CHAPTER 6: SUMMARY AND POLICY IMPLICATION

This chapter includes the summary of the study and policy implications based on the results of the study.

The average cow milk production in Sri Lanka is 156 million litres with an annual growth of 2%. The buffalo milk production is 30 million litres with an annual growth of 0.4% (Central Bank of Sri Lanka, 2005) .The annual milk consumption requirement in the country is 750 million litres(i.e. the self sufficiency of milk in the country is around 15-20%) and the balance domestic requirement required to be imported. Further the annual per capita consumption of milk of 19.87 litres is much below the level of 41.6 litres as recommended by the Medical Research Institute, to meet the nutrient requirement of an average Sri Lankan. Hence there is an urgent need to increase the consumption of milk in the country to meet the domestic requirement and average nutrient needs. The high imports of milk and milk products may also be related to the very low import tariff policy, low world price of milk imported and free access of imported milk and attitude of milk consumers in the country for imported whole milk powder over the last decade. The Sri Lankan dairy consumers have gained from subsidized exports of milk and milk products from European Economic Union (EU) and from other countries.Domestic production and marketing of milk under these condition has been difficult with the result that production and marketing of domestically produced milk has been quite static and low . Further the cost of production of domestic milk has escalated in the country mainly due to high cost of feeds, labour and other inputs. The annual imports of milk in 2005 amounted to 36118 metric tons of whole milk powder which on a liquid milk equivalent accounted for 353 litres of liquid milk.. In 1990 the value of imported milk amounted to Rs 2321.7 million and this has further increased to Rs 13401 million in 2005 (Central Bank of Sri Lanka, 2005). The principal form of milk marketing in the country is in the form of whole milk powder (WMP) representing around 75% formal market. Pasteurized and sterilized milk accounted for around 3% and sweetened condensed milk around 2% of the formal milk market.

The escalation of government expenditure of milk imports in the world market is related to increase of world price due to changes in demand and supply of milk in the exporting countries, changes in tariff rates, freight and transport cost, WTO agreements and other related factors. The reduction of milk imports (mainly milk powder) is essential for the government to conserve the much needed foreign exchange required for the development of the agriculture and industrial and other sectors in the economy. Hence much emphasis is given by the Ministry of Agriculture and Livestock currently to increase the domestic fresh liquid milk consumption of the consumers and to change their attitudes away from consumption of imported powdered milk.

The general objective of this study is to determine the major household factors affecting consumption of milk and other milk products in wet zone, intermediate dry zone and dry zone districts and to determine the import demand of milk and milk products for Sri Lanka .Farm household data was obtained from Colombo,Nuwara Eliya, Gampaha, Kegalle Matara (Wet Zone), Kurunegala ,Badulla (Intermediate Dry Zone),Anuradhapura, Polonnaruwa , Moneragala (Dry Zone) districts for a total of 600 randomly selected households representing the urban, rural and estate sectors using a structured questionnaire between 2004- 2005 . LA/AIDS model was used in estimating the elasticity of demand of milk and milk products for different districts in which the field survey was conducted .Further time series for the period of 1975-2004 was used in estimating the import share demand equations for different milk and milk products imported based on which the import elasticity of demand was estimated for Sri Lanka.

The average family size in the districts was 4-5 household with more than 40% of households having primary education. The urban households were better educated than the rural sector. Most of the households were employed in public or private sectors, full time with a small proportion in full time farming and self employment. Nearly 20% of the households were covered by safety net such as " Samurdhi Programme". The average household monthly income was around Rs 13498 for all the districts with a minimum of Rs 10384 in Kegalle to Rs 18255 in Polonnaruwa districts. The households own average farm holdings of around 2 acres/farm. Paddy was the major crop in the dry zone districts as compared to low extents under paddy in the wet zone districts. Vegetables was the main crop in Nuwara Eliya and Perennials were grown mainly in Matara districts.

The average herd size of cattle reared among households was 4 consisting of a cow . The rural sector of the districts has the highest number of cattle/herd (except in Nuwara Eliya district). Majority of the cows were within their third lactation.Buffalo and goats were reported only from Anuradhapura and Kurunegala districts.The monthly milk production in the districts were low and this was reflected in their low consumption of milk among households in the districts with the highest milk consumption reported from Kuruneagala district (30 litres/month or 26% of total).The surplus milk produced were sold at prices ranging from Rs 14-15/litre. Nuwara Eliya district reported of highest farm income from milk production (Rs 7807).

Nearly 46% of the total income received by households in the districts for the purchase of food requirements. Of the total food expenditure nearly 63% were spent on purchase of basic food such as rice, wheat flour, milk, sugar and others. In all the districts the highest expenditure borne by households was for food, health and education. The expenditure for milk/milk products were relatively low (7.3%) with the highest from Colombo district .and the lowest from Polonnaruwa district. The expenditure was highest for whole milk powder as compared to fresh milk or other milk products. The consumption of fresh milk among households were marginal indicating with its short supply. The rural sector consumed higher proportion of milk powder as compared to urban or estate sectors in the districts.In general the consumption of whole milk powder was higher than the level of other milk products (OMP) which in turn was higher than fresh milk consumption among households in the districts. The highest consumption of fresh milk (1-1 ½ litres/household) was reported from Nuwara Eliya district in the wet zone . In general, the consumption of fresh milk among dry zone districts was higher than that of wet zone districts. The average consumption of fresh milk among wet zone (1.95 litres/household) and dry zone districts (2.26 litres/ household) was low. Majority of consumers felt that the price for fresh milk was relatively low as compared prices for whole milk powder and other milk products.The purchase of branded whole milk powder was common and was influenced by level of advertisements and other types of mass media communications of the milk processing and packaging firms.

