FACTORS AFFECTING IMPORTED DAIRY PRODUCT MARKETING MARGINS IN KOREA

A THESIS PRESENTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS STUDIES IN AGRIBUSINESS

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ABSTRACT

Over the past decade, the Korean dairy industry has been affected by considerable reductions in non-tariff barriers as a result of trade liberalisation. The dairy marketing system in particular has had many regulations and barriers removed. The question arises as to the effect of trade liberalisation and reductions in protection on imported dairy product marketing margins in Korea.

This study determined imported dairy product marketing margins in Korea and assessed how they had changed over the past 15 years. The most important factors responsible for the trends and fluctuations observed in those margins were identified and estimated. An attempt at a product-focused method was made on cheese and skim milk powder (SMP), which are generally representative of dairy products as a whole. Descriptive and econometric methods were both used to identify the most important determinants of the aggregate cost of processing and distributing imported dairy products.

A cheese (MMCHE) model and a SMP (MMSMP) model were developed and estimated. The two models estimated cheese and SMP marketing margins respectively as functions of exchange rates, trade liberalisation, wage rates and transportation costs. Both models were estimated using standard and stepwise regressions.

Results obtained from this analysis suggest that changes in earnings (wages) were the strongest influence on imported dairy product marketing margins during the past 15 years. However, these results cannot explain the fall in cheese and SMP marketing margins after 1995 as this coincided with a rise in wage rates. The increase in CIF (Cost of Insurance and Freight) prices for these products was largely responsible for the smaller margins. Because exchange rates are a large element of CIF price, it is believed that marketing margins were closely associated with the value of the exchange rate.

Conclusions are based on descriptive indicators and an econometric analysis that examined the relationships between economic factors and marketing margins. The impact of trade liberalisation on imported dairy product marketing margins was mixed with other economic factors. This study concludes that trade liberalisation has not in general been associated with lower imported dairy product marketing margins in Korea. Labour costs (wages) appear to have been the most important influence on those margins during the period 1985-98.

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GLOSSARY AND ABBREVIATIONS

Expression	*Description*
ADB	Asian Development Bank
BOP	Balance of Payments
CIF	Cost of Insurance and Freight
CONOCHE	The Number of Cheese Importing Companies
CONOSMP	The Number of Skim Milk Powder Importing Companies
CPI	Consumer Price Index
ER	Exchange Rates
EU	European Union
FAO	Food and Agriculture Organisation of the UN
FOB	Free On Board
GATT	The General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
KDIA	The Korean Dairy Industries Association
KITA	Korea International Trade Association
KNSO	Korea National Statistical Office
KOTRA	Korea Trade Promotion Corporation
KREI	Korea Rural Economics Institute

NLCF	The National Livestock Co-operative Federation
MAFF	Ministry of Agriculture Fisheries and Forestry
MMCHE	Marketing Margins for Cheese
MMSMP	Marketing Margins for Skim Milk Powder
M/T	Metric Ton
OECD	Organisation for Economic Co-operation and Development
OLS	Ordinary Least Squares
PETRO	Petroleum
SMP	Skim Milk Powder
SWOPSIM	Static World Policy Simulation Model
UHT Milk	Ultra Heat Tested Milk
UR	Uruguay Round
USA	United States of America
USDA	United States Department of Agriculture
VIF	Variance Inflation Factor
WMP	Whole Milk Powder
WTO	World Trade Organisation

CHAPTER ONE

Introduction

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Introduction

1.1 Background

From the early-1960s until the mid-1990s, Korean agriculture was protected from international competition by strong government intervention, and restrictive trade measures, which including high tariff rates, quotas, and non-tariff barriers. The Korean government pursued reform of this system against a background of strong domestic sensitivities to liberalisation. However, the powerful agricultural lobby resisted liberalisation in sectors, such as the dairy sector, which had traditionally received high levels of protection for political, social, cultural and national self-sufficiency reasons. As a result, the dairy sector became heavily protected through the use of a variety of non-tariff barriers and domestic prices ended up being well above world levels.

Over the past decade, the controlled marketing systems have been liberalised as Korea has made determined efforts to modernise and internationalise its economy in order to ensure continued strong economic growth. Nevertheless, the issue of market opening in the agricultural sector remains very sensitive, both politically and economically.

The Korean dairy sector has undergone dramatic changes and will continue to do so for two reasons. They are the Uruguay Round (UR) of the General Agreement on Tariffs and Trade (GATT), which has opened up the Korean dairy market to imports, and the rapid rate of economic growth. Both factors have also led to an increased consumption of dairy products in Korea. This increase in consumption and the destruction of import barriers have in turn made the Korean dairy industry more vulnerable to foreign competition (Naran 1996).

Implementation of the Uruguay Round agreement over the ten-year period ending in 2004 will have a significant impact on the Korean dairy sector. However, even with improved access conditions in place by the end of the implementation period, the domestic dairy distribution and marketing infrastructure may continue to be a constraint to increased foreign activity in the domestic dairy market. The food distribution industry has traditionally been one of the underdeveloped industries in Korea (Rae & Bailey 1997). For example, the average size of food stores is very small compared with those in Japan and the United States. Nevertheless, the structure of the Korean food distribution industry has begun to change as is evidenced by the advent of discount stores and wholesale clubs. These trends have been accelerated by the liberalisation of foreign investment in the distribution industry since 1996 (Rae & Bailey 1997).

Korea has developed from a rural to an industrial country and is now a member of the Organisation for Economic Co-operation and Development (OECD). Although the rate of development has slowed down somewhat in recent years, the

economy has still been growing by 6-9 percent annually. Rapid economic growth, industrialisation and the expansion of urban areas have contributed to marked changes in the nature of food imports and food consumption in Korea. For example, over the past decade, there has been a six-fold increase in real expenditure per household on food consumed away from home. By 2004, the total consumption of dairy products could increase by 90 percent on current levels if the projected increase in expenditure on meals away from home occurs, the trend towards double income households continues, and society becomes more urbanised. Consumption increases could be substantially higher for specific products such as cheese and SMP, which have become the two most important traded dairy products in Korea.

For many years, the Korean government has been concerned about the behaviour of food prices and marketing margins, as these have been used for such things as indices of economic efficiency and market transparency. Short- and medium-term changes to product marketing margins are of particular interest as they have a big effect on the competitiveness of domestic farmers and consumer welfare. It is believed that increasing price transparency, reducing consumer food costs and increasing the competitiveness of Korean-produced food products are all important issues and need to addressed by government reforms

The behaviour of marketing margins on dairy products is similar to that experienced by the food sector as a whole, though changes in things like input costs and product characteristics do affect the margins of individual products quite

differently. In Korea, it is interesting to note that there is a very large difference between the landed price of dairy imports and their final retail price (Rae & Bailey 1997). The corresponding difference between the farm level price of domestic products and their retail price is much smaller. It is not surprising then, that fundamental changes, driven by a view that marketing margins are too large, are occurring in the Korean distribution system. Further, in recognition of the growing importance of competition, the Korean government has indicated that it will make efforts at every step of the distribution process to encourage price competition.

1.2 Objectives of the Study

The general objective of this study is to evaluate the influence of trade liberalisation on the price-spread mechanism, and to identify the economic factors that affect imported dairy product marketing margins in Korea. A better understanding of this mechanism is vital to all segments of the Korean dairy industry, which faces increasing market liberalisation. Specific objectives of this research are:

1. To determine imported dairy product marketing margins in Korea and to assess how they have changed during the past 15 years.

2. To discuss the effect of various factors, especially trade liberalisation, on imported dairy product marketing margins in Korea. Justification for the use of

specific variables will be provided and details of the methods used to estimate the relationships among variables will be presented.

3. To provide both a qualitative and a quantitative assessment of the effect of various factors on imported dairy product marketing margins in Korea. The analysis will be undertaken for cheese and skim milk powder, two major dairy products consumed in Korea.

This study assumes that the imported dairy product can be identified and its price measured at both the border and retail stages of the marketing chain. The difference in these two prices is defined as the overall marketing margin per unit of the product.

1.3 Organisation of the Thesis

This thesis is organised into seven chapters. This chapter, Chapter One, provides a brief introduction. Chapter Two reviews the literature on marketing margins. It presents the conceptual framework and methods on which the findings of this study are based. The chapter ends with a discussion of other investigations into marketing margins.

Chapter Three briefly describes the Korean dairy industry, and discusses indicators of production, imports and consumption. The policies affecting the development of the dairy industry are addressed, followed by a description of the

dairy marketing and distribution system. Chapter Four describes the impact of trade liberalisation and discusses the significance of the changes taking place in the dairy marketing system in Korea.

Chapter Five describes the methodology used in this study, which includes a quantitative analysis of the economic factors affecting imported dairy product marketing margins in Korea. The results of the quantitative analyses are presented along with a discussion of the general findings. There is also a description of the markets and commodities included in this analysis and an explanation of the data sources. Chapter Six presents results from the descriptive and econometric analyses and discusses the general findings of factors affecting imported dairy product marketing margins. Finally, Chapter Seven summarises the study and its conclusions. Recommendations for further research are also made.

CHAPTER TWO

Review of the Literature

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Review of the Literature

2.1 Introduction

Since many food products undergo a complex transformation between the farm to the consumer, the actual nature of the marketing margin is often difficult to determine. Diverse marketing systems, competitive structures and forms of government intervention exist. The nature and aims of marketing margin studies tend to vary with these differences.

This chapter reviews the literature on marketing margins and trade liberalisation. It begins by defining the term "marketing margin" and describes some methodological issues. Other investigations of marketing margins are discussed and that is followed by two examples of marketing margin behaviour, the first under the situation of trade liberalisation, the second under government intervention.

2.2 Definition of Marketing Margins

Marketing margins differ according the product, the market conditions it faces, and the marketing services provided along the distribution channel (Tomek & Robinson 1990). The study of marketing margins is a particular aspect of market

price analysis and reflects the many complexities of different kinds of market situations within national economies (OECD 1981). Marketing margins consist of the costs of performing such marketing functions as transportation, storage or processing. They are therefore the same as the returns to all factors of production involved in marketing. Viewed in this way, a marketing margin for a particular commodity is the difference between what the consumer pays for the final product and the amount the producer receives. Various definitions of the term "marketing margin" have emerged in the literature. For example, it has been defined as the vertical difference between two prices from the two different marketing levels (Adekanye 1982; OECD 1981; Tomek & Robinson 1990; Buzby *et al.* 1994). The marketing margin (MM) is equal to the difference between the retail price (P_R) and the farm level price (P_F):

(2.1) $MM = P_R - P_F$.

The term "marketing margin" is also used to describe the difference between cost and sales price and is referred to as the farm-retail price spread.

Dahl & Hammond (1977) stated that marketing margin refers only to price differences and makes no statement about the quantity of product marketed. Marketing margin theory is complicated when the identity of the good changes during the marketing process.

An overall marketing margin can be broken down into its various components, revealing what is paid for each identifiable service or function (e.g. processing and retailing) involved in the industry sector as a whole (Briz & de Felipe 1997). A descriptive analysis of such data provides a sense of the relative importance of the different cost components of the marketing function. It provides an insight into the operation of the food system at a point in time, as well as through time (OECD 1981).

Marketing margins change with changes in factor prices, the efficiency of providing services, and the quantity and quality of services embodied in the final product (Tomek & Robinson 1990). They are also influenced by marketing inputs, like storage and transportation costs, etc., that change whenever there is a shift in the demand for or supply of a product (Joshi & Sharma 1979; Seeba 1984). Dahl & Hammond (1977) identified five factors affecting marketing margins. They are: (1) marketing input prices, (2) services and value of the product process, (3) technological changes, (4) marketing mix strategies, and (5) structural organisations. Furthermore, the direction and magnitude of changes in the marketing margin depend upon whether price movements are caused by changes in consumer demand or changes in farm supply. Table 2.1 lists the economic factors responsible for the shifts in supply and demand that affect agricultural food prices. The interdependence between prices, marketing margins and inflation has been studied in order to identify the role played by each of these factors (OECD 1981). Changes in marketing margins are substantially more difficult to analyse than changes in either the primary supply or primary demand.

Table 2.1: Factors Affecting the Formation of Food Prices

Short Term	Long Term
	➢ Supply and demand factors affecting food in general and individual products particularly
	• Demand side
- Prices of raw material	- Income
- Variable cost of PDR inputs	- Tastes and preferences
- Merchandizing practices	- Socio-economic characteristics
- Seasonality	- External demand
- Prices of imported food	• Supply side
- Uncertainties	- Technological development
	- Storage technologies
	- Natural conditions affecting production
	- Government regulations and international agreement
	- Industrial organisation of the agriculture and food sector
	- External supply

Source: Canadian Journal of Agricultural Economics, 1986

2.3 Investigations into Marketing Margins

Oskam & Van Dijk (1984) subdivided the issues and methodology of marketing margin analysis as follows: (1) the short- versus long-term level of analysis, (2) the type of approach used, and (3) the particular questions and aspects of a study. They stated that a short-term margin analysis is suitable for assessing how effectively an industry operates. Long-term data are useful for analysing performance aspects such as the productivity and cost of the marketing function, rates of technical progressiveness, and the general adaptability to prevailing conditions in product markets.

Various approaches to the measurement of marketing margins have been used. Houston (1962) identified three methods for estimating the margin between producers' price and retail value. Each method allows a different level of analysis.

The first method (the functional approach), introduced by Houston (1962), is based on the accounting records of firms and organisations, and is considered to be the most reliable way of calculating the margins at each stage of the marketing process. This approach examines the factors influencing the performance and development of firms involved in the marketing activity. It has the potential to produce very detailed analyses, however the reluctance of firms to release commercially sensitive data has limited its usefulness in the past.

The second method (the product-focused approach) uses comparative pricing and is more easily applied. It has been adopted by many recent studies of prices and margins (Dijk 1978; Houston 1979). The availability of data often makes it possible to compare prices at different stages in the product process, but some corrections may be required due to time lags in price formation at different levels.

The third method (the national expenditure or sectoral approach) estimates the proportion of consumers' expenditure used to process and distribute products. However, this method is not particularly useful as it relies on aggregation and the data required is not easily obtained.

The first systematic attempt to develop techniques to evaluate food marketing margins was undertaken in the USA in 1921, by researchers trying to understand the cause of price differentials between the consumer and farmer levels (Waugh 1964). Other similar studies followed in the 1950s (Briz 1985). In the European Community, different studies have been undertaken by the Statistics Bureau and the Consumer Protection Service, among others, trying to understand the evolution of prices in different member states (Davis 1980). Some international institutions, such as the OECD, established specific groups to investigate methodological support for food marketing margin analysis (OECD 1978).

An important issue in the debate about the cost of marketing services is the incidence of changes in the charges associated with marketing an agricultural product. Most analyses of the incidence of marketing margins have relied on regression analysis using annual time-series data and have dealt with all foods (Waugh & Ogren 1961). A serious problem with such an approach is that income and price changes have been overwhelmingly large in relation to quantity changes. Alternatively, recent analyses of the incidence of marketing margins have relied mainly on cross-commodity comparisons of changes (Freeman 1966).

Various techniques have been used to investigate the impact of economic factors on changes in food marketing margins (e.g. Fisher 1981; Digby 1989; Parker & Zilberman 1993). These range from simple graphical representations of comparative data, to statistical investigations using regression analysis. Econometric models have found that changes in earnings (wages) have the

strongest influence on the aggregate cost of processing and distributing commodities (Chapple 1993; Fisher 1981; OECD 1981).

The difficulty of isolating marketing services as a separate or measurable activity has resulted in studies of the factors affecting producer and consumer values of the foods concerned (Fisher 1981; OECD 1981). Five factors were found to impact on these values. They were population changes, per capita calorie consumption, producers' and consumers' prices of relevant products, and the real value of consumed products. Fisher (1981) studied how a shift in the supply curve for marketing services affected retail and farm prices. He concluded that such shifts were caused by changes in exogenous factors, such as wage rates.

Parker & Zilberman (1993) estimated the quality factors affecting the farm-retail marketing margin. Their model used the producer and retail prices of a perishable product, time during the season and quality characteristics as variables. Their analysis verified that marketing margins typically decline during the season and increase with improved quality.

Attention has focused on modelling changes in marketing margins. Gardner (1975) predicted how various shifts in the supply and demand for food are likely to affect retail-farm price ratios. Other researchers have extended margin analysis to markets in disequilibrium. Heien (1980), for example, assumed that supply and demand are not in balance and that this imbalance is the determining factor in causing price and margin changes. Time is required for these markets to clear.

Lamm & Westcott (1981) examined the time dimension further. Using relatively simple lag structures, they concluded that changes in input and farm level prices, especially for fresh foods, are passed through to retail levels rather quickly, either in the current quarter or one quarter ahead. Barallat *et al.* (1987) specified and compared six alternative methodological approaches for estimating marketing margins. They were: (1) an econometric model; (2) a univariate ARIMA model; (3) a multivariate time-series model; (4) a composite model; and (5) two trend-based models. The study suggested that superior analysis results could be achieved by employing various composite models.

The relationship of volume, prices and costs to marketing margins was studied by Buse & Brandow (1960), and Breimyer (1957). Considerable work was done with models that assumed simultaneous determination of margins for foods, but results were neither statistically significant nor reasonable in economic terms. Buse & Brandow's study applied ordinary least squares (OLS) regression to annual and quarterly data for 20 commodities. It investigated the relation of farm-retail price spreads for individual foods to the average spread for all foods collectively, and to the volume, retail price and change in price of the individual foods. Their results indicated that whether margins widen or narrow as volume increases through marketing channels depends, to a large extent, on the characteristics of the particular commodity and the amount of time allowed for prices to adjust. They identified a clearly positive relationship between margins and retail prices but could not find one between margins and volume. Buzby *et al.* (1994) summarised the relationship between marketing margins and price. They stated that the addition of

a new service, all other things held constant, tends to raise the retail price, whereas a change in existing services tends to affect both retail and farm-level prices. The former case is defined as "cost-plus" theory, the latter as "derived demand" theory (Kohls & Uhl 1990).

