Number of Cattles Head	Total Revenues 000S.P	Total Cost 000S.P	Profit/Losses 000S.P
Jeb-Ramleh	Hama	4834	2280.3	125.5	462	124	1155	43744	40894	2850
Jorin	Hama	4176	1931	119.9	364	99	1113	31078	37033	-5955
Al-Ghab	Hama					16		2024	1485	539
Deir-Ez-Zour	Deir-Ez-Zour	4045	1986.7	103.5	491	111	1134	30225	36271	-6046
Taltamer	Deir-Ez-Zour	3340	1509.4	97.8	382	81	1035	37193	35454	1739
Fidio	Latakia	4169	1035.4	70.9	333	59	619	20165	21892	-1727
Al-Ghota	Damascus	5516	1511.1	72.5	240	50	624	21181	22674	-1493
Al-Zerbeh	Aleppo	4274	2027.5	104.3	401	80	1123	36228	37118	-890
Mascaneh	Aleppo	3865	3379.6	226.3	791	140	2085	79181	61375	17806
Dara	Dara	3000	1394.5	103.9	419	85	1183	24549	29956	-5407
Homs	Homs	5308	1547.4	76.7	394	64	759	37578	27380	10198
Tartous	Tartous	3834	810.3	29.7	201	45	614	14750	13718	1032
Ketian						2				
Center	Hama					102			16106	-16106
Total						1058		377896	381356	-3460

ANNEX F Short description of methods of processing

Table 3.3.1.1: Processed Mince and shopped meat

AnnexF

Table 1.1.-raw Processed mince and shopped meat.

Kind	Required meat	Spices	Micro cutting	Mixing	Filling in Casings	Smoking
Salami	40 kg. Steer meat 30 kg. Pork meat 30 kg. fatt	2.5 kg. salt 0.050 kg. nitrite 0.300 kg. pepper 0.030 kg. mace 0.025 kg. cumin or 0.400 kg ready spices	*	*	*	*
Zervelat wurst	24 kg. Steer meat 44 kg. Pork meat 32 kg. fatt	2.5 kg. Salt 0.050 kg. Nitrite 0.300 kg. pepper 0.030 kg. Mace 0.025 kg. Cumin or 0.400 kg. ready spices	*	*	*	*
Schlack wurst	25 kg. Steer meat 40 kg. pork meat 35 kg. fatt	As Zervelat wurst	*	*	*	*
Shinken polinish	35 kg. Pork meat 15 kg. Steer meat 20 kg. (Paunch) 30 kg. fatt	2.4 kg. salt 0.050 kg. nitrite 0.300 kg. pepper 0.100 kg. sugar or 0.400 kg. ready spices	*	*	*	*
Knoblauch wurst (Garlic wurst)	40 kg. steer meat 20 kg. Pork meat 40 kg. fatt	2.4 kg. salt 0.040 kg. nitrite 0.300 kg. pepper 0.050 kg. garlic or 0.400 kg. ready spices	*	*	*	*
Berliner Mett wurst	35 kg. steer meat 30 kg. Park meat 35 kg. fatt	2.4 kg. salt 0.050 kg. nitrite 0.300 kg. pepper 0.100 kg. cumin 0.050 kg. garlic	*	*	*	*

Table 3.5.1.2: Short Description of Milk Processing Methods

Pasteurized Milk

- Collection of milk in special tanks after refining.
- Homogenizing.
- Refining.
- Adding flavour.
- Pasteurization between (72- 74) C.
- Cooling to (4) C.
- Filling.

Sterilized Milk

- Choosing of milk and refining.
- Heating and homogenizing.
- Sterilization before filling.
- Filling and sterilization by (110-120) C.

Condensed Milk.

- Choosing of milk and refining.
- Heating (sterilization) by (105-110) C for some seconds.
- Transferring to special tanks to add sugar.
- Evaporation under vacuum.
- Cooling to (15) C.
- Filling

Dry Milk

- Choosing of milk and refining.
- Pasteurization by (65-85) C for (10-30) minutes.
- Concentrating under vacuum.(Evaporation)
- Drying.
- Filling.

Yogurt according to Home and Traditional processing

- Pasteurization by (85-90) C for (5-10) minutes.
- Cooling to (45) C.
- Adding starter (2-3)% (yogurt from the last day) and mixing.
- Filling in the containers.
- Keeping in warm place for (3-4) hours to get thick consistence.
- Cooling.

