THE COMPETITIVE ADVANTAGE OF NATIONS: THE CASE OF GREECE

IOANNIS KONSOLAS

Submitted in Fulfilment of the Requirements for
the Degree of Doctor of Philosophy
of the University of London

Interdisciplinary Institute of Management
The London School of Economics and Political Science

1999

ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

THESES

F

8099

ABSTRACT

The present study applies Porter's diamond framework, which identifies the sources of international competitive advantage for particular industries in a country, to the case of Greece. The diamond framework and Porter's work on the development of competitive economies are first summarised, their main applications are presented and a critical evaluation is attempted using the various criticisms and comments made by other researchers. Then, a short economic history of Greece since its liberation and a brief description of Greece's past and present economic environment are followed by a review of the Greek literature on industrial competitiveness. The competitive structure of Greek industrial clusters is further explored with the help of trade and other relevant data. Using Porter's methodology, the competitive Greek industries are identified and categorised in clusters. A large part of the study is devoted to five case-studies of particular Greek industries, namely the cement, rolled aluminium products, tourism, men's outerwear, and dairy industries. The conclusions from the case studies, and the data analysis, are positive for the applicability of the framework to Greece. Areas of concern, nevertheless, are apparent, related to domestic rivalry, customer sophistication, as well as, the relationship between firm strategy and structure, and rivalry. On the other hand, Porter's emphasis on geographic concentration, on the industry level of competitiveness, and especially on the cluster concept are found to be justified. These conclusions also provide the basis for the presentation of some suggestions concerning the Greek State's policies and the strategies of Greek companies.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

CEDEFOP	European Centre for the Development of Vocational Training
CPER	Centre of Planning and Economic Research (Greece)
Dr	Greek Drachmas
EAA	European Aluminium Association
EC	European Community
ECU	European Currency Unit
EEC	European Economic Community
EMU	European Monetary Union
ERMCO	European Ready Mixed Concrete Association
ETVA	Hellenic Industrial Development Bank
EU	European Union
FDI	Foreign Direct Investment
FEIR	Foundation of Economic and Industrial Research (Greece)
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
IEA	International Energy Agency
ILO	International Labour Organisation
IMP	Integrated Mediterranean Programs
IT	Information Technology
NICs	Newly Industrialised Countries
NSSG	National Statistical Service of Greece
NTO	National Tourism Organisation (Greece)
OECD	Organisation for Economic Cooperation and Development
OETH	Observatoire Européen du Textile et de l' Habillement
OTE	Hellenic Telecommunications Organisation
PASOK	Panhellenic Socialist Movement
R&D	Research and Development
RIFT	Research Institute for Tourism (Greece)
SA	Société Anonyme
SITC	Standard International Trade Classification
UN	United Nations
WTO	World Trade Organisation

ACKNOWLEDGEMENTS

There are many people that have made it possible for me to bring the present work to a completion and to all of them I owe my sincere thanks.

First of all, I am particularly indebted to my supervisor, Professor Peter Abell, whose advice, criticism and support proved invaluable throughout the preparation of this dissertation. I would also like to thank all the other members of staff in the Institute of Management of the London School of Economics and Political Science for their insightful comments and suggestions. A lot of the inspiration and encouragement also came from the other doctoral students in the Institute of Management and, in particular, Ozlem Oz, whose acute comments and critical observations had a clear impact on my work.

I am very grateful to all those academics, executives and industry experts mentioned in the list of interviews for agreeing to be interviewed and generously offering their time to provide me with a wealth of valuable information. In particular, I have benefited greatly by the fruitful discussions I had with P. Kondilis and K. Simeonidis for the cement case, A. Meyir and M. Lidorikis for the aluminium case, D. Lagos for the tourism case, G. Psaropoulos for the men's outerwear case, and K. Nikolaidis for the dairy case. I should also acknowledge with gratitude the prompt help of Mr M. Nikitaridis and Mr T. Karaganis in the data gathering phase of the project. I would further like to express my thanks to the staff in the libraries of the Centre of Planning and Economic Research (Greece), the Foundation of Economic and Industrial Research (Greece), the National Statistical Service of Greece, and the Greek Regional Development Institute who provided me with special access to data and documents.

INTRODUCTION

International competitiveness has been at the forefront of academic research for a long time. The question of why certain firms or certain industries based in particular countries are highly successful in international competition has troubled researchers but, despite the recent major advances in trade theory, a comprehensive model has not yet been produced. In the 1990's, Michael Porter (1990) has made a contribution to this field of research, by following well-established theories and combining them with extensive empirical work, undertaken in ten industrialised nations. The resulting diamond framework captures a wide range of attributes that, according to Porter, explain the creation of competitive advantage. The aim of the diamond framework is to categorise the national influences on the competitiveness of industries, and industry segments, in its four sides and two outside forces. Thus a more comprehensive answer to the international competitiveness question can be provided, which includes the influence of factor conditions, domestic demand conditions, related and supporting industries, firms' strategies and structures and domestic rivalry. Government and chance are 'peripheral' influences to the competitive advantage of industries based in a country, as they work through the other four determinants.

This ambitious undertaking by Porter has received much criticism, both on its entirety and on individual aspects of it. On the other hand, it has influenced the thinking of both business strategists and, especially, policy makers. The relative simplicity of the framework and the wide range of issues it addressed made it instantly appealing to government institutions all over the world. The prescriptions, however, suggested by Porter, are based on the premise that the diamond framework is, at least, an accurate taxonomy of the forces that shape competitive advantage and their creation processes. Therefore, each part of the diamond needs to be examined and its implications assessed. Moreover, the entire framework requires further investigation, so that we can appraise the effect of the individual forces on each other.

The present study applies the diamond framework to the case of Greece. The purpose of this application is two-fold. Firstly, insights will be gained on the applicability of the framework in this particular case and the possible need for modifications. Secondly, the competitive industrial structure of Greece and certain sectors in particular will be studied in-depth, using Porter's methodology for identifying and studying competitive industries. The selection of Greece as a suitable candidate for an investigation of Porter's diamond framework was based on a variety of reasons.

First, Greece's level of development is slightly lower than that of most of the countries studied in Porter (1990). Nevertheless, Greece is a country where the framework must apply, since Porter does not claim that the framework only applies to highly developed nations, and includes countries like Korea and Singapore, the level of which is close to that of Greece. However, it is also a country where conditions are not ideal, at least compared with the nations forming the basis for the diamond, and where serious development deficiencies can provide certain interesting observations on the diamond framework and its applicability.

Second, Greece has some other features that make this application a worthwhile pursuit. The most important among them are the small size of the Greek market, and the country's distance from many developed markets and poor transportation links even with the closest ones. These peculiarities of the Greek case offer a great opportunity to explore the relevant issues, as they have been the subject of much criticism directed at Porter's inadequate attention on the constraints they pose to the upgrading of competitive advantage. Another important characteristic of Greece is the fact that it is a member of the European Union. Although Porter studied several EU countries (Germany, the U.K., Italy, Sweden and Denmark) he did not place great emphasis on the effects of EU integration on the process of creating and sustaining competitive advantage. In this study, however, the role of the European Union and the closer links of Greece with the other members, will be further explored.

The objectives of the present study will be achieved by a presentation of Porter's framework, its applications and the relevant criticisms, followed by an analysis of the Greek economic environment and the Greek trade data. Then five in-depth case studies of particular industries will be analysed, which will offer the

necessary basis for reaching certain conclusions regarding the applicability of the diamond framework in the Greek case.

The fact that the diamond framework has not yet been applied, to this extent, to the case of Greece is part of the original contribution of this study. Moreover, although many applications of the framework have been made since its initial presentation, very few have concentrated on its critical evaluation. Another area where this study aims to contribute, is in providing a case study of a non-competitive industry and examining whether the diamond forces are equally effective in explaining its lack of competitiveness.

The present study is divided into eight chapters:

Chapter 1 summarises Porter's diamond framework and the competitive development of national economies as they are presented in *The Competitive Advantage of Nations*. Those applications of the framework, by Porter himself and by other researchers, that are relevant to the Greek case are also briefly described. Then, a review of the major criticisms for the diamond framework and other related issues is combined with excerpts of Porter's views on these issues.

Chapter 2 focuses on the competitive advantage of Greece. Greece's economic environment is examined, using a historical perspective as well as a wealth of current data. The available literature on the competitiveness of Greek industries is then critically reviewed. The final section of the chapter deals with the interpretation of the Greek trade data for three particular points in time, using Porter's methodology, and their implications for the structure of Greek industrial clusters.

In chapters 3, 4, 5, 6 and 7 the five case studies are presented. The cement, rolled aluminium products, tourism, men's outerwear and dairy industries, that were selected for further research, provide a good understanding of the forces that shape competitive advantage. In all five chapters, the industry's history, products and processes are presented, along with its economic characteristics and its current status in the European Union. Then the developments in Greece are given particular attention in order to achieve the main goal of each chapter, the identification of the sources of competitive advantage for the particular industry studied. In the summary of each individual case, an overview of the role of all the diamond determinants and their interactions is provided.

The final chapter, chapter 8 summarises the results for each diamond determinant as they are apparent from the case studies. Certain issues arise for the applicability of the diamond framework that are further investigated, along with the more general implications of the Greek case. In addition to the conclusions on the diamond framework and Porter's approach, the last section focuses on the possible implications of this study for company strategies and future government policy in Greece.

CHAPTER 1

THE COMPETITIVE ADVANTAGE OF NATIONS

This chapter introduces the concepts contained in *The Competitive Advantage of Nations*. In the first section, the two main contributions of Porter's (1990) book, the diamond framework and the model of economic development, are summarised. The next section contains a description of those applications of the diamond framework that are relevant to the Greek case. The third section encompasses the various views expressed on particular issues in Porter's (1990) work.

1. The Competitive Advantage of Nations: The Diamond Framework and The Competitive Development of National Economies

The Diamond Framework

The main goal of Porter's work was to determine the attributes of the national environment, which influence the competitive advantage of firms, in particular industries or segments. The result was the well-known 'diamond framework' (Porter, 1990: 71-130), where four groups of determinants - factor conditions, demand conditions, related and supporting industries, and firm strategy, structure and rivalry - individually and through their interactions promote or hinder the creation and sustainability of competitive advantage for industries within a nation. There are also two additional determinants - government and chance - shaping the national environment in an indirect way, that is, working through the other four determinants, as can be seen in Figure 1.1.

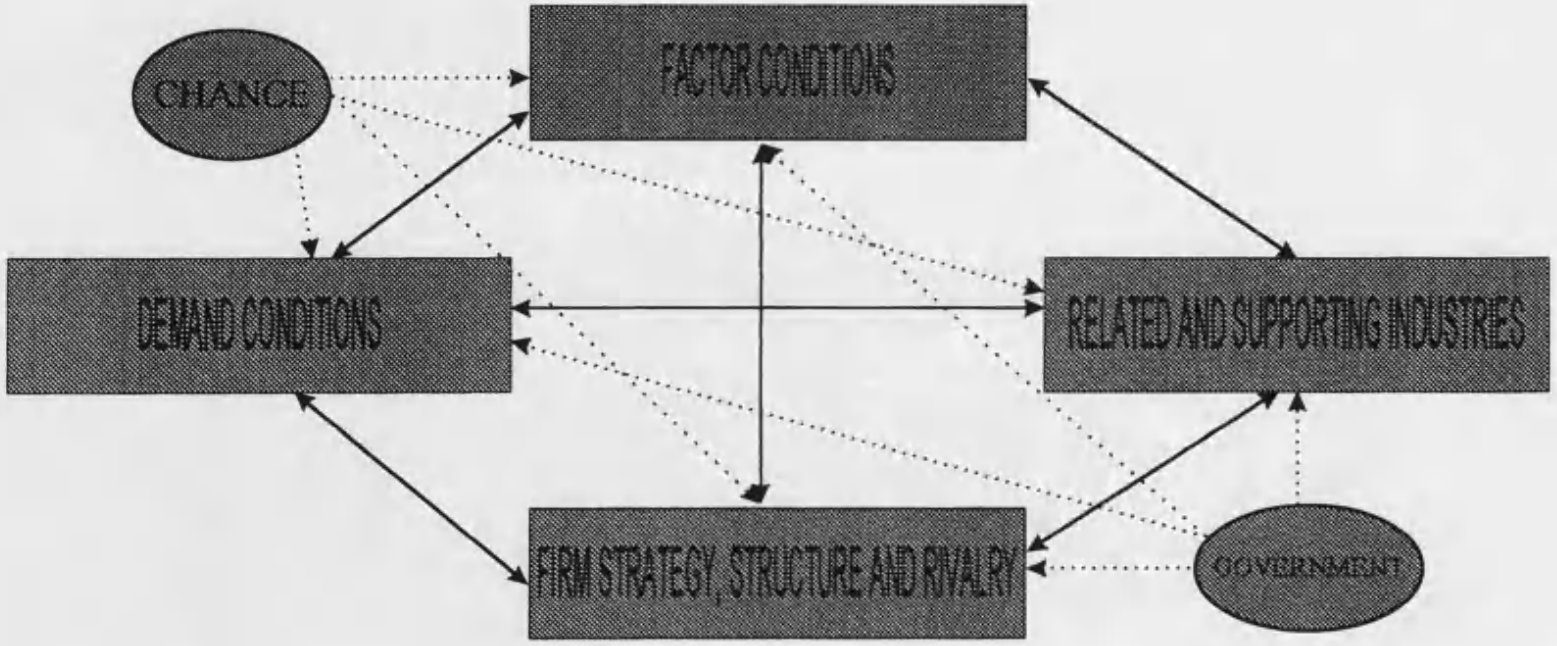


Figure 1.1: Porter's Diamond Framework
Source: Porter, 1990: 127.

Factor Conditions

The first determinant consists of the production factors necessary for an industry. Porter favours a detailed classification, including human resources, physical resources, knowledge resources, capital resources and infrastructure. Competitive advantage stems from possessing low-cost or high-quality factors, which are efficiently and effectively deployed.

The factors can also be divided in two ways. The first division is between basic and advanced factors. Basic factors, for example, natural resources, climate, location, unskilled and semiskilled labour, etc., are essentially inherited or created through simple, unsophisticated investment. Advanced factors, such as a digital data communications infrastructure, university research institutes, etc., are much harder to create, demanding large and continuous investment and often the presence of appropriate institutional structures.

Another categorisation is between generalised factors that can be used by many industries (like the highway system) and specialised factors that are specific to an industry or a narrow group of industries (for example, narrowly skilled personnel). Specialised factors offer a more sustainable advantage for an industry than generalised factors. The presence, however, of these specialised factors usually requires an appropriate level of generalised factors.

Competitive advantage can also be gained by selective factor disadvantages. Faced with a disadvantage in particular factors, industries are forced to innovate in order to improve their competitive position. In the process, new technologies and new ways to use or circumvent specific factors, emerge, which often provide the industry with a more sustainable advantage. Nevertheless, the condition of the other diamond determinants affects the ability of the industry to instigate the necessary processes.

Demand Conditions

The second determinant is demand conditions, and refers to the nature of home demand for the industry's products or services. Porter (1990) identifies three major attributes of home demand as essential. The first one is the home demand composition, that is, the segment structure relative to world demand and the *sophistication* of the home buyers. Segment structure is important because 'a nation's

firms are likely to gain competitive advantage in global segments that represent a large or highly visible share of home demand but account for a less significant share in other nations' (Porter, 1990: 87). Customer sophistication is also essential, as demanding buyers pressure firms to meet the highest standards, and consumer needs that anticipate global trends stimulate innovation.

The second attribute is the home demand's size and pattern of growth. Absolute home market size is important only in some industries or segments, where, for an instance, production economies of scale are present or R&D requirements are high. A rapid growth rate, especially in periods of technological change, the presence of a number of independent buyers or an anticipatory early demand, can positively affect a much wider range of industries. Early or abrupt saturation in the home market can also be a source of advantage as firms are forced to compete on low prices, improved product features, innovative products, or expand to foreign markets.

Internationalisation of home demand is the third attribute. This refers to mobile or multinational buyers that use products from their home base, and demonstrate to other firms the benefits of entering a foreign market. Additionally, internationalisation of home demand can be a result of various influences on foreign needs and perceptions of a country's products that are acquired by foreign nationals when travelling, working or training in the home country or are transmitted through historical, political and cultural ties.

These three demand attributes are reinforcing each other and their importance differs according to the evolutionary stage of the home industry. Firms are always affected by the nature of their home demand as they pay greater attention, understand better and respond quicker to the needs of their domestic market.

Related and Supporting Industries

The presence in a nation of related and supporting industries, is the third determinant that shapes competitive advantage. These industries can be suppliers to the competitive downstream industries, offering efficient, early and, although less often, preferential access to certain inputs. They are also a source of early and accurate information sometimes through informal networks, which are facilitated by the cultural proximity. However, the suppliers must be internationally competitive, or

'strong by world standards' (Porter, 1990: 104) if they are not competing globally, for these exchanges to be beneficial.

Moreover, an industry can benefit from the presence, in its home base, of other competitive industries with which it is linked through, among others, common inputs, technologies or distribution channels. Again, the relative ease of information exchange that sometimes even results in formal alliances, enables firms to share these activities and benefit from each other's innovations.

Nevertheless, an industry can source its inputs from abroad, form alliances with foreign firms and achieve some of the benefits of having competitive domestic related and supporting industries. My research also showed that in certain machinery industries, the dominance of a few countries is so strong that it would be very hard for a competitive user industry to cause the creation or expansion of the corresponding machinery industry.

Firm Strategy, Structure and Rivalry

The fourth and broader determinant includes the strategy and structure of firms in the domestic industry, as well as the rivalry among them. The firms' strategies and structures, including aspects such as management practices, modes of organisation, willingness to compete globally, company goals, etc., must be appropriate for the industry in which the firms are competing. The way firms are organised and managed is affected by national conditions, such as the educational system, and historical trends. National firms succeed in industries where the required characteristics match the country's prevailing organisation structures as well as in those 'where there is unusual commitment and effort' (Porter, 1990: 110).

The pattern of home rivalry is also considered by Porter as one of the major attributes that shapes competitive advantage. Competing firms pressure each other to improve and innovate, and domestic competition is more visible than competition from foreign firms. Moreover, domestic rivalry can be emotional or personal, as pride drives managers to be more sensitive towards domestic competitors, leading to better products or exports, since there are no excuses and 'unfair advantages', that are often cited as the reasons behind the success of foreign companies. Sometimes, rivalry can also lead to the upgrading of competitive advantage, as simple advantages, like basic factors or local suppliers, are not sustainable against other domestic competitors.

The formation of new businesses is also an important part of this determinant because it increases the number of competitors. The intensity of domestic rivalry, however, does not depend only on the number of competitors. Their commitment to the industry and the lack of extensive co-operation among the competitors are much more important. Porter even concedes that 'a completely open market along with extremely global strategies can partially substitute for the lack of domestic rivals in a smaller nation' (Porter, 1990: 121).

The Role of Government

Government influences competitive advantage by an array of policies that affect all the other four determinants. Regulation, education, tax and monetary policy are examples of government's impact on the competitive environment of firms. The role of government, however, is partial, according to Porter (1990: 128). Government policy cannot be the only source of advantage, it is only able to reinforce the other four determinants. Government's role can be positive or negative, and policies are usually affected by the national attributes forming the diamond.

The Role of Chance

Chance events, that is, occurrences usually outside the power of firms, also play an important role, usually by creating discontinuities that allow shifts in competitive position. These events, which include inventions, sudden rises in input prices, surges of demand, and political decisions by foreign governments, among others, have a diverse impact on industries of different countries. The way national firms exploit the advantages, or circumvent the disadvantages, is determined by the condition of the diamond determinants.

The Dynamics of National Advantage

The determinants of national advantage reinforce each other, creating a dynamic system where the cause and effect of individual determinants become blurred. A good example is the Greek dairy industry. There, fierce domestic rivalry resulted in aggressive pricing and increased product variety. Home demand was thus

stimulated leading to high growth rates and more sophisticated customers. The opposite, however, is also possible as very competitive and sophisticated buyer firms can decide to enter the supplier industries, thus increasing domestic competition.

Porter (1990: 143) considers domestic rivalry as having a very direct role in helping firms 'reap the benefits of the other determinants'. He also connects domestic rivalry with another very important feature of competitive industries, geographic concentration. A large number of industries studied by Porter (1990, 1998b, see also Enright, 1990) were based in small regions or even in individual cities within countries, and, in a few European cases, in adjacent regions of different countries. Proximity increases the concentration of information and the speed of its flow, raises the visibility of competitor behaviour and attracts the necessary factors and resources.

Another finding of Porter's (1990) study is the presence of groups of successful industries in every nation. This finding led him to develop his 'cluster charts' which are described in detail in Chapter 2. Clusters of related industries, with constant interchanges among them, work in ways similar to the geographic concentration (in fact, those two phenomena often coincide). Accelerated factor creation, increased information flows, spreading rivalry and a tendency for resources to move away from isolated industries, and into the clustered ones, are all observations made by Porter (1990) in several cases.

The dynamic and reinforcing nature of the determinants and the additional influences of clustering and geographic concentration create a situation where competitive advantage depends on the entire 'diamond' system. Porter, however, states that not all the determinants are necessary to succeed in international competition as a disadvantage in one determinant can be overcome by 'unusual advantage in others' (Porter, 1990: 145). His only emphatic assertion is that competitive advantage in more sophisticated industries rarely results from a single determinant.

The Competitive Development of National Economies

Porter (1990), in the 'Nations' part of his book, describes the pattern and evolution of industrial success in eight of the ten nations he studied. From that, he

attempts to extend the framework, in order to assess 'how entire national economies progress in competitive terms' (Porter, 1990: 543). Linking the upgrading of an economy with the position of firms exposed in international competition, Porter (1990: 545-573) identifies four stages of economic development for a country: factor-driven, investment-driven, innovation-driven and wealth-driven.

Countries in particular points in time belong to the stage of development that corresponds to the predominant pattern in the nature of competitive advantage of their firms. Although these stages do not explain everything about a nation's development process, they can highlight the attributes of a nations' industries that are most closely related to economic prosperity.

In the factor-driven stage, advantage for virtually all internationally competitive industries results from basic factors, usually natural resources, climate, land conditions and semi-skilled labour. Indigenous firms compete essentially on price in industries where technology is not required, or is widely available. Domestic demand for exported goods is modest and the economy is sensitive to world economic cycles and exchange rates. The range of industries may widen over time, with the creation of domestically-oriented industries through import substitution. However, these industries usually lack international competitiveness.