Empirical studies into the relationship between different market level prices by Heien (1980), Lamm & Westcott (1981), and Ward (1982) provided useful information on price transmission in food marketing channels. Lamm & Westcott (1981) reviewed the nature of the relationship between changes in food sector input costs and retail food prices. Their analysis was based on a twenty-equation econometric model of the food price determination process, specified according to Popkin's (1974) "stage of processing" approach. Each model was estimated using according to OLS regression techniques. Variables with no significant explanatory power were deleted from each equation following Theil's (1971) explanatory set reduction strategy. Their results confirmed findings by Heien (1980) and Lamm (1979) that changes in farm-level prices pass quickly through to retail prices and are transferred faster for fresh commodities compared to processed products. They also found that the length of lag in price adjustments is related to the amount of processing (Tomek & Robinson 1990). Increases in producer prices and input costs were both important causes of higher relative food prices.

Ward (1982) measured the links among retail, wholesale and shipping point prices for a selected group of fresh vegetables. The study showed procedures for dealing with discontinuous time series. Granger's (1967) causality test was used to

show the direction of the price linkage. The results showed that retail prices tended to adjust to lower wholesale prices but did not totally match increases in wholesale prices. In contrast, shipping point prices tended to reflect wholesale price decreases more fully relative to increases. Ward (1982) concluded that perishability, ranging from structural considerations to the nature of the products, might be a major contributing factor for the asymmetry.

Changes in marketing margins, from whatever cause, could conceivably have different effects on farm and retail price levels. Freeman (1966) argued that changes in marketing margins were not meaningfully related to farm price changes. Cross-commodity data rather than time-series data were used to determine the incidence of increased marketing margins. He found that farm-price changes were closely related to changes in productivity and were essentially unrelated to changes in marketing margins. His supply-demand analysis showed how changes in marketing margins affected farm and retail prices, with large rises in marketing margins mainly flowing through to higher retail prices.

Other researchers (Pick *et al.* 1990; Fisher 1981; Buzby *et al.* 1994) have investigated the interaction of prices and marketing margin variation through the market stages, especially the extent of by which changes in farm supply, consumer demand, and price spread are correlated. Marketing cost increases for farm products have stimulated renewed interest in farm-retail price relationships and the behaviour of marketing margins. Important priority areas for marketing research identified in a recent report (including efficiency in marketing agricultural products,

supply/demand and price analysis, competitive interrelationships, and performance of the marketing system) directly relate to price and marketing margin behaviour (Pick *et al.* 1990). The graphical and mathematical models used by Buzby *et al.* (1994) showed how increases in the cost of marketing services affected farm prices, retail prices and the farm-retail price ratio.

Briz & de Felipe (1997) summarised four characteristics of the price-marketing margin relationship: (1) an increase (decrease) in consumer demand usually diminishes (increases) percentage margins; (2) if farm product supply increases (decreases), this usually produces a decrease (increase) in percentage margins; (3) government intervention in agricultural markets usually has a significant impact on margin performance; and (4) market liberalisation may diminish marketing margins for some products. However, Tomek & Robinson (1990) pointed out that higher value added and more marketing services may offset these trends.

2.4 Agricultural Trade Liberalisation and Marketing Margins

Many applied general equilibrium models have been used to analyse the global impact of the UR on agriculture (Parikh *et al.* 1997). Examples include Webb *et al.* (1988), Andrews *et al.* (1994), and Goldin & van der Mensbrugghe (1995). The numbers generated by these models vary according to the underlying assumptions, the reference scenarios used and data availability. Nevertheless, they all suggest that the UR's agricultural provisions will have a modest effect on

world agricultural trade. The prices of some products are likely to rise while others will change little or even fall (Tanner 1996).

According to Yao & Hay (1991), three possible goals are commonly defined for market liberalisation: (1) creation of a completely free market system without controls, (2) privatisation of state marketing activities with limited government intervention in prices and trade, and (3) reduction in the scope of intervention with reforms of the existing state marketing apparatus that are generally compatible with free competition from the private sector. Meanwhile, the market reforms implemented over the past decade are difficult to assess for three main reasons. First, the effects of the reforms are difficult to isolate from other processes affecting the broader economy, including macroeconomic adjustments. Second, the reforms have been subjected to reversals and only partially implemented. Third, the assessment has limitations because of weak or incomplete data (Jayne & Jones 1997).

Alderman & Shively (1996) stated that price changes in agricultural markets can be traced back to adjustment policies through three principal routes: (1) fiscal contraction or public expenditure switching, (2) currency devaluation, and (3) privatisation and liberalisation of domestic and international trade. Changes in the fiscal environment may affect food prices directly by reducing subsidies or increasing taxes on food items. Currency devaluations have sometimes been accompanied by trade liberalisation that reduces rents and promotes scale economies. Market liberalisation can thus lead to lower domestic prices for imports

even when border prices for a reference commodity appear to rise. Similarly, improvements in domestic trade may result in higher producer prices yet lower consumer prices. These statements are consistent with the findings by Chapple (1993) and Jayne *et al.* (1998) that greater product market competitiveness can lower marketing margins by reducing entry barriers for domestic firms and foreign firms. Trade liberalisation-oriented reforms presume that the elimination of parastatal authority induces significant private entry into food marketing, leading to more competitive and efficient markets (Beynon *et al.* 1992; Coulter 1994; Jones 1994). Only competitive markets can deliver lower prices, higher quality and more diverse products. Thus competition may reduce marketing margins. Nevertheless, negative margins can occur as a result of promotion programmes or unexpected price evolutions (Briz & de Felipe 1997).

Prior to 1980, analyses of market power in food industries were generally based upon the structure-conduct-performance paradigm (Wann & Sexton 1992). These studies usually involved inter-industry analyses of profitability or price-cost margins as functions of concentration ratios and other structural measures. This work is aptly summarised by Connor *et al.* (1985). Modern variations on this theme specify models to explain price as a function of market structure variables and usually focus on the behaviour of single industries. Recent studies by Cotterill (1986) and MacDonald (1987) illustrate the approach, and a good summary is provided by Weiss (1990).

Tomek & Robinson (1990) identified the relationships between marketing margin behaviour and competition. The consequences of changes in margins become more complicated when the assumption of pure competition is relaxed. Several studies (e.g. Gardner 1975) of marketing margins in a competitive industry have been published. Kate (1992) stated that it is unrealistic to expect trade liberalisation to lead to substantially greater efficiency and competitiveness in a domestic industry within a short period of time. Kate (1992) and Barrett (1997) concluded that, although far-reaching liberalisation measures were carried out in a relatively short period of time, other economic factors delayed the exposure of domestic industry to foreign competition considerably.

Gardner (1975) used a mathematical analysis of marketing margin behaviour to examine how competitive equilibrium in product and factor markets affected the relationship between farm and retail food prices. His primary objective was to identify how the various shifts in the demand for and supply of food affected the farm-retail price ratio. He concluded that farm and retail prices move together in different ways depending on whether the events causing the movement arise from a shift in retail demand, farm supply, or the supply of marketing inputs.

Schroeter & Azzam (1991) provided a conceptual and empirical framework for analysing marketing margins in a non-competitive food processing industry. It was applied to a time series of spreads between wholesale prices and farm prices of meat. Their study suggested that marketing margins are consistent with competitive performance.

Holloway (1991), and Wann & Sexton (1992) have also investigated the farm-retail price spread in imperfectly competitive industries. Wann & Sexton (1992) developed and estimated a generalised model of the farm-retail price spread to test for market power and market behaviour in food processing industries. The study by Holloway had three objectives: (1) to provide a conceptual framework for the analysis of imperfect competition in food industries, (2) to assess the analytical consequences of non-competitive behaviour, and (3) to determine the empirical significance of such behaviour. Gardner's comparative statics on the farm-retail price ratio were revised by testing hypotheses about food industry conduct. The study found no evidence of departures from competition in the output markets of the food industries. Nevertheless, the comparative-static results showed that movements in the farm-retail price ratio can be used to make inferences about behaviour in the food industries.

Gallagher (1998) studied the relationships between marketing margins and trade uncertainty for agricultural products. He concluded that trade uncertainty acts as a barrier that reduces trade, reduces prices in the origin market, and increases prices in the destination market. Uncertainty may also complicate the marketing margin behaviour of internationally traded agricultural products. Gardner's comparative static analysis of the theoretical model gave some useful information on how uncertainty influences price transmission in a marketing channel (Brorsen *et al.* 1985). Several factors may preclude price alignment in agricultural markets. For instance, trade policies such as quotas or variable levies limit price adjustment in importing countries (McCalla 1967). Also, local supply and demand conditions

may sometimes be a barrier to trade (Sexton *et al.* 1991). Oligopoly pricing occasionally restricts price equalisation (Ohno & Gallagher 1992).

One approach to modelling the effects of liberalisation on prices is to build a structural econometric model consisting of behavioural equations that explains the supply and demand decisions of all market participants including producers, consumers, traders, and state agencies involved in food marketing. However, this would require a large model embodying many over-identifying restrictions drawn from economic theory. A potential problem with large-scale structural models is that the restrictions used to identify the model may not be valid. The alternative is to specify a reduced form model for equilibrium food price levels (Jayne *et al.* 1998; Tomek & Myers 1993)

The effect of market liberalisation on marketing margins has been analysed by Jayne *et al.* (1998) and Parikh *et al.* (1997). Jayne *et al.* (1998) used a reduced form econometric model to examine the effects of market reform on the levels of commodity prices and price spreads between major wholesale markets. The model was estimated simultaneously across six markets using the seemingly unrelated regression estimator (SURE). Minimal restrictions applied to the reduced form and so the model had enough flexibility to be consistent with a wide range of alternate economic structures (Tomek & Myers 1993). However, the disadvantage of this model is that structural information on the effects of liberalisation on the supply or demand decisions of particular market participants is unavailable (Jayne *et al.* 1998). The results indicated that the removal of regulatory constraints on private

trade and the transition to a market-oriented system would reduce marketing costs and pass benefits along to farmer and consumer alike.

2.5 Government Intervention and Marketing Margins

Governments intervene in the agricultural price-setting mechanism in many different ways and for assorted reasons (Yao & Hay 1991). For example, they may wish to: (1) support or raise farm incomes, (2) protect or preserve small farms and reduce rural migration, (3) achieve self-sufficiency in food and fibre production or decrease the dependence on imports, (4) reduce price and income instability, or (5) hold down consumer costs and/or increase consumption of foods and fibres. Government intervention has been a feature of food markets in both industrialised and agrarian economies. In an interventionist economy, marketing margins are usually fixed at a maximum level by the authorities. Governments generally target food products when regulating prices in order to keep consumer prices at low levels. In some cases the price spread is systematically negative or less than costs, due to direct or indirect government subsidies (Briz & de Felipe 1997).

There has been much debate (Chambers 1983; Yao & Hay 1991; Bale & Lutz 1981; Unnevehr 1985) over the rationale for these interventions. Arguments in favour of price controls have been used in many countries, especially those with weak economies and facing an uncertain development process. Even if economic policy is appropriate for the circumstances, attempts to control marketing margins may lead to other distortions in market behaviour: under the counter trade, parallel

channels, etc (Briz & de Felipe 1997). A literature review of agricultural marketing and pricing reform by Duncan & Jones (1993) revealed a relationship between marketing margin behaviour and the market intervention system. Johnson (1975), and Bale & Lutz (1981) also studied government intervention in the determination of agricultural product prices. The primary objective of Johnson's study was to review government intervention and its effects upon price variability. He concluded that reduced intervention in agricultural product markets significantly reduced price instability for internationally traded products.

Chambers (1983) used theoretical and empirical approaches to examine the effect of international trade and government intervention on the farm-retail price margins in two countries. The objective was to examine the determinants of the farm-retail price margin in a model that explicitly allowed for the possibility of international trade in the retail food commodity and the agricultural commodity used to produce the food commodity. Although the purpose of his study is similar to Gardner's (1975), a rather different approach is used. He found that the farm-retail price margin is sensitive to governmental intervention in the international pricing mechanism as well as to the degree of gross substitutability between inputs. Results suggested that an increased government intervention in the international pricing mechanism led to a decline in marketing margins. The farm-retail price margin is sensitive to governmental intervention in the international pricing mechanism.

There are other elements to consider in the political process of marketing intervention. There is a discriminatory situation against the food distribution sector, with a negative incentive for investment, innovation and modernisation. However, according to Briz & de Felipe (1997), political and economic circumstances may push politicians into establishing a rigid control of food marketing margins. In food-deficit countries, support programs have been introduced and maintained in an attempt to reduce dependence on imports, conserve foreign exchange, and insulate domestic producers from international price instability (Tomek & Robinson 1990). Hazell *et al.* (1990) found that exchange rates, domestic marketing arrangements and government intervention act to buffer price movements in many developing countries. Increased price spreads might be accompanied by lower farm price support in developed countries, following the UR Agreement in the GATT (Briz & de Felipe 1997).

Unnevehr (1985) and Johnson (1975) investigated the relationship between marketing margins and government intervention. Their studies showed that market intervention can limit domestic price fluctuations through purchases and sales in defence of floor and ceiling prices. They found that increased price variability significantly increases marketing margins at each level of the marketing channel. Thus, any government intervention would have some impact on price and reduce marketing margins. Unnevehr concluded that the reduction of marketing margins could be achieved with non-price policy instruments such as investment in transportation and communications infrastructure or through policies to encourage growth of financial institutions for private trade.

2.6 Concluding Comments

Although there is a rich literature available on marketing margins analysis, relatively few studies have looked at marketing margin behaviour under the situation of trade liberalisation and government intervention.

The greater product market competitiveness that results from market liberalisation causes marketing margins to fall as barriers to entry for domestic and foreign firms decline. However, it is unrealistic to expect domestic industries to make substantial gains in efficiency and competitiveness within a short period of time.

Econometric models have been used to identify the most important factors causing trends of fluctuations in marketing margins. Preliminary results suggest that changes in earnings (wages) best explain changes in the cost of processing and distributing food (Chapple 1993; Fisher 1981; OECD 1981).

CHAPTER THREE

The Dairy Industry in Korea

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The Dairy Industry in Korea

3.1 Introduction

This chapter discusses important features of the Korean dairy industry. Section 3.2 discusses indicators of national dairy development, including production, consumption and trade. Section 3.3 reviews dairy marketing and distribution in Korea. Section 3.4 deals with government policies affecting the development of dairy industry and section 3.5 summarises all the selected issues.

3.2 Indicators of Korean Dairy Development

The Korean dairy industry remains a relatively small component of the national economy, yet indicators of production, imports and consumption show that it has grown rapidly over the last thirty years. This development has been made possible by extensive government support programmes and rapid growth in the Korean economy (USDA 1996).

3.2.1 Production

Korean dairy farming began in 1902 when 20 milk cows were introduced from France. An actual dairy industry did not begin until the early 1960s when the

government introduced a series of plans and laws for livestock and dairy promotion.

The production and consumption of dairy products grew by an average 20 percent per annum from 1971 until the mid-1980s. This was mainly because the government boosted consumption with its school and military meal programmes, and also because it implemented an integrated dairy development project. This 10-year project sought to expand production by providing financial support to farmers and establishing dairy processing facilities.

Table 3.1 presents milk production and consumption figures for each year from 1980 until 1998. The local dairy association (NLCF 1999) commented on these figures as follows:

- There was an increase in the number of dairy cows during this period.
- Improved technology and management increased productivity.
- The growth in consumption moderated once per capita consumption exceeded 40 kg.
- High government support prices encouraged increased production.

Table 3.1: Fluid Milk Production and Consumption in Korea

Year	Production	Consumption		Self-sufficiency
	(M/T)	Total (M/T)	Per capita (g)	ratio (%)
1980	408	415	10,802	98
1985	1,005	972	23,827	103
1989	1,761	1,641	38,734	107
1990	1,751	1,879	43,910	93
1991	1,740	1,698	43,201	93
1992	1,816	1,920	43,983	95
1993	1,857	1,983	45,059	94
1994	1,917	2,078	46,800	92
1995	1,998	2,143	47,800	93
1996	2,033	2,465	54,500	83
1997	1,984	2,439	53,300	81
1998	2,027	2,286	49,200	89

Source: The Newspaper of Food and Beverage, 1999

The self-sufficiency ratio remained at 95 percent in 1992, mainly because the government restricted imports of fluid milk. However, government projections indicated that the ratio would fall to 80 percent by 2000 with the remaining 20 percent being met by imports (see Table 3.6). Recent trends show that domestic milk manufacturers are already turning to imported raw materials in an effort to lower costs (USDA 1996).

The seasonal imbalance between the production and consumption of fresh milk has been an ongoing problem for the Korean dairy industry. Winter months

are characterised by low consumption and high production; summer months experience high consumption and low production. In the past there was no seasonal pricing to either encourage or discourage production to accommodate consumption needs. The winter surplus was converted into milk powder or other processed products and stored for release onto the market during the summer months. However, recent experience shows that there is no longer a market for winter produced milk products.