Yogurt according to industrial processing

- Pasteurization by (90) C.
- Cooling to (80) C.
- Pasteurization by (95) C.
- Adding starter (2-3)% and flavour.

- Filling.
- Keeping in the incubator by (42-45) C for (2.5-3.5) hours.
- Cooling

Labneh according to Home and Traditional processing.

- Processing milk to yogurt.
- Filling in containers.
- Keeping to get the required thick consistence.

Labneh according to industrial processing.

- Pasteurization of milk by (90) C.
- Cooling to (45) C.
- Adding starter (3% of quantity).
- Keeping for (3-4) hour to get the required acidity.
- Transferring to pasteurization equipment

Table 3.5.1.2: Short Description of Milk Processing Methods

- Cooling and transferring to the separating machine.
- Cooling and filling in special tanks.
- Mixing with cream according to required fat content.

White cheese (Ecawi) according to Home and Traditional processing.

- Heating the milk to (35-40) C.
- Adding rennet according to instructions.
- Waiting to curdling.
- Cutting the curdling to get rid off the milk serum.
- Putting the curdling in textile piece.
- Putting the curdling in small textile piece and rolling.
- Putting the roles on wood plates, which organized on each other.
- Putting weights on the wood plates to get rid off the milk serum and the cheese takes the required form.
- Putting in (16-18%) salt-water solution when the cheese will be kept for a long time.

White cheese (Ecawi) according to industrial processing

- Choosing of milk with good properties and changing the fat content.
- Pasteurization of milk by (72) C for (15) seconds and cooling directly to (35-40) C.
- Adding (10) gram of calcium chloride(after solving it with some water) as well as (0.5) liter of starter which contains bacteria for generating acidity and favor for each (100)liter of milk .
- Keeping of the milk for (20-30) minutes to let the bacteria working and to build acidity between (0.25-0.3)% as well as to prepare the environment for rennet working.

- Adding rennet according to instructions.

- Keeping the milk for (50-45) minutes without mixing to make curdling.

Note: curdling is finished when a knife or a class pieces remains clean after immersing in curdling.

- Cutting the curdling with a knife to small squares length and wide and keeping it for (15) minutes to be more consistent and to get ride off the milk serum.
- Transferring the curdling to the forms and pressing to get the required figure.
- Drawing the cheese from the forms and adding salt on the surface (2-3)%.

- For long time keeping the cheese will be stored in (16-18)% salt solution.

Halum and Shellal white cheese

The processing technique as by Ecawi cheese, but after curdling will be treated with heating to facilitate forming of cheese.

Kashkaval cheese

- Processing white cheese.
- Passing it through a spiral and a tank with hot water.
- Pressing in forms.
- Drawing the cheese from the forms.
- Keeping the cheese for several hours.
- Keeping the cheese in cool place on wood plates.
- Filling under vacuum.

Processed cheese

- Micro cutting of cheese (several kinds) and filling in the cooker.
- Adding extenders.
- Heating by mixing (least temperature 66 C)
- Filling

Ice cream

- Mixing of milk, water, sugar, fat, favor, fixer, and color substance by (70)C for (20) minutes
- Homogenizing
- Pasteurization by (72)C
- Cooling to (3)C
- Keeping for (8) hours by (3)C
- Filling
- Refrigerating by (-30) C.

Table 3.5.1.2: Short Description of Milk Processing Methods

Butter and cream

- By industrial processing churn can be used.
- By home and traditional processing

Milk will be transformed to yogurt and though mixing in a wash machine, butter can be gotten.

- Cream milk is kept in container for a determined time and after collecting for several times cream can be gotten..

Ghee

- Heating of butter or cream by a temperature more than (100)C.
- Adding of salt or crashed wheat and flour to absorb the non- evaporated water or to shorten the heating time.
- Filtration of ghee by (50-60)C.