The investment-driven stage is characterised by the willingness and ability of the private and public sectors to invest aggressively. Firms construct modern facilities and acquire product technology from abroad. They are able to absorb the foreign technology and improve on it, refining the production processes to suit their particular needs. Firms, citizens and the government also invest in modern infrastructures, education and other mechanisms, which create advanced factors. Firms' strategy and structure, as well as the increasing number of home rivals are additional sources of advantage for domestic industries. Demand is growing, even for exported goods, but sophistication is still low, while related and supporting industries are largely underdeveloped. The government's role can be substantial at this stage with, for example, capital aids and temporary protection measures.

The innovation-driven stage is where all the diamond determinants are at work. The nation is competitive in a wide array of industries, with deeper clusters and even the establishment of entirely new groups of industries. Sophisticated service industries also develop because of knowledgeable and demanding customers and the

presence of skilled human resources and infrastructure. Firms create technology, production methods and innovative products and compete in more differentiated segments, on the basis of their high productivity. Global strategies emerge, as firms develop their own international marketing and distribution networks, usually depending on their established brand names. Foreign direct investment also increases with the relocation of certain activities to nations with more favourable endowments in particular factors. Industries are less vulnerable to price shocks and exchange rate movements in the world markets. Also, the national economy is less dependant on a few sectors. Government's role becomes more indirect, with emphasis on improving advanced factors and the quality of home demand and preserving domestic rivalry.

The wealth-driven stage is where firms in a nation start to lose competitive advantage in many industries with intense international competition. Rivalry decreases as firms are interested in preserving their established positions, there is less motivation to invest and constant calls to the government to protect the status quo. Rising wages with slower productivity increases, mergers and acquisitions that seek to preserve stability, and reduced willingness to take risks, especially in starting new businesses or transforming existing industries, diminish the international competitiveness of many of the nation's industries. This causes a de-clustering process, where the loss of position of one industry affects all the other in its cluster. The range of industries, where a nation can still compete, narrows to those that are related to personal wealth, basic factors and those where no technological changes occur or where the nation still has strong brand names.

Returning to the ten nations from which his main observations are drawn, Porter (1990: 565-573) categorises them according to their stage of development. Singapore is still considered to be in the factor-driven stage, while Korea has moved to the investment-driven stage. Denmark in the 1960's, Japan in the 1970's, Italy in the 1980's and Sweden soon after the war, reached the innovation-driven stage where they now are. Germany, Switzerland and the USA had reached this stage even before the Second World War. Porter (1990: 570-572) sees elements of the wealth-driven stage developing in the last three countries, while the UK is viewed as having been in that stage for decades now. Nevertheless, recent productivity gains and other development in the UK are considered by Porter (1990: 573) as signs of an impending reversal, which is still not certain.

2. Applications of the Diamond Framework

The first applications of the diamond framework are essentially presented in *The Competitive Advantage of Nations*. Porter (1990: 277-541) devotes three chapters to study, in more detail, eight of the ten nations included in his original research. Although this applications can by no means be considered a test of the theory, as these are the countries providing the empirical observations for its inception, a brief summary can provide interesting insights on the way the framework can be applied. Particular emphasis will be placed on the European nations studied by Porter (1990) and especially Switzerland and Sweden, two countries with small home markets, Italy, that exhibits an industrial structure, in terms of clusters, very similar to the Greek one, and Germany, that represents a major supplier and market for many Greek industries. The other four nations analysed by Porter (1990), Japan, Korea, the UK and the USA, will be briefly examined.

Subsequently, Porter has applied his framework to a number of other countries. Particular mention will be made to the two most widely disseminated applications, for Canada and New Zealand. These studies are again not critical of the framework, they are, however, interesting given the small size of the New Zealand market and the heated debate surrounding the Canadian case. Three attempts to test parts or all of the diamond framework will also be presented. These attempts are based on observations from New Zealand (as a complement to Porter's analysis), Ireland (a small EU nation) and Turkey (a neighbouring country with a similar industrial structure to Greece).

The first European nation mentioned by Porter (1990: 307-331), as a post-World War II winner, is Switzerland. Switzerland is competitive in a wide array of manufacturing and service industries. Natural resources are little related to Switzerland's success, as Porter (1990: 318) considers only the available hydropower and the pleasant landscape as advantages. Location and political neutrality have been much more important as was a highly educated and skilled pool of human resources. Low interest rates and easily available capital along with a world-class transportation infrastructure, complete the picture for basic factors. These factors were upgraded through the educational system and the well-developed apprenticeship system, as well

as the extensive in-house training of employees. University research, especially in chemistry and physics has also helped all related industries, while close relations with foreign research centres guarantee the successful assimilation of foreign technologies.

Demand conditions have been central to the success of many Swiss industries. Geography and climate have created a sophisticated demand for industries such as heating controls and railway equipment. Swiss affluence has also resulted in sophisticated demand for premium consumer goods. The presence of multiple cultures (French, German, Italian) has also been important, as it can account for the wide range of competitive industries. Firms from related and supporting industries have often initiated the creation of competitive industries. Also, interchanges among industries are frequent and open.

The strategy of firms in the most successful Swiss industries has been to concentrate in small industries or highly differentiated, high-quality segments. Pharmaceuticals is the only major exception, since Swiss companies already had the scale to compete with foreign rivals. Swiss firms generally do well in industries where contact with the buyer is required. Rivalry is a characteristic of many competitive Swiss industries, although mergers and cartelisation have reduced the number of competitors. The Swiss federal government has intervened in a very modest extent in most industries, and primarily in a positive way, while Switzerland's neutrality in the two Wars has been a major source of benefits.

Demand conditions, clustering, excellent human capital and an appropriate strategy are behind most successful industries in Switzerland. Recent reductions in the intensity of rivalry and in the emphasis on innovation are worrying trends, according to Porter (1990: 329). Risk-taking and aggressive seeking of market share are also out of favour in many Swiss industries.

Sweden is the second European post-World War II winner examined by Porter (1990). The Swedish economy has also been the subject of a separate book (Solvell, Zander and Porter, 1992), where the role of the Swedish 'home-base', for Sweden's trade-dominating multinationals, is examined in more detail.

Sweden has a narrower competitive base of industries but the competitive clusters are very deep, especially the materials/metals, forest products and transportation ones. Natural resource advantages, such as extensive forests, large deposits of iron ore and inexpensive hydroelectric power, were originally important

for many of the most competitive Swedish industries. Later, these advantages have played a less crucial role for these industries' success. A universally high level of education, a number of excellent technical universities and research institutes and the early licensing of foreign technologies, constitute now the essential factor advantages for Swedish industries. High wages in all skill levels have led to the restructuring and the automation of Swedish manufacturing industries, while the long winters have caused an emphasis on energy conservation, and the long distances a sophistication in logistics.

Demand for reliable transportation equipment and services, also stemming from Sweden's long distances, has been one from a variety of demand conditions that affect competitive advantage. Similar roles are played by the high levels of automation in Swedish firms and Sweden's climate, geography and geology, which place extraordinary demands on, for example, mining and power-related industries. The resource-related industries are also very sophisticated industrial buyers, especially given certain factor disadvantages they now face. Disadvantages in demand conditions are evident because of the large state sector which is sometimes an unsophisticated buyer and the high tax level that reduces demand for consumer goods, and especially luxury items. Clusters of competitive industries are prevalent in Sweden. Collaboration among vertically and horizontally related industries is very high, partly due to the high level of cross-ownership among related companies and the Swedish culture of co-operation.

The structure of Swedish firms and the characteristics of their employees (like open communication, and trust) are favourable for competing in technologically-complex industries that require extensive international networks. Internationalisation strategies have also been beneficial for those industries, in addition to capital markets with a long-term view. Rivalry is intense in some competitive industries but not present at all in others. While Porter (1990: 350-351) considers this a disadvantage, he concedes that Sweden's small open market and the high levels of Swedish presence in foreign markets can partly compensate.

The government plays a substantial role, which can be very positive, for example in the enforcement of strict safety and environmental regulations, or negative, with its focusing only on large companies. Chance events have occurred in

many industries. The Second World War, however, and Sweden's neutrality were uniformly important.

Demand strengths, supplier-buyer relationships and human resources are among the traditional advantages of Swedish industries. Domestic rivalry, dependence on basic factors for some industries and individual motivation are problematic areas in the diamond framework. A loss of position in many industries, especially in sophisticated ones, is a worrying sign.

Italy is considered by Porter (1990: 421) 'particularly interesting' as a recent success story, given its limited resource endowment and its image of chaotic government. Italy has a very high number of exporting industries, which are, however, highly clustered. The country enjoys high shares in textiles and apparel, household products, food and beverages, personal products and metal goods and associated machinery. Competitive industries in Italy are also geographically concentrated, with small regions or cities being the home base for sometimes hundreds of firms in many industries.

Factor conditions are not entirely favourable for Italian industries. Inherited and socially-created factors are absent from Italy. Natural resources are few, wages, since the late 1970's, have been close to those of other Western European nations and real interest rates are high. Part of the educational system, both high-school and university, is of excellent quality and its links with local industry have become a major source of advantage. Demand conditions are a major strength of most competitive Italian industries. Italian consumers are discerning buyers for many types of goods, such as clothing, furniture or tiles. Consumer goods firms are also demanding buyers of machinery and other inputs. Internationalisation of Italian style and taste has had a positive influence, created mainly by the increased world-wide exposition of Italian design and the millions of tourists visiting Italy every year.

Clusters in Italy are very deep and vertical relationships among firms in related industries are very strong. Co-operation among firms with common distribution channels and family links, in many geographically concentrated industries, are also common. High specialisation and constant model changes are characteristic of firms in successful Italian industries. Small and medium sized enterprises with little organisational structure and increased autonomy for employees have been at the forefront of the aggressive internationalisation of Italian firms. Extraordinary rivalry,

often at a personal or family level, is present in almost all the competitive Italian industries.

Italy, according to Porter (1990: 447), is the case that proves that government is not central for competitive advantage. Many of the disadvantages for the Italian industries are created by the national government. Local governments have been much more supportive of industries, with appropriate investments and limited interference. The relatively late post-World War II boom that enabled Italian firms to invest in modern production technologies, without commitments to older generations of process technology, has been the only major chance event.

Geographic concentration, demand conditions, domestic rivalry and extensive clustering created and broadened the competitive advantage of most Italian industries. Better functioning capital markets, a more effective national government and properly organised and managed large firms might contribute to a widening in the range of industries where Italy competes successfully.

The German case, noted as 'important' by Porter (1990: 356), is central to the development of the European Union. Germany had 345 competitive industries in 1985, including both consumer and industrial products, with especially strong positions in production machinery. Natural resources (mainly iron and coal reserves) contributed to the initial formation of some competitive industries. Their role is now much smaller, while the presence of highly educated, skilled and motivated workers, a scientific and technical knowledge base and a well-developed infrastructure, are very important. Universities, high-quality technical colleges, a distinctive apprenticeship system and a host of research institutes lead to the continuous upgrading of human capital and the knowledge base. The large size of the market and its early saturation in many products have been advantageous for many German industries. However, the most important demand attribute is the presence of sophisticated, extremely demanding and quality-conscious consumers and industrial customers. Clustering is high in Germany and suppliers and buyers collaborate extensively in technical issues.

The hierarchical structure and the emphasis on precision engineering exhibited by most competitive German firms has led to international success in high-performance segments. The technical orientation of firms has also resulted in increased competitiveness in industries requiring complex production processes.

Rivalry has been strong in the internationally competitive industries and competition has focused on technology and performance.

Government has been less protective of industry than in most other nations, while its role has been substantial in factor creation. The two World Wars were at the same time a source of many losses for Germany and a challenge to overcome them and recreate a strong industrial base.

Germany has some 'unusual' advantages in industries related to physics, chemistry and mechanical engineering (Porter, 1990: 379). Advantages in human capital and technological knowledge have spread among industries, creating deep and wide clusters. The two Wars have provided a constant challenge to Germans to upgrade competitive advantage. The only worrying sign has been the absence of positions in new industries. Recent phenomena, such as the apparent consolidation in some of the traditionally strong industries along with a subdued domestic rivalry, which threaten their competitive advantage, and concerns over the 'ability to make fundamental breakthroughs in new scientific fields' (Porter, 1990: 380) have raised questions for the future of German industries.

The first of the Asian nations mentioned by Porter (1990: 384-421) is Japan. Japan's achievement of becoming a major economic power and the rapid rise of many of its industries is examined using the diamond framework. Japan is another country with few natural resources (except natural ports and available hydroelectric power) whose industries took advantage of a disciplined, educated work-force, good labour-management relationships and a, more or less, constructive government. These initial advantages were later supplemented by a large pool of engineers, a low cost of capital, a tendency of related diversification for large firms, which promoted clustering, particular home demand conditions and an emphasis on product quality and automation. Fierce, emotional domestic rivalry is another characteristic of competitive Japanese industries.

The only other Asian nation analysed in detail by Porter (1990: 453-479) is Korea. There, competitive advantage has primarily depended on human resources, investment-oriented company and managerial goals, as well as domestic rivalry. A major weakness for most Korean industries has been demand conditions, with the exception of the shipbuilding, construction and defence industries.

The last European nation examined by Porter (1990: 482-507) is the United Kingdom. Competitive British industries are found to possess advantages in all diamond determinants, while the declining ones are experiencing low or less sophisticated home demand, a shrinking number of related and supporting industries, low commitment by employees and investors, and eroding rivalry.

The same observations are made by Porter (1990: 507-535) about the United States in 1985. Again, inadequate factor creation, eroding demand quality, weaknesses of supplier and related industries, and low levels of rivalry characterise many American industries that declined during the last two decades. America's home market size, natural resources and wide range of competitive industries remain a sound base for upgrading competitive advantage. There are, of course, still many competitive industries across most clusters with highly skilled employees, sophisticated home demand, strong domestic suppliers and intense rivalry.

Porter, after his original work, studied other nations and regions using his framework. These approaches were not an attempt to test or 'evaluate' his theory, as pointed out by Cartwright (1993: 56) for the New Zealand study. The framework was used as the 'ideal condition' and industries were examined against this benchmark. Two of these studies were published and widely disseminated. Both will be mentioned here, the first one, regarding New Zealand (Crocombe et al., 1991), in more detail, since New Zealand, like Greece, is a small nation with a limited base of competitive industries. The second study, concerning Canada (Porter and Monitor Company, 1991), a nation with few common characteristics with Greece, will nevertheless be briefly presented, as it has sparked a great deal of criticism, especially by Canadian scholars.

New Zealand is strong in very few clusters, notably food/beverages, textiles/apparel (primarily the wool-related industries), materials/metals, forest products and, to some extent, housing/household (Crocombe et al., 1991: 209-212). The research team studied twenty export industries of three categories: traditional, developed in the past two decades and emerging. Factor conditions were found to be universally important, while the uniqueness of New Zealand's demand needs provided some advantage, especially to the agriculture and sport-related industries. Related and supplier industries have played a positive role, although they are absent in some cases and most clusters are not geographically concentrated. Cost-based strategies and lack

of international orientation have affected the ability of industries to compete in differentiated segments. Rivalry is considered by the team as a weakness for New Zealand, although the data presented show a substantial number of competitors in many of the competitive industries, especially given the country's size. Government has played a prominent role, aiding considerably certain industries, while impeding others from upgrading. Favourable chance events have affected almost every competitive New Zealand industry.

Almost all of the industries studied in New Zealand draw their advantage from basic factors and chance events. Created factors, demand conditions, related and supporting industries and firms' strategy, structure and rivalry also exert some influence on most industries. However, only one of those four groups of determinants exerts 'strong' or 'moderate' influence (as characterised by the researchers, see Crocombe et al., 1991: 96) in each case, with the exception of the electric fences and yacht-manufacturing industries. Government is also affecting most of the industries, with about one-fourth of them relying extensively on its role.

An attempt to test Porter's model using the New Zealand cases was made by Cartwright (1993). Interval scales were used for all diamond determinants, with the exception of chance, and different maximum values are assigned 'to reflect Porter's apparent views about the relative impact of strongly developed determinants' (Cartwright, 1993: 61). Ten industries are placed in two groups using both profitability and export share to determine whether an industry is placed in the more competitive or the less competitive group. The results of the test show a divergence between the characteristics of the industries in the competitive group and those in Porter's 'ideal' model, as, moreover, these 'ideal' characteristics are more closely associated with the less competitive industries of the second group. The many restrictions of the testing method, also acknowledged by the author himself (Cartwright, 1993: 65), limit the usefulness of this test. Its results, however, do put a question mark on the framework's applicability.

Porter's study of Canada (Porter and Monitor Company, 1991) exhibits similarities to that of New Zealand. Twenty-five industries were studied, with export shares being the primary selection criterion. Four cases were picked based primarily on the high level of foreign control, which was also present in five others. Factor conditions were found to be of 'high' or 'medium' importance in almost all cases,

while each of the other determinants were important in 11 to 13 cases. Chance was instrumental in two cases and positive in five more, while the government affected positively 16 industries and negatively two.

Porter's classification of Canada at the factor-driven stage of economic development, and his view that competitive advantage based on natural resources and dependency on a highly developed neighbour is not sustainable, angered many Canadian scholars. Rugman (1991: 61), who otherwise found the diamond concept 'brilliant', claims that the classification of Canada as a 'factor-driven' nation is 'inaccurate and dangerously misleading'. Rugman and Verbeke (1993) refer to Porter's work in Canada as flawed and Rugman and D'Cruz (1993: 17) say that the framework needs to be adapted to explain Canada's resource-based multinationals and other features of the Canadian economy. An opposing view is found in Nicholson (1991: 290) where he considers Porter's views on Canada's problems as correct and helpful, but already 'well documented by others'.

Two more attempts to test Porter's model will be mentioned here, besides the one for New Zealand already analysed, as they are both relevant to this study. The first was made using data from Ireland, another small EU nation. The second was more extensive and concerned Turkey, a close neighbour of Greece with a very similar industrial structure (for the striking similarities in cluster export shares see Konsolas and Oz, 1996).

In the Irish case, O' Donnellan (1994) investigates the extent of sectoral clustering and geographic concentration and their relation to industrial performance. Vertical links are found to exist among some, but not all, of the industries in the same cluster, although part of the problem is the misplacement of certain industries. Sectoral geographic concentration is also present in Ireland, further than would be expected given the general concentration of employment and manufacturing firms around Dublin and Cork. Vertical linkages, however, among the concentrated industries are evident in only two groups of sectors, food, and wood transformation and printing. Moreover, little association is found between clustering or geographic concentration and enhanced industrial performance, in terms of exports, productivity and innovation. Although some of the results do support Porter's hypotheses, the author wonders whether the lack of many groups of industries both geographically concentrated and vertically linked may be responsible for the low correlation with

industrial performance. The author seems more in favour of promoting vertical linkages and sectoral clustering than geographic concentration, for which he considers there is a very limited potential, given Ireland's size (O' Donnellan, 1994: 230).

In the Turkish case, Oz (1997: 75-94) followed Porter's methodology and found Turkey very competitive in the textiles/apparel, food/beverages, materials/metals and housing/household clusters. Turkey's strong positions were mostly in final products, while the machinery industries were relatively weak. Five industries, four competitive (glass, construction, leather clothes and flat steel) along with one uncompetitive (automobiles) were studied by Oz (1997: 98-339). Extensive case studies were conducted of the five industries, and the sources of advantage and disadvantage were thoroughly investigated. The competitive advantage (or disadvantage in the automobile case) of these industries was found to be closely related to the determinants in the diamond framework and their interactions. Certain issues, however, concerning the role of basic factors, domestic rivalry and government intervention did arise from the case studies. Specifically, two of the industries (leather clothes and flat steel) drew little advantage from basic factors, in the glass and flat steel industries there was no domestic rivalry and the role of government in three cases was much more direct that what Porter envisages. Oz (1997: 356) concludes that although some of the aberrations can still be explained within the diamond framework others require further applications of Porter's framework in other industries in order to reach a more conclusive result.

3. Evaluation of The Competitive Advantage of Nations

Porter's (1990) *The Competitive Advantage of Nations* has sparked a debate regarding many of the subjects of the book, such as the determinants of trade patterns, the process of economic development and the identification of competitive industries. This section presents a review of these debates, in an effort to summarise the views of other scholars on Porter's work. Where appropriate, excerpts from *The Competitive Advantage of Nations* are also used in order to clarify Porter's positions

and contrast them with those of his critics. An attempt has been made to group the various comments on Porter's work, starting from general criticisms, proceeding to specific points about the study, followed by comments on the diamond framework, his model of economic development and the methodology. Nevertheless, certain issues appear in more than one category, with a different focus each time. Also, certain aspects of Porter's work are part of a wider issue (for example, stage theories of development) and a broader perspective was deemed necessary.

General Assessment

Porter's diamond framework has influenced both the strategy of firms and, especially, the policy choices of national, regional and local governments throughout the world (De Man, Van den Bosch and Elfring, 1997: 53; Malecki, 1997: 9). It has also attracted the attention of scholars from a variety of disciplines, including management, economics, international relations and others.

The approach that Porter (1990) uses in presenting his theory does not comply with the traditional forms of analytical models. The absence of a typical structure and the overuse of cases and examples, created an opportunity for criticism. The strongest point to this effect was expressed by Greenaway (1993: 146) who stresses that Porter is constantly referring 'to a "theory" of competitive advantage which is never formally presented, nor formally tested'. Additionally, Gray (1991) makes two valuable arguments. First, certain phenomena mentioned by Porter are 'not identified as integral parts of the diamond' and, second, 'the treatment of some phenomena becomes an obiter dictum rather than a closely reasoned deduction' (Gray, 1991: 510).

Stopford and Strange (1991: 8) attack the characterisation of Porter's contribution as a theory, terming it instead 'an explanatory framework' because, among others, it does not resolve 'the causality between policies to create growth and those aimed at structural reform'. The weakness of the framework 'in generating clear predictions' that has been pointed out by Grant (1991: 542-543), who is perhaps the most careful reader of Porter's study, is an additional argument in favour of avoiding the term 'theory' for Porter's work. Other writers that have used extensively

Porter's approach also prefer the term 'framework' (De Man, Van den Bosch and Elfring, 1997) or 'taxonomy' (Singleton, 1997).