Table 3.2: Producer Price of Milk, in Korea (farm level)

Won/kg	1980	1981	1982	1985	1989	1991	1993	1995	1996	1997
Milk price	266	307	313	322	364	383	394	414	423	423
% change (1989=100)	73.1	84.3	86	88.5	100	105	108	113	116	116.2

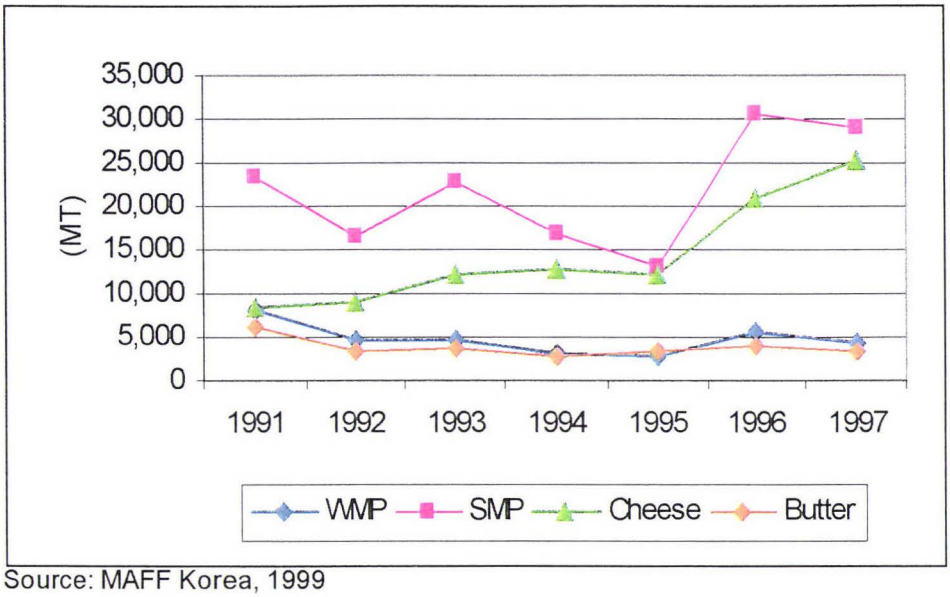
Source: The Korean Dairy System Improvement Committee 1996 & OECD 1997

The producer price of milk is fixed by the government in consultation with producers and processors. Calculated costs of production are the major determinant of price, with only limited account taken of resultant demand effects. Rae *et al.* (1985) reported that no account appeared to be taken of import prices. The price increased every year from 1973 until 1982, and, since 1985, rose at an average 2.9 percent per annum (Table 3.2). In some years, the rising price reduced demand and led to an accumulation of milk powder stocks.

Consumer prices for milk and dairy products are determined nationally by the dairy industry with practically no government control (FAO 1983). Increases in the consumer price often follow increases in the producer price of milk, and are usually 2-3 times higher. However, Rae *et al.* (1985) reported that wholesale and retail prices were strictly controlled by government in co-operation with producers' organisations and the Economic Planning Board, which implies control of the marketing margins.

Over 99 percent of the milk produced in Korea is collected for processing (Rae *et al.* 1985). Of this, around two-thirds are utilised as liquid milk with the remainder processed into various by-products, ice cream, yoghurt, cheese and butter (Voboril & Kim 1996). Figure 3.1 gives a breakdown of Korean dairy production during the period 1991-1997. Four trends are apparent. First, whole milk powder (WMP) production decreased steadily, with the 1997 volume being about half that of six years earlier. Second, the production of SMP decreased significantly from 23,514 M/T in 1991 to 13,081 M/T in 1995, but then increased dramatically to over 29,000 M/T in 1997. Third, cheese production increased from 8,536 M/T in 1991 to 25,331 M/T in 1997. This increase was fuelled by high growth in per capita fast food consumption levels. Finally, butter production fell from 6,266 M/T in 1991 to 3,332 M/T in 1997. Appendix I provides additional information about these figures.

Figure 3.1: Dairy Production in Korea



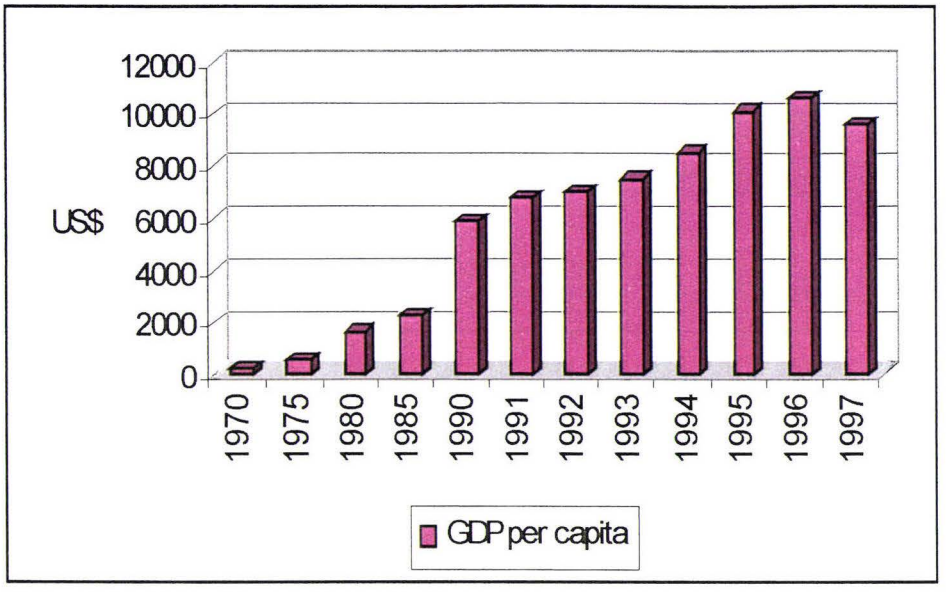
Source: MAFF Korea, 1999

3.2.2 Consumption

Prior to 1997, the Korean economy grew at a sustained annual average rate of nearly 9 percent. The rapid growth in per capita income evident in Figure 3.2 has had the effect of westernising the Korean diet, especially among young people and women, and in the cities. Food consumption has shifted from a carbohydrate-centred pattern based on rice to a more diversified one with a greater reliance on livestock products, fats, vegetables and fruits.

Korean consumers have spent about 28 percent of their income on food, in recent years (MAFF Korea 1999). As can be seen in Figure 3.3, dairy product consumption per capita has increased dramatically, from 1-2 kg in 1970 to approximately 55 kg in 1997.

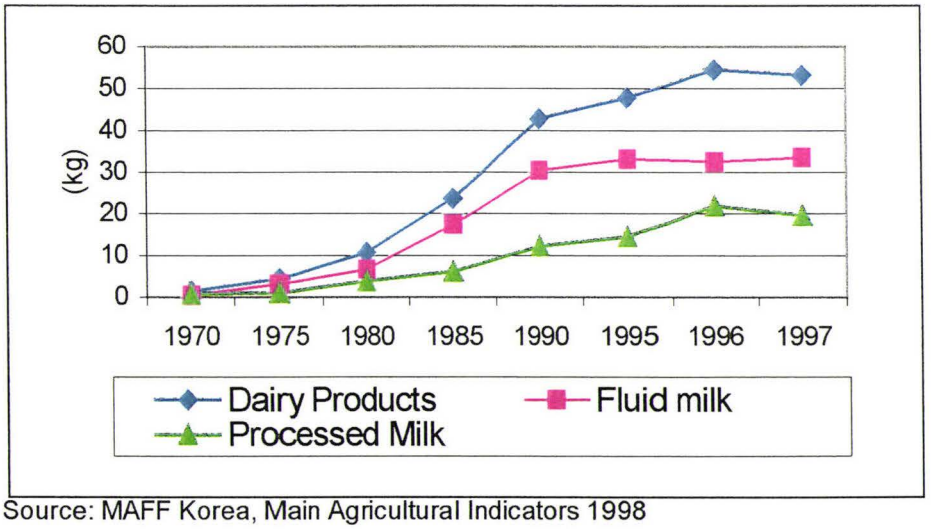
Figure 3.2: Korean GDP (per capita) Growth, since 1970



Note: GDP (Gross Domestic Product)

Source: Korea National Statistical Office, 1997

Figure 3.3: Per Capita Consumption of Dairy Products, in Korea



Source: MAFF Korea, Main Agricultural Indicators 1998

A wide variety of pasteurised milk and milk products are available in an equally wide variety of packaging types and sizes. Table 3.3 shows the pattern of milk and dairy product consumption for the period 1988 to 1995. About 70 percent of consumption was in the form of liquid milk with fermented milk being the second largest market. Fermented milk in Korea is classified as either fluid yoghurt or condensed yoghurt and has SMP as an input. Consequently, the demand for SMP has increased in line with the consumption of yoghurt (OECD 1998). Demand for infant formula grew steadily throughout the 1980s, although it did stagnate in the mid-1990s as a result of the move towards breast-feeding and worldwide restrictions on infant formula advertising.

Table 3.3: Milk and Dairy Product Consumption in Korea

	1988	1990	1994	1995
Number of dairy cattle (000)	480	504	552	553
Total milk consumption (M/T)	1,652	1,879	2,708	2,144
Milk consumption (per capita)	39.4kg	42.8kg	46.8kg	47.8kg
Consumption pattern (M/T)				
Fluid milk	1,304	1,337	1,553	1,556
Milk powder	18.8	20.8	23.0	20.2
Condensed milk	2.1	3.4	3.3	3.8
Cheese	5.6	6.8	13.2	13.9
Butter	4.1	5.1	3.0	2.8
Yoghurt	226	353	524	584

Source: MAFF Korea, 1996

Domestically produced infant formula relies heavily on imported milk powder. Nevertheless, demand for SMP increased dramatically after the mid-1990s due to rapid growth in the consumption of fermented products. These trends are evident in Table 3.4, which gives a detailed breakdown of consumption patterns for cheese, butter, SMP and WMP for the period 1989 to 1997.

Table 3.4: Consumption of Dairy Products in Korea

M/T	Cheese	Butter	SMP	WMP
1989[a]	4,764	4,905	13,371	9,125
1990[a]	6,173	7,254	18,302	15,177
1991[a]	8,503	4,805	19,091	8,578
1992[a]	9,320	4,580	18,811	5,948
1993[a]	11,938	4,067	21,686	4,245
1994[a]	13,182	3,034	19,433	3,544
1996[b]	20,566	4,324	27,872	4,507
1997[b]	30,000	6,000	23,700	3,600

Note a: Data from Dairy Handbook 1995, b: Data from OECD 1997

Source: Dairy Handbook 1995 & OECD 1997.

Imported SMP has been the main ingredient of domestically produced butter. This has led to instability in both supply and prices, which has in turn let to margarine and butter prepared products taking over the butter market. A large increase in butter consumption in 1990 was offset by a significant fall in 1991. Butter consumption has levelled off since 1992.

The cheese market was insignificant until the mid-1980s when annual sales were less than 600 M/T. It subsequently increased at an annual average of 20 percent due to rapid growth in fast food outlets and western style restaurants (Voboril & Kim 1997). Annual cheese sales reached 30,000 M/T in 1997. Natural cheese, which comprised 65 percent of the Korean cheese market in 1996, was 99 percent mozzarella cheese. Processed cheese accounted for the remainder of the cheese market and was mostly represented by sliced cheddar cheese. Regular sliced cheese accounted for an estimated 59 percent of total processed cheese in 1996, followed by sliced cheese (USDA 1997).

Consumption of dairy products prior to the UR was discouraged by high prices. Table 3.5 compares the prices of domestically produced and imported dairy products in 1997. Domestic dairy product prices were 100-200 percent higher.

The 1998 economic crisis was Korea's worst financial upheaval since the early-1950s. It had a significant impact on the consumption and importation of dairy products during 1998 and 1999. For instance, the currency fell dramatically in value, increasing the price of imported products and those domestically produced products, which used a large proportion of imported inputs. One example is the importation of animal feed concentrates and milk powders, which were used in yoghurt, ice cream and reconstituted drinking milk. Also, the reduction in economic growth lowered per capita income growth. Consumers responded to higher prices and lower incomes by reducing their consumption of non-staple and higher valued foods.

Table 3.5: Price Comparison for Dairy Products in Korea, in 1997

Product	Domestic	Import price (Won)				A/B
	Price (A)	C.I.F. Price	Tariff Rate	Import Cost	Total (B)	
	(Won)		(1996)	& Profit		
White Milk	195	109	44	9	162	120%
	(200mg)		(40%)			
SMP	5,700	1,749	3,694	140	5,583	102%
	(kg)		(211.2%)			
Mozzarella	8,370	2,720	1,088	218	4,026	208%
Cheese	(kg)		(40%)			
Cheddar	6,160	2,640	1,056	211	3,907	158%
Cheese	(kg)		(40%)			
Butter	5,294	2,240	2,173	179	4,592	115%
	(kg)		(97%)			

Source: Seoul Dairy Co-op, 1997 (A: Producer price)

However, the Korean economy recovered fast and is forecast to grow 6 percent in 2000 (USDA 1999). As can be seen in Table 3.6, imports of milk are expected to increase in 2000 and the consumption of dairy products should return to pre-financial crisis levels

Table 3.6: Forecast of Milk Consumption in Korea

	1996	2000	2004	2020
Number of dairy cattle (1,000)	560	565	580	700
Milk consumption (per capita)	50.4kg	59.2kg	64.2kg	83.4kg
Total milk consumption (M/T)	2,280	2,770	3,091	4,218
- Domestic	2,056	2,216	2,318	2,953
- Import	224	554	773	1,265
Self-sufficiency ratio (%)	91	80	75	70
Population (1,000)	45,250	46,790	47,930	50,580
GDP per capita (1995)	US$10,780	$13,690	$16,560	$32,020

Source: Korea Development Institute, 1999

Reliance on imported Ultra Heat Tested (UHT) milk and SMP is likely to increase due to higher consumption of fluid milk. Cheese consumption is also likely to grow, with most of the increase being met by imports (Voboril & Kim 1997). In addition, industrial demand for SMP is expected to rise in response to strong growth in the food-processing sector. It is likely that additional imports will be required to meet this demand.

3.2.3 Dairy Trade

High production costs have prevented Korean dairy products from being exported to other countries. For example, it can be seen in Table 3.7 that the U.S. milk producer price was approximately 50 percent of the Korean milk producer

price in 1996. Also, locally manufactured SMP costs US$5.42 per kilogram but retails at only US$3.75 per kilogram. Locally manufactured cheese costs US$7.50 per kilogram but, in 1999, the average price of imported cheese was only US$4.17 (USDA 1999).

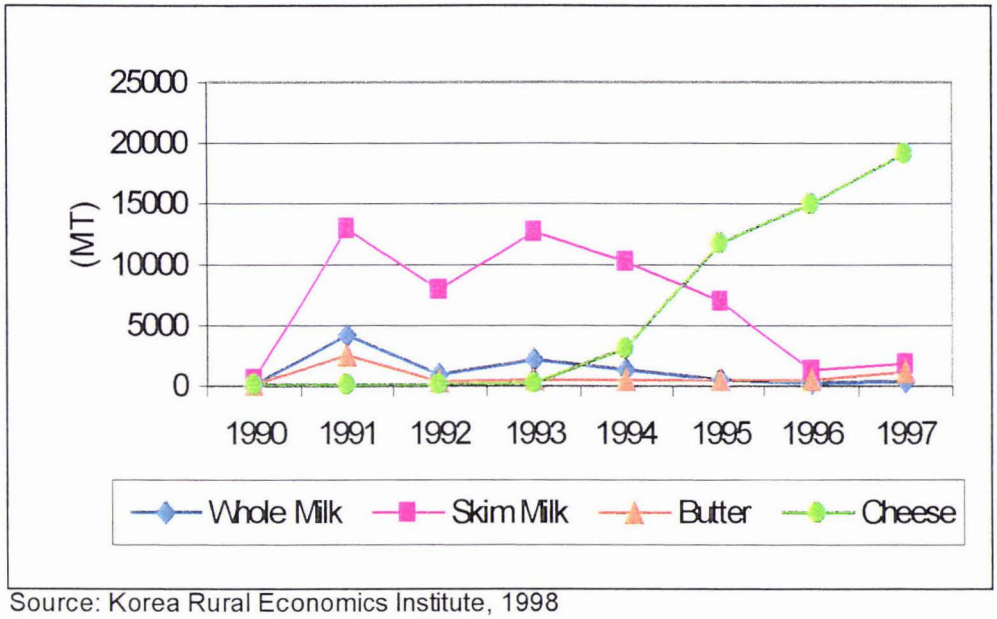
Table 3.7: Producer Price Comparisons of Milk (farm level)

	Korea	USA	Canada	Denmark	New Zealand	Australia	Japan
Won/kg	450	216	308	330	106	164	603
(%)	100	48	69	73	34	36	134

Source: The Korean Dairy System Improvement Committee, 1996

The main imported products are SMP, whey powder, cheese and casein. However, import volumes are small in relation to total consumption, so that self-sufficiency ratios are about 90 percent. Figure 3.4 shows the situation of dairy product imports since 1990. The increased demand for yoghurt has led to a growing market for SMP. Larger quantities of SMP were imported in earlier years as production of processed dairy products increased, however volumes fell between 1990 and 1995 as the amount of domestically produced SMP increased. Lactose imports increased steadily as associated industries such as confectioneries, feed and pharmaceuticals expanded.

Figure 3.4: Dairy Product Imports



Source: Korea Rural Economics Institute, 1998

Nearly all dairy imports were subject to quantitative controls and imported milk powders were generally not permitted for human consumption, except when used to produce certain items such as yoghurts. Fluid milk imports were liberalised on January 1993, however long transportation times and a short shelf life meant that no fluid milk was imported into Korea.

Cheese imports grew in importance, in line with growth in the fast food sector (Voboril & Kim 1997). Industry experts expect imports to account for almost all of this growth due to the lack of competitiveness of domestic processors. Processed cheese and mozzarella for the fast food industry make up the majority of cheese imports. Total cheese imports increased by 375 percent in 1995 (see Table 3.8).