ANNEX F

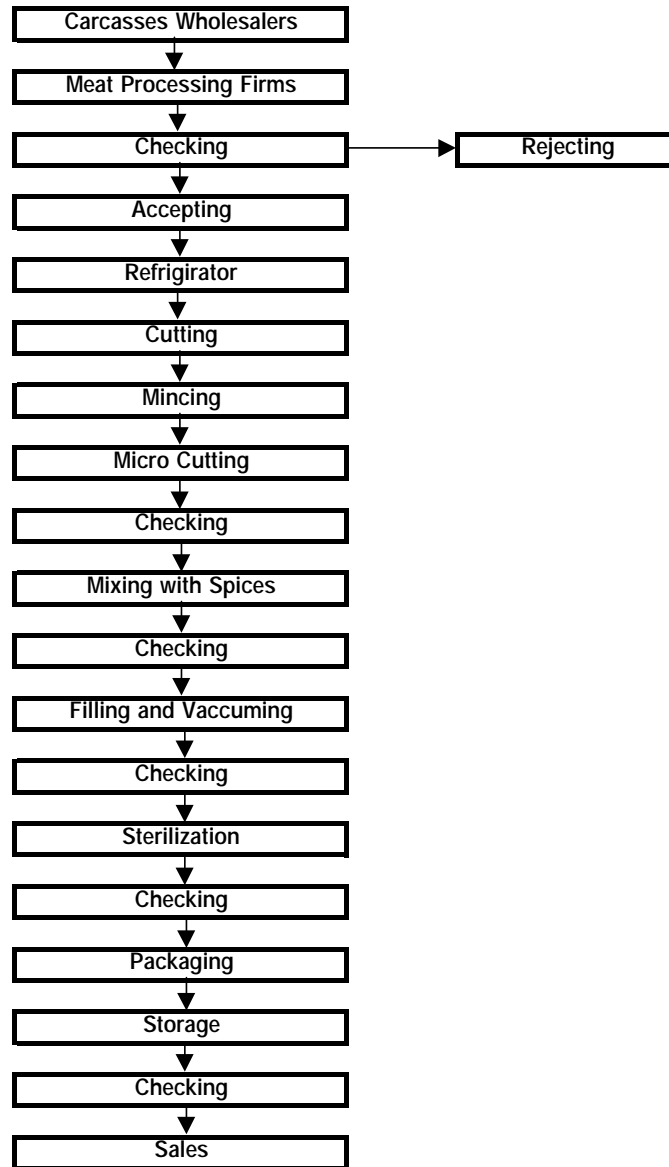


Figure3.3.1.1 : Canned Mortadella processing in Quality Assurance System

ANNEX G Regression results of forecastingTable 4.2.1: Regression results of sheep production
SUMMARY OUTPUT

ANNEX G

<i>Regression Statistics</i>	
Multiple R	0.939755
R Square	0.88314
Adjusted R	0.861228
Standard E	650.8963
Observatio	20

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regressor	3	51227836	17075945	40.30521	1.1E-07
Residual	16	6778655	423666		
Total	19	58006491			

	<i>Coefficient</i>	<i>standard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	971.8393	1261.355	0.770472	0.452247	-1702.11	3645.792	-1702.11	3645.792
X Variable	697.875	72.77242	9.589829	4.9E-08	543.6044	852.1456	543.6044	852.1456
X Variable	8372.936	1087.768	7.697357	9.11E-07	6066.972	10678.9	6066.972	10678.9
X Variable	5821.848	641.3829	9.077024	1.04E-07	4462.177	7181.519	4462.177	7181.519

Table 4.2.2 : Regression results of sheep total supply
SUMMARY OUTPUT

ANNEX G

<i>Regression Statistics</i>	
Multiple R	0.945756
R Square	0.894454
Adjusted R	0.874665
Standard E	579.2162
Observatio	20

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3	45490409	15163470	45.19778	4.89E-08
Residual	16	5367863	335491.5		
Total	19	50858273			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	2940.082	1122.448	2.619348	0.018595	560.5987	5319.566	560.5987	5319.566
X Variable	612.6842	64.75835	9.461085	5.9E-08	475.4027	749.9658	475.4027	749.9658
X Variable	6594.085	967.9771	6.812232	4.17E-06	4542.066	8646.104	4542.066	8646.104
X Variable	4679.829	570.7506	8.199429	4.02E-07	3469.892	5889.765	3469.892	5889.765

Table: Regression results of beef production
SUMMARY OUTPUT

Regression Statistics

Multiple R	0.711046
R Square	0.505587
Adjusted R	0.412884
Standard E	56.12182
Observatio	20

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regressor	3	51533.38	17177.79	5.45386	0.008916
Residual	16	50394.53	3149.658		
Total	19	101927.9			

	<i>Coefficient</i>	<i>standard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	476.8218	113.2887	4.20891	0.000666	236.6606	716.983	236.6606	716.983
X Variable	20.69116	6.546182	3.160798	0.006056	6.813875	34.56844	6.813875	34.56844
X Variable	219.4259	93.72706	2.341115	0.032502	20.73341	418.1183	20.73341	418.1183
X Variable	74.0381	54.76928	1.351818	0.195236	-42.0676	190.1438	-42.0676	190.1438