It is common practice to look for the degree of originality in any new scientific contribution. This is why an extensive discussion has been conducted regarding the originality of Porter's framework. De Man, Van den Bosch and Elfring (1997: 53-54) point out that Porter's view is not completely new. The core of his innovativeness is the 'combination of theory, practice and tools' and 'the integration of various research approaches'. This view is challenged by many researchers (for example, Rugman, 1991: 61; Dunning, 1992: 139) who argue that almost all the determinants of Porter's framework are analysed and/or incorporated in previous studies of prominent scholars. Others stress that there is nothing particularly new in Porter's study (Thurow, 1990); that it is a 'rehash' of the theory of comparative advantage (Cote, 1991: 312), a partial repetition of models of trading economies (Bruce, 1991: 80) or a repeat of facts that are part of the theory of intra-industry trade (Gray, 1991: 506). A different approach is adopted by Magaziner (1990: 189) who argues that Porter's contribution is new to policy makers, although not to business strategists. Indeed, Porter's approach has been used in practice by various governments (De Man, Van den Bosch and Elfring, 1997: 53) and has been characterised by policy makers as 'a valuable contribution to the policy debate' (Geelhoed, 1997: 66) that provides 'insights' (Smit, 1997: 67) into a region's economy.

In terms of the individual determinants, a brief summary of the criticisms regarding their originality is provided by Penttinen (1994: 9). He argues that the role of factor conditions is similar to the theory of comparative advantage, the importance of home demand has long been pointed out, for example, by Vernon (1966), while most of the attributes included in the 'strategy, structure and rivalry' determinant have been covered by industrial economics. The other components of Porter's theory can also be subject to criticisms similar to those mentioned above.

Malecki (1997: 152) considers Porter's identification of regional clusters as 'nothing new in the economic geography of industries' although he admits that Porter 'illuminated the phenomenon for many unaware of the concept'. Indeed, clusters and geographic concentration are concepts that can be found, for example, in the work of Weber (1929), Isard (1960) and other regional scientists in their writings concerning

location theory. In fact, the importance of networks for innovation, as De Man, Van den Bosch, and Elfring (1997: 53) point out, has already been established, long before Porter's work.

Smith (1993: 399) considers Porter's way of thinking about development policy original, and his work a 'serious attempt to develop a really original grand theory of national economic development'. His views are in contrast with most of the other writers, although they are not irreconcilable. Grant (1991) also devotes a substantial part of his extensive critique to analyse Porter's contributions. He finds that Porter integrates the theory of competitive strategy with the theory of international trade and comparative advantage and reformulates the strategy model in a dynamic context, with his emphasis on innovation and upgrading. Grant (1991: 548) also states that Porter's work will eventually lead to 'a redefinition of the boundaries of strategic management' and considers that Porter offers 'new insights into the development of industries and nations within their international context', thus influencing the direction of international trade theory.

De Man, Van den Bosch and Elfring (1997: 45-48) point to another aspect of Porter's work, the way he approaches international competitiveness. They define his contribution as an effort to integrate the three, up to now separate, schools of competitiveness, which emphasised the firm level and superior management, the industry level and industrial policy and the macro-economic environment of countries.

Although most parts of the diamond framework have been the subject of earlier works, it is true that Porter has combined these in an original way, in an effort to illustrate the multitude of influences on trade patterns. In this attempt, Porter has also made use of his own earlier work on competitive advantage and has emphasised the importance of the local environment, linking firm strategy to sectoral and spatial circumstances.

Porter has also brought attention to many of the issues mentioned in his work, inspiring other authors to develop original ideas. The improvements to Porter's framework, which have already been proposed, also contain some original concepts and more work is continuously being done on the framework by other scholars and Porter himself.

A lot of the shortcomings of the framework 'in theory, exposition and empirical analysis' are related to the fact that it is ambitious in its scope, as Grant

(1991: 548) points out and Magaziner (1990: 189) confirms. Both writers, however, see many important insights present in the framework. Malecki (1997: 29) believes that Porter emphasises many substantial issues, such as the importance of services in the clustering process. Maucher (1990: 188) expects *The Competitive Advantage of Nations* to 'make history, setting a new framework for an old problem', while Smith (1993: 404) sees Porter's focus on the long-term success of the firm as something lacking from development theory. Grant (1991: 540) in addition to his observation that Porter encompasses 'many of the central themes of established theory', argues that 'Porter is able to broaden and integrate many recent contributions to the theory of international trade'.

Bellak and Weiss (1993: 112), on the contrary, believe that new trade theory, which takes account of economies of scale, imperfect competition and product differentiation (for a brief review see Krugman and Obstfield, 1997: 122-142), proves that there is no need for a 'new paradigm' as Porter claims. Porter (1990: 16), however, while acknowledging these recent contributions, points out that they fail to answer an important question, that is, which nation's firms will be able to gain competitive advantage in particular industries. Porter's work tries to provide an answer to this question and only extensive testing of Porter's assertions will prove whether they are indeed correct.

An additional general criticism is made by Grant (1991: 548) that considers Porter's definitions as 'adjusted to suit the needs of different parts of the analysis'. This is especially true in the economic development part of the book, as well as in many cases where the industry-level concepts are adapted to the national level.

Moreover, concepts are not always well-defined, according to Thurow (1990: 95), which asserts that 'sentences and paragraphs have to be read several times to decipher their meaning'. Thurow (1990: 95) also considers the book far too long, a view shared by Dobson and Starkey (1992: 254). Grant (1991: 548) believes that Porter uses repetition to reinforce his ideas. Despite these criticisms, Jelinek (1992: 509) considers the book a 'careful, structured discussion' with a 'wealth of detailed examples' and 'well-developed case-studies', that 'gathers power in the course of the roughly 750 pages of text', 750 pages that are required to present this 'highly detailed and complex explanation'. Although it is true that the book is quite long by any standards, it certainly fits Porter's usual style of presenting his views.

Criticisms about the Study

Geographical Aspect

Given the high level of development of the countries studied by Porter and their concentration in Western Europe, North America and East Asia, a lot of writers have questioned the applicability of the diamond in other countries. Narula (1993: 85) thinks that Porter's framework is not applicable to developing countries. A similar point is brought forward by Hodgetts (1993: 44) who considers it 'unlikely' that the framework can be applied to countries with less economic strength than those studied by Porter. Rugman and D'Cruz (1993: 26) believe that Porter's analysis is not relevant for Canada and that '90% of the world's nations potentially cannot be modelled by the Porter diamond' due to the insufficient attention paid to the role of multinationals.

Bellak and Weiss (1993: 117) also consider Porter's emphasis on the home market and indigenous firms as relevant only to large countries. The only point that should be made here is that Porter (1990) in his 'stages of economic development' classifies most countries of the world in the factor-driven and investment-driven stages, where not all of the diamond determinants are present and even those that are present are less than perfectly developed.

Another issue concerning the geographic scope of Porter's work is the relevant level of analysis. Jacobs and De Jong (1992), in their study of clusters in the Netherlands, find industries whose advantage is closely related to a specific region and others where the nation is the relevant unit of analysis. They also mention the presence of cross-border clusters, a fact already noted by Porter (1990:158-159). Their conclusion is that the geographic unit of analysis should change according to the cluster or industry examined. This is seen by De Man, Van den Bosch and Elfring (1997: 56) as a clarification and extension of Porter's analysis. There is no doubt that the framework can be easily applied to regions or even large cities, as Porter himself (1990: 158) states. Porter (1990: 154) also observes that industries are 'often' concentrated in particular regions or cities. Nevertheless, he argues that there are more similarities between regions in the same nation than across nations; and that central government policies, social and political values and other characteristics are more nation-specific. Another justification for Porter's selection of countries as the

unit of analysis in his original work is the availability of reliable data. In most countries export and other data are often not available for particular regions, and certainly not for cities, and when they are, their accuracy is much higher at the national level.

Many writers have argued for the opposite, that is, the importance of other nations or of supra-national entities for competitive advantage. Several scholars (for example, Rugman and D'Cruz, 1993; Rugman and Verbeke, 1993; Hodgetts, 1993) have proposed a double diamond approach, where the diamond of one country is linked to that of a larger or more developed nation. Jacobs and De Jong (1992) also point out that in certain industries competition is at a global scale, and production is carried out by international networks. Dunning (1993: 12) refers to a 'supranational' diamond replacing the national diamonds in the EU countries. Porter (1990: 159) sees such a development as unlikely in the near future, as he considers national differences among EU nations in demand conditions, factor creation and other determinants as persisting. This is a rather bold assertion and, despite the fact that national differences in important determinants are showing little change, other attributes of production and demand are heavily influenced by developments at the EU level as the integration process moves on.

The Impact of National Culture

Porter (1990: 129) examines the role of cultural factors in shaping the firms' environment. He considers that they work through the other determinants and that they cannot be separated from economic outcomes. In fact, economic circumstances often shape the social norms and values, which are an important part of the 'national culture'. Nevertheless, Porter (1990) occasionally mentions cultural influences as important and essential attributes of the national environment, which cannot be easily emulated.

Van den Bosch and Van Prooijen (1992: 173), on the other hand, consider that national culture is given too little attention, especially since, as they claim, 'the national diamond rests on the base of national culture, and the latter is exogenous to the firm'. The two authors object to the fact that although Porter (1990) recognises the importance of culture, he does not include it in the diamond (Van den Bosch and Van Prooijen, 1992: 175). Their analysis is not in contrast to Porter's, in fact, the

authors admit that culture works through the other determinants; they only advocate a more explicit treatment of culture and further research on its role in determining competitive advantage. Porter's reply (1992: 178) to their article summarises the points already made in *The Competitive Advantage of Nations*. Its main addition to those arguments is the emphasis on the fact that culture is not necessarily exogenous to firms but 'changes over time and can be changed', presumably by firms. He also stresses that culture might have different effects on different industries. While it is true that culture is mentioned and analysed by Porter, it is also true that it is not explicitly incorporated in the diamond.

Macro-economic Policy and Exchange Rates

Exchange rates and macro-economic policies that affect production costs are considered by Daly (1993: 130) and Jasinowski (1990: 196) as being downplayed in Porter's analysis. Gray (1991: 154) also agrees that exchange rates affect price competitiveness and that Porter does not take this fact into account.

Porter (1990) believes that an undervalued currency can only confer an advantage in the short-run, and only in price-sensitive segments. In the long-run, domestic industries are prevented from upgrading their competitive advantage, and remain trapped in price competition through exchange rates that cannot ensure their success, once conditions change. Porter (1990), nevertheless, emphasises the importance of other macro-economic factors (such as interest rates) for competitiveness. However, he emphatically points out that his theory is 'aggressively industry (and cluster) specific' (Porter, 1990: 283). Therefore, factors that affect all industries in a nation are much less important than factors that are specific to an industry or a group of industries.

Criticisms about the Diamond Framework

Factor Conditions

Factor conditions are, according to Jelinek (1992: 508), an elaboration of the traditional factors of production, with increased emphasis on upgraded and industry-specific factors. Grant (1991: 537) considers that Porter's contribution, through his

treatment of factor conditions, is 'to analyse in much greater detail' their characteristics, while also exploring their creation mechanisms.

The first point criticised by many in Porter's factor conditions, is the 'hierarchy' of factors and his preference for advanced factors, as they are seen to provide a more sustainable advantage. Cooper (1991) states that minimum retraining and better marketing can offer a comfortable living for New Zealanders, exploiting the country's scenery and open spaces for tourism purposes. Grant (1991: 541) sees Saudi Arabia's competitive advantage in the supply of crude oil as sustainable despite being based on natural resource endowment. Other writers (such as Cartwright, 1993; Rugman and D'Cruz, 1993; and Hodgetts, 1993) see basic factors as a sustainable source of advantage, usually complemented with other attributes, such as export policies or managerial and marketing skills.

A second point, that has been criticised, is the presence of selective factor disadvantages. These disadvantages, according to Porter (1990: 81-85) can foster innovations, which often eliminate the disadvantage and create new sources of advantage. Grant (1991: 542) correctly points out that 'Porter fails to clearly define the conditions under which advantages in the supply of basic factors are an advantage, and the conditions under which they are a disadvantage'. The only clarifications made by Porter (1990: 83) is that disadvantages 'must be *selective*' and should '*send the proper signals* about circumstances that will ultimately confront firms elsewhere' (emphasis in the original text).

Demand Conditions

In this determinant, Porter analyses a variety of demand conditions that affect international competitiveness. His critics have paid particular attention to the question of demand size and the related issue of whether a small market can have buyers with the characteristics envisioned by Porter (sophistication, anticipatory needs, etc.). Rugman and Verbeke (1993: 76) believe that 'demand conditions in the United States are just as relevant as Canadian demand conditions' for most Canadian Multi-National Entreprises (MNEs). Rugman and D'Cruz (1993: 30) view the Canadian home market as too small to support the required economies of scale. Cartwright (1993), examining the case of New Zealand, finds that for many export-dependent industries, sophisticated demand is present only in foreign markets. Porter (1990: 86),

nevertheless, emphasises that the quality of home demand is more important than the quantity and that the home market has a disproportionate effect on 'a firm's ability to perceive and interpret buyer needs', thus highlighting the pivotal role of domestic demand, regardless of its size.

Related and Supporting Industries

The emphasis on related and supporting industries, as a major influence on the international competitiveness of an industry, has been the subject of much praise, as one of Porter's main contributions. Jacobs and De Jong (1992: 246) describe Porter's method for analysing clusters as 'a valuable tool for strategic policy making'. Rugman (1991: 61) finds that the identification of clusters is accurate and relevant to managers.

Grant (1991: 542) points out a serious overlap in the related and supporting industries determinant. He claims that the role of related and supporting industries is to affect factor conditions and demand conditions. Specifically, successful supplier industries are providing resources, 'horizontally-related industries contribute to factor creation' and competitive downstream industries are important buyers. Although it seems that many of the effects of this determinant are captured by factor and demand conditions, Porter (1990: 103) argues that 'mere access or availability of inputs' is not the primary benefit from internationally competitive domestic suppliers. Their role is more important in the various interchanges, of technology, ideas, etc., which promote innovation and upgrading. The same role is envisaged for related industries, where sharing of activities and extensive co-ordination are the driving forces for a successful, internationally competitive cluster.

Firm Strategy, Structure and Rivalry

Porter has also been praised for his emphasis on the firm, as the major actor in international trade. Rugman (1991: 61) considers that Porter's model 'has exactly the correct perspective by its focus on the strategies of firms'. However, Harris and Watson (1991: 246) point out that although the firm's role is acknowledged by Porter, very little is said about it. Grant (1991: 542) offers another general criticism on this determinant by pointing out that the variables included 'do not form a coherent group'. For example, domestic rivalry is an industry-level variable clearly

defined, while management training and practices are national characteristics, possibly related to factor conditions.

Dobson and Starkey (1992: 255) direct much of their criticism towards this determinant. They consider the book 'weak on how firms should structure their internal organisations to foster competitive advantage'. They point out that the book emphasises an inter-organisational perspective and inter-firm rivalry rather than an intra-organisational one. It is true that Porter makes few suggestions for the firm's organisation. His main purpose is to examine the national characteristics that shape certain aspects of the way firms are organised and managed, and thus affect their competitive advantage. Nevertheless, actions of individual firms are analysed and suggestions are made regarding the benefits and costs of internationalisation, diversification and other issues related to a firm's strategy and structure.

In terms of domestic rivalry, Dobson and Starkey (1992: 254) again question the fact that 'unregulated competition is the way forward'. Porter (1990) offers an array of examples where rivalry has been central to the creation and sustainability of competitive advantage, especially in the more developed countries. He emphasises what Smith (1993: 401) calls the 'dynamic economic benefits of intense domestic competition' and its effect on reducing reliance on government subsidisation and protection policies, which affect equally all producers in an industry. On the rivalry issue, Dunning (1992: 155) also stresses that 'the optimum structure of the market for competitive and innovatory stimuli has always been a matter of debate'. On that point, Porter (1990: 121) argues that the number of competitors required for effective rivalry varies among industries. Dunning (1992: 155) also points out that 'it would be erroneous to argue that a greater population of firms necessarily means more effective competition'.

The Role of Government

The indirect role attributed to government by Porter (1990) has been the subject of extensive discussion. A very comprehensive analysis is provided by Van den Bosch and De Man (1994) that criticise Porter on three major points.

The first one is the limited attention Porter pays to regional and local governments. Although it is true that Porter's suggestions usually refer to the national government, explicit mention is made of regional and local governments as well. The

second point, that the two writers consider important, is the apparent shift from macro-policies to meso- and micro-policies, which makes governments much more involved in shaping the proximate environment of firms. The conclusion that they reach is that government should be included in the framework as a fifth determinant. Porter (1990: 128), however, considers that 'by viewing government as an *influencer* of the national "diamond" [a] far broader array of public policy options and outcomes' can be explored, including various micro-policies. Dunning (1992: 141) also considers Porter's classification of the government's role, as an influence on the structure and efficiency of the system and not an attribute of the diamond, as probably correct.

The third and final point made by Van den Bosch and De Man (1994) is that the appropriate role for government can vary according to the point, in the industry's life-cycle, where it finds itself, regardless of the country's level of development. This is a valid point, especially in regard to Porter's advice to governments, which is based on his 'stages of economic development'. In fact, a similar point has been made by Hodgetts (1993: 44) in his critique of Porter's model of economic development, where he mentions that there might be industries or companies in an economy operating at different stages.

The issue of introducing government as a fifth determinant is also raised by Stopford and Strange (1991: 8-9). Dobson and Starkey (1992: 254) envisage a far more active role for government in factor creation. Harris and Watson (1991: 250), however, are sceptical of the ability of government to act, even in an 'influencing' role, according to Porter's prescriptions, since 'governments are called upon to be consistent, thoughtful, sophisticated, and original', while 'there is ample evidence that real-world governments simply do not behave this way'.

The Role of Chance

Narula (1993: 88) considers the role Porter (1990) attributes to chance as disproportionate. Indeed, it seems that Porter includes a large number of unrelated phenomena in the chance category, some of which could have been treated separately, as Bellak and Weiss (1993: 112) point out. Nevertheless, the question that Porter (1990: 125) tries to address is not what events will take place or when they will take place but 'what nation exploits them', that is, where is the most favourable diamond,

given the changes brought about by these unpredictable and often uncontrollable events.

Critique of Porter's Stages of Economic Development

Both classical and non-classical economists have presented theories regarding an economy's ability to continue to grow or the reasons for which it is doomed to stagnate. In recent decades, theories were articulated in an attempt either to explain the reasons behind the poor countries' under-development or propose the necessary processes necessary for their development. 'Stage' theories, though, were attempting to address both of the issues mentioned above. These theories used the historical approach, and their main argument is that the evolution of an economy follows a pattern, possibly uniform, of consecutive stages.

Stage theories were extensively explored by members of the German historical school. They were based on the assumption that primitive economic systems are the first steps towards more advanced economies. They also tried to include cultural and sociological explanations regarding the transition mechanisms among the stages. Most well-known among these early theories is that of Karl Marx, which identifies three stages: primitive communism, feudalism, and capitalism. After analysing the factors that led to the creation of the third stage, capitalism, Marx predicts its eventual downfall and its replacement by a fourth stage, communism.

An alternative theory to Marx's views and one of the best known current stage theories, is that of Rostow, first articulated in 1961. Rostow (1961) describes five stages in a society's growth process: traditional society, preconditions for takeoff, takeoff, the drive to maturity, and high mass consumption. Small economic changes are seen as leading to inevitable fundamental shifts in a society's economic and political institutions, especially during the 'takeoff' stage. Rostow supports his theory with ample historical details, describing the evolution of many diverse societies. His theory has been considered a significant contribution, although it has also been highly criticised, especially for the inevitability of the transitions from one stage to the next.

In a general assessment of the stages of growth theories, Grabowski and Shields (1996: 17) make two important points. The first is that these theories 'differ significantly in the types of stages that a nation is hypothesised to pass through'. The second is the emphasis on factors like the cultural and social environment and political institutions, evident in most 'stage' theories, as the agents of change in the transition process between stages.

As was mentioned before, Porter (1990) uses his extensive industry-level research to propose four stages of economic development for a country: factor-driven, investment-driven, innovation-driven and wealth-driven. The transition to each successive stage is not inevitable, nor is it a pre-condition for a country to pass through all the previous stages to reach one of the two final ones. Countries can also move backwards, even as far as the first, factor-driven stage.

In a critique of this model of economic development, Grant (1991: 547-548) has concerns about the ability of Porter to use the micro-foundations of his theory to arrive at an explanation of national economic development. He considers this part of Porter's analysis as the 'least successful' one and doubts whether his prescriptions should be used to guide governments, a point also made by Rugman (1991: 64) regarding the Canadian case. Bellak and Weiss (1993: 115) and Thurow (1990: 96) find the model of economic development inadequate and vague, since the criteria for classifying countries in every stage and the transition mechanisms among stages are not analysed in detail. Jasinowski (1990: 196) considers Porter's model problematic because it is based, as Jasinowski perceives it, on the fact that 'the principles governing the company are equally applicable to nations'.

Cote (1991: 311) follows another line of criticism pointing out that Porter emphasises only the traded sector of an economy and assumes that economic expansion is contingent upon the expansion of the traded sector. Harris and Watson (1991: 247-249) also believe that Porter relies on trade data and case studies of industries exposed to international competition 'to construct a grand generalisation'.

In an article devoted to Porter's model of economic development, Narula (1993: 85-107) finds that its most critical shortcomings are that it is 'static' and based on evidence 'from selected industrialised countries'. The attempt to extend the model to countries 'with entirely different economic structures should be founded on a

larger data base', according to Narula (1993: 89). Moreover, gradual evolution is ignored as all developing countries are essentially classified in the factor-driven stage.

Government intervention is another area of concern, as it is deemed unfeasible for industrialised countries according to Porter (1990). Narula (1993: 89), however, points to the regional integration attempts as an example of government 'collusion between countries to consolidate their mutual or complementary competitive advantages'. Moreover, Narula's (1993: 88) main criticism is that the model 'does not address the mechanisms of growth' and is thus 'essentially a static model'.