Table 3.8: Dairy Product Import Situation

M/T	1990	1991	1992	1993	1994	1995	1996	1997
Butter	110	2,508	371	514	515	498	535	1,153
Cheese	122	121	200	265	3,121	11,704	15,023	19,199
Skim Milk Powder	595	12,944	7,950	12,660	10,254	7,044	1,397	1,927
Whole Milk Powder	84	4,156	880	2,183	1,327	532	221	441

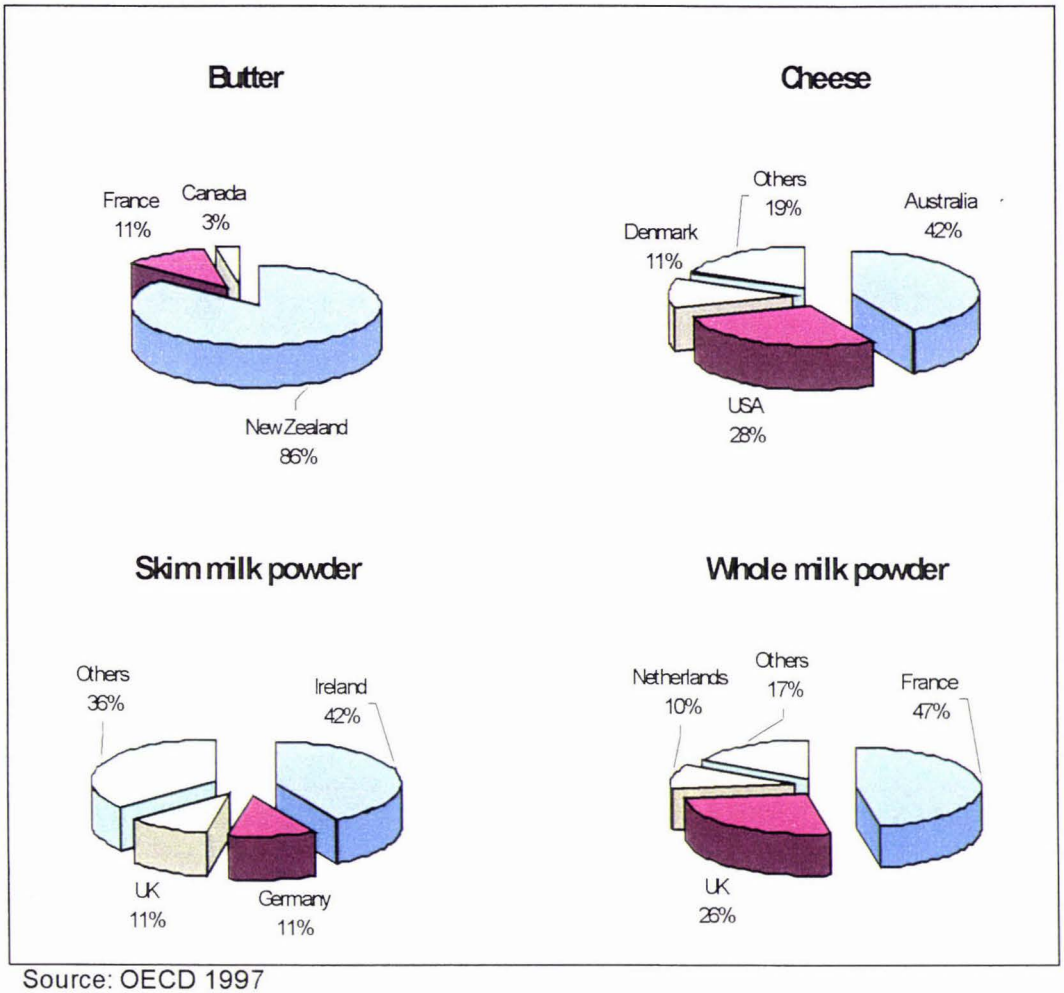
Source: FAO, 1999

Almost 80 percent of the total domestic demand for dairy products is met from imports (Podbury *et al.* 1995). Imports of finished dairy products are a small proportion of total dairy imports as almost all finished goods are produced locally using imported ingredients. Cheese and milk powders are the two main imported dairy products.

In 1995, 42 percent of Korean cheese imports by volume came from Australia, 28 percent from the USA and 11 percent from Denmark. Figure 3.5 illustrates the importers share of the Korean dairy market in 1995.

SMP was imported by local dairy processors and used largely as an ingredient in confectionery and bakery products for re-export to Japan. It was imported from the EU in order to comply with Japanese standards for these products.

Figure 3.5: Importers Share of the Korean Dairy Market in 1995



Source: OECD 1997

3.3 Dairy Marketing and Distribution

Import restrictions led to Korea being self-sufficiency in over 90 percent of all processed foods. However, the local food processing industry still does not produce the full range of products available on the international market. The price of food in Korea is among the highest in the world compared with its per capita income (USDA 1997).

The distribution channels of imported dairy products are similar to domestically produced products, except that collection is done by the importer and the product moved directly to the wholesale market. Local cheese producers distribute cheese products either directly to the retail sector through their sales agents or to wholesalers for the food service sector. The volume of sales is evenly split between these two channels.

Few companies have national distribution systems or carry a complete range of products, whether imported or local or both. Retailers must deal with a large number of distributors or wholesalers in order to access the full range of imported products available. Importers must deal with many different distributors and retailers if they want their products distributed nationally. These inefficiencies, together with an inadequate transportation infrastructure, add greatly to the cost of locally made and imported dairy products (USDA 1997).

In 1995, about 46 percent of imported cheese was imported directly by dairy processors and pizza companies, the remainder was imported by general importers (USDA 1997). Importers typically sell the products to local cheese processors, sales agents, or wholesalers. Few importers specialise in brand name products and market directly to the retail sector.

Bulk cheese is imported by local cheese manufacturers, re-packaged and distributed directly to retailers and restaurants. Local cheese manufacturers combine locally produced cheese ingredients with imported ingredients in their production process. Ready to eat, small packaged cheeses such as cream cheeses are purchased by importers and distributed to retailers (USDA 1999).

Because most Korean dairy products have not been exported to other countries, the total dairy market size can be estimated by the addition of total local production and total imports (Table 3.9).

The market size for milk powders was unstable in the period 1991 to 1997. It fluctuated between 36,458 M/T and 20,125 M/T in the case of SMP and between 12,393 M/T and 3,469 M/T for WMP. The quantities of locally produced and imported cheeses both increased significantly after 1991, reflecting the high demand for cheese and cheese products.

Table 3.9: Total Korean Dairy Product Market Size for Selected Items

(M/T)	1991	1992	1993	1994	1995	1996	1997
			Butter				
Total market size	8,774	3,735	4,351	3,444	3,901	4,735	4,485
Local Production	6,266	3,364	3,837	2,929	3,403	4,200	3,332
Imports	2,508	371	514	515	498	535	1,153
			Cheese				
Total market size	8,657	9,375	12,422	15,789	23,760	36,046	44,530
Local Production	8,536	9,175	12,157	12,668	12,056	20,843	25,331
Imports	121	200	265	3,121	11,704	15,023	19,199
			Skim milk powder				
Total market size	36,458	24,460	35,549	27,133	20,125	31,941	30,969
Local Production	23,514	16,510	22,889	16,879	13,081	30,544	29,042
Imports	12,944	7,950	12,660	10,254	7,044	1,397	1,927
			Whole milk powder				
Total market size	12,393	5,667	6,754	4,441	3,469	5,803	4,900
Local Production	8,237	4,787	4,571	3,114	2,937	5,582	4,459
Imports	4,156	880	2,183	1,327	532	221	441

Source: FAO and KREI, 1999

Most Korean food manufacturers are small-scale companies. At the end of 1996, there were 6,239 food companies with a labour force of five or more nation-wide. This was up from 4,654 in 1990. Table 3.10 shows the characteristics of the Korean food processing industries. The number of co-operatives in the food

processing industry increased dramatically from 17 companies in 1990 to 170 companies in 1995.

Table 3.10: Characteristics of Food Processing Industries[1]

	Units	1975	1980	1985	1990	1995	1996	1997
Total companies[2]								
Number of firms		3,865	4,595	4,637	4,654	6,232	6,239	n.a.
Number of employees	(000)	134.4	168.2	185.8	207.0	201.4	197.7	n.a.
Gross sales	Billion won	1,111	3,861	7,676	14,711	22,786	29,714	n.a.
Value-added	Billion won	364	1,274	4,054	5,617	8,357	12,410	n.a.
Co-operatives[3]								
Number of firms		n.a.	n.a.	n.a.	17	170	182	n.a.
Number of employees	(000)	n.a.	n.a.	n.a.	n.a.	1,792	1,980	n.a.
Gross sales	Billion won	n.a.	n.a.	n.a.	n.a.	100	128	n.a.
Value-added	Billion won	n.a.	n.a.	n.a.	n.a.	291	345	n.a.

n.a.: not available.

1. Food excluding tobacco.
2. Companies with more than 5 employees.
3. Data provided by the NACF, livestock manufacturing is not included.

Source: Korea National Statistical Office, Report on Mining and Manufacturing Survey.

In contrast, the number of dairy processors declined from 201 in 1993 to 130 in 1998 (see Table 3.11). This may have occurred as a result of domestic manufacturers amalgamating in order to compete with cheap imports. Another

reason might be the recent shift of resources into imported processed dairy products as a result of market opening under the UR. Given market access, imported products are very competitive because of the high production and distribution costs of domestically produced products.

Table 3.11: The Number of Dairy Manufacturing Companies in Korea

Manufacturer	1993	1994	1995	1996	1997	1998
Fluid milk	37	45	55	50	50	41
Milk powder	47	27	27	33	26	25
Yoghurt	16	15	14	12	17	11
Ice cream	84	69	59	56	54	47
Butter & Cheese	10	9	7	9	5	4
Other dairy product	7	1	3	1	2	2
Total	201	166	165	161	154	130

Source: Korea National Statistical Office, 2000

Most dairy producers distribute a large proportion of their products directly to retailers. Thus wholesalers or distributors have continued to play a relatively small role in Korea. The recent opening of the wholesaling and retailing markets to foreign ownership is forcing local companies to develop distribution systems in order to remain competitive.

Milk collection and distribution is divided between dairy co-operatives and the private sector. Ninety percent of farmers belong to co-operatives under the National Livestock Co-operative Federation (NLCF). During rapid growth in the

1970s and 1980s, both the private sector and co-operatives were able to coexist profitably. However, competition stiffened dramatically once the market liberalised in the 1990s.

Strong competition exists among milk processors for market share. Distribution from plants is through contracted agencies, with refrigerated storage facilities, to retail outlets and homes. Sales promotion is placed in the mass media. Co-operatives and private sector companies are beginning to take steps to remain competitive. These steps include the modernisation of processing facilities, the development of new products, and improvements in packaging and other marketing techniques. These developments will ultimately bring processors and consumers closer together.

3.4 Government Policy

The Korean dairy sector is not subsidised, and specific administrative organisations responsible for exporting dairy products have not been formed (OECD 1997). This is mainly because domestic dairy product prices are so much higher than world prices that exports are nearly impossible.

The government has supported fresh milk prices since the establishment of the Dairy Promotion Law in 1967. The Dairy Promotion Board has now been given the authority to decide the price of raw milk based on negotiations with

representatives of farmers and processing companies. The Act was revised in 1997 and became effective in 1999 (OECD 1999).

The Korean government's policies have been designed to raise revenue through customs duties, and to support and protect domestic dairy industries from foreign competition. Another objective has been to ensure the security of supply of dairy products in Korea.

The Korean dairy industry has been influenced by several institutions. These include:

- The Ministry of Agriculture Fisheries and Forestry (MAFF). Dairy policy has been formulated and implemented with a high degree of intervention.
- The Korean Dairy Industries Association (KDIA). The KDIA represents the dairy processing sector and pursues highly interventionist policies. It is notorious for its protectionist policies.
- The National Livestock Cooperative Federation (NLCF). The NLCF is striving to develop the Korean livestock industry in order to improve the socio-economic status of livestock farmers and realise the welfare of rural communities by maximising its services.

Policy interventions in the dairy sector are a combination of occasional price stabilisation measures combined with import controls (quotas). Dairy imports were

restricted under the Balance of Payments (BOP) provision and, since 1989, under memoranda of understanding reached following the BOP consultations. As a result of the UR these restrictions were replaced by ceiling bindings [1], which, are similar to tariff equivalents, reflect the price difference between domestic and external prices. SMP and WMP came under price ceilings in 1995, and butter in 1996. Tariff rate quotas have been established for these products in line with minimum and current access provisions. Import restrictions have been removed on cheese since January 1995 and a tariff of 40 percent, falling to 36 percent by 2004, will apply.

The Korean government is carrying out structural adjustments to increase productivity in response to increased market liberalisation. Furthermore, the sanitary grading of raw milk (e.g. bacterial counters and somatic cell counters) has been greatly reinforced since July 1996 in response to increased consumer concern about safety and sanitary issues.

The Korean dairy industry was seriously damaged in 1996, when increased imports of milk powder blends resulted in an oversupply of milk. The figures in Table 3.12 show how stocks of dairy products accumulated following the increase in imported dairy products. Consequently, the Korean Government has adopted the Safeguard Measures [2] on milk powder blends from March 1997 to February 2001 (OECD 1997).

(1) Ceiling bindings have allowed developing countries to substantially increase their bound commitments, thus underpinning their open markets policies, while keeping a certain margin for protection in case of need.

(2) A safeguard measure is an import restriction which can be adopted in emergency circumstances, when imports have increased in such quantities and conditions that they cause serious injury or threaten serious injury to domestic industries producing a like or directly competing product.

Table 3.12: Dairy Product Stocks, in Korea

M/T	1995		1996		1997					
	Sept.	Dec.	Sept.	Dec.	March	April	May	June	Sept.	Dec.
Butter	537	604	600	480	822	717	729	650	637	539
Cheese	1,128	1,378	1,388	1,613	1,691	1,557	1,581	1,573	1,641	1,716
SMP	2,907	5,200	8,362	9,191	11,700	10,665	9,580	9,933	9,000	4,250
WMP	621	1,365	2,406	1,675	2,175	1,952	1,478	1,404	1,000	750

Source: OECD, 1997

Table 3.13 summarises long-term development plans for the dairy industry projected by the Korean Ministry of Agriculture, Forestry and Fisheries (MAFF). Projections indicate that milk consumption will increase to 3,993 M/T in 2004, with significant increases in the quantity of imported fresh milk.

Table 3.13: Long-term Development Plans for the Korean Dairy Industry

	1994	2004
Milk supply/demand projection		
• Production (000 M/T)	1,917	2,931
• Consumption (000 M/T)	2,078	3,993
• Import (000 M/T)	131	1,062
Production structure		
• Dairy farms (000 farms)	26	15
• Milk cows (000 heads)	552	610
Productivity		
• Fresh milk cost (Krw/kg)	401	264
• Milk per cow (kg/head)	5,665	7,000
Distribution		
• Fresh milk collection	Duplicated	Unified
• Fluid milk distribution	Wide-area	Regional area
• Distribution channel	Home-delivery	Chain store

Source: USDA, 1996

3.5 Concluding Comments

The development of the Korean dairy industry has been heavily influenced by changes in income, dietary patterns, and government policies. Increases in income and expenditure that have traditionally accompanied the Korean

economy's high growth rates suggest that demand for dairy products will continue to increase.

Between the early-1960s and mid-1990s, dairy product prices were controlled by the Korean government in co-operation with producers' organisations and the Economic Planning Board. However, the UR effectively removed these restrictions, a combination of price stabilisation measures. These policy changes are likely to further increase the consumption of dairy products. This will in turn increase imports, as growth of local supply has tended to be below growth of demand since the early-1990s.

CHAPTER FOUR

Effects of the GATT Uruguay Round on the Korean Dairy Sector

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Effects of the GATT Uruguay Round on the Korean Dairy Sector

4.1 Introduction

Trade liberalisation impacted significantly on the Korean dairy industry during the 1990s, especially after the signing of the GATT Uruguay Round agreement in 1993. This chapter outlines the effect of that agreement on the Korean dairy sector. The dairy trade restrictions and requirements before and after the GATT Uruguay Round agreement are outlined and compared.

4.2 Pre-GATT Uruguay Round

High levels of protection from foreign dairy product imports, between the early-1960s and mid-1990s, enabled the Korean dairy industry to expand rapidly. The only dairy imports were those required to meet domestic shortages or to provide animal feed and specialised products, such as casein. The Korean dairy sector came to depend heavily on this high level of protection for continued growth and profitability despite huge pressure from the rest of the world to lower its barriers and allow imports.

Table 4.1: Pre GATT-UR Dairy Product Imports, in Korea

Product	Duty	Comments
Milk and Cream	40%	Shelf life limit
Yoghurt	40%	Freely imported
Whey Powder	20%	Import licence
Cheese/Curd	40%	Freely imported
Lactose	20%	Import licence
Cocoa mix	20%	Freely imported
Casein/ate	20%	Freely imported
SMP	20%	Freely imported
WMP	20%	Freely imported
Butter	40%	Imports banned

Source: Dairy Access to the R. O. Korea, New Zealand Dairy Board Papers.

Prior to the GATT Uruguay Round, Korea had virtually no trade in dairy products. The extremely short (seven weeks) shelf-life limit on milk was the most prohibitive non-tariff barrier prior to the Uruguay Round (see Table 4.1). It was the major factor shielding the dairy sector from foreign competition. Shelf-life restrictions, together with the cold chain distribution infrastructure, remain a severe impediment to increased dairy imports.

Butter imports were banned, except for product used by the airline catering trade. Cheese imports were almost non-existent before the early-1990s. Korean dairy exports were almost nil due to the low competitiveness of the Korean dairy sector.

4.3 The GATT Uruguay Round

The GATT Uruguay Round was successfully concluded in December 1993 after negotiations lasting more than seven years. It ushered in a new era of trade liberalisation and substantially increased the volume of world trade by reducing protectionist instruments such as tariffs, subsidies, and non-tariff barriers that restricted export opportunities. The major agreements were:

- A 36 percent reduction in the value of export subsidies and a 24 percent reduction in the volume of subsidised exports (from a 1986-90 base).
- A 20 percent cut in domestic subsidies over six years (from a 1986-88 base).
- The conversion of all non-tariff barriers into tariff equivalents and their reduction by an unweighted average of 36 percent over six years (from a 1986-88 base).