The results LA/AIDS model for wet zone , intermediate dry zone and dry zone districts indicated that in general the own price elasticity of whole milk powder, fresh milk, of these districts were low and inelastic indicating that the households were not very responsive to changes of prices of these milk products. The variation of own price elasticity of whole milk powder in the wet zone districts ranged from -0.1118 in Nuwara Eliya to -0.9802 in Gampaha districts. In the dry and intermediate dry zone districts the own price elasticity of whole milk powder ranged from -0.2323 in Moneragala to -0.5336 in Kurunegala. The own price elasticity of fresh milk in the wet zone districts ranged from -0.0252 in Nuwara Eliya to -0.5369 in Matara districts. In the dry zone and intermediate dry zone the own price elasticity of fresh milk varied from -0.1560 in Kurunegala to -0.5498 in Badulla districts.

The cross price elasticity between whole milk powder and fresh milk ,other milk and other milk products among households were low and inelastic .The sign of the coefficients was positive indicating that these were close substitutes (with some exceptions) to whole milk powder. However the level of substitution between these products were very marginal. For example, the cross price elasticity between whole milk powder and fresh milk among the wet zone districts ranged from 0.0013 in Nuwara Eliya to 0.3744 in Colombo district. The cross price elasticity between whole milk powder and fresh milk in the dry zone districts varied from 0.1322 in Polonnaruwa to 2.535 in Moneragala districts .

The cross price elasticity between fresh milk, whole milk powder, other milk and other milk products deviates from elastic-inelastic values among districts . The signs of the coefficients of the coefficients were also positive (with some exceptions) confirming that whole milk powder, other milk and other milk products were close substitutes to fresh milk. However the substitution values affirm that the level of substitution of the households were very high – low in the districts . For example, the cross price elasticity between fresh milk and whole milk powder among the households of the wet zone districts ranged from -0.4028 in Matara (complementary, inelastic) to 6.340 in Kurunegala (substitute, elastic) districts. In Colombo district the cross price elasticity between fresh milk and whole milk powder was 0.0002 indicating that the substitutability of fresh milk with whole milk powder among households was negligible in this district.

The expenditure elasticity of whole milk powder, fresh milk in the districts were low and inelastic indicating that the milk products were basic necessities in their food balance sheets. For example in the wet zone districts the expenditure elasticity of whole milk powder varies from 0.0160 in Kegalle district to 0.1962 in Matara district and in the dry zone districts this value ranged from 0.00028 in Moneragala district to 1.1251 (elastic) in Anuradhapura district. For fresh milk ,the expenditure elasticity in the wet zone districts varied from 0.0110 in Gampaha district to 0.5055 in Kegalle district and in the dry zone this value deviated from 0.1459 in Badulla district to 1.4396 (elastic) in Anuradhapura district.

The import share equation for whole milk powder indicated a that the demand of whole milk powder in Sri Lanka would decrease with an increase of price of whole milk powder significantly. However the import demand elasticity of whole milk powder was low and inelastic (-0.7669) . Further, an increase of imported prices of fresh milk,cream and condensed milk would increase the demand for whole milk powder significantly indicating that these are close substitutes to whole milk powder .The cross price elasticity between whole milk powder imports and fresh milk and with condensed milk was 0.1618 , 0.2335 respectively. The import share of whole milk powder is affected by exchange rate and GNP but not significantly. The income elasticity of whole milk powder although small, indicated that it is a normal good. The result indicated that with increase of GNP the import share of whole milk powder would increase.

The import share equation for fresh milk and cream also shows expected theoretical results with own price elasticity of imported demand being negative and inelastic (-0.4783) indicating that with an increase of 1% in the price of imported price of milk and cream its demand would reduce by nearly 0.5%. The results also shows that whole milk powder , imported condensed milk, butter, cheese and ghee being close substitutes with all cross price elasticities being inelastic, and the cross price elasticity of fresh milk with butter, cheese and ghee being significant. In this equation GNP and exchange rate significantly affects the demand for imported fresh milk. The result shows that when the exchange rate appreciates the demand for imports of fresh milk and cream increases.

The import share equation for condensed milk shows elastic own price elasticity

(-1.1307) for condensed milk. The cross price elasticity of fresh milk and cream was negative (complements) and inelastic but not significant. Both GNP and exchange rate showed theoretically accepted results (but not significant).

The import demand for butter, cheese and ghee was inelastic (-0.7482) and significant. The exchange rate was significant in the import share equation of butter, cheese and ghee.

The trend variable influences dairy imports positively in most of the estimated systems. This results indicated that some variables other than prices of imported milk or milk products, expenditure e.g. variables representing demographic dynamics (population density, aging of population, female participation in labour force, employment capacity of workers) may be influencing the imported demand of milk and milk products.

Policy Implications :

The results here shows some policy implication with relation to farm fresh milk , whole milk powder household consumption and imports. The results of household survey indicated that whole milk powder, farm fresh liquid milk were household basic food necessities. However the availability of farm fresh liquid milk was low in most of the districts (except Nuwara Eliya, Polonnaruwa, Kurunegala) and hence the households have no other alternative than to increase their demand for whole milk powder for their daily family needs. The results also shows that farm fresh liquid milk is a close substitute for whole milk powder and the prices of fresh milk is low in the districts as compared to whole milk powder and other milk products. Hence the substitution effect between whole milk powder and fresh milk (i.e cross price elasticity) would become higher if supply of fresh milk was readily made available to the household. However the study also indicated that the low quality of fresh milk available to the households as a main constraint in developing the farm fresh liquid milk market and changing the attitude of fresh milk consumption among households. Challenges are mostly in ensuring animal health and improvements in hygiene of milking. Improvements in infrastructure for collection of milk, storage , inspections may be important

The cross price elasticity between fresh milk and whole milk powder prices