Narula (1993: 88) concludes that 'the "diamond" as it is presently configured cannot be justifiably used to examine the dynamic process of development'. An extension of the diamond is deemed necessary that would include multinational activity as a third exogenous variable, as Dunning (1992) proposed, and accumulated technology as an endogenous variable affecting and being affected by the other four endogenous variables and, indirectly by government, chance and 'international business activity' (Dunning's additional variable).

The extended 'diamond' is then used by Narula (1993: 97-104) to suggest five stages of development, where the growth mechanisms that enable a country to progress from one stage to the next, are related to the rate of technological accumulation and the use of technology in the international trade and investment activities of indigenous firms and foreign multinationals investing in the country.

On a more general level, Kottis (1981: 257), in his extensive critique of the stage theories developed until the 1970's, asks three fundamental questions:

a) How can a development policy be formulated by the government if the transition mechanisms among stages are not clearly defined?
b) Can we be sure that all countries will follow the same path?, and
c) Can we exclude the possibility of a nation reverting to a previous stage than the one where it currently is?

Porter's (1990) stages of economic development address the last two questions by accepting the possibility of nations reverting, even as far as the first stage, and moving from the factor-driven to the innovation-driven stage directly, skipping the transition to the investment-driven one. Regarding the first question, Porter (1990: 560-562) offers a list of forces that enable transitions between the

stages. However, the exact mechanisms by which these forces will be activated are not clear.

Porter's model of economic development exhibits a lot of the weaknesses of similar models that categorise many diverse countries in a few groups. Moreover, the data used by Porter to produce this model are limited, mainly industry-specific, and focusing on the traded sector. The questionable link between the competitive advantage of industries and the development of national economies is another problem with the theory of economic development. Therefore, this part of Porter's (1990) study is of limited value for the analysis of the case of Greece.

Criticisms about the Methodology

The methodology used by Porter (1990) is analysed in Section 2.3, Chapter 2 along with specific points of critique relevant to the application of this methodology to Greece. The broad lines of criticism for the methodology will be mentioned here, as the discussion is related to other points previously made in this chapter.

The identification of competitive industries is the first part of the methodology that has been criticised. Rugman and D'Cruz (1993: 22), and Bellak and Weiss (1993) disagree with Porter's reliance on export shares as the primary indicator of competitiveness. They prefer foreign direct investment data that are, however, already used to some extent by Porter. Cartwright (1993: 58) also criticises Porter for his bias towards selection of exporting industries against those that produce abroad or make use of foreign value-adding subsidiaries. Again an internationally comparable, widely available measure of competitiveness, other than export shares that is, is not proposed. Cartwright (1993: 62) uses profitability in his definition of competitive New Zealand industries, along with export shares. Porter (1990: 739), however, considers profitability 'unreliable' as an internationally comparable measure of competitiveness, because of protectionist policies, differences in reporting requirements and accounting standards, the availability of data, and company diversification, which makes comparisons among industries very difficult.

Porter's criteria for excluding industries from the competitive lists were also the subject of much discussion. Porter (1990: 740) excludes industries whose trade

'was almost exclusively with neighbouring nations'. In his study of Canada, though , Porter (Porter and Monitor Company, 1991) slightly modifies his views. He makes a distinction between industries that are successful mainly in the USA market and those that are also exporting to many other markets, without, however, excluding those in the first category from the competitive lists. In the Greek case, this issue does not arise as trade is not dominated by neighbouring countries in any industry, something expected given the level of development of some of these countries.

Another exclusion criterion has caused a much wider debate. Porter (1990: 740) excluded from the competitive lists industries whose exports are 'dominated by foreign companies who produced in the nation as part of a global manufacturing strategy'. This has attracted a lot of criticism from Canadian scholars (Rugman, 1991; Rugman and D'Cruz, 1993) who consider Porter's views on inward Foreign Direct Investment (FDI) as a serious flaw in his diamond framework and one that makes it impossible for the diamond to be applied in the Canadian case.

Hodgetts (1993) and Bellak and Weiss (1993) also believe that Porter should have paid more attention to inward FDI, that is equally or more important than outward FDI for certain countries. Porter' treatment of inward FDI implies that only when a subsidiary is strategically autonomous, is it able to reap all the advantages of a nation's diamond. Otherwise, it is established to selectively tap into certain advantages, and thus, its presence is only an indication that these few advantages exist in the nation, rather than the full diamond. In this case, the multitude of advantages are located in the multinational's home-base, and a global strategy is used to add to these or to offset home-base disadvantages.

Porter (1990: 679), however, does not dismiss the role of multinationals' investment, especially in developing countries, stating that 'multinationals can seed a cluster', but only in industries where the nation's firms might eventually gain competitive advantage. This assertion makes the exclusion of industries dominated by exports of foreign subsidiaries more contentious for countries less developed than those studied by Porter (1990). On the contrary, Porter (1990: 606) is adamant in his assertion that 'a firm can only have one true home base for each distinct business or segment'.

According to De Man, Van den Bosch and Elfring (1997: 57) this view, supported by recent empirical evidence, contradicts the views of Ohmae (1990), that

globalisation reduces the role of the place where a firm is established. Rugman and Verbeke (1993: 72) also challenge Porter's position that the core competencies and the innovation processes of multinationals depend upon the characteristics of their home base. Grant (1991: 537) agrees with Porter when he states that 'while multinationality permits access to global scale economies and the resource advantages available in different countries, this is quite consistent with Porter's basic proposition that national environments exercise a powerful influence on the competitive advantage of companies'. Malecki (1997: 203) also considers that 'global firms continue to rely on their domestic base'.

The next step in Porter's methodology is the preparation of the cluster charts. Jacobs and De Jong (1992) applied the same methodology to the Netherlands and came up with some interesting critical observations.

They first point out that the classification of industries in clusters takes primarily into account the consumption side, while a more balanced approach should also incorporate the production side. Then they discuss the classification of machinery industries that are sometimes put in the 'primary goods' category instead of the 'machinery' one, as the emphasis, in these cases, is on the machinery being exported rather than integrated in the domestic cluster. The lack of extensive service trade statistics and the maximum number of industries in each cluster (that, indeed, according to my observations can vary widely) are two more points of concern. These points, however, are more related to the UN trade statistics, Porter's (1990) main source of trade data, and the Standard International Trade Classification (SITC) than Porter's use of them.

The final step in Porter's methodology is the preparation of detailed case-studies. The use of case-studies by Porter has also been a contentious issue. Greenaway (1993: 146), while accepting that this approach can yield 'insights that escape more formal methods', points out that 'many of the insights which are yielded are inevitably case-specific'. Narula (1993: 86) and Cartwright (1993: 65) point to the subjectivity in the analysis of the information available that affects the validity of the conclusions. Bellak and Weiss (1993: 116) question whether the conclusions from case studies are generalisable and comparable among countries. Yin (1994), in a general analysis of case studies, considers analytic generalisations possible if cases are not considered as a 'sample' but as a series of replications.

A more specific point for Porter's use of cases is his preference for studying more competitive industries. Harris and Watson (1991: 248) believe that a study of failing industries, 'the same way' as the successful ones 'would be a very useful lesson'. This issue is further discussed in Section 2.3, Chapter 2, where the criteria for selecting the Greek case-studies are analysed.

CHAPTER 2

THE COMPETITIVE ADVANTAGE OF GREECE

In this chapter, the emphasis shifts to the particular attributes of the Greek case. The first section deals with the Greek economic environment, through a historical overview and the presentation of the relevant data from the most recent periods. Then, the literature that addresses the issue of Greek industrial competitiveness is reviewed. In the final section, the structure of Greek industrial clusters is explored, with the help of Porter' methodology for identifying and grouping competitive industries. This is also where the rationale for selecting the particular case-studies is explained.

2.1 The Greek Economic Environment: Past and Present

The history of the Greek nation is, of course a very long one. However, the history of the modern Greek State is much shorter, spanning only about 170 years. The major developments throughout this time are going to be presented below, with the purpose of revealing the influences that led to the current Greek industrial profile. The presentation is arranged in chronological periods and special emphasis is placed on the rapid development period of the 1950's and 1960's and the current period (after 1975), which effectively started after the overthrow of the military government.

From Independence to the Second World War

The modern Greek State was created in 1830 after a fierce War of Independence from the Turks that started in 1821. Since then and up to the end of the Second World War (1945), the Greek economy was affected by many important events, three of which were of major significance. The first was the continual expansion of Greek territory with the addition of new provinces, such as the Ionian islands in 1867, Thessaly in 1881, Macedonia and Epirus in 1912 and Thrace in 1913. The last province to join the Greek state was the Dodecanese islands, in 1947. The second was Greece's active participation in the two World Wars and in regional wars as well as in a series of conflicts with the Ottoman Empire for the liberation of territories where Greeks lived. The third was the enormous effort for the development of the country and its productive sectors, an effort was seriously hampered by various external and internal factors.

After the liberation struggle of the 1820's, the main objectives of the new State were to restore production at the level it was before the 1821 Revolution, to create the necessary infrastructure, part of which was destroyed during the war operations, and to mobilise the financially powerful Greek communities, outside the Greek territory, mainly in Constantinople, Smyrna and Thessaloniki, for revitalising trade. At the same time, the state was interested in using the commercial fleet of certain islands and coastal cities to recapture the trade routes, especially with Western Europe (Petropoulos and Koumarianou, 1977: 16-18, 94-95).

Emphasis was initially given to promoting small-scale agricultural production, developing commerce and establishing small units in the shipbuilding, construction materials and textile industries. For many decades there was also continuous construction of port facilities, roads and public buildings. The wide range of irrigation and drainage works increased agricultural production and, consequently, the first major food producing firms were established and with them, exports of some agricultural products, mainly tobacco and raisins, increased. The agricultural reform of 1871 further revitalised agriculture as peasant farmers became land-owners (Kofos, 1977: 310). The first efforts to exploit the country's natural resources, the development of merchant shipping, the creation of the rail networks and the establishment of the first steam-operated industrial units in Athens, Pireus, Patras and

the island of Syros shaped the new structure of the Greek economy at the end of the 19th century.

In the first decade of the 20th century, economic development continued, without substantial external borrowing, despite some lingering public finance and agricultural problems. This development gave Greece the financial means to make a series of wars, which ended with the annexation of the Northern Greece provinces (Oikonomou, 1977: 197).

Three important periods for the country's economy followed. From 1914 to 1922, increases in demand for industrial products and the war effort strengthened traditional industries and favoured the creation of companies in new industries, such as chemicals, electrical goods and some textile products.

After 1922, the country's population was greatly increased because of the influx of Greek refugees from Asia Minor (1.3 million approximately) and at the same time the quality of the workforce improved, since among the refugees were many skilled craftsmen and semi-skilled industrial workers. From 1925 to 1930 the electricity network was constructed, without however fully satisfying the constantly increasing demand.

In the decade before the Second World War, there were no major changes in the Greek economy, as the repercussions of the world economic crisis were felt in Greece, too. A decrease in agricultural exports was another negative development of this period.

During the Second World War, Greece was part of the allied forces. After the German invasion, the country's economy suffered from mounting inflation and the financial burden imposed by the occupying forces. The total economical loss for the occupation years is estimated by A. Angelopoulos to be around $549 million (Oikonomikos Tachydromos, 1996: 60). The ensuing Civil War increased the problems and constrained even further the country's development.

Concerning the economic policies of the Greek State from its establishment to 1939 the following characteristics can be discerned (Stefanidis, 1952): In the first period (1827-1893) state intervention was indirect and fiscal policies ineffective. From 1893 (when the state declared bankruptcy) until 1909, the state's role in the economy was increased, and monetary and fiscal policies became more robust. The third period (1909-1923) is characterised by attempts to promote development mainly

by assisting industrial activity and seeking foreign investment. In the fourth period (1923-1939) the state's direct intervention is again increased as many public enterprises are created, local industries are protected, labour laws are enacted and agricultural credits are institutionalised.

The Reconstruction (1945-1952)

Like all the other countries that took part in the Second World War, Greece should have started its reconstruction efforts from 1945. However, the civil war that took place from 1945 to 1949, further eroded the country's infrastructure and created lasting social problems. The development process started effectively at the end of 1949, when priority was given in rebuilding what the two wars had destroyed (Agapitos, 1997: 47).

When the occupying forces left Greece in October 1944 the Greek economy was in a 'chaotic' state (Drakatos, 1997: 11). All sectors of the economy, and especially manufacturing, were not functioning. Food supplies were limited, infrastructure networks were seriously damaged, the banking system was almost non-existent, health and education services were inadequate and the drachma - the national currency - had effectively been replaced by gold and 'barter' transactions.

In November 1944 the 'new drachma' was introduced and, in 1946, the Monetary Committee was created, with wide-ranging powers in monetary and credit policies. The British and USA aid of the first post-war years were also very important for industrial reconstruction and for financing the increasing trade and budget deficits. In 1948 the 'Reconstruction Council' was established and the first 'Long-Term Plan for the Economic Reconstruction of Greece 1948-1952' was proposed. This plan, though, was not implemented due to the lack of domestic and foreign funds (Drakatos, 1997: 31).

The Civil War caused problems in Greece's balance of payments. Commercial transactions were subject to various controls. Imports increased, mainly depending on foreign aid funds, but could not cover demand. Exports were also growing, although industrial production was still at low levels. Exports were 27.1% of imports in 1947 and that ratio went down to 23.6% in 1951 (Drakatos, 1997: 24). In 1949, the

drachma was devalued to strengthen exports and encourage capital inflows. In order to tackle the increasing current account deficit (1951: $284.7 mil.) the government also took other measures to promote exports and restrict imports. An immediate result was the reduction of the trade deficit from $329.7 million in 1951 to $160.4 million in 1952 (Bank of Greece, 1978).

Since 1945 already, some factories were operating, although faced with considerable difficulties because of the lack of raw materials, fuel and capital. In 1945 industrial production was at 33% of its pre-war level. The reconstruction policies, however, had such an effect that in 1951 industrial production was up 30% from its 1938 level, while agricultural output was at 93% of the 1938 output (Wexler, 1983: 94-95). Investments in manufacturing increased from 21.5% of total 1948 investment to 26.1% in 1951. These developments affected GDP growth, which in 1949 was as high as 20.1%, although it fell subsequently. The composition of GDP at the end of the reconstruction period was: Primary sector: 27.4%, Secondary sector: 18.8% and Tertiary sector: 53.8% (Co-ordination Ministry, 1976).

In this critical period, 1945-1952, organisational shortcomings of the state, the condition of the infrastructure networks, fiscal problems, increased military spending and the slow increases, mainly in agricultural but also, to a lesser extent, in industrial production, caused serious delays in Greece's development efforts, despite the substantial foreign economic aid. This was not the case for the next period, 1953-1974.

The High Growth Period (1953-1974)

The period from 1953 to 1974 (when the 1967 dictatorship ended) is particularly important for Greece's economic history, because during that time economic development was promoted, after a short preparation process in the period's early years.

The period was characterised by noteworthy events, with both positive and negative consequences, such as the devaluation of the drachma by 50% against the dollar, the liberalisation of imports, the protection of foreign investment, the increase

in private and public investments, the association with the European Community, the military dictatorship and the economic crisis of 1973-1974.

In the first three years of this period (1953-1956) the economy was adjusting to new realities and a development strategy was formulated aiming at monetary balance, which would enable faster economic development, larger infrastructure projects and the establishment of modern industrial units. The stabilisation policy that followed, produced satisfactory results in decreasing inflation and budget deficits, but did not affect the narrow industrial base, the balance of payments problem, the rise in imports and the restricted capital inflows. What was becoming apparent was that the drachma was overvalued, a fact that did not correspond with the government's strategy. The devaluation of the drachma on the 9th of April 1953 (raising the dollar exchange rate from 15,000 to 30,000) and the associated measures that were taken, proved to be the starting point of the country's post-war economic boom.

After the devaluation, a series of measures followed, such as the full liberalisation of imports (except for some luxury goods) and the end of food rationing. The banking system augmented its financing of private investment while competition was intensified with the creation of new companies in many industries. Substantial incentives were also given for attracting and retaining foreign investment. Private investment was complemented by public investment in transportation, electricity generation, telecommunications, port and airport facilities, etc. During the same period, in 1955, a comprehensive system of income taxation was introduced, with mixed results (Drakatos, 1997: 34-42).

The liberalisation of imports and the small capacity of domestic units resulted in the reduction of exports to 45.1% of the level of imports in 1956. However, the increased remittances from Greek workers abroad and from those working in the Greek merchant fleet provided a valuable source of foreign exchange, and in 1956 the Bank of Greece's reserves had increased to $190 million (Bank of Greece, 1978).

Investment during the years from 1953 to 1956 was mainly directed to construction (42.4% of total investment) in order to deal with the increasing urbanisation, as population migrated from the rural areas to Athens and Thessaloniki. Despite the increases in the utilisation of productive capacity, there was a shortage of jobs, especially for those leaving the agricultural sector. The result was a strong migration wave towards Western European, especially West Germany, and North

American countries. Nevertheless, the GDP in this sub-period continued to increase, with the secondary sector accounting for most of the increases. The next sub-period (1957-1972) was characterised by rapid economic development, the association agreement with the European Community and the military dictatorship, that changed the political circumstances.

In this sub-period, economic growth was aided by the increase in demand for consumer goods, the monetary stability and the positive circumstances in the world's economy. Despite this economic progress, the required changes in the administration, the educational system and other institutions were not made. Especially during the dictatorship period, consumer spending was given a big boost, without any structural adjustment measures.

Investment started growing at a high rate, aided by the incentive schemes, the organisation of the capital markets and the creation of specialised organisations for industrial and tourist development. In the 1960's, foreign investment also increased. Its characteristics were the establishment of big units, mainly in new industries for Greece (petroleum, chemicals, steel, aluminium, large-scale shipbuilding, pharmaceuticals, etc.), vertical integration, seeking of domestic market share, substantial exports and concentration in capital and intermediate goods industries (Giannitsis and Vaitsos, 1987: 64-65).

This was a time of prolonged high growth, among the highest in Europe. GDP grew at an annual average rate of 6.6% between 1957 and 1972. The rise in industrial production is reflected in the detailed changes in GDP, where the secondary sector's product increased by 9.6% annually (manufacturing: 9.3%), while the primary sector's product by 4.2%, and the tertiary sector's by 6.4% (Co-ordination Ministry, 1976). Manufacturing production soared both as a result of domestic demand and of exports of manufactures, that rose five-fold between 1957 and 1972.

The current account balance, during the same years, was almost constant, with a deficit of around $200 million. In terms of the trade balance, what should be noted is that the years until 1960 were characterised by exports of agricultural products and raw materials, whereas from 1960 to 1972, growth in exports came from manufacturing goods mainly (Giannitsis and Vaitsos, 1987: 48).

Between 1961 and 1972 the total workforce decreased. Unemployment was also decreasing and this can be attributed to the great number of workers migrating to

foreign countries. Domestic population experienced a great rise in living standard. Per capita domestic consumption increased by an average annual rate of 5.2% between 1961 and 1970, while for the same period per capita GDP grew by 10.3% annually, an impressive figure that was matched by very few countries with similar levels of development at the time, with the exception of Japan's 'miraculous' growth that corresponded to a 15.6% average annual GDP increase (Drakatos, 1997: 70-71).

In the rest of Europe an important development was taking place. In 1957, the treaty of Rome was signed, establishing the European Economic Community. The first country that submitted an application for association and subsequent membership to the Community, was Greece. The application was submitted in 1959 and the Athens association agreement was signed on the 9th of July, 1961, ratified by the law 4226/14-3-62, and went into force on November 1962. The association of Greece with the Community was an act of political choice, but also of economic significance. The goal of the agreement was for Greece to become a full member within 25 years. The agreement stipulated: a) a customs union, b) policies harmonisation and c) economic assistance (Foreign Ministry, 1980: 13-16).

Specifically, the European Community would eliminate tariffs for Greek industrial products by July 1968, while Greece would do the same for Community products not manufactured in Greece. By 1984, all tariffs for Community products would have been eliminated, while Greece would have also adopted the common external tariffs. In terms of policy co-ordination, especially agricultural policy that was considered an important obstacle for Greece's accession, the achievements were not very spectacular. Economic aid was given for the financing of investments, however, only a portion of the planned sum was provided to Greece. In the first years after the agreement the balance of trade situation remained unchanged. There were also some positive effects in the business climate as Greece was seen as economically stable and a good location for exporting to the EC countries.(Drakatos, 1997: 73-74).

The main event that limited the agreement's potential was the 1967 military coup. During the dictatorship period (1967-1974), no funds were dispensed from the EC and, therefore, from the $125 million that were initially allocated, Greece only received 55%, that went mainly to road and irrigation and drainage works, while the remaining were frozen by the Community.

The short-term orientation of the dictatorship's economic policies, the misallocation of essential resources and the disproportionate emphasis on the construction industry, brought, in 1972, the first signs of a crisis that coincided with the oil crisis of 1973-1974.

This third sub-period (1972-1974) is characterised by inflationary pressures, as well as stagnation in industrial and agricultural production, which failed to keep pace with demand, especially for animal products. The major problem of inflationary pressures was exacerbated by imported inflation. The rises in oil prices caused Greece's current account deficit to triple, from $401.5 million in 1972 to $1191.5 million in 1973. The devaluation of the drachma against most European currencies also contributed to the rising cost of imports.

In order to deal with these problems a series of anti-inflationary measures were implemented, leading to a stifling of economic activity. The situation was not helped by the political uncertainty of this period that culminated in the overthrow of the military rule in July 1974.

The Current Period 1975-1998

In the period starting with the restoration of democracy, in July 1974, the economic policies of Greece, are related to the process of the European integration. It is, therefore, a period with specific targets, which the economic performance of Greece had to achieve, and also a period of increased competition and structural changes in the world economy.

The goals of converging with the economies of the other EU states and of stabilisation and restructuring of the economy were pursued with considerable social cost and mixed results. During most of this period, stagflation and reduced investment, combined with alternating economic policies, prevented Greece from achieving the necessary stability.

Important events for Greece, after 1974, were the second oil crisis (1979), Greece's accession to the EC (1981), the victory of the socialist party (PASOK) in the 1981 elections, and the restrictive economic policies that were first implemented in 1985 and 1986. These policies were reversed in 1987 and, to make things worse, a

period of political instability followed. In April 1990 the conservative party of New Democracy won the elections and restored the restrictive policy that continued even after the return of PASOK to power (1993).