Korea faced strong pressure to open its agricultural markets before the World Trade Organisation (WTO) system was launched. It has pursued active trade liberalisation policies since the early-1980s by reducing tariffs and relaxing other import regulations in the agricultural sector. In 1984, about 29 items were lifted, 37 in 1985, 21 in 1986, 8 in 1987, and 43 in 1988. In April 1989, the Korean government announced a three-year (1989-1991) import liberalisation schedule for agricultural products. Under the plan, some 159 products were liberalised, 56 in 1989, 59 in 1990, and 44 in 1991. An additional 69 items were liberalised by the Import Liberalisation Plan in 1992. In 1995, the government announced an additional 216 items to be liberalised between 1995 and 1997.

Table 4.2 shows the extent of liberalisation in Korean agriculture after 1994. The import liberalisation ratio for agricultural products was 98.3 percent in 1997, and the cheese, SMP and WMP markets were liberalised in 1995. Import restrictions on butter were removed in 1996.

Table 4.2: Korean Import Liberalisation Ratios

Year	Total items	Number of items liberalised	As percentage of total items	Commodities
	1420		100%	
1994		1,178	83.0%	Barley, maize, soybean, potatoes
1995		166	94.6%	Sweet potatoes, apples, fresh grapes, cheese, pepper, garlic, sesame seed, skim and whole milk powder
1996		15	95.7%	Grape juice, apple juice, butter
1997		37	98.3%	Pork, poultry, silk, orange juice
2001		8	98.8%	Beef, cows (live animals)

Source: OECD, 1997

4.4 Results for the Korean Dairy Sector

The non-tariff barriers that effectively prevented the import of many dairy products prior to the Uruguay Round were abolished by that agreement, and replaced with tariffs and minimum market access commitments. These changes are set out in Table 4.3. These changes are being implemented in ten equal

instalments beginning in 1995 and ending in 2004. The new tariff rates for many products are higher than the pre-Uruguay Round levels, however the non-tariff barriers prior to the Uruguay Round were so restrictive that imports were almost non-existent. The removal of these restrictions has allowed dairy imports to increase significantly.

Table 4.3: Korea's GATT Commitments- Tariffs Quotas

Product	Initial TQ 1995 (M/T)	Final Quota 2004 (M/T)	In-Quota Tariff (%)	Base Tariff 1995 (%)	Final Tariff 2004 (%)
SMP/Buttermilk	621	1034	20	220	176
WMP	344	573	40	220	176
Cheese	na	na	na	40	36
Whey/Powder	23,000	54,233	20	99	49.5
Butter	250	420	40	99	89
Lactose	5640	9400	20	na	na

na = not applicable

Source: Dairy Access to the R.O. Korea. New Zealand Dairy Board Papers.

Import restrictions on SMP and WMP were eliminated from 1995 and they became subject to ceiling bindings, which were set at 220 percent but reducing to 176 percent by 2004. Tariff quotas were established over the 10-year implementation period at a lower in-quota tariff rate. For SMP, 621 M/T of tariff quota was provided in 1995, and will be increased to 1,034 M/T by 2004, with an in-quota tariff rate of 20 percent. For WMP, 344 M/T of tariff quota was provided in

1995, and will be increased to 573 M/T by 2004, with an in-quota tariff rate of 40 percent (MAFF Korea 1999).

Import restrictions on cheese were removed from January 1, 1995. The tariff rate was set at 40 percent and will be reduced to 36 percent by 2004.

Limited market access has been provided for butter. Import restrictions on butter were eliminated from July 1, 1995 with the ceiling binding of 99 percent as a starting level in 1995. This will be reduced to 89 percent by 2004. A tariff quota of 250 M/T was established for 1995 and will be raised to 420 M/T by 2004, with an in-quota tariff rate of 40 percent.

4.5 The Effects of UR Agreements on the Korean Dairy Sector

Prior to the Uruguay Round, Korean dairy manufacturing was sustainable only because of the high level of protection. Now that trade liberalisation has exposed the sector to foreign competition, its survival depends on its ability to devise and implement superior strategies to compete against cheap imports.

The New Zealand Dairy Board expects trade liberalisation to have the following outcomes on the Korean dairy industry:

- The production of manufactured products will sharply decline.

- The scaling back of manufactured products will affect milk production by a limited extent, as only 5 percent of the milk is used for that purpose.
- The structure of the processing industry will change, with many current facilities becoming redundant.
- Consumer prices in Korea for manufactured products should become closer to international levels encouraging expanded consumption.

(Naran 1996)

Table 4.4 indicates that the import volumes of some dairy products increased rapidly following market liberalisation. Cheese imports prior to the Uruguay Round were almost non-existent but then increased by 373 percent in the two years to 1996. In order to promote domestic cheese production, cheese products imported by Korean processors as raw material for further processing received, an adjusted tariff rate of 20 percent in 1995. Local cheese processors were also allocated quotas for raw material for further processing. These quotas were set at 4,966 M/T in 1995, 4,585 M/T in 1996 and 1,500 M/T in the first half of 1997 (USDA 1997).

Out-of-quota tariffs on SMP and WMP were set at 220 percent, while those on blended milk powders, such as whey or skim milk powder, were levied at 20-40 percent. Blended powders can be used in a variety of food products, including yoghurt, ice cream and bakery products. As a result, imports of blended powders increased by 80 percent in 1995. At the same time, imports of milk powders declined.

Table 4.4: Korean Imports of Selected Dairy Products: 1994-1996

Item (tonnes)	Code	1994	1995	1996
All cheeses	0406	3,121	11,073	14,777
Milk powders	0401 and 0402	21,133	17,560	7,333
Blended powder (a)	1901.90.2000	6,836	10,857	8,770
Other powder blends	0404.90.2000	8,724	17,150	23,472

(a): Food preparations for goods of headings 0401 to 0404

Source: Korea Customs Service, 1997

Imports of butter and cheese products increased as a result of trade liberalisation. However, as shown in Table 4.5, import prices for all dairy products rose proportionately higher than import volumes. This was mainly caused by rising world dairy prices (Baek 1995).

Table 4.5: Dairy Product Imports Prior to and After Trade Liberalisation

Item	1994		1995		1996		Comparison			
	M/T (A)	000U$ (B)	M/T (C)	000U$ (D)	M/T (E)	000U$ (F)	C/A	D/B	E/A	F/B
Butter	515	1,079	498	1,146	535	1,487	0.97	1.06	1.04	1.38
Cheese	3,121	8,563	11,074	33,943	15,023	50,471	3.55	3.96	4.81	5.89
SMP	10,254	15,482	7,044	14,860	1,397	2,896	0.69	0.96	0.14	0.19
WMP	1,327	2,224	532	1,194	221	521	0.40	0.54	0.17	0.23

Source: FAO, 1999

Ideally, dairy product sales in the domestic market, prior to and after trade liberalisation, could be used to estimate elasticity, determine the effect of trade liberalisation on domestic dairy marketing efficiency, and measure the impact of the change in marketing margins on dairy producers and consumers (Wait & Ahmadi-Esfahani 1996). Table 4.6 shows the elasticity of import demand both before and after trade liberalisation. Elasticity of import demand is a measure of how strongly the quantity demanded responds to a change in price. Elasticity of import demand is calculated according to equation (4.1):

(4.1) ε = Percent change in quantity / Percent change in price

= $P * \Delta Q / Q * \Delta P$

The import demand for butter was inelastic before trade liberalisation, and elastic afterwards. Imported SMP was a main ingredient in locally made butter prior to liberalisation of the butter market in 1996. Butter imports were very limited except for product intended for the airline catering trade. As a result, the import demand for butter prior to trade liberalisation was inelastic with its limited uses. When butter prices fell in 1997 as a result of butter market liberalisation, local butter manufacturers increased imports of butter rather than continue to make it themselves using imported SMP. This caused the import demand for butter to become elastic.

Table 4.6: Elasticity of Import Demand Prior to and After Trade Liberalisation, in Korea

Item		1990	1991	1992	1993	1994	1995	1996	1997	1998
	US$/kg	2.85	1.70	2.14	2.04	2.10	2.30	2.78	1.99	2.43
Butter	Imports (M/T)	110	2508	371	514	515	498	535	1153	499
	Ed[(a)]	-2.254	6.987	-0.23	0.708	0.004	-0.07	0.151	2.440	-1.433
	US$/kg	6.43	5.86	4.79	4.82	2.74	3.07	3.36	3.10	2.71
Cheese	Imports (M/T)	122	121	200	265	3121	11704	15023	19199	13263
	Ed[(a)]	-0.283	-0.055	3.207	1.335	11.219	3.002	0.730	0.854	-1.215
	US$/kg	1.81	1.35	1.67	1.74	1.51	2.11	2.07	2.02	1.60
SMP	Imports (M/T)	595	12944	7950	12660	10254	7044	1397	1927	2648
	Ed[(a)]	0.115	3.865	-0.58	0.748	-0.393	-0.48	-2.85	0.698	0.720
	US$/kg	1.86	1.44	1.70	1.66	1.68	2.24	2.36	1.92	1.90
WMP	Imports (M/T)	84	4156	880	2183	1327	532	221	441	194
	Ed[(a)]	-1.668	4.094	-1.73	1.464	-0.805	-1.26	-1.80	1.748	-1.502

Note: (a) Elasticity of import demand

Source: FAO, 1999

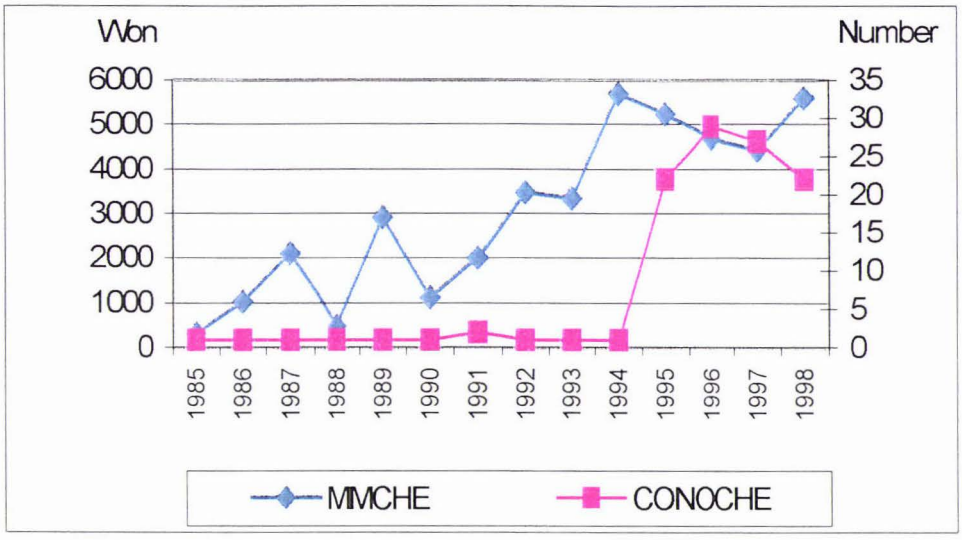
Table 4.6 shows that the import demand for cheese was highly elastic before trade liberalisation, but was much lower afterwards (The cheese market was liberalised in 1995). This change was associated with the rapid growth in fast food and western-style restaurants, and a change in Korean dietary patterns. This indicates that the status of cheese as a luxury good is declining.

In general, SMP has a smaller elasticity of import demand than WMP, because SMP is mainly imported and used largely as an ingredient in confectionery and bakery products.

The inverse relationship between price and quantity demanded suggested by price theory is not apparent in the calculated elasticities for butter and cheese in Table 4.6. However, no judgement on the inverse relationship is possible, because the inverse relationship by itself says nothing about the responsiveness of quantity demanded to a price change for a product (Tomek & Robinson 1990).

The impact of trade liberalisation on the Korean dairy sector is reflected in the changing relationship between marketing margins and the number of dairy importing companies. Figure 4.1 shows that imported cheese marketing margins (MMCHE) increased significantly from almost 300 won to 5,700 won, during the period 1985-94. They declined after 1995 when the number of cheese importing companies (CONOCHE) increased dramatically.

Figure 4.1: Cheese Marketing Margins and the Number of Cheese Importing Companies, in Korea



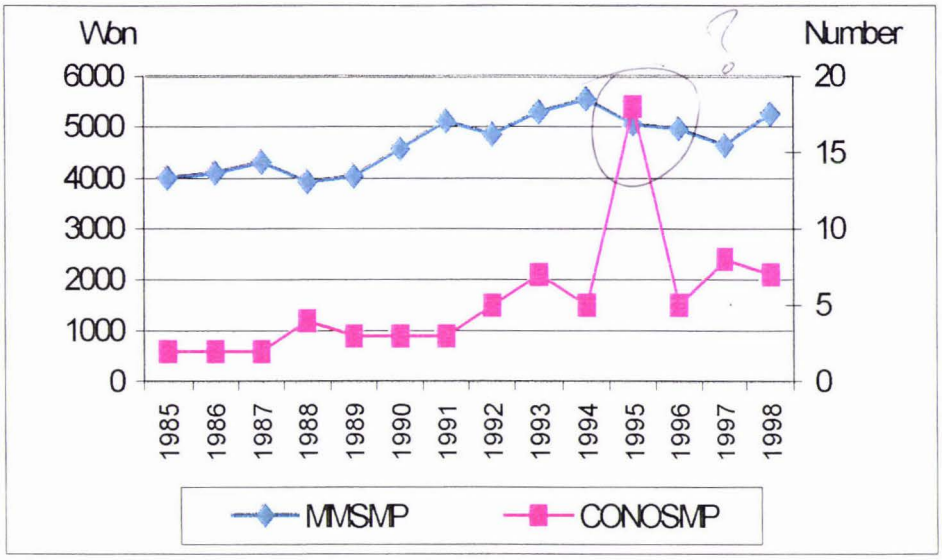
Note: MMCHE: Marketing Margins for Cheese,

CONOCHE: The Number of Cheese Importing Companies.

Source: KNSO and KITA, 2000

Figure 4.2 shows how SMP marketing margins (MMSMP) have changed since 1985. They increased steadily from 1985 until 1994, from almost 4,000 won to 5,544 won. They declined dramatically from 1995 as the number of SMP importing companies (CONOSMP) increased. This phenomenon is examined in greater detail in section 5.5.

Figure 4.2: SMP Marketing Margins and the Number of SMP Importing Companies, in Korea



Note: MMSMP: Marketing Margins for SMP,

CONOSMP: The Number of SMP Importing Companies.

Source: KNSO and KITA, 2000

4.6 Impact of Trade Liberalisation on World Dairy Prices

The Uruguay Round trade negotiations stimulated the development of large-scale agricultural trade studies into the consequences of global agricultural trade reform. Most of these studies (Warr 1997; FAO 1995) focused on the impact of the reforms on world prices for agricultural commodities.

The implementation of the Uruguay Round commitments has gradually reduced the volume of subsidised dairy exports over the past decade. Improved

international trading conditions are expected to boost world dairy product prices. The main factors contributing to this are:

- Continued demand growth in the Asian region, especially for cheese and milk powders, reflecting ongoing economic growth; and
- The implementation of the GATT Uruguay Round phased reduction commitments in export subsidies.

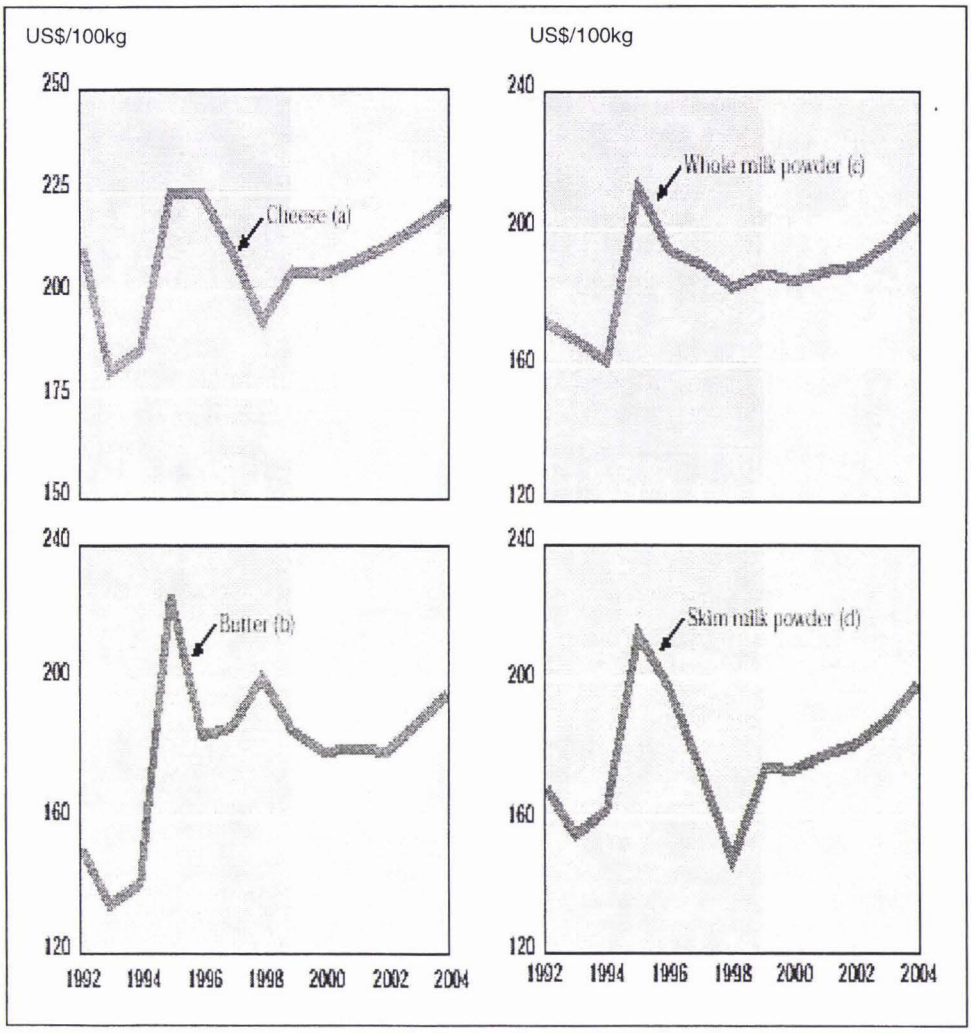
However, this recovery in world dairy prices is likely to be tempered by:

- Continuing subsidised supply from major dairy producers;
- Expansion of supply from sources where commitments on export subsidies will not constrain exports, including U.S. butter exports; and
- Political and economic problems in some major milk powder importing countries, which may constrain demand.