Table 4.3.2: Regression results of Beef Total Supply
SUMMARY OUTPUT

ANNEX G

<i>Regression Statistics</i>	
Multiple R	0.733128
R Square	0.537476
Adjusted R	0.450753
Standard E	54.83138
Observatio	20

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regressor	3	55898.95	18632.98	6.197607	0.005362
Residual	16	48103.68	3006.48		
Total	19	104002.6			

	<i>Coefficient</i>	<i>standard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	477.651	110.6838	4.315457	0.000533	243.012	712.2901	243.012	712.2901
X Variable	21.10876	6.395662	3.300481	0.004515	7.550567	34.66696	7.550567	34.66696
X Variable	221.1233	91.57195	2.414749	0.028082	26.99948	415.2471	26.99948	415.2471
X Variable	71.46148	53.50995	1.33548	0.200408	-41.9745	184.8975	-41.9745	184.8975

Table 4.4.1: Regression results of milk production
SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.897786
R Square	0.80602
Adjusted R	0.795243
Standard E	101.8994
Observatio	20

ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regressor	1	776614.1	776614.1	74.79314	7.94E-08
Residual	18	186902.9	10383.49		
Total	19	963517			

	<i>Coefficient</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	927.2263	47.33549	19.5884	1.38E-13	827.7781	1026.675	827.7781	1026.675
X Variable	34.17368	3.95149	8.648302	7.94E-08	25.8719	42.47546	25.8719	42.47546

ANNEX H Regression results of partial equilibrium

Table 5.2.1.1: Linear estimation of beef supply function in current prices
SUMMARY OUTPUT

ANNEX H

<i>Regression Statistics</i>	
Multiple R	0.804616
R Square	0.647406
Adjusted R	0.603332
Standard E	4.783992
Observatio	19

Interceptp	39.73948
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ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regressor	2	672.3626	336.1813	14.68901	0.000239
Residual	16	366.1853	22.88658		
Total	18	1038.548			

	<i>Coefficient</i>	<i>standard Err.</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	7.392678	7.171855	1.03079	0.31797	-7.81097	22.59633	-7.81097	22.59633
X Variable	4.06E-05	2.57E-05	1.579959	0.13368	-1.4E-05	9.51E-05	-1.4E-05	9.51E-05
X Variable	0.782022	0.182048	4.295694	0.000556	0.396098	1.167947	0.396098	1.167947

Table 5.3.1.1: Linear estimation of beef demand function in current prices
SUMMARY OUTPUT

ANNEX H

<i>Regression Statistics</i>	
Multiple R	0.865931483
R Square	0.749837333
Adjusted R Squ	0.699804799
Standard Error	4.161777746
Observations	19

Intercept	52.732
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ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	3	778.742	259.58	14.987	9E-05
Residual	15	259.8059	17.32		
Total	18	1038.548			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	33.86047187	12.08529	2.8018	0.0134	8.1013	59.62	8.1013	59.62
X Variable 1	-0.00011314	5.91E-05	-1.916	0.0747	-2E-04	1E-05	-2E-04	1E-05
X Variable 2	0.173160159	0.286922	0.6035	0.5552	-0.438	0.7847	-0.438	0.7847
X Variable 3	5.52102E-05	2.09E-05	2.6434	0.0184	1E-05	1E-04	1E-05	1E-04

Table 5.3.2.1: Linear estimation of sheep meat demand in current prices
SUMMARY OUTPUT

Regression Statistics

Multiple R	0.918202
R Square	0.843094
Adjusted R	0.811713
Standard E	14.41459
Observatio	19

Intercept	158.5214
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ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>ignificance F</i>
Regressior	3	16746.83	5582.277	26.86625	2.79E-06
Residual	15	3116.704	207.7803		
Total	18	19863.54			

	<i>Coefficient</i>	<i>standard Err</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>ower 95.0%</i>	<i>pper 95.0%</i>
Intercept	115.2818	31.4392	3.666819	0.00229	48.27074	182.293	48.27074	182.293
X Variable	-3.4E-05	9.53E-05	-0.35492	0.727588	-0.00024	0.000169	-0.00024	0.000169
X Variable	0.028954	0.265402	0.109094	0.914574	-0.53674	0.594644	-0.53674	0.594644
X Variable	0.000184	5.92E-05	3.101617	0.007293	5.74E-05	0.00031	5.74E-05	0.00031

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