The detailed analysis of the economic indicators of this period will be presented in three phases that correspond to the analysis of export performance, using the Porter methodology, which is presented in Section 2.3 of this chapter, and also to the different phases of Greece's effort to converge with the other EU members. These phases are: a) 1975-1980, b) 1981-1987 and c) 1988-1998.

The analysis and the data used in this remainder of this section come primarily from Tables .2.1, 2.2, and 2.3 that present the main indicators for these three phases. The raw data for these tables were obtained from the National Statistical Service of Greece (NSSG). The choice of indicators, which are different for each period, and the necessary calculations were performed by the author. Some of the results were compared to similar indicators in Lianos and Lazaris (1995) and Drakatos (1997) to increase accuracy. An overview of the GDP and the Trade Balance is also given in Figures 2.1 and 2.2, for the 1962-1995 period. To illustrate the changes in the three phases mentioned above a trend line has been drawn, with the help of a regression analysis, using as explanatory variables the time trend and a set of dummy variables that correspond to the three phases. The inclusion of the dummy variables, as expected (for example, see Pindyck and Rubinfield, 1991: 104-108) led to shifts in the position or changes in the slope of the regression line at the start of each phase. The use of these particular periods improved substantially the accuracy of the fit.

The 1975-1980 Period

Following the fall of the dictatorship the most important event of this period was the re-instatement of Greece's application for full membership to the EC. The association agreement was again activated, at the end of 1974, especially the part related to the financial transfers from the EC. Although Greece had not reached the level of development of the other nine members (in 1975 the per capita GDP of Greece was 44% of the EC average), the Greek government pursued vigorously the goal of accession to the EC. The application was submitted in 1975, the agreement was signed in 1979 and in 1981 Greece became the tenth member state of the

TABLE 2.1: BASIC INDICATORS 1975-1980

	1975	1976	1977	1978	1979	1980	'75-'80 Av.
GDP (at constant 1970 prices) - bil. Dr.	339.8	360.4	371.0	394.8	409.1	417.5	
GDP growth, %	5.1	6.1	2.9	6.4	3.6	2.1	4.4
Primary Sector, % of GDP	16.7	15.5	14.0	14.5	13.2	14.5	14.7
Secondary Sector, % of GDP	31.7	32.6	33.2	33.2	33.9	32.4	32.8
Tertiary Sector, % of GDP	51.6	51.8	52.8	52.3	52.9	53.1	52.4
Investment, % of GDP	22.0	22.1	23.2	23.1	24.2	22.2	22.8
Inflation, %	13.4	13.3	12.1	12.6	19.0	24.9	15.9
Public Debt, % of GDP	24.7	24.1	24.2	31.0	29.0	23.8	26.1
Budget Deficit, % of GDP	5.4	5.1	5.3	5.0	5.3	5.1	5.2
Trade Balance, % of GDP	-14.6	-14.8	-14.9	-13.7	-16.2	-17.0	-15.2
Current Account Balance, % of GDP	-4.6	-4.1	-4.1	-3.0	-4.9	-5.5	-4.4

TABLE 2.2: BASIC INDICATORS 1981-1987

	1981	1982	1983	1984	1985	1986	1987	'81-'87 Av.
GDP (at constant 1970 prices) - bil. Dr.	418.3	420.6	422.4	434.7	449.4	457.2	455.0	
GDP growth, %	0.2	0.6	0.4	2.9	3.4	1.7	-0.5	1.2
Primary Sector, % of GDP	14.2	14.5	13.1	13.7	13.5	13.6	13.0	13.7
Secondary Sector, % of GDP	31.9	31.0	30.9	30.4	30.5	30.3	30.2	30.7
Tertiary Sector, % of GDP	53.9	54.5	56.0	55.9	56.0	56.1	56.8	55.6
Investment, % of GDP	20.5	20.0	19.6	18.0	18.3	16.9	16.1	18.5
Unemployment, %	4.0	5.8	7.9	8.1	7.8	7.4	7.4	6.9
Inflation, %	24.5	21.9	20.5	18.3	19.2	23.1	16.9	20.6
Interest Rates, 1-Year Treasury Bill, %	17.7	15.4	18.2	18.5	15.8	17.4	16.6	17.1
Public Debt, % of GDP	34.2	38.7	44.3	53.2	51.6	65.0	72.4	51.3
Budget Deficit, % of GDP	10.8	8.5	11.6	12.0	16.0	13.8	17.4	12.9
Exports to the EU, % of total exports	43.3	46.3	52.5	53.3	53.3	63.5	65.8	54.0
Imports from the EU, % of total imports	50.0	46.2	48.0	47.0	46.7	58.4	61.0	51.0
Trade Balance, % of GDP	-18.1	-15.4	-15.4	-15.8	-18.8	-14.4	-15.0	-16.1
Current Account Balance, % of GDP	-6.5	-4.9	-5.4	-6.3	-9.8	-4.5	-2.6	-5.7

TABLE 2.3: BASIC INDICATORS 1988-1996

	1988	1989	1990	1991	1992	1993	1994	1995	1996	'88-'96 Av.
GDP (at constant 1988 prices) - bil. Dr.[1]	8318.3	8624.0	8536.0	8806.8	8876.5	8791.6	8926.4	9108.5	9341.2	
GDP growth, %		3.7	-1.0	3.2	0.8	-1.0	1.5	2.0	2.6	1.5
Primary Sector, % of GDP	12.3	11.9	10.2	11.7	11.2	11.2	11.9	11.7	11.5	11.5
Secondary Sector, % of GDP[2]	28.9	28.6	28.6	27.4	26.9	26.0	25.3	25.6	26.1	27.0
Tertiary Sector, % of GDP	58.8	59.5	61.2	60.9	61.9	62.8	62.7	62.7	62.4	61.4
Investment, % of GDP[3]	16.7	17.8	19.7	18.2	18.3	18.0	18.1	18.8		18.2
Unemployment, %	7.7	7.5	7.0	7.7	8.7	9.7	9.6	10.0	10.3	8.7
Inflation, %	13.5	13.7	20.4	19.5	15.8	14.4	10.9	9.3	8.5	14.0
Interest Rates, 1-Year Treasury Bill, %	19.0	20.0	24.0	22.5	22.5	20.3	17.5	14.2	11.2	19.0
Public Debt, % of GDP	65.8	69.2	90.1	92.3	99.2	111.8	110.4	111.8	111.8	95.8
General Government Deficit, % of GDP	11.5	14.4	16.1	11.5	12.8	14.2	12.1	9.2	7.4	12.1
Exports to the EU, % of total exports	64.3	65.2	63.7	63.5	65.4	56.0	54.0	60.9	56.2	61.0
Imports from the EU, % of total imports	65.5	64.7	65.5	62.4	64.6	64.0	66.2	70.0	65.5	65.4
Trade Balance, % of GDP	-11.8	-13.6	-14.9	-13.8	-14.2	-13.7	-13.8	-15.0	-14.9	-14.0
Current Account Balance, % of GDP	-1.5	-3.8	-4.3	-1.7	-2.1	-0.8	-0.1	-2.5	-3.7	-2.3

1. In this table GDP is given based on the Revised System of National Accounts, in accordance with the European System of National Accounts.
2. Due to data inconsistencies (see also Pitelis et al., 1997: 70), adjustments were made to the secondary sector's participation in the GDP.
3. Due to lack of data, investment, as a percentage of GDP, is given according to the old system of National Accounts.

Figure 2.1: GREEK GDP, 1962-1995

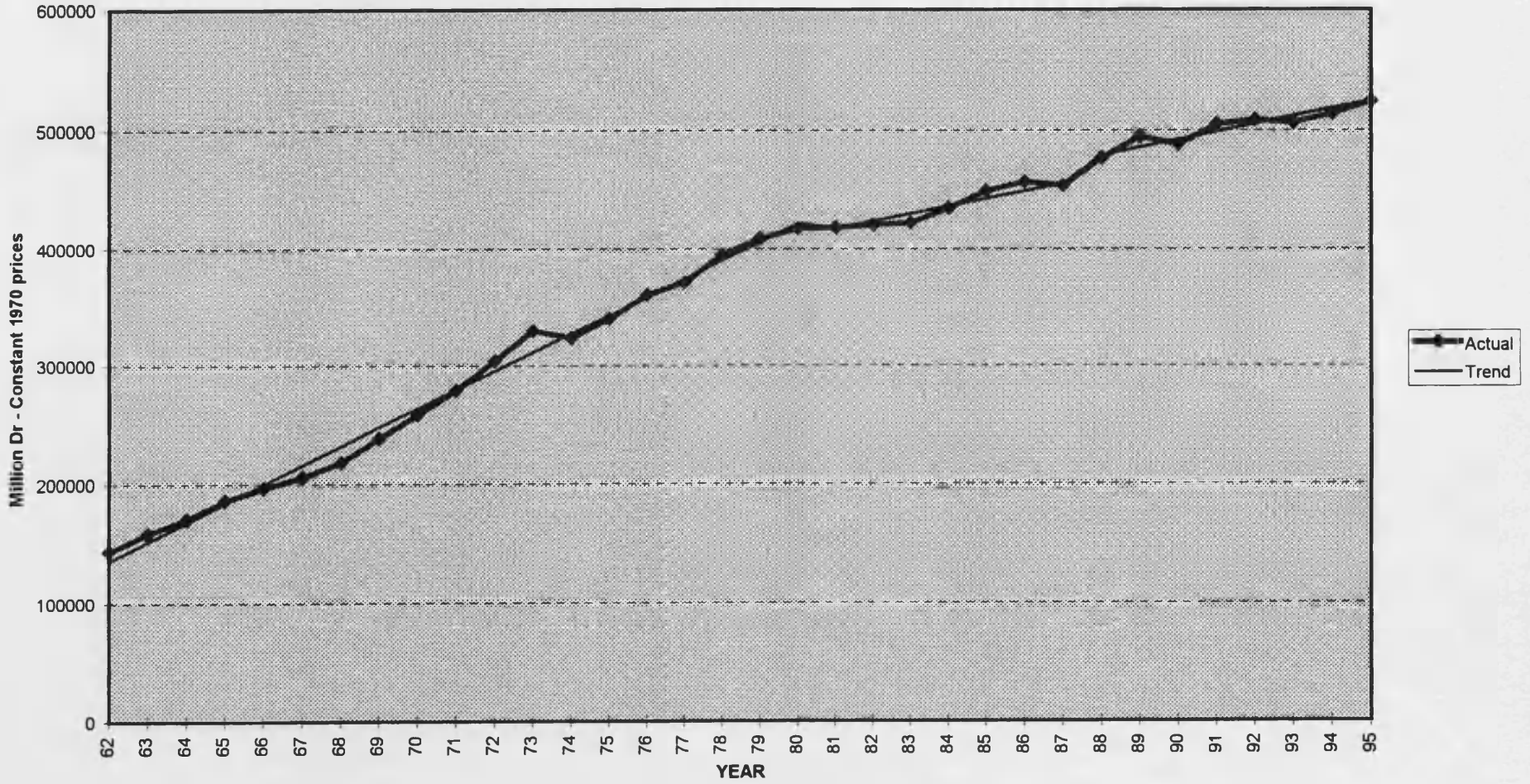
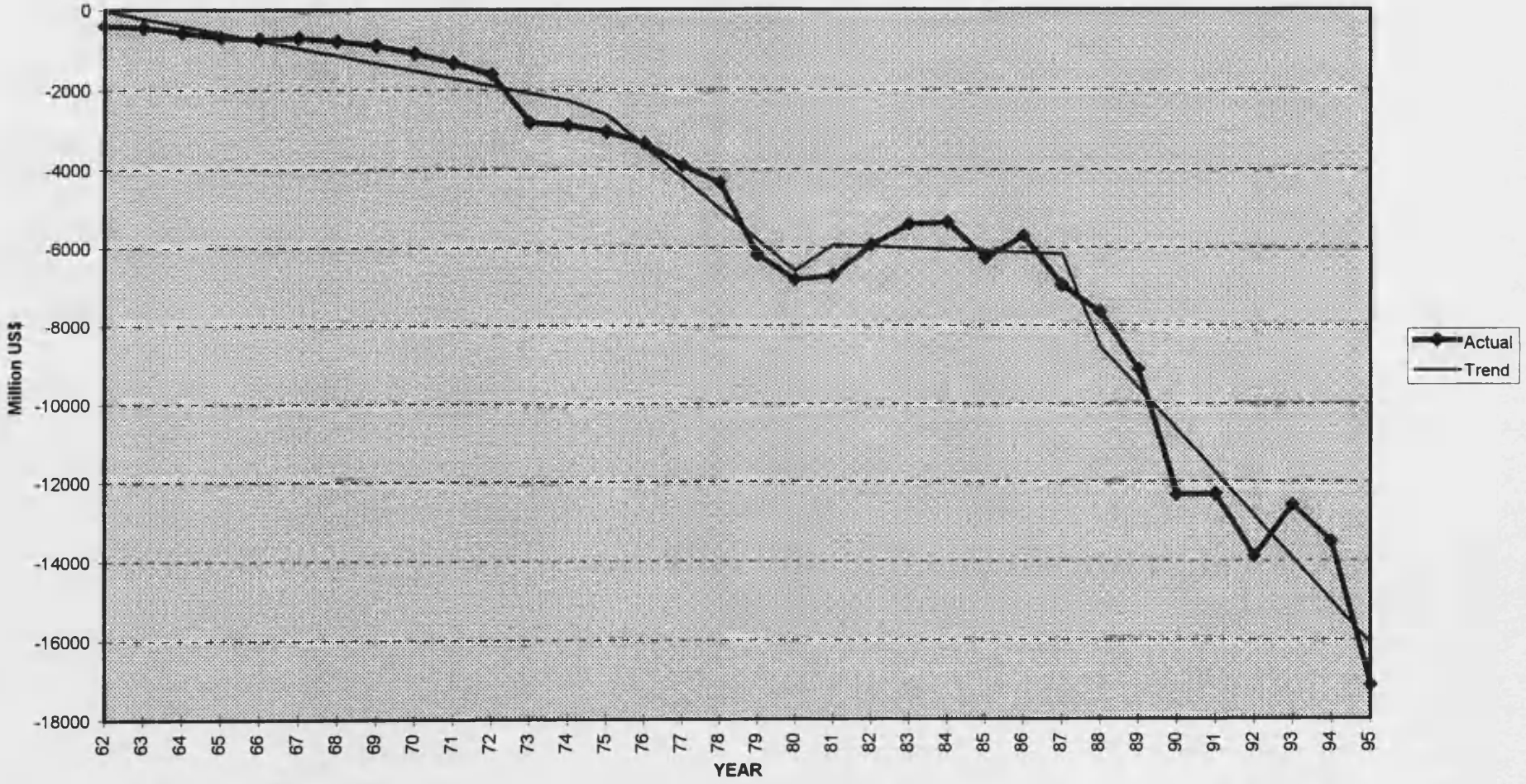


Figure 2.2: GREEK TRADE BALANCE, 1962-1995



Community. There was, however, a five year transition period, during which Greece had to make the necessary changes to conform with EC policies and regulations.

Another characteristic of this period was the economic stagnation, that had already started in 1973. The annual rate of increase for investment was much lower than in previous decades, especially in the manufacturing industries, where there was an average annual decline of 1.5% in investment levels, compared to a 10.8% average annual increase between 1958 and 1973. Inflation was again on the rise, with the consumer price index growth doubling. From 13.4% in 1975, inflation reached 24.9% in 1980 (see Table 2.1), and the average for the period was 15.9%, while the OECD average was 9.9%. The main reasons behind this development, according to Drakatos (1997: 81-83), were the high prices of imported goods, the increased business profits and wages, the large subsidies and the excess liquidity.

A positive development was the continued rise of GDP at a 4.4% average annual rate. Although this rate was lower than the average for previous periods, it was still almost double the EC average. The composition of the GDP remained stable with a small extension (+1.5% between 1975 and 1980) of the services sector's share.

Public debt as a percentage of GDP, increased gradually during the previous period and was around 25% in 1970. In this period it remained almost constant (average: 26.1%) with small yearly variations. The same is true for the budget deficit, that remained at 5.2% of GDP, on average. However, government expenditure was on the rise and the budget deficit was mainly controlled by restraining public investment.

The trade deficit, as a percentage of GDP, increased by 2.5% between 1975 and 1980 and the current account deficit by 0.9%, both affected by the 1979 oil crisis. What restricted the expansion of the current account deficit was the change in tourist receipts, from $643 million in 1975 to $1733 million in 1980.

During the 1975-1980 period, the economic indicators continued to signal a depression. It was the preamble of a longer period of negative developments and macro-economic difficulties.

The 1981-1987 Period

In 1981, Greece became a full member of the EC. In 1982, the new socialist government requested a special status for Greece's relation to the EC. The

government claimed that the impending accession of Spain and Portugal would negatively affect Greece, and especially its agricultural producers. Therefore, its proposal was for the creation of a new Community structural policy, in favour of the weaker member-states. This was how the Integrated Mediterranean Programs (IMP) were created, with the objective of strengthening the agricultural sector and the infrastructure of Greece, Southern Italy, Portugal, Ireland and certain areas of Spain and France. The time frame for the implementation of the IMP was from 1985 to 1990. These Programs were the start of Community policies for the improvement of cohesion among the EC economies. This policy was later continued with the Community Support Frameworks and various other Community Initiatives (Konsolas, 1992: 41-52).

This first period of Greece's accession to the EC coincided with some negative economic developments and found the country unprepared to face the very competitive environment in which it was thrust. Between 1981 and 1987, most economic indicators continued to worsen, restrictive and expansive policies alternated, unemployment became a major issue, real wages declined, and the trade deficit expanded. At the same time, public debt increased and the drachma was devalued twice.

Average annual increases of GDP were reduced to 1.2% (see Table 2.2) and at the end of the period there was a decline of 0.5% in GDP, mainly due to the stabilisation programme, which restricted home demand. The composition of the GDP again changed slightly in favour of services (that reached 55.6% on average), while manufacturing production and manufacturing capacity declined.

Investment, as a percentage of GDP, decreased from an average of 22.8% (1975-1980) to 18.5%, with manufacturing and agriculture mostly affected. Low investment coincided with the end of the migration trend of previous decades, and unemployment increased by 3.4% between 1981 and 1987 reaching 6.9%. It is worth noting that 40% of the unemployed were under 25 years old, and more than 50% were women.

The consumer price index's annual growth was on average 4.7% greater than that of the previous period, despite a decrease in 1987 when it went down to 16.9%. Another important indicator, which has now become very relevant due to the European Monetary Union (EMU), was the level of long-term interest rates.

Throughout this period long-term interest rates were fairly stable at an average of 17.1%. This was 3.5%, on average, lower than inflation and as this continued throughout the period it lowered the purchasing power of smaller depositors (Vamvoukas, 1991: 431-433).

Salaried employees also faced an increased tax burden as the state was trying to deal with the mounting fiscal difficulties. Public debt, as a percentage of GDP, doubled from 34.2% in 1981 to 72.4% in 1987, and the average for the period was 51.3%. The average trade deficit also increased, as a percentage of GDP, by 0.9% between 1975-1980 and 1981-1987 and the average current account deficit by 1.3% (1981-1987 averages: Trade deficit: 16.1%, Current Account deficit: 5.7%). During this period, Greece's trade relations with the EC were further strengthened, as 54% of Greek exports went to the EC and 51% of imports originated in EC countries.

The downward trend for most indicators and the continued macro-economic difficulties are the main characteristics of this critical period for Greece.

The Period 1988-1998

During this period Greece received substantial funds from the First (1989-1993) and the Second (1994-1999) Community Support Frameworks. The economic policy was designed to achieve the convergence criteria, especially those related to the launching of the Euro. Despite the government changes (two in 1989, then one in 1990 and one in 1993) and after an initial worsening of indicators in 1989, a consistent stabilisation policy was implemented since 1990, in order to achieve the goals of the Convergence Program. Nevertheless, some characteristics of the previous period are still evident in 1998, constraining the economy and Greece's real convergence with most EU countries.

The average annual increase in GDP (according to the new Revised System of National Accounts), between 1988 and 1996, is 1.5%, or 0.3% more than in the previous period (see Table 2.3). Investment, as a percent of GDP, has been constant in this period, while unemployment has jumped to over 10%. Unemployment is a Community-wide problem and the measures so far implemented have not made a great difference. Moreover, Greece is currently in the middle of an effort to legalise the more than 500,000 illegal immigrants, a development which will offer the government a clearer picture of the unemployment problem.

The trade deficit has been slightly increasing throughout this period, reaching 14.9% of GDP in 1996, while the current account deficit has improved to an average of 2.3% of GDP between 1988 and 1996, aided by the EU transfers. Greece's trade is still mostly with the EU, although the Eastern European markets have become an important destination for Greek exports since 1990.

Other economic indicators are moving in line with Greece's goal of joining EMU by 2001. The recent (March 1998) entry of the drachma into the Exchange Rate Mechanism, that was combined with a 13.8% devaluation and a series of anti-inflationary and privatisation measures, is a clear signal of the government's commitment. Inflation is coming down since 1990, with an impressive 3.5% decline in 1994. Since then, decreases are continuous and although the average for this period is still high, the latest figures for 1997 show inflation at 5.8%. Interest rates are also decreasing, at a much slower pace, from a high of 24% in 1990 to 11.2% in 1996. During 1997, they remained constant at 11.2%, however, the March 1998 devaluation has contributed to a further reduction.

Government debt, as a percentage of GDP, was at 65.8% in 1988 and has increased throughout this period to over 110%, in 1996. Although it has recently stabilised and slightly declined to 108%, the debt burden remains a major problem for the Greek economy, affecting interest rates and private investment. The budget deficit is another persistent feature of the Greek economy and it has only been tackled in the last four years, with substantial reductions in government expenditure, in the hope of reaching the 3% Maastricht ceiling in 1999.

It is obvious that a great effort is still required, if Greece is to meet the Maastricht criteria, especially those related to public debt and interest rates. The prolonged stabilisation policy has created resentment from large parts of the population. There are, nevertheless, signs of a political consensus in terms of the measures necessary for development and the private sector is also responding positively to the improved economic environment.