(SONZA 1996)

Figure 4.3 shows that world dairy product prices improved significantly from 1993 until 1995. This was mainly due to rising demand, lower stocks, and static production. After 1995, the positive impact on prices due to rising demand was tempered by increased dairy production in the non-OECD area and in those OECD member countries not subject to production quotas.

Figure 4.3: World Dairy Product Prices



Notes: (a) F.o.b. export price, cheddar cheese, 40lb blocks, Northern Europe. (b) F.o.b. export price, butter 82% butterfat, Northern Europe. (c) F.o.b. export price reported by Int. Dairy Agreement participants. (d) F.o.b. export price, not fat dry milk, extra grade, Northern Europe.

Source: OECD Secretariat, 1999

World prices for all dairy products except cheese declined in the 1996 season. This reflected an increase in world milk production and a decline in demand. Because increasing demand was matched by increasing production,

cheese was largely unaffected by changes in the value of other dairy products and remained at around US$225 per 100kg throughout 1995 and 1996. Cheese prices were supported by commitments to limit subsidized exports under the UR Agreement on Agriculture.

World dairy prices, with the exception of those for butter, fell in 1998. This was mainly because of economic crises in Asia, Russia and Latin America which reduced demand for dairy products. Prices in general were affected by ample supplies in the main exporting countries coupled with reduced demand by importers whose currencies fell in value in the wake of the Asian financial crisis.

After several years of languishing, prices for most dairy products appear to have reached a low point and are starting to recover. The cheese market appears to have reached equilibrium sufficient to arrest any further declines. The outlook for milk powder prices remains positive. This view is, to a certain extent, influenced by UR restrictions on export subsidies which are starting to affect market supply. The demand side of the equation remains encouraging. The recovery of the Asian economies is spurring demand sufficiently to absorb supplies.

4.7 Concluding Comments

The Korean dairy sector will continue to undergo dramatic change as a result of the Uruguay Round. Domestically manufactured dairy products, which had

developed behind considerable protection, must now compete with cheap imports. Down-scaling has also appeared in the last few years and is likely to continue.

Non-tariff barriers effectively prevented dairy imports prior to the Uruguay Round. However, imports rose substantially once those barriers were removed. Foreign competition has also allowed consumption to increase while prices have continued to fall. Prospects appear particularly promising for cheese, because of a relatively low tariff of 40 percent combined with rapid growth in the consumption of fast foods.

The impact of trade liberalisation on the Korean dairy sector is reflected in the changing relationship between marketing margins and the number of dairy importing companies The dramatic surge in the number of companies following trade liberalisation in 1995 has caused imported dairy product marketing margins to decline.

CHAPTER FIVE

Estimation of Factors Affecting Marketing Margins

CHAPTER FIVE

Estimation of Factors Affecting Marketing Margins

5.1 Introduction

In any attempt to explain trends or fluctuations in marketing margins, the influence of the most important factors should be identified and measured (OECD 1981). Like Musick's study (1993) which analysed the factors affecting lamb marketing margins in USA, this study examined the economic factors affecting the marketing margins of imported cheese and SMP in Korea.

This chapter describes the standard and stepwise regression techniques, which were used in this analysis, and presents the results. The data consisted of annual cheese and SMP prices at border and retail level in Korea published by the Food and Agriculture Organisation (FAO) of the United Nations (UN), and the Korea National Statistical Office (KNSO). The period covered is 1985 to 1998.

5.2 Approach to Marketing Margins

When selecting an appropriate methodology for the study of marketing margins, consideration must be given to such factors as the availability of statistical data, the characteristics of the market products, the nature of marketing channels and the objectives of the analysis (Briz & de Felipe 1997).

Three different approaches can be applied when adopting methodologies to describe marketing margins:

a) The sectoral approach examines the role of marketing margins in the general economy, either by national accounting or by input-output tables. However, aggregation used in the systems limits the usefulness of this method.

b) The functional approach analyses the different economic activities associated with each enterprise. This allows one to analyse the economic or social efficiency of specific industries. Through historical and cross-sectional studies, it may be possible to evaluate the effect of public policies, or the collusive actions of some entrepreneurs, on the structure and behaviour of the industry. Unfortunately this approach is usually difficult because most firms are either unwilling or very sensitive about disclosing information regarding their costs, margins and pricing policies.

c) The product-focused approach is based on the simple idea of following the product through the commercial process and noting prices, quantities, costs, etc. on each transaction. This approach allows one to identify factors influencing the level and behaviour of the components of the margin realised on a product. However, the concept of product is not always clear, and frequently refers to a group of similar products with analogous utilities. High quality data is therefore needed for this approach in order to make accurate

price comparisons. Unfortunately, there are many pitfalls in the interpretation of such data.

This analysis is based on the product-focused approach, because it seeks a comprehensive explanation of what determines marketing margins on individual products. Also, the overall estimates also rely on data sources.

The term marketing margin as defined in this study is the difference between the landed (CIF) price and the consumer price of products shipped to Korea. This definition focuses on the costs associated with the various steps required to move a product from the point of importation through to the consumer. Because market structure can be very different at different levels of the industry, the appropriate characterisation of margin behaviour may also be different at each level (Musick 1993). The first step in analysing the movement of a marketing margin is to appropriately characterize the nature of that margin in an aggregate sense so that it adequately represents marketing costs that occur between two price levels. The marketing margins used in this study were therefore estimated according to equation (5.1):

(5.1) $MM = P_c - P_{cif}$

Marketing margins (MM) are defined as $MM = P_c - P_{cif}$, where P_c and P_{cif} are the consumer and CIF prices, respectively. Therefore, cheese marketing margins (MMCHE) can be expressed as a function of the CIF price (CIFPCHE) and

consumer price (CPCHE) of cheese. SMP marketing margins (MMSMP) are expressed as a function of the CIF price (CIFPSMP) and consumer price (CPSMP) of SMP.

(5.2) MMCHE = f (CIFPCHE, CPCHE)

(5.3) MMSMP = f (CIFPSMP, CPSMP)

Suppose prices can be expressed as a function of marketing costs and various economic factors. The nominal exchange rate (ER) and the number of companies importing cheese and SMP (CONOCHE and CONOSMP, respectively) were used in equations (5.4) and (5.5) to represent economic factors influencing CIF price. The marketing margin of each good was determined using its world price, the interaction of the level of domestic costs and the appropriate nominal exchange rate (ER) at which the good entered the domestic market (Chapple 1993). CONOCHE and CONOSMP represented competition incurred by trade liberalization.

(5.4) CIFPCHE = f (ER, CONOCHE)

(5.5) CIFPSMP = f (ER, CONOSMP)

It was decided to use two variables (WAGE, PETRO) in equations (5.6) and (5.7) to represent marketing costs in the MM model. Labour costs were the largest marketing expense. WAGE is used to capture the effect of changes in labour costs. The price of petroleum (PETRO) is a proxy for transportation costs. These two

variables should provide information about how marketing costs impact on marketing margins.

(5.6) CPCHE = f (CIFPCHE, WAGE, PETRO)

(5.7) CPSMP = f (CIFPSMP, WAGE, PETRO)

Thus, the specification of equations is as follows:

(5.8) MMCHE = f (ER, CONOCHE, WAGE, PETRO)

(5.9) MMSMP = f (ER, CONOSMP, WAGE, PETRO)

The MMCHE model, equation (5.8), estimated the cheese marketing margin as a function of the exchange rate (ER), trade liberalization (CONOCHE), wage rates (WAGE) and petroleum prices (PETRO). The MMSMP model, equation (5.9), estimated the SMP marketing margin as a function of the exchange rate (ER), trade liberalization (CONOSMP), wage rates (WAGE) and petroleum prices (PETRO).

Consumer prices and CIF prices were removed from the models because marketing margins were obtained by subtracting the CIF price from the consumer price. It is assumed that marketing margins are highly correlated with these two variables.

Higher rates of external protection (in particular tariffs) raise the price of a foreign firm's products as they enter the domestic market and are therefore likely to be associated with higher marketing margins (Chapple 1993). At the same time, domestic prices are influenced by foreign competition resulting from trade liberalisation. The coefficient associated with trade liberalization (CONOCHE, CONOSMP) would be negative because an increase in the number of dairy importing companies could likely increase competition in the domestic market.

Exchange rate changes affect the marketing margins of imported goods. For example, CIF prices at the Korean border increase when the won depreciates against the U.S. dollar. This would reduce the marketing margins of imported dairy products (equation (5.1) defines the marketing margin as the difference between retail prices and CIF prices). The estimated coefficient of ER in equations (5.8) and (5.9) should therefore be positive. However, in many cases, it appears that imperfectly functioning markets prevent border price changes from being completely transmitted to retail prices.

Labour is the single largest marketing cost and is followed by packaging and transportation costs (Dahl & Hammond 1977). The predominance of labour costs in the food marketing bill has important consequences. First, the marketing bill closely follows the rate of increase in labour costs. Second, the dominance of labour costs introduces a downward rigidity in the marketing margin. However, a steady rise in per unit labour costs over time has contributed to a rising marketing margin (Kohls & Uhl 1990). Increases in marketing costs lead to increases in marketing margins

(Musick 1993). The estimated coefficients of the WAGE and PETRO variables should be positive because processors are likely to try to offset higher costs by increasing the marketing margin.

5.3 Method of Estimation

Regression analysis is normally used when one or more independent variables are correlated with a dependent variable (Neale & Liebert 1986). There are three major regression models, namely, standard regression, hierarchical regression and stepwise regression (Wonnacott & Wonnacott 1935). These models differ according to their treatment of overlapping variability due to correlation of the independent variables; and also to the order of the independent variables in the equation.

This analysis began with a standard regression to look at the closeness of the relationship between the dependent variables in equations (5.8) and (5.9) and their explanatory variables. All independent variables enter the regression equation at once in the standard regression model. Explanatory variables included in the econometric model were suggested by standard price theory and previous marketing studies; these include labour costs and transportation costs (Barallat *et al.* 1987).

The next step in the analysis was to use a stepwise regression to identify which of the independent variables significantly determined changes in the

marketing margin. Stepwise estimation is the most common sequential approach to variable selection. It allows the contribution of each predictor variable in the regression model to be examined. However, rather than deleting variables, as in the backward elimination procedure, each variable is considered for inclusion prior to developing the equation. The primary distinction of this approach is the ability to add or delete variables at each stage. The order of entry, and whether the predictor is eventually accepted, are decided on the basis of whether the F-test exceeds a certain critical value (FIN) and a critical alpha level (PIN).

The specific issues at each stage are as follows:

1. Start with the simple regression model in which only the predictor most highly correlated with the dependent variable is used. The equation is $Y = b_0 + b_1X_1$.

2. Examine the partial correlation coefficients to find an additional predictor variable that explains both a significant portion and the largest portion of the error remaining from the first regression equation.

3. Recompute the regression equation using the two-predictor variables, and examine the partial F value for the original variable in the model to see whether it still makes a significant contribution, given the presence of the new predictor variable. If it does not, eliminate the variable. This ability to eliminate variables already in the model distinguishes the stepwise model

from simple forward addition models. If the original variable still makes a significant contribution, the equation becomes $Y = b_0 + b_1X_1 + b_2X_2$.

4. Continue this procedure by examining all predictors not in the model to determine whether one should be included in the equation. If a new predictor is included, examine all predictors previously in the model to judge whether they should be kept. A potential bias in the stepwise procedure results from considering only one variable for selection at a time. Suppose variables X_3 and X_4 together explain a significant portion of the variance, but neither is significant by itself. In this situation, neither would be considered for the final model.

In stepwise regression, the number of independent variables entered and the order of entry are determined by statistical criteria generated by the stepwise procedure. The method of entry can be either forward, backward or a combination of both. Stepwise selection is a combination of the forward and backward procedures. It allows for the later removal of variables that were previously entered.

5.4 Data Collection and Description

The dairy product prices used in this study are average CIF and consumer prices. Dairy firms operate under a wide variety of conditions, which makes it extremely difficult to obtain specific price data, especially in the retail sector.

Available price information is usually based upon accounting records, and the state of accounting and financial management within the dairy trade does not generally inspire confidence in the quality of such data. Therefore, rather than undertake a formal study using prices, this study adopts a more indirect estimation approach.

This study compares import unit (one kilogram) prices of cheese and SMP with their retail unit (one kilogram) prices. Import unit prices were gathered from the FAO, and were calculated by dividing the declared CIF value of imports with the volume of imports. Consumer price indices for these products were obtained from the Korea National Statistical Office (KNSO). Consumer prices for each dairy product were formulated from the consumer price index (CPI) of cheese and SMP. Foreign exchange rates were obtained from the Asian Development Bank (ADB). The number of companies importing cheese and SMP was collected from the Korea International Trade Association (KITA). These economic indicators are presented in Appendix II.

The CIF import price for each dairy product was converted from U.S. dollars to Korean won in order to calculate a margin. Each price and wage variable is deflated using the GDP deflator index (1995 = 100) reported by the KNSO. Marketing margins were calculated by subtracting the suggested consumer price from the CIF import price for each dairy product. Summary data are presented in Appendix III. The analysis was undertaken for cheese and SMP, as they are the major dairy products consumed in Korea, and there were not sufficient data for the other categories of dairy product.

5.5 Results and Findings

This section presents the results obtained from the standard and stepwise regressions. The analysis focused on annual changes in marketing margins. The results are indicative rather than absolute as estimates between years were difficult to interpret.

5.5.1 Correlation

The correlation coefficient measures the degree of association between two variables. It is calculated by a formula that uses the deviation of each data point from its data set mean, similar to that of the standard deviation. Pearson's product moment correlation coefficient assumes both sets of data to be normally distributed. As can be seen from Table 5.1 and Table 5.2, wage movements have a positive relationship with changes in both MMCHE and MMSMP. In both cases the coefficient has a high positive value ($r = 0.880$ and $r = 0.784$, respectively) that passes the 0.01 significance level.

Table 5.1: Correlation Matrix Between Variables for Cheese

VARIABLES		MMCHE	ER	CONOCHE	WAGE	PETRO
MMCHE	Pearson Correlation	1.000	.400	.648*	.880**	.493
	(Sig.)	(.)	(.156)	(.012)	(.000)	(.074)
ER	Pearson Correlation		1.000	.470	.266	.952**
	(Sig.)		(.)	(.090)	(.359)	(.000)
CONOCHE	Pearson Correlation			1.000	.776**	.683**
	(Sig.)			(.)	(.001)	(.007)
WAGE	Pearson Correlation				1.000	.419
	(Sig.)				(.)	(.136)
PETRO	Pearson Correlation					1.000
	(Sig.)					(.)

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 5.2: Correlation Matrix Between Variables for SMP

VARIABLES		MMSMP	ER	CONOSMP	WAGE	PETRO
MMSMP	Pearson Correlation	1.000	.270	.451	.784**	.256
	(Sig.)	(.)	(.351)	(.106)	(.001)	(.376)
ER	Pearson Correlation		1.000	.131	.266	.952**
	(Sig.)		(.)	(.656)	(.359)	(.000)
CONOSMP	Pearson Correlation			1.000	.594*	.224
	(Sig.)			(.)	(.020)	(.442)
WAGE	Pearson Correlation				1.000	.419
	(Sig.)				(.)	(.136)
PETRO	Pearson Correlation					1.000
	(Sig.)					(.)

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Test for multicollinearity diagnostics indicated that the exchange rate (ER) and transportation costs (PETRO) were highly collinear among the variables, but gave generally acceptable values from a numerical point of view. Large Variance Inflation Factor (VIF) values are an indicator of multicollinearity. As the VIF value increases, so does the variance of the regression coefficient, making it an unstable estimate. SPSS uses a default maximum of 100 for Variance Inflation Factors (Jennrich 1995). ER and PETRO in the model of cheese analysis had values of VIF 30.9 and 45.8, respectively. ER and PETRO in the SMP model analysis had values of VIF 13.7 and 15.5, respectively. Thus, these two variables did not cause multicollinearity problems in either model.

5.5.2 A Standard Regression Analysis for Cheese

The effects of the various factors affecting cheese marketing margins were estimated by a standard regression analysis. The results in terms of the unstandardised coefficients (β), the t-value (t) and the R-square (R^2) are presented in Table 5.3.

Table 5.3: Standard Regression Results for Cheese

VARIABLES		ER	CONOCHE	WAGE	PETRO
MMCHE					
	Unstandardised Coefficients (β)	5.54	-3.68	6.664E-03	-16.49
	T- value (t)	.65	-.05	4.13	-.38
	R Square (R^2)	.82			

Dependent variable: MMCHE

The independent variables explained 82 percent of the variability in the cheese marketing margins. The signs on ER, CONOCHE and WAGE meet prior expectations but that on PETRO does not. ER, CONOCHE and PETRO are not statistically significant at the 5 percent level. However, WAGE is significant at the 5 percent level.

The unstandardised regression coefficient (β) on trade liberalisation (CONOCHE) is –3.68 indicating that a 1 percent increase in the number of cheese importing companies results in an approximately 3.68 percent decrease in cheese marketing margins. The larger the number of dairy importing companies, the greater the competition among domestic dairy processors and the greater the pressure to lower marketing margins. This result accords with the general perception that trade liberalisation has a negative impact on marketing margins in real terms (Chapple 1993).

There is also a negative relationship (-16.49) between transportation costs (PETRO) and cheese marketing margins (MMCHE). The implicit assumption from this negative relationship is that not all transportation cost increases were added onto marketing margins. A large part of this imperfect market mechanism is related to government intervention (Tomek & Robinson 1990). A discussion of the effect of Korean government intervention on the determination of petroleum prices in Korea is contained in section 6.1.6.

5.5.3 A Standard Regression Analysis for Skim Milk Powder

The effects of various factors affecting SMP marketing margins are estimated by a standard regression analysis. As in section 5.5.2, the results consist of the unstandardised coefficients (β), the t-value (t) and the R-square (R^2) and are presented in Table 5.4.

Table 5.4: Standard Regression Results for SMP

VARIABLES		ER	CONOSMP	WAGE	PETRO
MMSMP					
	Unstandardised Coefficients (β)	5.65	-13.93	2.471E-03	-25.33
	T- value (t)	4.27	-.70	6.64	-4.30
	R Square (R^2)	.88			

Dependent variable: MMSMP

The results obtained from this regression are consistent with those obtained in section 5.5.2. The independent variables explain 88 percent of the variability in SMP marketing margins. ER, WAGE and PETRO are statistically significant at the 5 percent level, but CONOSMP is not. The signs on ER, CONOSMP and WAGE meet prior expectations. However, PETRO has a negative sign which is not consistent with predictions.

The unstandardised regression coefficient (β) on trade liberalisation (CONOSMP) is –13.93 indicating that a 1 percent increase in the number of SMP importing companies results in an approximate 13.93 percent decrease in SMP marketing margins. This result is consistent with the belief that trade liberalisation has a negative impact on marketing margins in real terms.

There is also an inverse relationship (-25.33) between transportation costs (PETRO) and SMP marketing margins (MMSMP). This implies that increases in transportation costs were not fully passed onto marketing margins.

5.5.4 A Stepwise Regression Analysis for Cheese and Skim Milk Powder

A stepwise regression procedure was employed to determine which of the independent variables had a significant influence on marketing margins. WAGE was the only significant variable in the regression model and is listed in Table 5.5 with its explanatory power. The R-square (R^2) value gives the proportion of

variance in marketing margins accounted for by that variable, taken individually at the point where it entered the model. The model R^2 gives the cumulative proportion of variance accounted for at each step.

Table 5.5 presents the results of the stepwise regression analysis. The procedure identified WAGE as the only variable that was statistically significant ($p < 0.001$). It contributed significantly to explaining the changes of marketing margin for both cheese and SMP, 78 percent and 61 percent respectively. The sign of the coefficient met prior expectations.

Table 5.5: Stepwise Regression Results for Cheese and SMP Models (only significant predictors are included)

- ***Stepwise Regression Results for Cheese***

Variable	Multiple R	R^2	Unstandardised Coefficients (β)	Standard error (b)	Beta	T- value (t)	Sig.
Wage	.88	.78	6.425E-03	.001	.88	6.43	.001

Dependent variable: MMCHE

- ***Stepwise Regression Results for SMP***

Variable	Multiple R	R^2	Unstandardised Coefficients (β)	Standard error (b)	Beta	T- value (t)	Sig.
Wage	.78	.61	1.627E-03	.001	.78	4.37	.001

Dependent variable: MMSMP

These results show that changes in the marketing margins of imported cheese and SMP were significantly determined by labour costs during the period 1985-98. The exchange rate (ER), trade liberalisation (CONOCHE, CONOSMP) and transportation costs (PETRO) did not exert a statistically significant effect in either model.

5.6 Concluding Comments

This chapter used historical time series data to investigate the effect of four economic factors on imported dairy product marketing margins. Two models were developed, one for cheese imports and the other for imports of SMP. Both models were analysed using standard and stepwise regressions. The results of the standard regression showed that increases in the number of importers (trade liberalisation) had a small, negative effect on marketing margins. Moreover, the impact of trade liberalisation (CONOCHE, CONOSMP) was not statistically significant for either product ($t < 1$).

The stepwise regression analysis indicated that increased labour costs (WAGE) had the biggest influence on imported dairy product marketing margins. The impact of trade liberalisation (CONOCHE, CONOSMP) was mixed with other economic factors and did not seem to be associated with lower margins in Korea, during the period 1985-98.

CHAPTER SIX

Discussion

CHAPTER SIX

Discussion

Various studies have put forward detailed explanations of price and margin behaviour (e.g. Houston 1962; Parish 1967). However, the extent by which existing theory can explain the characteristics revealed in these analyses is questionable. The relative importance of the factors highlighted in previous studies is likely to have changed and developments, particularly in product merchandising and retail structure, are likely to have introduced new influences on both retail price and margin. There is, therefore, a need to exercise caution in any attempt to isolate the factors currently shaping the behaviour of marketing margins.

This study investigated imported dairy product marketing margin behaviour in Korea during the period 1985-98. Marketing margins in Korea account for anything from 5% to 65% of the final price that consumers pay for imported cheese, and 66% to 84% of the price they pay for imported SMP. The reduction of these margins represents a major opportunity to improve market transparency and product innovation. During the decade of the 1990s, Korea moved steadily toward a freer and more open trading system by reducing import restrictions and promoting fair trade (KOTRA 1993). However, the journey towards a more liberal market has not been an easy one. During the transitional period, government agencies controlled marketing margins, especially for dairy products. From fixed

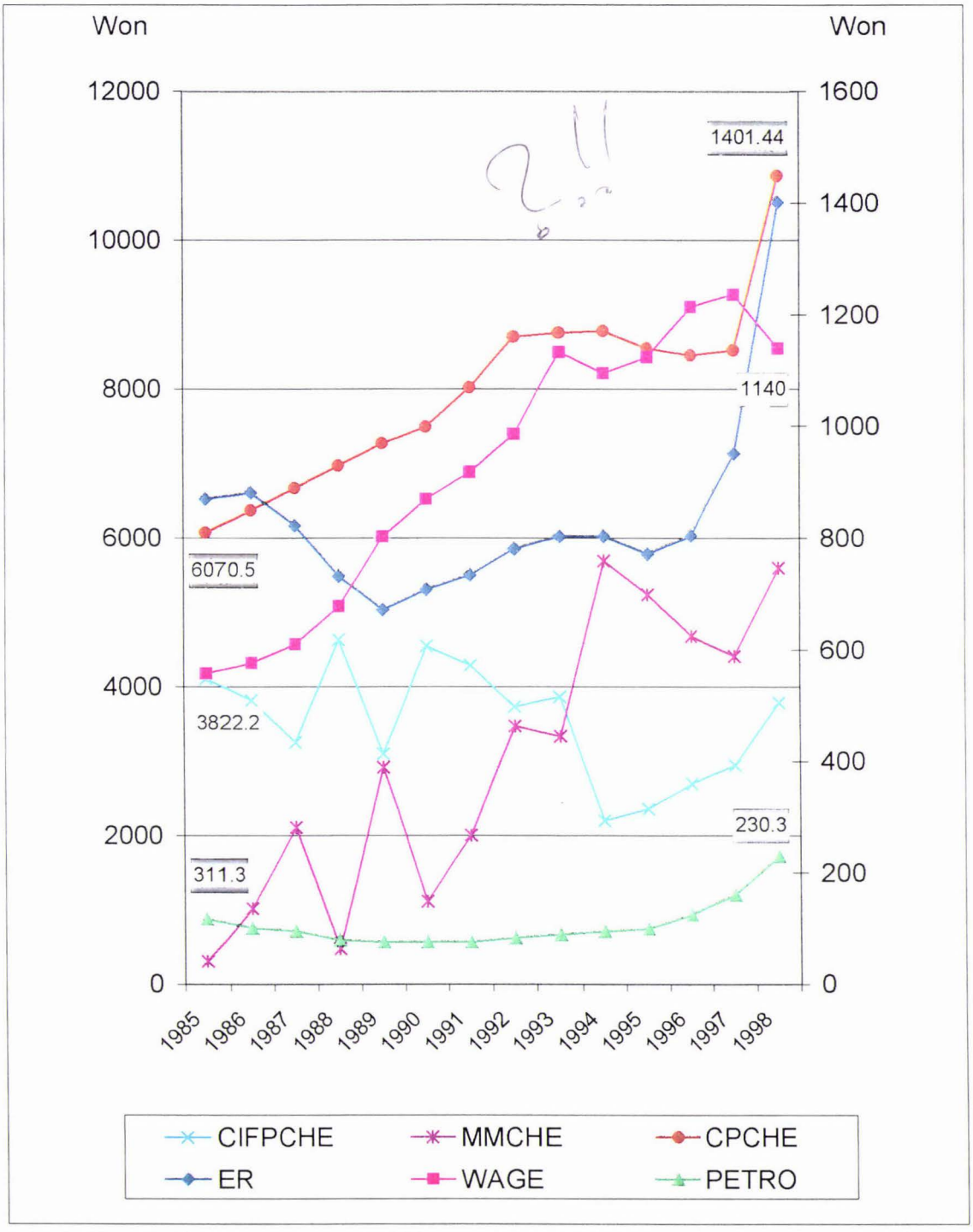
margins, the next step is to adopt recommended margins before moving into a non-interventionist system.

The stepwise regression analysis in section 5.5.4 indicated that labour costs (WAGE) have the biggest influence on the marketing margins of imported dairy products in Korea. Fisher (1981), OECD (1981) and Chapple's (1993) studies showed a similar result. The empirical evidence indicated that trade liberalisation had not had a considerable, noticeable, widespread or readily observable impact on margins.

6.1 Price Movements, Marketing Margins and Economic Factors of Imported Cheese

Figure 6.1 shows the movements in imported cheese prices, marketing margins and economic factors over the period 1985 to 1998. Marketing charges for imported cheese from the border up to retail level have been identified and trends in these unit charges have been compared with economic factors and consumer price indices. The Asian financial crisis, which affected Korea towards the end of the sample period, makes it necessary to interpret the results of this analysis with caution.

Figure 6.1: Cheese Prices, Marketing Margins and Economic Factors



Note: **CIFPCHE**: CIF Prices of Imported Cheese, **MMCHE**: Marketing margins for Imported Cheese, **CPCHE**: Consumer Prices of Imported Cheese, **ER**: Exchange Rates, **WAGE**: Wages, **PETRO**: Prices of Petroleum.

6.1.1 Marketing Margins for Imported Cheese

The data presented in Figure 6.1 reveal a number of general characteristics of imported cheese marketing margins in Korea. Yearly figures show that margins grew considerably during the study period 1985-94. There was also a significant change in the structure of both the processing and the marketing sectors in Korea. The increased number of co-operatives in the dairy processing industry, along with more integrated dairy manufacturing companies, has been a notable feature in Korea. Yearly average marketing margins for imported cheese grew from 311 won in 1985 to 5,695 won in 1994. This increase reflected higher prices of inputs such as labour and transportation, and a greater use of some inputs per unit of output such as labour in dairy retailing. Increased marketing margins and consumer prices also reflect strong consumer demand, during the period 1985-94.

Imported cheese marketing margins decreased in Korea from 1995 to 1997. This coincided with a rise in the CIF price of cheese. There was obviously a rapid decrease in marketing costs, with the exception of labour and transportation costs. The decrease may be explained by increased competition as a result of trade liberalisation, or by innovations in the dairy marketing system. Either way, increased competition and improved marketing systems in Korea are likely to have put downward pressure on retail prices. Increased cheese consumption may also be reflected in margin changes. Per capita cheese consumption in Korea increased 127 percent, with a 110 percent increase of domestic cheese production and a 64 percent volume increase in imported cheese.

6.1.2 The CIF Price of Imported Cheese

The CIF price of imported cheese shown in Figure 6.1 fluctuated in a downward direction from 1985 until 1994. It began to trend upwards when the Korean cheese market was liberalised in 1995. CIF prices rose significantly during the period 1995-97, but this did not completely flow through to consumer prices. The effect on imported cheese marketing margins is apparent in Figure 6.1. Short-term fluctuations in CIF prices tended to be passed on to marketing margins throughout the study period. An inverse relationship was apparent over the long-term.

6.1.3 The Consumer Price of Imported Cheese

The consumer price of imported cheese rose by approximately 40 percent over the period 1985 to 1997. This was much less than the 93 percent increase recorded in the consumer price index (CPI) during the same period. Figure 6.1 indicates that short-term volatility in CIF prices were not fully and immediately reflected in the consumer price of imported cheese. In many cases, the magnitude of changes in consumer prices was less than that of changes in CIF prices. This reduced fluctuations in marketing margins. This may be due in part to the fact that the Korean government has been empowered by legislation to intervene in the pricing process to help secure favourable consumer prices. The reduction in Korean tariffs in 1995 reduced the consumer price of imported cheese.

6.1.4 Exchange Rates

Exchange rate changes appeared to have a significant influence on the marketing margin of imported cheese. For example, it can be seen in Figure 6.1 that the CIF price of cheese increased when the Korean won depreciated against the U.S. dollar during the period 1995-97. This dragged down the marketing margin, which is the difference between prices at the border and retail levels. On the other hand, the appreciation of the Korean currency in 1994 and 1995 was not reflected in the change of CIF price.

6.1.5 Wages

The stepwise regression analysis used in this study indicated that labour costs (WAGE) had the biggest influence on the marketing margins of imported cheese in Korea during 1985-98. The predominance of labour costs in the food marketing bill has important consequences. It means that the marketing bill closely follows the rate of increase in labour costs and it introduces a downward rigidity in the marketing margin. A steady rise in per unit labour costs will contribute to a rising marketing margin (Kohls & Uhl 1990). Increases in marketing costs lead to increases in the marketing margins (Musick 1993).

Figure 6.1 reveals a long-term trend, from 1985 to 1994, there was a widening of the margin between CIF and consumer prices, and a consequent fall in the proportion of the consumer dollar going to importers. There are two explanations for this development. First, marketing and processing services

became more labour intensive and this increased sensitivity to wage increases. Second, consumers are demanding that more services be added to the product.

The stepwise regression analysis in section 5.5.4 showed that the cost of labour was the only variable to have a significant impact on imported cheese marketing margins. However, the fall in margins since 1995 cannot be explained by that relationship. Marketing margins for the cheese marketing sector declined substantially over the 1995-97 period, even though wage rates rose during the same period.

6.1.6 Transportation Costs

Imported cheese marketing margins and transportation costs (PETRO) were expected to have a positive relationship. The inverse relationship observed could be due the imperfect market mechanism referred to in section 5.5.2. This may due to Korea's large petroleum imports, and the government's use of a Special Excise Tax to stabilise domestic petroleum prices. Under this system, the government adjusts the tax rate on oil up or down in order to minimise price fluctuations generated by international events. Consequently, the petroleum price is not always determined by market forces and has changed relatively little over the past 15 years. This may partially explain the negative relationship between transportation costs (PETRO) and marketing margins for imported cheese (MMCHE)

6.2 Price Movements, Marketing Margins and Economic Factors of Imported SMP

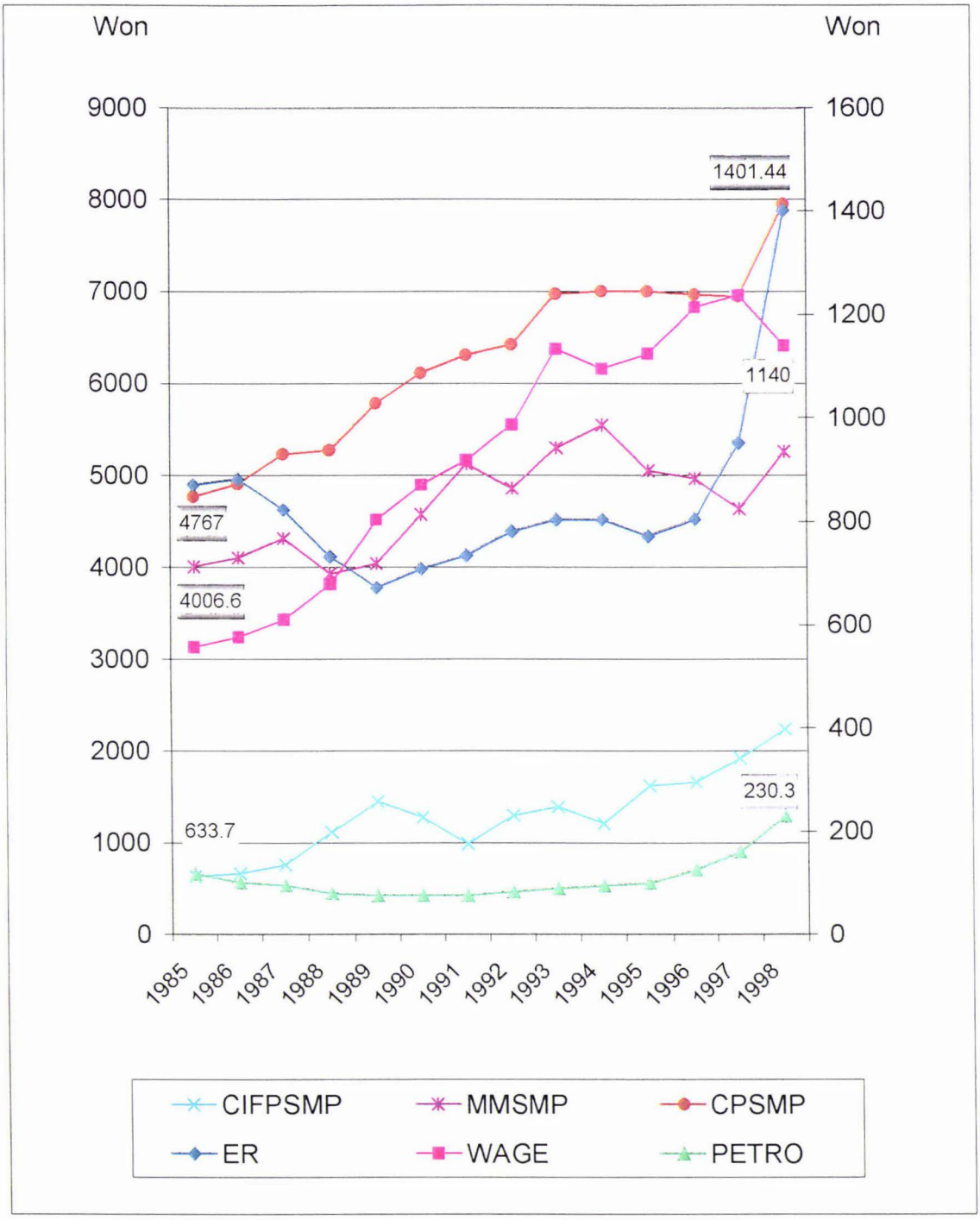
Figure 6.2 depicts the movement of imported SMP prices, marketing margins and economic factors over the period 1985 to 1998. Marketing charges for imported SMP from the border up to retail level have been identified and trends in these unit charges have been compared with economic factors and consumer price indices.