The various indicators that were analysed in this section must be compared with those in other EU countries since economic convergence is considered a pre-requisite for further integration steps. Overall, the restrictive economic policies and the EU's fund transfers, have brought some indicators in line with most other EU countries. However, other indicators, and especially those related to the standard of

living, are still behind those of most developed nations. Worth mentioning are the per capita GDP figures, adjusted for purchasing power parities. Between 1981 and 1996 Greece's per capita GDP has increased from 65% of the Community average to 66%, the lowest increase for all Community countries below the average. In fact, since 1990, when Portugal reached the 66% level, Greece is the country with the lowest per capita GDP among the EU-15. Despite the success of the Convergence Program in reducing inflation, fiscal deficits, public debts and interest rates, the long-term real convergence requires further positive developments in GDP and productivity growth, unemployment and other quality-of-life indicators.

Additional Features of the Economic Environment

A central feature of the Greek economic environment is public administration. After the changes that the dictatorship imposed on public administration, the return to democracy brought with it the pre-1967 structure without incorporating any developments that had taken place meanwhile, in other countries. The only major changes were the reduction of the hierarchical levels, especially the removal of some of the upper ones (Makrydimitris, 1996: 124).

In the 1980's decentralisation was promoted and the role of regional administration was strengthened. In the 1990's three important measures further increased this trend. The first one is the increased authority of the General Secretaries of the regions on a variety of local issues. The second is the direct election of Prefects by the electorate. The third, and most important, is the unification of small communities in larger municipalities, under the auspices of the 'Kapodistrias' programme (Konsolas, 1998).

The major problem of public administration is its dependence on political parties. This especially affects hiring and promotions, leading to a low quality of service and an over-inflated number of employees. The recently introduced examination system for the hiring of all civil servants is a major step towards achieving meritocracy in the public sector.

Another issue for the Greek economy is the systematic efforts of many businesses to conduct their transactions without having them appear in their records. This 'underground economy' has become a major problem, which decreases tax

revenues and distorts most official statistics. The sectors mostly affected are small-scale manufacturing industry and most of the services industries.

Certain studies (Pavlopoulos, 1987; Kanellopoulos et al., 1995, and other) have attempted to estimate the size of the 'underground economy', yielding different results. The recently introduced Revised System of National Accounts aims at capturing a large part of the 'hidden' transactions, so that at least the official government statistics will more accurately reflect the real situation. The revision produced a higher GDP by up to 24% and it is now estimated that the unrecorded economic activity is not more than 10% of the revised GDP (Drakatos, 1997: 120).

Population and Labour Force

In the sub-period 1975-1980, population in Greece rose at an average annual rate of 1.2%. Since 1981, however, annual increases have been much lower, never exceeding 0.9%. According to the 1991 census, Greece had a population of 10.248 million people, that is now estimated by the National Statistical Service of Greece to have reached 10.465 million. The share of urban population has been rapidly increasing in the post war years, and has recently stabilised around 59%. However, rural population (28.3% in 1991) is still decreasing in favour of the semi-urban segment (those living in towns with under 10,000 inhabitants). The composition of the population is also changing in terms of the dominant age groups. Those aged over 70 are now 9.3% of the population (4.3% in 1951, 6.9% in 1971) and both the pension and health service systems are under increasing pressure. This problem will be exacerbated in the future as those ready to enter the labour force (under 20s) represent only 26.8% of the population, down from 39.1% in 1951 and 33% in 1971.

Out of the approximately 3.8 million people employed, 21.7% are University graduates, while only 4.7% hold diplomas from other technical or vocational schools, thus creating a shortage of skilled technical personnel. However, the situation is changing and between 1982 and 1992, University students increased by 34.8%, while students in technical and vocational schools by 51.8% (Glytsos, 1995).

The employment statistics also reflect the changing importance of the different economic sectors. The agricultural sector has witnessed constant falls in employment and its share is now down to 21.3%, while the industrial sector, that was before 1971 the main recipient of those leaving agriculture and the rural areas, has an almost

steady share of employment, recently at 24.2%, down 3.4% from 1971. The services sector is the only one registering constant increases, and now accounts for 54.5% of total employment.

2.2 Review of the Literature on Greek Industrial Competitiveness

This section contains a brief review of a number of published works that examine the competitiveness of Greek manufacturing and service industries. Particular emphasis is placed on those studies that explore the factors affecting the diverging performance of different sectors.

Factor Conditions, Home Demand and Government's Role

Researchers have used basic factors (especially raw materials and cheap labour), government policy and some aspects of the Greek market to explain the diverging development of many manufacturing industries. The industry definitions are usually aggregated (most often the 20 sectors in the National Statistical Service of Greece classification), although some studies have used data on an expanded number of industries.

The first major study after the post-war reconstruction that dealt with these issues was provided by Coutsoumaris (1963) in one of the first publications of the newly established Centre of Economic Research. Coutsoumaris, in his introductory chapter, identifies the factors that shaped the pattern of development of Greek industry as: resource availability, capital availability and allocation, skilled labour supply, indigenous entrepreneurship, domestic market nature and size, tariff protection and government intervention, social institutions and attitudes, and supporting services, such as power facilities and trade activities. He then examines several characteristics of each of the 20 major industrial sectors including number and size of producing units, mechanical power, output, employment (education, skill

levels, wage, non-wage, family), investment, capital-labour mix, ownership form, and financial and cost structure. Also, the domestic and foreign markets are analysed in terms of their structure, their income elasticities of demand and some organisational aspects.

Geographical distribution and regional concentration is the subject of a separate chapter, where Athens is found to have more than its 'fair' share of most producer-goods industries, such as petroleum refining and metal manufactures, various durable goods industries, such as furniture, printing and publishing and some of the consumer goods industries, such as footwear and clothing. The performance of the 20 industrial sectors over time is the focus of the book's second section, where output growth, value added, labour and capital productivity, returns to labour and capital and capacity utilisation are used as measures.

The sectors considered to have an advantage for the future are material-oriented, namely food, beverages, tobacco, leather, non-metallic minerals and some chemicals industries (where local materials are available), labour-intensive and transport-extensive industries with low technical knowledge and skill requirements (for example, textiles, footwear, clothing, rubber articles) and a few transport-intensive or regionalised industries whose products have high material content (for example, foundries, wood and furniture, containers, fertilisers, construction materials) or where local preferences, craftsmanship requirements, or absence of scale economies limit competition. Besides the low-technology or material-related industries, the author expects Greece to be able to compete and export in some intermediary products industries, such as printing, oil refining and components of metal manufactures, taking advantage of the developing industrial specialisation in the then Common Market.

In another subsequent publication of the Centre of Planning and Economic Research, Prodromidis (1976) adopts a more formal approach. He estimates export demand functions for 14 sectors and sub-sectors based on data from the 1960's. Exports are found to be linked to relative prices and domestic and foreign consumption growth. One of the most interesting findings of the study is that Greek supply conditions determine to a great extent exports of certain products, like textiles, machinery and mining products, while world demand conditions affect more Greece's traditional exports (food, beverages, tobacco and other agriculture-related products).

His recommendations are in favour of improving the quality, and thus increasing the price, of Greek exports and focusing on expanding the domestic production of textiles, chemicals and certain agricultural products.

In a rather different approach, Negreponti-Delivani (1986) analyses a series of factors, responsible for the structure and performance of Greek manufacturing industry. Among those, are factors related to the domestic market, not so much in its size that she, of course, considers limited, but in its composition. The relative numbers of farmers, salaried employees and self-employed, their propensity to save or consume, and the different taxation levels for each group, are presented and their effects on exports and imports are estimated. Government policy is considered another major influence on Greek industry and the focus is on tax policy (and the related problem of tax avoidance), foreign direct investment policy and subsidies. In the second part of the book, the performance of Greek industry as a whole, as well as of 20 broad sectors individually are investigated. The major indicators used are: investments, productivity, firm size, exports, imports, persons employed, output and value-added for the period 1963-1980. While the relative position of most industries has changed within the time frame employed, the sectors with above average performance are: food products, textiles, apparel, non-metallic minerals and metal products and to a lesser extent beverages, tobacco, chemicals, petroleum and basic metallurgy.

Giannitsis (1983) presents some additional factors when analysing the correlation between export performance and some structural characteristics of 82 Greek industries. His findings are that capital-intensive and low-wage industries are the ones where exports are rising; that there is little or no correlation between export performance and the degree of vertical integration, or the degree an industry is related to others further up or down the production chain, whereas there is a positive correlation of export performance with the concentration of domestic production in big units.

Greece was also one of the countries studied by Leamer (1984) in his detailed empirical study of comparative advantage and resource abundance profiles. Greece, in line with its resource profile that includes an abundance of land area in a Mediterranean climate zone, is found to export agricultural products in 1958, and mainly labour intensive manufactures in 1975, while importing machinery.

In the 1990's, Lolos and Papagiannakis (1993) examine factor conditions for several years and find that Greece exports capital-intensive products and imports skilled labour-intensive products. In more recent years, the share of total exports of products requiring low or medium-skilled labour is increasing. In terms of product groups, Greece, in the last twenty years, has had a comparative advantage in food, beverages and tobacco, textiles and apparel (including shoes, leather and fur) and construction-related products (mainly non-metallic minerals and aluminium), while in the 1970's some chemical, steel and metal processing industries also exhibited a high comparative advantage.

Baltzakis and Katsos (1996), in a wide-ranging study by the Centre of Planning and Economic Research, use export and import data to measure competitiveness and conclude that the most competitive sectors are: textiles, apparel, tobacco, petroleum and non-metallic minerals. Two of those sectors, however, apparel and tobacco, along with the less competitive publishing industry, had the greatest decreases in competitiveness between 1989 and 1994. Changes in unit labour cost and the effective exchange rate are also presented and a market shares analysis is conducted, showing that the slight drop in Greece's exports as a percentage of total OECD exports between 1980 and 1992, is due to the lack of major changes in the product mix or the recipients of Greek exports.

In-depth studies of individual industries are conducted by the Centre of Planning and Economic Research, the Foundation of Economic and Industrial Research and ICAP, a private data bank and consulting company. These studies focus especially on labour costs, resource availability, the size and structure of the domestic market and government policy. Moreover, a recent survey of 30 broad sectors of Greek manufacturing and services (Patsouratis & Rosolymos, 1997) is also emphasising factor costs, domestic market attributes, government policy and firm strategy.

Greece and the EU

The accession of Greece to the European Community had major consequences for the domestic manufacturing industry. A number of studies

conducted before or right after 1981 considered the effect of reduced protection on the size, export potential and productivity of Greek manufacturing industry. For some of the writers, full membership was seen as another step in Greece's continuing liberalisation, affecting, therefore, only slightly the established patterns of Greek industry. Others saw accession as a more fundamental change that would shape the development of the Greek industry in the decades to follow (for a critical review of most of these studies see Giannitsis, 1988a: 37-74).

When the first data from the post-1981 period became available, many influential books and articles were published (for a list of the post-1980 works on Greece and the EU see Ioakeimidis, 1996: 154-160). There was also an attempt to integrate more of the complex influences on the development of individual industries.

Giannitsis (1988a) attempted to estimate the effects of accession on manufacturing industries and Greek trade. First, changes in tariffs are calculated and the EU countries' share of Greek exports and imports is presented at the 3-digit SITC level. Giannitsis finds that Greek competitiveness in food, beverages and tobacco (with few exceptions, such as vegetable oils and fruits) has been reduced, especially in its trade with other EU countries, after 1981, influenced by changes in protection and Greece's participation in the Common Agricultural Policy. In terms of other 'industrial' products, one-sixth of the 95 industries studied improved their position after 1981, one-third remained at the same levels, while the rest (representing about 50% of value added among all industries) saw their position worsen slightly or substantially. Again, changes in trade patterns with other EU countries have had very negative effects. Giannitsis also observes that the period after 1981 has brought a reduction in average firm size.

A year later, Mitsos (1989) deals with similar issues. Mitsos calculates in detail tariffs and non-tariff barriers for a list of products, presents the changes brought about by EC membership and correlates protection levels with imports and with certain characteristics of the domestic industries. He also analyses export data from 1980 and 1985, and Greece is found to have an especially high comparative advantage for both years in fruit and vegetables, fresh and preserved, oils and fats, tobacco, cement, minerals, carpets, apparel, shoes and aluminium. Four groups of determinants are used in an attempt to explain Greece's comparative advantage in certain products. The first one is factors of production, where the most successful

industries are found to be capital-intensive, while the correlation with skilled labour levels is inconclusive. The second group comprises of industrial structure variables (number and size of units, geographic concentration, domestic market shares), where only a possible positive relation with firms' size is statistically significant. The third group of determinants is related to the characteristics of the product, and Greece's advantage is concentrated in products also exported by countries with lower income levels. The fourth group are the tariff and non-tariff protection variables, where, although most results are not statistically significant, there seems to be a negative correlation between protection and competitiveness.

In another comprehensive publication about Greece and the EU, Hassid and Katsos (1992) correlate the performance of aggregated industrial sectors with concentration ratios, capital/labour ratios, labour productivity, labour costs, investment levels and tariff levels. Performance is calculated in relation to output, prices, wages, returns on capital, import penetration and export volume. The best-performing group of industries is found to have higher concentration ratios, higher capital/labour ratios, higher unit sizes and higher labour productivity and labour costs than the worst-performing and the 'intermediate' groups. Export subsidies and investment levels provide mixed conclusions and their role is not clear, while the correlation for some of the other factors is not very strong.

In two recent publications about Greece in the next millenium, a separate chapter was devoted to the competitiveness of Greece's manufacturing industry. Giannitsis (1988b) finds that Greece is improving its advantage in traditional industrial products, while the advantage of agricultural and raw materials industries is slightly decreasing. Greece's advantage, is, however, very low in 'technologically advanced' products or products for which world demand is rapidly growing. These developments are attributed to lack of investment in these 'high-tech' industries, the low levels of R&D conducted by Greek firms, the absence of protection for 'infant industries' and the government policy on research promotion, education and infrastructure, which made most firms rely on labour cost advantages and government subsidies.

Kintis (1995) considers Greece's competitive advantage to be eroding in many industries. The factors causing this are grouped in two categories, one related to the structural deficiencies of Greek manufacturing industry and the second to the

environment in which firms operate. The small size of firms and their orientation to traditional industrial activities are considered the most important structural deficiencies. In terms of the environment, the rapid liberalisation after 1973, coinciding with the world economic crisis, the macro-economic and tax policies of the State, the lack of mobility for skilled personnel and the low level of country infrastructure, are the major influences on firm's performance.

Porter's Diamond

Competitiveness and export performance have been the subject of an increasing literature, of which typical examples were mentioned above. There still lacks, however, a holistic framework to explore the competitiveness of Greek manufacturing industries. Also, the multitude of determinants in Porter's diamond are not all featured in this body of research. Nevertheless, the diamond framework is being increasingly noted and has been used in two recent influential studies.

Hassid (1994) considers cost data and exchange rates as inadequate to explain the competitiveness of Greek industries. A questionnaire survey of Greek firms is then conducted, with Porter's framework as a basis for some of the questions. The areas where firms believe improvement is necessary for competitive performance are mainly related to human capital and production technology.

Pitelis (1997) in his study on competitiveness, industrial strategy and the future of Greek industry, commissioned by the Ministry of Development, emphasises human capital, technology and innovation, transformation economies (that is, economies of scale, scope, learning, time etc.), infrastructure, natural resources and government policy as the determining factors of competitiveness. Greece is found to have a disadvantage in domestic market size, size of firms, lack of high multinational activity, specialisation in low- or medium- technology activities and high defence spending. However, this study sees a way where these can be turned into advantages, for example (and this is one of their basic recommendations) by linking small businesses, especially those in geographic proximity, so as to enable them to retain their flexibility, while developing economies of scale and scope.

Although interest in Porter's diamond has been growing, there is still no comprehensive application for Greece, that would include an in-depth analysis of trade data at a disaggregted level and detailed case studies, following Porter's framework.

2.3 The Competitive Industrial Structure of Greece

This section presents the methodology for the entire study and the results of the primary data analysis. First, Porter's methodology is articulated and its use in the Greek case is explained. Then, trade and other data are used to identify the competitive Greek industries and group them in clusters. In the last section, the methodology for the conduct of the case studies is presented, along with the reasons for selecting the five particular industry case studies.

Porter's Methodology and its Application to Greece

Porter (1990) studied ten, mainly developed, countries, six from Europe (Germany, Italy, United Kingdom, Sweden and Switzerland), three from Asia (Japan, South Korea and Singapore) and the United States. Additional research on other countries has been conducted by teams headed by Porter, such as the widely available New Zealand (Crocombe et al., 1991) and Canada studies (Porter and Monitor Company, 1991). Independent researchers have also applied Porter's methodology for identifying competitive industries, for example, in the cases of Ireland (O' Donnellan, 1994) and The Netherlands (Jacobs and De Jong, 1992). In the original 1990 book, the internationally competitive industries were identified with the use of international trade, foreign investment and other data from three points in time (1971, 1978, 1985). Industries were defined as narrowly as possible, in an attempt to represent 'strategically distinct businesses' (Porter, 1990: 739).

The basic measure used to determine an industry's position in international competition was the industry's share of world exports. All industries in a country, at the 3-digit, 4-digit and 5-digit level of the Standard International Trade Classification, were included in the analysis. The lowest level of disaggregation was used, that is, if data were available for the 5-digit level, at least for one industry, then the 4-digit industry was excluded and the share of the remaining 5-digit industries (if it was not available) was calculated as a residual. Then the exports of these industries were divided by the world exports for the particular years used, in order to calculate the world export share.

The list of competitive industries included, initially, those industries that had a world export share above the nation's cut-off. The cut-off was calculated by dividing a country's total exports (as given in the UN International Trade Statistics) by the world's total exports. The competitive lists were then modified according to additional trade-related criteria. Specifically, industries with a negative trade balance were excluded, unless their world export share was more than twice the country's cut-off. Also, industries that were among a country's top fifty in terms of export value for that particular year, with a positive or slightly negative trade balance, were included, regardless of their export share. Industries were kept off the list if their exports were exclusively to neighbouring countries or if exports were dominated by subsidiaries of foreign firms.

This list was extended to include industries where there was evidence of substantial foreign direct investment, if this investment was 'based on skills and strengths developed in the nation' (Porter, 1990: 740). Also, many service industries were added using published data and interviews. Other data, as well as the researcher's judgement, were used to modify the lists of competitive industries to a small extent.

In order to highlight the competitive patterns in each nation and identify the interconnections among its successful industries, the list of competitive industries was used to produce the cluster charts. All competitive industries were clustered into 16 broad categories that were further grouped in 'Upstream Industries', 'Industrial and Supporting Functions' and 'Final Consumption Goods and Services'. 'Upstream Industries' included the Materials/Metals, Forest Products, Petroleum/Chemicals and Semiconductors/Computers clusters. 'Industrial and Supporting Functions' included

the Multiple Business, Transportation, Power Generation & Distribution, Office, Telecommunications and Defence clusters. The 'Final Consumption Goods and Services' grouping included the largest number of industries that belong to the Food/Beverages, Textiles/Apparel, Housing/Household, Health Care, Personal and Entertainment/Leisure clusters.

Within each cluster, industries were put into four categories in an attempt to capture vertical interconnections. The 'primary goods' category is the one where most industries were placed, as it includes both end-products and self-contained components. The 'machinery' category represents the industries producing machinery for the production of the primary goods, while 'specialty inputs' consists of the necessary inputs for this production process. The related 'services' industries form a separate category in each cluster.

The cluster charts for the years studied constituted the basis for the selection of the case studies. The case studies were a detailed illustration of the industry's history in the country examined and, briefly, in the rest of the world, in an attempt to identify the sources of competitive advantage or disadvantage. The industries selected were picked from a variety of clusters and included both service and manufacturing industries. They were a combination of well-known highly successful industries and some lesser known star performers, with industries where competitive advantage had shifted over time. The emphasis on relatively successful industries can be justified by the fact that in an open economy the share of the competitive industries is increasing, while a study of non-competitive ones would offer insights into a small and shrinking part of the economy. Porter also mentions that examples of non-competitive industries were studied as a result of the extensive review of the world market for each case. Natural resource-dependent industries were mostly avoided, as Porter considers that their advantage is well explained through other theories.

The methodology has been criticised, along with the other parts of Porter's framework, and a summary of the criticism is available in Section 1.3 of the present study. I would like to mention here three points concerning the application of Porter's methodology to Greece.

The first one is related to the use of mainly export and, to a lesser extent, foreign direct investment data, which has been criticised by many scholars (among others Grant, 1991; Bellak and Weiss, 1993; Rugman and D' Cruz, 1993; and

Cartwright, 1993). It should be noted that an alternative measure that would be internationally comparable and widely available at the level of disaggregation required is hard to find and that Porter used additional national and international data in order to modify the lists of competitive industries. A second point that has received a lot of criticism (especially by Rugman, 1991; Rugman and D' Cruz, 1993; and Bellak and Weiss, 1993) is Porter's treatment of foreign direct investment and the exclusion from the competitive lists of industries with exports dominated by subsidiaries of multinationals, when these subsidiaries lack autonomy in formulating strategy. The reasons behind this policy are not considered satisfactory by the above mentioned scholars and even Porter himself (1990: 740) admits that few industries were excluded with this rationale. The third point that has been mentioned in the criticisms of Porter's framework (for example in Harris and Watson, 1991: 248) is the exclusive selection of successful industries to be studied. Although the rationale for that was explained above, the question of whether unsuccessful industries exhibit some of the same characteristics is not adequately addressed by Porter.

In the Greek case, trade data are mainly used to identify competitive industries, in order to obtain an objective view of the industries' positions in international competition. Other data are also used with the purpose of adding service industries to the list of competitive Greek industries. Personal judgement and interviews were helpful in verifying the overall picture of the Greek economy that was obtained; however, no additions or subtractions are made based on them. The only adjustments to the lists of competitive industries are done in accordance to Porter's various criteria, where there is support from export or foreign investment data.

Additionally, no industries are excluded from the competitive list because of significant multinational presence, due both to the controversy mentioned above and the lack of data. Export data at company level are not widely available and the degree of subsidiaries' autonomy is hard to determine. However, issues of ownership are given particular attention, especially in the case studies.

Moreover, in selecting the case studies, the objections regarding the emphasis on very successful industries was taken into account. One of the five industries studied, is uncompetitive (the men's outerwear industry) and its position has further declined in the last ten years.