6.2.1 Marketing Margins for Imported SMP

A comparison of Figure 6.1 with Figure 6.2 shows that the marketing margins for imported cheese were considerably below those for imported SMP. Marketing margins accounted for between 5% and 65% of the retail price for imported cheese, and between 66% and 84% of the retail price for imported SMP. This difference, which is considerable, may be due to cheese having a more elastic import demand. It also indicates that considerably more restructuring took place in the distribution system of imported cheese.

Increased marketing margins and consumer prices of imported SMP reflect strong consumer demand during the period 1985-94. Per capita consumption of SMP increased 45 percent from 1989 to 1994 and this must also be reflected in the margin changes.

Figure 6.2: SMP Prices, Marketing Margins and Economic Factors



Note: **CIFPSMP**: CIF Prices of Imported Skim Milk Powder, **MMSMP**: Marketing margins for Imported Skim Milk Powder, **CPSMP**: Consumer Prices of Imported Skim Milk Powder, **ER**: Exchange Rates, **WAGE**: Wages, **PETRO**: Prices of Petroleum.

Figure 6.2 shows that imported SMP marketing margins decreased between 1995 and 1997. This may be due to increased competition as a result of trade liberalisation, or to innovations in the dairy marketing which would have put downward pressure on retail prices. A shortening of the marketing chain might also have narrowed the gap between CIF price and consumer price by taking out middle ground profits and improving information flow.

6.2.2 The CIF Price of Imported SMP

Changes in the proportion of consumer food expenditure going to importers are normally assumed to result from consumers demanding new services. Supply side factors may also have an influence and may become more important in determining future trends. SMP importers receive a lower percentage of the final consumer price - between 13 percent and 28 percent compared with between 25 percent and 67 percent for cheese importers. The remainder of the cost to the consumer is taken by those who provide time, transfer and place utility in the distribution process. Therefore, the marketing margins for imported SMP, over the study period, are larger than those for imported cheese, on a percentage basis.

Unlike the CIF price movements of imported cheese, those for imported SMP tended to be unstable in a slightly upward direction throughout the study period. This is mainly because the CIF prices of SMP in Korea closely followed world SMP price movements. Also, Figure 6.2 shows that CIF prices and marketing margins were inversely related during the period 1994-97.

6.2.3 The Consumer Price of Imported SMP

Marketing margins and consumer prices of imported SMP appear to be positively correlated over the long-term. For example, between 1985 and 1994 marketing costs for imported SMP increased from 4,006 won to 5,544 won, as consumer prices increased in response to a rise in CIF prices. The relationship was again evident during the period 1995-97 when margins decreased at the same time consumer price increases failed to keep pace with the rise in CIF prices.

The consumer price of imported SMP rose by approximately 46 percent, much less than the 93 percent increase in the consumer price index (CPI) during 1985-97. There are three possible explanations for this. First, as mentioned before, the Korean government is empowered by legislation to intervene in the pricing process in order to secure prices favourable to consumers. Second, the reduction in Korean tariffs following trade liberalisation reduced the retail price of imported SMP in Korea during the period 1995-97. Third, there was an oversupply of milk powder in the mid-1990s caused by an increase in milk powder imports.

6.2.4 Exchange Rates

The effect of the exchange rate on the marketing margin of SMP was very similar to that reported in section 6.1.4 for cheese. The CIF price of imported SMP in Korea increases whenever the Korean won falls in value against the U.S. dollar. Significant impacts of exchange rates on marketing margins are confirmed in

Figure 6.2. Imported SMP prices at the border increased, when the value of the Korean won decreased against the U.S. dollar during the period 1995-97.

6.2.5 Wages

Increased marketing margins reflect rising costs faced by firms operating in the dairy sector. These costs include the wages of workers as well as the price of supplies and services bought by marketing firms from other parts of the economy. Prices rose for most inputs required in dairy processing and distribution in Korea during the study period. The rise in marketing costs partially explains the observed increase in the CIF-to-consumer price spread and SMP prices at retail (Figure 6.2). Thus, the stepwise regression analysis in section 5.5.4 also indicated that increased labour costs appeared to be the most significant influence on margins for imported SMP in Korea during 1985-98.

However, the squeezed marketing margins for imported SMP since 1995 cannot be explained by these results. Wages increased substantially between 1995 and 1997, at the same time margins for imported SMP decreased. The differences are so considerable that they cannot be explained by wage rate movements. This indicates that other factors are affecting marketing margins. These might include changes in the mix of variable inputs, profit and price changes at each marketing level, and consumer demand.

6.2.6 Transportation Costs

The price of petroleum in Korea is not determined solely by market forces, as was mentioned in section 6.1.6. This may partially explain the negative relationship between transportation costs (PETRO) and marketing margins for imported SMP (Table 5.4). Petroleum prices have changed little over the past 15 years, rising by only about 36.6 percent, which is much less than the 93 percent increase in the consumer price index (CPI), recorded for 1985-97. Relatively stable transportation costs and greater government efforts to control other marketing costs have the marketing margins down in recent years.

6.3 Implications

According to the regression results presented in chapter 5, the cost of labour was the only variable that significantly affected imported dairy product marketing margins during the period 1985 to 1988. However, Figures 6.1 and 6.2 show that it was increases in CIF prices and not changes in labour costs that caused the fall in the marketing margins of cheese and SMP after 1995. For example, in Figure 6.1, cheese marketing margins and CIF prices moved in opposite directions during the period 1995 to 1997. A large currency depreciation during that three year period also increased the CIF prices of cheese and SMP by 34 percent and 59 percent, respectively. Exchange rates are therefore a big determinant of the CIF price and so it would appear that changes in dairy price spreads after liberalisation were largely due to exchange rate changes.

In general terms, consumer prices are more sensitive to increases than to decreases in food production costs (Briz & de Felipe 1997). From 1995 to 1997, the retail prices of cheese and SMP did not change, even though marketing costs, such as wage rates and petrol prices, increased. This behaviour can be explained by imperfect market mechanisms that fail to transmit border price changes to the retail level. For example, political and economic circumstances in Korea tend to push politicians into establishing rigid control of dairy prices in order to maintain consumer prices at low levels.

In the real terms, the price spreads of cheese and SMP narrowed after liberalisation. This indicates that important barriers in the dairy marketing system were being removed and that this facilitated marketing cost reductions. For example, the reduction of Korean tariffs following trade liberalisation increased import prices and decreased consumer prices of imported dairy products.

The number of SMP importing companies has fallen steadily after a big increase in 1995 following trade liberalisation. This may be due to the continuous decrease of marketing margins after 1995. As Rae & Bailey (1997) pointed out, the marketing costs involved in moving a product can be the difference between a sustainable commercial relationship, and one that ends quickly when sufficient profit is no longer available. This indicates that greater competitiveness in the dairy sector tends to lower marketing margins as barriers to entry for domestic and foreign firms decline (Chapple 1993). However, this conclusion was not confirmed in this study. The impact of trade liberalisation (CONOCHE, CONOSMP) on

marketing margins is hard to isolate from the impacts of other economic factors such as government intervention and diverse distribution channels. Results for both models using the standard and stepwise regressions showed that trade liberalisation had a small, negative effect on marketing margins. Furthermore, the impact of trade liberalisation was statistically not significant for both products ($t < 1$).

The number of importing companies has decreased, but by different amounts for cheese and SMP. This difference could be due to the different consumption patterns of the two products (see Appendix IV). SMP is mainly used as an ingredient for reconstituted drinking milk, yoghurt and ice cream, and its marketing margin accounts for a high proportion of the consumer price. Total cheese consumption, on the other hand, has grown dramatically as the Korean diet has become more westernised. This growth has created new opportunities for major cheese traders and has helped sustain the number of cheese importing companies, even though marketing margins have declined since 1995.

The Korean government supports an improved dairy distribution system and encourages lower distribution costs. Improvements enhance the productivity and stability of the food system and further increase the benefits arising from trade liberalisation. Rae & Bailey (1997) pointed out that some exporters have had limited success with some products because of a lack of refrigeration capacity in Korea. The goal of raising and stabilising a firm's revenues can be promoted by improving the efficiency of the dairy marketing system. Dairy marketing margin stability is therefore an important factor affecting firm's decision-making process.

Variability in marketing margins is a risk factor for private dairy traders because it affects the uncertainty of revenues derived from dairy trading. It also affects traders' decisions on whether or not to make investments that increase the efficiency of the dairy marketing system.

6.4 Concluding Comments

The results of this analysis indicate that the transition to a more liberalised market environment in Korea has not yet significantly affected imported dairy product marketing margins. The overall effect of trade liberalisation is conditioned by macroeconomic factors, pricing policies, distribution channels, and the nature of the products. However, in the long run, marketing margins will tend to move downward as innovation and competition reduce marketing costs in the Korean dairy sector.

CHAPTER SEVEN

Summary and Conclusions

CHAPTER SEVEN

Summary and Conclusions

7.1 Summary

The Korean dairy sector has undergone dramatic changes during the past decade as a result of trade liberalisation and the rapid rate of economic growth. These two factors have increased the consumption of dairy products in Korea. The increase in consumption and the destruction of import barriers have stiffened competition among dairy importing companies in the domestic market. The Korean government has become increasingly concerned about the behaviour of food prices and marketing margins as the importance of the latter in determining the competitiveness of dairy products has become more apparent.

This study has determined the imported dairy product marketing margins in Korea and assessed how they have changed during the past 15 years. This study had the following objectives: (1) to identify the economic factors affecting the marketing margins of dairy products in Korea; (2) to provide qualitative and quantitative assessments of the effect of these factors on those margins; (3) to evaluate the influence of trade liberalisation on the price-spread mechanism.

The influence of the most important factors were identified and estimated, in order to explain trends or fluctuations in marketing margins. A product-focused

method of investigation was made of cheese and SMP imported into Korea as either finished products or intermediate goods. These two products were chosen, because they are two most important traded dairy products in Korea. Descriptive and econometric methods were both used to determine the most important factors affecting the aggregate cost of processing and distributing imported dairy products. The method of analysis used is useful enough to provide a partial measure of the performance of the dairy marketing system. However, the results are indicative rather than absolute as estimates between years were difficult to interpret.

In Chapter Two, the literature on marketing margins was reviewed. The Korean dairy industry was briefly described in Chapter Three. The impact of trade liberalisation in the Korean dairy marketing system was discussed in Chapter Four. The economic factors affecting margins were estimated in Chapter Five. The results of the descriptive and econometric analyses with discussing the general findings of factors affecting margins were presented in Chapter Six.

7.2 Conclusions

Conclusions are based on descriptive indicators and an econometric analysis that examined the relationships between economic factors and marketing margins.

The following points emerged:

1. The graphical evidence suggests that imported dairy product marketing margins have declined since the Korean dairy market was liberalised in 1995. Exchange rate changes appear to have been at least partly responsible for this development, especially during the period 1995-97.

2. More sophisticated econometric tests suggested that changes in earnings (WAGE) appeared to have the biggest influence on imported dairy product marketing margins in Korea during the period of 1985-98.

The impact of trade liberalisation on imported dairy product marketing margins has been mixed with other economic factors. Therefore, there is little evidence from this empirical analysis that trade liberalisation has had a strong, widespread and readily observable impact on imported dairy product marketing margins in Korea. The research concludes that trade liberalisation has not in general been associated with lower imported dairy product marketing margins in Korea. Labour costs (wages) appear to have been the most important influence on those margins during the period 1985-98.

7.3 Limitations of the study

These conclusions are conditioned on several factors. First, the Asian financial crisis of 1997-98 may have affected the results. Second, the reduction in economic growth lowered incomes and possibly lead to a reduction in the consumption of non-staple and higher valued foods. This may partially explain the

dramatic increases in marketing margins during 1998. Third, lack of data meant that only the two most important traded dairy products were used in this analysis. Finally, it must be recognised that the models used in this analysis did not include all the marketing cost components incurred by processors. Nonetheless, although these caveats must be considered, the estimated models do explain about 80-90 percent of the variation in marketing margins. These findings were statistically significant.

7.4 Further study

This study analysed the changes between import prices and consumer prices from 1985 to 1998. However, because of commercial sensitivities, this data was unavailable from marketing agents. Although this study provides evidence indicating that trade liberalisation has in general not been highly associated with changes of imported dairy product marketing margins in Korea, further research and better data are needed. Additional studies could use other measures of trade liberalisation to determine the effect on marketing margins. Only one retail price series was collected. A large sample with quarterly data might more accurately reflect actual market prices. Finally, although the impacts of trade liberalisation seem to be quite small, this analysis did not determine their incidence.

Further work, both in the quantitative assessment of the factors affecting the relationship between CIF and consumer prices and in the behavioural aspects of consumer pricing, would clearly improve understanding of the determinants of

current marketing margin behaviour and enable researchers to suggest how such influences may change in the future.

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APPENDIX I

Appendix Ⅰ : Korean Dairy Production

M/T	1991	1992	1993	1994	1995	1996	1997
Butter	6,266	3,364	3,837	2,929	3,403	4,200	3,332
Cheese	8,536	9,175	12,157	12,668	12,056	20,843	25,331
Skim Milk Powder	23,514	16,510	22,889	16,879	13,081	30,544	29,042
Whole Milk Powder	8,237	4,787	4,571	3,114	2,937	5,582	4,459

Source: Korea Rural Economics Institute

APPENDIX II

Appendix Ⅱ: Main Economic Indicators

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
GDP per Capita (000 won)	2011	2323	2694	3168	3514	4171	5001	5616	6279	7244	8368	9188	9856	9681
GDP Deflator	48.5	51.0	53.9	58.0	61.3	67.9	75.2	81.0	86.7	93.3	100	103.9	107.2	112.6
Exchange Rate (average of period)	870.0	881.4	822.6	731.5	671.5	707.8	733.4	780.7	802.7	803.5	771.3	804.5	951.3	1401.4
Petrol Price Index	117.5	101	95.5	79.6	76	76	76	83.1	89.4	94.9	100	125.6	160.5	230.3
Wage (000 won)	557	576	610	678	803	870	918	986	1133	1095	1124	1214	1237	1140
CPI	56.8	58.4	60.2	64.5	68.2	74	80.9	85.9	90.1	95.7	100	104.9	109.6	117.8

Source: Asian Development Bank and Korea National Statistical Office, 1999

APPENDIX III

Appendix Ⅲ: Prices and Marketing Margins for Imported Dairy Products

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Cheese (Won/1 kg)														
CIF Price	4113.7	3822.2	3257.6	4636.6	3106.2	4554	4297.1	3735.4	3870.5	2204.3	2364	2702.6	2950.4	3794
Tariff	1645.5	1528.9	1303	1854.6	1242.5	1821.6	1718.8	1494.2	1548.2	881.7	945.6	1070.2	1156.6	1472.1
Marketing Margins	311.3	1018.7	2108.4	477.1	2918.8	1114.2	2004	3474.3	3336.5	5694.9	5240.4	4683.2	4417.4	5601
Consumer Price	6070.5	6369.8	6669	6968.3	7267.5	7489.8	8019.9	8703.9	8755.2	8780.9	8550	8456	8524.4	10867.1
Skim Milk Powder (Won/1 kg)														
CIF Price	633.7	670.4	762.4	1119.1	1452	1281	988.7	1301.7	1395.8	1213	1627	1667.6	1923.8	2245.5
Tariff	126.7	134.1	152.5	223.8	290.4	256.2	197.7	260.3	279.2	242.6	325.4	333.5	384.8	449.1
Marketing Margins	4006.6	4102.5	4314.1	3928.1	4039.6	4573.8	5120.6	4857	5297	5544.4	5047.6	4963.9	4635.4	5257.4
Consumer Price	4767	4907	5229	5271	5782	6111	6307	6419	6972	7000	7000	6965	6944	7952

Source: FAO, OECD, Korea's GATT Schedule and Korea National Statistical Office

APPENDIX IV

Appendix Ⅳ: The Number of Dairy Importing Companies in Korea (for selected items)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
The Number of cheese importing Companies	1	1	1	1	1	1	2	1	1	1	22	29	27	22
The Number of SMP importing Companies	2	2	2	4	3	3	3	5	7	5	18	5	8	7

Source: Korea International Trade Association