Industrial Clusters in Greece

The years studied in the Greek case are 1978, 1985 and 1992. Selection was based on the availability of comparable and accurate trade data from the UN International Trade Statistics. The most recent year when accurate trade data was available at the required level of disaggregation, was 1992, while the 1978 and 1985 data were the focus of Porter's analysis. This, however, was not the only reason for the selection. These three years belong to the three distinct sub-periods in the era after the restoration of democracy in Greece (1974-1998). Specifically, 1978 is in the middle of the 1975-1980 period, when the effects of the democratic system of governance were already evident and the country was preparing for accession to the EU; 1985, is part of the first post-accession period of 1981-1987, when the fiscal problems in the Greek economy were most evident, and 1992 was the year when the first signs of the current upturn in the economy were becoming evident, as the major issues present in the beginning of the 1988-1998 period were being dealt with effectively.

The industrial base of Greece is rather narrow, considering its level of development. Greece' share of world exports in 1992 was 0.26% and only five clusters of industries had a share above that figure. These clusters are: Food/Beverages, Textiles/Apparel, Housing/Household, Personal (all four belonging to the category 'Final Consumption Goods and Services') and Materials/Metals (from the 'Upstream Industries' group). The same five clusters exceeded Greece's average share of world exports in both 1978 and 1985. The complete cluster chart for 1992 is presented in Table 2.4, while the cluster charts for 1978 and 1985 are in Tables A.1 and A.2 respectively, in the Appendix.

The Food/Beverages cluster, according to Table 2.5, is the one with the highest share of world exports for 1992, with 0.7%. Its share has been constantly rising (it was 0.5% in 1978 and 0.6% in 1985 as seen in Table 2.6) as well as its importance among Greek clusters. The range of competitive industries is very wide in this cluster and Greece has a relatively strong position in both the primary goods and the specialty inputs categories, with world export shares of 0.7% in both. The lack of any competitive Food/Beverages machinery industries is not a characteristic of this cluster only, but common to all Greek industrial clusters. The Food/Beverages cluster

Table 2.4: Clusters of Internationally Competitive Greek Industries, 1992

Primary goods	**MATERIALS/METALS** IRON AND STEEL **Iron, simple steel coils** **Tinned plates, sheets** *Iron, steel, universal and other plates, sheets** *Iron, simple steel wire* *Iron, steel, tubes and pipes* *Thin plate, rolled, of iron or simple steel* METAL MANUFACTURES *Aluminium transport boxes and iron, steel, aluminium compressed gas cylinders** NON-FERROUS METALS **Copper tubes, pipes** **Aluminium bars, wire etc.** **Aluminium foil** **Aluminium powders, tubes, tube fittings*** *Aluminium plates, sheets, strip* *Aluminium and alloys, unwrought* *Copper plates, sheets and strip* OTHER MATERIALS AND WASTE **Natural abrasives** **Asbestos** **Other crude minerals, exc. clay, asbestos*** *Other refractory construction material** Metaliferous non-ferrous waste Non-ferrous metal waste and scrap, exc. copper*
Machinery	
Specialty inputs	**Aluminium ores and concentrates** **Alumina (aluminium oxide)** *Zinc ores and concentrates*
Services	

Primary goods	**FOREST PRODUCTS** WOOD Plywood of wood sheets
Machinery	
Specialty inputs	
Services	

Primary goods	**PETROLEUM/CHEMICALS** PETROLEUM PRODUCTS **Spirit-type jet fuel and other light petroleum oils*** POLYMERS *Polyvinyl chloride in primary forms* ORGANIC CHEMICALS *Halogenated derivatives of hydrocarbons*
Machinery	
Specialty inputs	
Service	

Primary goods	**SEMICONDUCTORS/COMPUTERS**
Machinery	
Specialty inputs	
Services	

Primary goods	**MULTIPLE BUSINESS**
Machinery	
Specialty inputs	
Services	

Primary goods	**TRANSPORTATION** *Fishing vessels and other ships** Tugs and floating structures**
Machinery	
Specialty inputs	*Articles of rubber, exc. other articles of unhardened rubber**
Services	**Shipping#**

Primary goods	**POWER GENERATION AND DISTRIBUTION** *Insulated wire, cable, bars etc.*
Machinery	
Specialty inputs	
Services	

Primary goods	**OFFICE**
Machinery	
Specialty inputs	
Services	

Primary goods	**TELECOMMUNICATIONS**
Machinery	
Specialty inputs	
Services	

Primary goods	**DEFENSE**
Machinery	
Specialty inputs	
Services	

Primary goods	**FOOD/BEVERAGES** BASIC FOODS *Fish, fresh or chilled, exc. fillets* *Fish dried, salted exc. cod* *Rice in the husk or husked* *Rice, broken** *Groats, meal and pellets, of wheat** *Other cereal meals and flours* Edible nuts, fresh or dried** Crude animal materials, exc. gut, bladders* FRUITS AND VEGETABLES **Other vegetables*** **Oranges, fresh or dried** **Grapes, fresh** **Grapes, dried(raisins)** **Stone fruit, fresh** **Figs and other fruit, fresh or dried*** *Potatoes fresh, exc. sweet* *Mandarines, clementines etc., fresh or dried** *Lemons, grapefruit etc.* PROCESSED FOOD **Fruit, preserved exc. fruit juices*** **Vegetables, prepared, preserved** *Milk and cream, fresh** *Cheese and curd* *Shell fish, prepared, preserved* *Pastry, cakes etc.* *Sugar candy, non-chocolate* Fruit or vegetable juice, exc. orange** EDIBLE OILS **Olive oil** *Soya bean oil* *Cotton seed oil* BEVERAGES *Wine of fresh grapes* *Spirits obtained by distilling wine or grape marc* Other alcoholic beverages or compounds*
Machinery	
Specialty inputs	**Nitrogen, phosphorus and potassium fertilizers** **Durum wheat, unmilled** **Maize(corn),unmilled** *Nitrogenous fertilizers, exc. urea** *Chemical potassic fertilizers exc. potassium chloride** *Seeds for other fixed oils, exc. copra** Beet-pulp, bagasse Feeding stuff for animals, exc. oil-cake etc.**
Services	

Primary goods	**TEXTILES/APPAREL** FABRICS **Made-up articles, exc. linens and other furnishings*** **Pile etc. cotton fabrics** Grey woven cotton fabric APPAREL **Woman's coats and jackets, exc. of man-made fibres*** **Women's skirts** **Women's blouses, exc. of man-made fibres*** **Women's suits, exc. of cotton or man-made fibres*** **Women's dresses, suits, etc., exc. of synthetic fibres*** **Other outer garments, accessories*** **Under garments, knitted, of cotton, non-elastic** **Articles of furskin** *Men's suits* *Men's trousers, exc. of cotton** *Men's jackets, blazers etc.* *Women's dresses, exc. of man-made fibres** *Jerseys, pull-overs, of cotton or regenerated fibres** *Under garments, knitted, other than of cotton** OTHER **Hides and skins, raw, exc. bovine*** **Furskins tanned or dressed** *Leather, exc. of other bovine cattle**
Machinery	
Specialty Inputs	FIBRES AND YARNS **Raw cotton, exc. linters** **Cotton, carded or combed, inc. linters, waste*** **Cotton yarn, exc. 40-80 km per kg*** **Yarn of regenerated fibres** *Yarn of synthetic fibres, exc. polyamide and discontinuous synthetic fibres** Old textile articles, rags
Services	

Primary goods	**HOUSING/HOUSEHOLD** FURNISHINGS **Floor coverings exc. knotted carpets and carpets of man-made materials*** GLASS, CERAMICS AND STONE PRODUCTS *Coarse ceramic houseware* HOUSEHOLD EQUIPMENT/APPLIANCES *Household equipment of base metal, exc. domestic type heating and cooking apparatus* OTHER HOUSEHOLD PRODUCTS Cutlery**
Machinery	
Specialty inputs	**Cement** **Building stone, worked** *Stone, sand and gravel* Lime and unfired mineral building products**
Services	

Primary goods	**HEALTH CARE**
Machinery	
Specialty inputs	
Services	

Primary goods	**PERSONAL** *Cigarettes* *Other articles of precious metal*
Machinery	
Specialty inputs	**Tobacco, unstripped, non-Virginia type*** **Tobacco, stripped, non-Virginia type*** *Tobacco refuse**
Services	

Primary goods	**ENTERTAINMENT/LEISURE** Coin-operated electric gramophones*
Machinery	
Specialty inputs	
Services	**Tourism#**

KEY

Courier	0.26% world export share or higher, but less than 0.52% share
Italics	*0.52% world export share or higher, but less than 1.04% share*
Bold	**1.04% world export share or above**
*	Calculated residuals
**	Added due to significant export value in a segmented industry
#	Added based on in-country research
##	Added due to high export value

TABLE 2.5: Percentage of Greek Exports by Cluster and Vertical Stage, 1992

	MATERIALS/METALS				FOREST PRODUCTS				PETROLEUM/CHEMICALS				SEMICONDUCTORS/COMPUTERS				UPSTREAM INDUSTRIES	
	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	SW
PRI. GOODS	8.9	-3.4	0.3	-0.1	0.2	-0.5	0.0	-0.1	5.3	-6.2	0.1	-0.1	0.0	0.0	0.0	0.0	14.4	0.1
MACHINERY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPE. INPUTS	1.1	-1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.2
TOTAL	10.0	-4.4	0.3	-0.1	0.2	-0.5	0.0	-0.1	5.3	-6.2	0.1	-0.1	0.0	0.0	0.0	0.0	15.5	0.1

	MULTIPLE BUSINESS				TRANSPORTATION				POWER GENERATION & DISTRIBUTION				OFFICE				TELECOMMUNICATIONS				DEFENSE				INDUSTRIAL & SUPPORTING FUNCTIONS	
	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	SW
PRI. GOODS	0.0	-0.1	0.0	0.0	0.1	-0.3	0.0	0.0	1.0	+0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0
MACHINERY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPE. INPUTS	0.0	0.0	0.0	0.0	0.1	+0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
TOTAL	0.0	-0.1	0.0	0.0	0.2	-0.2	0.0	0.0	1.0	+0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	0.0

	FOOD/BEVERAGE				TEXTILES/APPAREL				HOUSING/HOUSEHOLD				HEALTH CARE				PERSONAL				ENTERTAINMENT/ LEISURE				FINAL CONSUMPTION GOODS & SERVICES	
	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	SW
PRI. GOODS	22.3	+1.5	0.7	0.0	19.7	0.0	0.7	-0.4	0.9	+0.1	0.1	0.0	0.0	-0.3	0.0	-0.1	1.2	+0.7	0.1	0.0	0.0	-0.1	0.0	0.0	44.1	0.4
MACHINERY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPE. INPUTS	5.2	+1.9	0.7	+0.4	3.9	-3.4	0.4	-0.4	4.0	-0.6	1.3	-0.5	0.0	0.0	0.0	0.0	4.1	+0.8	3.9	+1.2	0.0	0.0	0.0	0.0	17.2	0.8
TOTAL	27.5	+3.4	0.7	+0.1	23.6	-3.4	0.6	-0.3	4.9	-0.5	0.3	-0.1	0.0	-0.3	0.0	-0.1	5.3	+1.5	0.6	+0.1	0.0	-0.1	0.0	0.0	61.3	0.5

KEY: SC Share of country's total exports 1992
CSC Change in share of country's exports 1985-1992
SW Share of world cluster exports 1992
CSW Change in share of world cluster exports 1985-1992

TABLE 2.6: Percentage of Greek Exports by Cluster and Vertical Stage, 1985

	MATERIALS/METALS				FOREST PRODUCTS				PETROLEUM/CHEMICALS				SEMICONDUCTORS/COMPUTERS				UPSTREAM INDUSTRIES	
	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	SW
PRI. GOODS	12.3	-1.2	0.4	0.0	0.7	+0.4	0.1	+0.1	11.5	+0.1	0.2	0.0	0.0	0.0	0.0	0.0	24.5	0.2
MACHINERY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPE. INPUTS	2.1	-0.3	0.3	-0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.3
TOTAL	14.4	-1.5	0.4	0.0	0.7	+0.4	0.1	+0.1	11.5	+0.1	0.2	0.0	0.0	0.0	0.0	0.0	26.6	0.2

	MULTIPLE BUSINESS				TRANSPORTATION				POWER GENERATION & DISTRIBUTION				OFFICE				TELECOMMUNICATIONS				DEFENSE				INDUSTRIAL & SUPPORTING FUNCTIONS	
	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	SW
PRI. GOODS	0.1	0.0	0.0	0.0	0.4	+0.4	0.0	0.0	0.6	-0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0
MACHINERY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPE. INPUTS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	0.1	0.0	0.0	0.0	0.4	+0.4	0.0	0.0	0.6	-0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	0.0

	FOOD/BEVERAGE				TEXTILES/APPAREL				HOUSING/HOUSEHOLD				HEALTH CARE				PERSONAL				ENTERTAINMENT/ LEISURE				FINAL CONSUMPTION GOODS & SERVICES	
	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	CSC	SW	CSW	SC	SW
PRI. GOODS	20.8	-3.5	0.7	0.0	19.7	+6.1	1.1	+0.3	0.8	-0.7	0.1	0.0	0.3	0.0	0.1	0.0	0.5	+0.4	0.1	+0.1	0.1	-0.1	0.0	0.0	42.2	0.5
MACHINERY	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SPE. INPUTS	3.3	+2.0	0.3	+0.2	7.3	-1.1	0.8	0.0	4.6	-1.3	1.8	-0.5	0.0	0.0	0.0	0.0	3.3	-3.0	2.7	-1.8	0.0	0.0	0.0	0.0	18.5	0.7
TOTAL	24.1	-1.5	0.6	+0.1	27.0	+5.0	0.9	+0.1	5.4	-2.0	0.4	-0.1	0.3	0.0	0.1	0.0	3.8	-2.6	0.5	-0.5	0.1	-0.1	0.0	0.0	60.7	0.5

KEY: SC Share of country's total exports 1985
SW Share of world cluster exports 1985
CSC Change in share of country's exports 1978-1985
CSW Change in share of world cluster exports 1978-1985

includes many of the industries with the highest world export shares among all Greek industries (among them the first one, olive oil, where Greece has a 30% share). Although agricultural products is where Greece has the highest world export shares, processed food and beverages represent a large part of the competitive exports from this cluster, that account for 27.5% of all Greek exports.

The second cluster in importance is the Textiles/Apparel cluster that has a world export share of 0.6% for 1992. This cluster saw a rise in its share between 1978 and 1985, when it reached 0.9%, the highest among Greek clusters at the time. This rise was due to the increased shares of the primary goods industries, mainly the apparel ones. Since 1985, these industries experienced a drop in their world export share, which was matched by an equal drop in the share of the specialty inputs industries. Cotton yarn (from the specialty inputs category), fur products and some women's apparel industries are among the best performers in this cluster. Exports from the competitive Textile/Apparel industries represent 23.6% of total Greek exports, 3.4% less than in 1985, but still 1.6% more than in 1978. The other two important 'Final Consumption Goods and Services' clusters are the Housing/Household and the Personal, each accounting for approximately 5% of Greek exports in 1992.

The Personal cluster has the higher share of world exports (0.6%) but this is almost entirely the result of Greece's 20% share of non-Virginia type unstripped tobacco exports. Between 1985 and 1992, the range of competitive tobacco-related industries increased, to include stripped tobacco and cigarettes, as well as the cluster's share of Greek exports (from 3.8% to 5.3%).

The range of competitive industries in the Housing/Household cluster (share of 1992 world exports: 0.3%) is wider, and has remained so since 1978, despite the slight drops in Greek and world export shares. The strongest industries belong to the specialty inputs category and are mostly related to building materials, although some competitive primary goods industries (metal household equipment and floor coverings) consistently have a high world export share.

The remaining two clusters in this grouping are the Health Care and Entertainment/Leisure ones, where 'isolated cases', as Porter terms them, are evident. The only Health Care industry with noteworthy exports was antibiotics which was competitive both in 1978 and 1985, but not in 1992. In Entertainment/Leisure the

most important feature is the presence of a competitive service industry, tourism. Data from the World Tourism Organisation show Greece with a share of more than 0.5% of both tourist arrivals and receipts for many consecutive years.

Among the 'Upstream Industries' and the 'Industrial and Supporting Functions' clusters, the most competitive one is the Materials/Metals, with a share of world exports of 0.3% in 1992, a 0.1% decline from 1978 and 1985. This cluster includes a large number of industries, both specialty inputs and primary goods ones, although most of them are related to aluminium and iron and steel, where the highest world export shares are observed. Competitive exports from this cluster account for 10% of Greek exports in 1992.

The other noteworthy 'Upstream Industries' cluster is the Petroleum/Chemicals one, where Greece has a 0.1% share of the world market. The range of competitive industries in this cluster has been narrowing and its contribution to Greek exports diminishing rapidly. In 1992, the few remaining competitive primary goods industries accounted for 5.3% of Greek exports.

Among the other two 'Upstream Industries' clusters, Forest Products includes one or two competitive wood or paper industries for each year studied, accounting for between 0.2 and 0.7% of Greek exports. Semiconductors/Computers is among the clusters where Greece has had no competitive industries in any of the years studied.

The same is observed in most 'Industrial and Supporting Functions' clusters, as Greece has no presence in the Office, Telecommunications and Defence ones, as well as in the Multiple Business cluster for 1992. The Power Generation and Distribution cluster has consistently had a 0.1% world export share and a share of Greek export between 0.6 and 1%. However, this is mainly due to one industry, insulated wire and cables, whose products are related to the Materials/Metals cluster and the competitive wire industries there. The Transportation cluster includes a few competitive industries in 1992, three of them related to sea transportation. The most interesting case is that of shipping, another competitive Greek service industry, where a large part of the world's vessel fleet is under Greek ownership, either registered in Greece or in other countries.

'Final Consumption Goods and Services' dominate Greek exports in 1978, 1985 and 1992. Primary goods from these clusters have a large and increasing share of Greek exports and a considerable share of the world market. Specialty inputs have

a slightly declining share of Greek exports, though, their world export share is still high (0.8%). The balance between primary goods and specialty inputs industries, that is evident in most clusters, is not complemented by the presence of any machinery industries. Competitive service industries are also few, although the ones included in the competitive list are among the best performing Greek industries. The declining shares of the 'Upstream Industries' clusters have not been associated with increasing shares of the 'Industrial and Supporting Functions' ones, as Porter expects in a country's development path. Indeed, out of the five clusters where Greece has had no competitive industries in 1992, four belong to the 'Industrial and Supporting Functions' group.

Among the most important individual clusters, the Food/Beverages one has seen its shares drop in 1985 and increase sharply again in 1992, while the opposite is true for the Textiles/Apparel cluster. The Materials/Metals cluster has experienced declines in its shares, although it remains a major component of Greek manufacturing industries. The same is true for the Housing/Household cluster, while the special case of the Personal cluster is entirely dependent on the performance of tobacco-related industries.

The Industry Case-Studies

The identification of the sources of competitive advantage for particular industries and the comparison of those sources with the determinants of competitive advantage included in Porter's diamond necessitates the conduct of in-depth case studies. In an attempt to follow Porter's methodology, in order for the results to be comparable to those presented in Porter (1990), the same types of sources were used, which included books, articles and other published data, unpublished company records and in-depth interviews with leading industry experts, representatives of trade associations and, primarily, high-level executives of the relevant companies. Studies considered influential in the development of the industry were given particular attention and research institutes associated with the industries were also contacted. Extensive use was made of the few existing Greek companies databases and especially the most comprehensive ones.

All the case studies are presented using a similar format. The first section of every case deals with the industry's product, its various uses, and certain aspects of its production process. The second section presents the recent trends in the world market, while the third one focuses on the European Union. Particular emphasis was placed on the developments in the European Union since all Greek industries are also part of a wider EU industry and EU countries are usually where the main customers and competitors of Greek firms are located. The fourth section is where some of the important economic characteristics of each industry are analysed. The fifth section describes the historical development of the industry in Greece, along with the essential facts regarding the enterprises and their financial status. The sixth section aims to identify the relevant sources of advantage for the Greek industry and these sources are compared with Porter's 'four plus two' determinants. The concluding section assesses the applicability of Porter's diamond framework for the particular Greek industry.

The selection of industries followed several criteria. The mix of industries was representative of the dominant clusters in the Greek economy and included a service industry. The international positions of the industries selected reflect the positions of their respective clusters and vary from industries with low and declining shares to some of the best performers.

The first case study is the cement industry, the 6th Greek industry in terms of world export share. The industry's extraordinary performance over the years and the recent foreign acquisitions in Bulgaria, the Former Yugoslavian Republic of Macedonia (FYROM) and the USA reflect the performance of the whole specialty inputs category of the Housing/Household cluster. Moreover, Greece's particularly high share of world exports in cement has been the subject of research and speculation for many years. The particular attributes of Greek demand for the product also presented an opportunity to evaluate the relevant determinants in Porter's diamond.

The second case study, the rolled aluminium products industry, is again a relatively successful one, although much less so than cement. In 1992 it was the 50th among Greek industries, however, its world export share has been consistently high. This industry is a primary goods industry from the Materials/Metals cluster and its product is what Porter calls a 'self-contained component'. It belongs to a wider group

of aluminium-related industries that exhibit different characteristics. The case study for this industry was an opportunity to examine, in less detail, the other aluminium industries and gain insights into the role of related and supporting industries. This particular industry was selected among this wider group of industries for two reasons. First, its advantage is related to natural resources only to a very small extent, and second, the lack of domestic rivalry presented an opportunity to examine closely Porter's relevant strong views.

A service industry, tourism, was selected for the third case study. The industry is more of an 'isolated case', as it is in the otherwise underdeveloped Entertainment/Leisure cluster. It is also an industry that includes a multitude of firms offering different parts of the complete tourist product, increasing the industry's complexity. The Greek tourism industry's development is closely associated with basic factors. However, as the industry matures, the role of advanced factors is strengthened, along with the influence of the other determinants. This was the only resource-related industry studied. Its selection was also considered necessary because of its importance for the Greek economy, as it represents more than 10% of Greek GDP and employment.

All the above industries have achieved high world export shares in the three years studied. The remaining two cases were selected because their performance was somewhat different, reflecting their cluster's status.

The Textiles/Apparel cluster is still central to the Greek economy, although the loss of export share has been very high between 1985 and 1992. An industry whose share has moved accordingly is the men's outerwear industry, the fourth one studied. Although part of the industry was still in the competitive lists for 1992, the downward trend has continued well into the 1990's. The perspective of this case study is towards understanding the role of the various determinants in an industry whose competitive position is declining. The industry was also selected because it is a producer of a final product, sold to consumers.

As the Food/Beverages cluster rose to first place in both Greek and world export shares in 1992, new industries were added to the competitive list. A characteristic example is the fifth case study, the dairy industry. The industry's world export share was still low in 1992. Nevertheless, the magnitude of change since 1985 merits further examination. This is also an industry where the role of rivalry can be

further explored as small firms are constantly entering the Greek market and the two leading firms are the best known rivals among Greek companies. Again this is an industry where Greece does not possess a particular advantage in natural resources, at least compared to most other food and beverages industries.

The five industries selected represent all four major Greek clusters and include four manufacturing and one service industry. The combination of five diverse industries, in terms of their products, export performance, firms' number and size and other characteristics, offers interesting insights into the sources of competitive advantage in the Greek case. Given the high level of detail required in the examination of each case and the extent to which the cases demonstrate trends throughout their clusters, I believe that the objectives of this study can be covered to a great extent with the use of these five cases.

CHAPTER 3

THE GREEK CEMENT INDUSTRY

The first case study was chosen from the Housing/Household cluster, a cluster that does not contain large numbers of competitive Greek industries, but whose share of Greek and world exports has been consistently high. The industry selected for a detailed analysis is the cement industry, a 'specialty inputs' industry among the most competitive not only of this cluster but among all Greek industries.

The Greek cement industry has had a particular importance for the Greek economy, ever since it was created in the beginning of the 20th century, since cement is a vital part of any construction activity. Its export potential, however, has been fully realised in the last thirty years, when the cement industry became one of Greece's most competitive industries.

The analysis in Chapter 2 shows that cement is among Greece's competitive exports for all the years studied. In fact, Greek cement exports have risen from $177 million in 1978 to $235 million in 1992, while Greece's share of world exports has remained exceptionally high, 9.21% in 1978, 8.68% in 1985 and 7.05% in 1992 (UN, International Trade Statistics Yearbook). The principal objective of this chapter is to examine the underlying factors affecting this strong performance.

3.1 Products and Processes

Cement Types and Uses

Cementing materials to connect stone blocks were used by the ancient Egyptians, Babylonians and Assyrians. Ancient Greeks were the first to use lime,

mixing it with sand, and many examples of the use of this material can be found in the early stages of the Greek civilisation. The Greeks sometimes added volcanic tuff from the island of Santorini, to create a mixture that would resist the action of water.

The term cement was first used in the Roman times, characterising adhesive substances with connective abilities, which were used to hold together stones in large scale construction. The main ingredients of the cement mixture in the Roman and Medieval times were lime, volcanic deposits, and sand and water (Parisakis, 1981: 1). The Romans borrowed the use of cementing materials from the Greeks, as lime was available throughout the Roman Empire. Volcanic tuff could also be found, and the best variety came from Pozzoli, near Naples, from where the material has acquired the name pozzolana. Romans spread the use of this material throughout Europe and the same mixture continued to be used until the 18th century (Lea, 1970: 3-4).

Then, in 1756 John Smeaton discovered the properties of what he named 'hydraulic lime', thus creating a hydraulic cement misleadingly termed Roman cement, which was intensively used until 1850. At the same time, engineers and bricklayers in the UK and France were experimenting with the amount of silica or other ingredients that should be added to lime, and with the temperature to which the mixture was heated. The best known among them is Joseph Aspdin, a Leeds builder, who is credited with the invention of 'Portland' cement, the most commonly used type of cement. Aspdin patented, in 1824, the process of calcinating a mixture of crushed limestone and clay and then grinding it to a fine slurry. He registered the name 'Portland cement' to describe this product. In 1845, Isaac Charles Johnson made some improvements on the process, and this was the effective beginning of the modern cement industry (Lea, 1970: 5-7; Parisakis, 1981: 3-4).

These pioneers established their first workshops in Britain but very soon cement producing factories appeared in France, in 1850, and later in Germany, in 1855. The industry then spread outside Europe with the establishment of the first American factory in 1875 (Parisakis, 1981: 4).

Portland cement is still the most common variety today. Ordinary Portland cement is the product of heating to the calcination temperature (1450^{0}C - 1500^{0}C) a homogeneous mixture of approximately 75% limestone and 25% clay. The resulting mixture - called clinker - is ground with a small amount of gypsum (Parisakis, 1981). The exact composition and preparation of Portland cement differ from country to

country according to domestic regulations, which have been put in place to ensure the constant quality of cement. The first German standards were introduced in 1877, while the British ones were drawn up in 1904 (Lea, 1970: 8).

Some of the variations of Portland cement are: Rapid-hardening Portland cement, which is ground finer, Quick-setting Portland cement, White Portland cement, containing a low proportion of iron oxide to make it white, instead of grey, Waterproofed Portland cement and many more. Other types of cement are being produced for special usage. Supplementary ingredients are usually added, either in the preparation of the clinker, or in the final product, which give these types of cement some different properties, like increased resistance to high temperatures or even different colours. Some of the most common ones are: high-alumina cement, slag cement, oil-well cement, specially produced for oil drilling, and pozzolanic cement containing natural or artificial pozzolanas (Lea, 1970: 11-19).

Cement is almost 100% used by the construction-related industries, either on its own or mixed with other materials. The most common mixture is concrete, produced from sand, water, cement and other additives. Cement is primarily sold to ready-mixed concrete companies, that manufacture concrete, and to construction companies, that use it directly or mix it with other materials on the construction site. Cement is also bought by other companies that manufacture construction products (for example, blocks, bricks and tiles) from cement.

Cement is primarily used in building construction, for example construction of houses, industrial buildings, hotels. Demand is closely related to each country's preferences. Common substitutes are wood, aluminium, steel, plastics and other materials, especially in small houses and low-height buildings. Cement is also used in non-building construction projects (for example, various infrastructures), in conjunction with other materials, such as steel and aluminium (FEIR, 1982; Pheng and Bee, 1993: 3).

Production Technology

Cement production has several phases. The first one is the preparation of the raw materials. Limestone is brought from the quarry and crushed. Then it is put into

storage along with clay. In the dry type of production process, which is the most widely used, both materials are dried in the drying plant and then ground together until they form a homogenised mixture. This mixture is called raw meal and after being dried again it usually passes through the pre-heater. From the pre-heater, raw meal goes to the rotary kiln where it is heated to the calcination temperature. The end product of the heating process is called clinker. Clinker is then fed in the cement grinding plant where it is ground with gypsum (that prevents too-rapid hardening) and other additives to form cement. The end product is packed in sacks, sold in bulk form, or transported, usually by sea, and then packaged in a special terminal closer to the clients (Czernin, 1980).

The whole process consumes huge amounts of energy and produces dust and noise. Thus, the two major cost factors in the industry are energy (35% of production costs) and environmental costs, along with labour (29% of production costs) (Karsamba, 1997: 20). The grinding and drying plants usually use electrical energy and therefore any cost savings come only from the efficient use of electricity. The kiln, however, can burn on any kind of fuel. Petroleum, coal and gas are most commonly used, although there have been attempts at using cheaper fuels that would also require less additional equipment. Environmental costs are mostly fixed costs that represent a high percentage of any new investment in the industry. They are currently on the rise, as regulations in developed countries become more stringent. Labour costs have been decreasing, as semi-skilled labour is currently being replaced by automated production control systems that monitor and regulate the production process.

The basic steps of the production process have essentially been the same since the very start of the modern cement industry. Nevertheless, changes have occurred, throughout the industry's history. The introduction of the horizontal rotary kiln, which allowed a continuous production run, took place at the end of the 19th century. Still, there are some factories, usually with a low capacity, that use vertical or chamber kilns, that necessitate batch production. Another, more recent, change was the shift of most factories from a wet to a dry process, when oil prices increased, as the dry process kiln fuel costs are approximately 55% of those for the wet process (Bianchi, 1982: 3-7). The industry is also affected by general changes in

manufacturing methods that promote energy efficiency and effective production control, along with increased concern for the environment.

3.2 Recent Trends in the World Market

The European and North American cement industries were the first to develop and they remained the major producers until 1980. They were given a big boost in the aftermath of the Second World War, when reconstruction, in an unprecedented scale, was urgently needed in Europe. During the 1960's and 1970's, Asia experienced a similar construction boom. The rapid economic development brought huge projects in both the housing and the public works sectors and by 1980, Asia had surpassed Europe and became the major cement producing continent, with 275 million tons out of the world total of 872 million tons. Asia also had the second and fourth largest producers, Japan and China, while the Soviet Union and the United States were the other two major producers (UN, Industrial Commodity Statistics Yearbook).

In 1985, the fast-growing Chinese cement industry became the world's major producer with an annual production of 145 million tons. In 1994, world production had reached 1,354 million tons. China, with a production of 421 million tons and Japan with 91 million tons were the major producers, while other Asian countries like India and South Korea were among the top ten. The United States and the countries of the former Soviet Union are still among the important cement-producing countries (UN, Industrial Commodity Statistics Yearbook).

Cement is a heavy and hard-to-transport material. Therefore, cement exports are fluctuating, with major changes usually prompted by factors outside the control of the industry. In the 1970's the event that caused a sudden surge in exports was the increase in oil prices. A number of countries, mainly in the Middle East and Africa, were flooded with the proceeds from the sale of oil. Since most of them did not possess a domestic cement industry, cement imports enabled them to embark immediately into huge construction projects. By the end of the 1970's, Spain and

Japan had emerged as the two principal exporters, followed by Greece and South Korea (Pheng & Bee, 1993: 4-6).

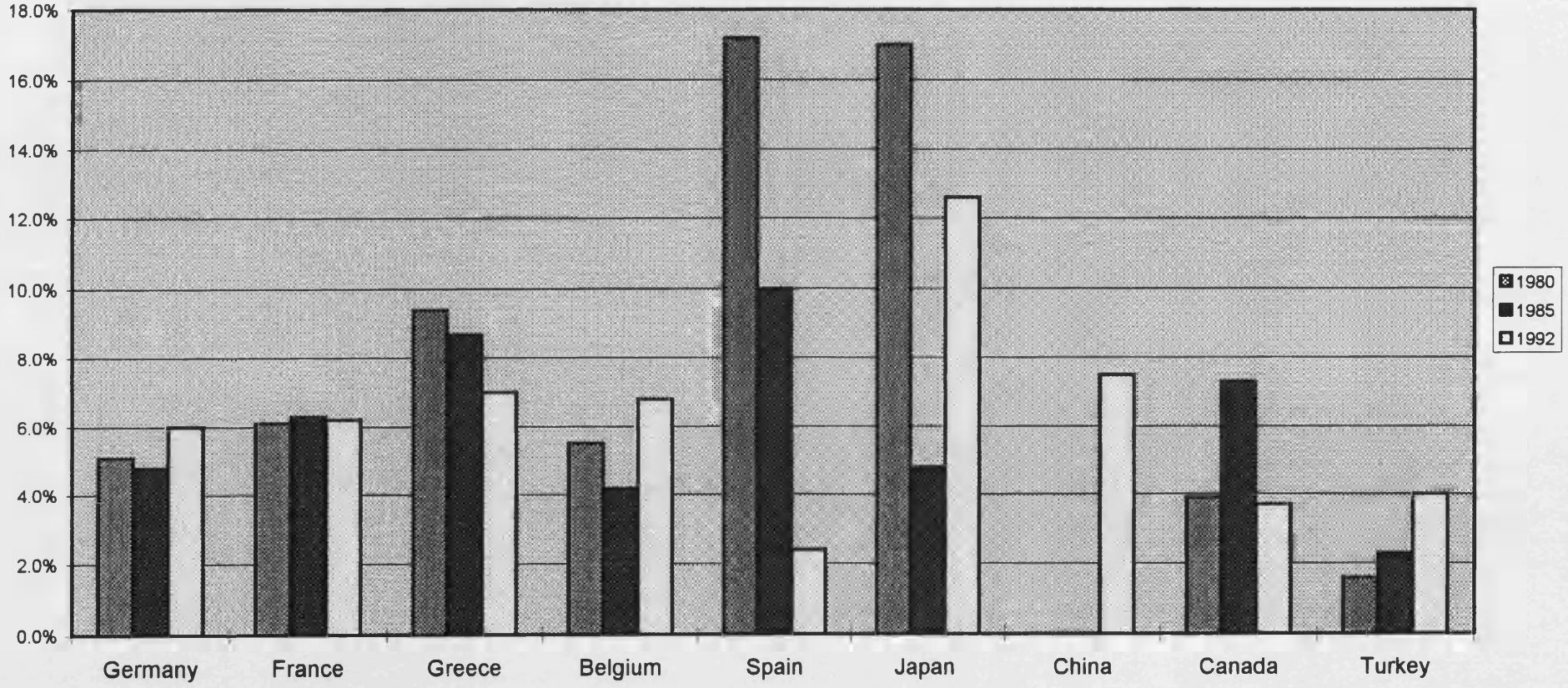
Most of the importing countries, however, created their own cement industries, while the exporting countries rapidly increased their output. An overcapacity problem soon emerged and it coincided with the drop in oil prices in the mid-1980s. As world cement prices came tumbling down, exports, burdened with the significant costs of transporting the material, were on the decline. In 1987, Greece, whose exporting firms continued to be aggressive, became, for a short period, the world's largest exporter. Since then, the industry experienced a shift in export destinations, with most exports now directed not to the oil producers but to the developed countries of Europe, Asia and North America. It is characteristic to note that in 1980, the Middle East accounted for 32.2% of world cement imports and Europe for 12.6%. In 1992, the reversal was complete, with Europe's imports representing 37.8% of world trade, and Middle Eastern imports falling to a negligible 2.9% (UN, International Trade Statistics Yearbook).

The uncertainty of the last ten years prompted the Spanish and South Korean industries to direct most of their output to their domestic markets, while Greece and Japan kept the same ratio of exports to domestic deliveries. Other EU countries, like Germany, France and Belgium continue to be among the world's major exporters, along with China, Canada and Turkey, as can be seen in Figure 3.1 (UN, International Trade Statistics Yearbook).

3.3 The European Union: Customers and Competitors

The countries of the European Union have played an important role in the development of the world cement industry. However, as construction needs became greater elsewhere, competitive cement industries emerged in other parts of the world, making the EU a smaller but still significant player. Stagnating economies in the European Union and its neighbours in the early 1980's, and again in the early 1990's, in addition to falling cement prices, caused a decline in European production. The

Figure 3.1: CEMENT WORLD EXPORT TRADE, 1980 - 1992



Source: UN, International Trade Statistics Yearbook

rebound came in 1994, along with the restructuring of the industry. Production levels, however, have not yet significantly increased.

Italy has been the largest European producer, until recently, when the needs of German re-unification, gave that country's industry a big boost. The figures for 1995 show Italy producing 34.2 million tons and Germany 33.3 million tons, with Spain constantly increasing its production, which has now reached 28.2 million tons. France's production has stabilised, after serious reductions in the 1980's and in 1995 France produced 20.7 million tons. The fifth largest producer in the EU is Greece, which has kept production levels steady throughout the 1980's, and in 1995 produced 14.3 million tons. Other EU countries, with a production of more than 5 million tons in 1995, are the UK, Portugal and Belgium (Titan, 1996a).

Exports from EU countries have followed global trends peaking in 1983, decreasing sharply between 1983 and 1989 and exhibiting smaller but constant increases since. Starting in the early 1980's, the countries with the highest export volumes in the EU have been Spain and Greece. In 1995, eight EU countries exported more than one million tons, with Greece being the leading exporter with 7.4 million tons. Spain, France and Belgium exported significant quantities, while Germany and Italy were among the six biggest EU exporters but with small quantities relative to their output. The surge in demand, during the late 1980's (1986 - 1990) brought also a deterioration of the EU's cement trade balance, as extra-EU imports increased dramatically by more than 8 times between 1985 and 1991 and have remained high ever since. Most of these imports are coming from the countries of Eastern Europe and some EU producers claim that the price levels of these imports are artificially low, enough to be considered as dumping. The EU, in 1994, still exported more than it imported, with Spain, Italy and Germany absorbing most of the imports. (Cembureau, 1997)

The European market has a few major players that hold significant shares of their domestic markets and are trying, mainly through acquisitions, to enter the other EU markets. Among these companies there are two German ones (Dyckerhoff and Heidelberger), one Italian (Italcementi), one British (Blue Circle) and one French (Lafarge). A Swiss firm (Holderbank) and the Mexican giant Cemex, are also considered direct competitors to the firms mentioned above, as they have substantial cement interests in the EU (Cembureau, 1997: 9.36).

3.4 Economic Characteristics of the Industry

Demand for cement is closely correlated with the levels of construction activity, as cement is a primary input of the construction process. The levels of construction activity, in turn, are closely connected with economic growth rates. Therefore, demand for cement is very cyclical and heavily dependent on each consuming country's economic growth trends.

Supply, however, cannot move in step with demand. Creating a new production unit is a long process that takes three to four years (Express, 1993) and costs more than £150 million (Pheng & Bee, 1993: 9). Also, economies of scale are present since the production process is simple, technology is widely available and the product is by and large homogeneous (Bianchi, 1982). Therefore, most production units now created produce large quantities of cement and represent a considerable investment. As demand fluctuates, capacity utilisation rates fluctuate too.

A way to ameliorate the situation would be to export when domestic demand is decreasing. This, however, is not easy given the nature of the product. Cement is heavy, difficult to handle and, most importantly, its ratio of price to weight is low. Transportation expenses therefore are high, both in absolute terms and relative to the product's value. This factor has limited world cement trade to a small fraction of world production, recently 6%-7% (Cembureau, 1997: 9.34). Consequently exports require a willingness to accept lower margins in order to achieve economies of scale.

Lower export profit margins are a result both of the high transportation costs and of the nature of the product. Cement has some special characteristics. Most countries in the world have their own specified types of cement that must meet certain criteria, creating hundreds of variations and some additional barriers to trade. An exporter is faced with the burden of producing different types of cement for every national market it sells in, without being able to charge a premium for these different types, because the product is considered undifferentiated in every market. Cement companies, therefore, even the non-exporting ones, are vigilant in pursuing lower costs, without compromising on product quality, as cement is constantly tested by the authorities or private bodies in most countries.

Lower costs are not easy to achieve. Any reductions in variable labour and energy costs require huge investments in automation, the use of cheaper fuels, or the more efficient use of all kinds of energy. Continuous investment is therefore a necessity and the huge capital requirements have caused companies in mature markets to be hesitant towards expansion. Start-up companies in developed countries are now very few and the established ones are usually growing through acquisition. As a result concentration is rising in most markets.

3.5 The Greek Cement Industry

Historical Development

The first cement factory in Greece had a capacity of 2,000 tons and was established in Eleusina in 1902 by Nicholas and Angelos Kanellopoulos. In 1911 the company was named Titan SA and in 1914 the rotary kiln was introduced, raising its production capacity (Titan, 1992a). Around the same time, a new company, called General Cement Company, established a production unit in Piraeus, the port of Athens. As these were the only factories in the country then, their target was to cover domestic demand and by 1920 their production had reached 20,000 tons. Domestic demand increased sharply in 1922, when an influx of refugees from Asia Minor created enormous housing needs. Two new cement factories were created, one in Volos in 1925 from the Cement Volou Olympos, which then merged with General Cement Company, and one in Halkis, Evoia in 1926. Total production by 1930 was 174,100 tons and a new factory was established by Halips in 1936 in Aspropyrgos (Express, 1993).

The Second World War brought to a halt all industrial activity and the ensuing civil war restrained the country's productive capacity for three more years. Very soon, however, production surpassed the pre-war levels, covering the demand generated from the reconstruction efforts. Although a small part of the production was exported, more than 90% was directed to the domestic market. In the 1960s,

Titan established two new factories, one in Nea Eukarpia, near Thessaloniki, in 1962 and the other in Drapano, Achaia, 15 km. from Patras in 1968 (Titan, 1992a). As a consequence, production surged to 4.9 million tons in 1970. The oil crisis of 1973 and the enormous increases in revenues for the oil producers in the Middle East and in North and West Africa caused demand for cement in these countries to rise. Greece's proximity to this area offered the Greek industry a great opportunity. Exports rose beyond expectations and production doubled between 1974 and 1983. Two new factories were established, in Kamari, Boiotia in 1976 by Titan, and in Aliveri, Evoia in 1983 by the General Cement Company, now called Herakles.

The Greek cement industry was affected by the 1980's crisis in the world cement industry, which was mainly due to over-capacity and reduced demand from oil-exporting countries. Despite continued high sales, financial results were poor, coinciding with a period of price controls and lay-off restrictions in Greece. Control of three of the four companies passed to the State, they were soon, however, re-privatised, first Halips in 1990, then Herakles in 1992 and recently Halkis in November 1996. Production volumes have increased since the late 1980's, along with export levels.

A major development in the 1990s is the foreign direct investment of the Greek company Titan in the USA. After considering a number of options, Titan decided to use the productive capacity of an existing factory, in Roanoke, Virginia. A capital outflow of $40 million was required and the factory is now supplying the American market with one million tons of cement. The same company has recently (1997) acquired 48.6% of a Bulgarian cement company, Plevenski. In 1998, Titan and the Swiss giant, Holderbank, acquired 83% of USJE, the largest cement producer in neighbouring FYROM (the Former Yugoslavian Republic of Macedonia).

Major Competitors - Ownership Structure

The Greek market is relatively concentrated. There are four major cement producing companies effectively accounting for the entire Greek production.

Titan Cement Co. SA was the first to be established in 1911, although its first factory was built in 1902. It now accounts for almost 40% of Greek production. It

has a number of subsidiaries and within the last five years it has bought several quarrying and ready mixed concrete companies. The descendants of the initial founders, N. and A. Kanellopoulos, still hold approximately 51% of the shares. The stock is publicly traded in the Athens Stock Exchange, where it is considered among the few 'blue chip' stocks.

Herakles General Cement Co. SA is the other major cement producer in Greece. It was established in Athens, in 1911 and is also listed in the Athens Stock Exchange. It controls a large number of subsidiaries, mostly related to cement raw materials production and cement and concrete distribution. The firm was unprofitable for a short period of time in the mid-1980's, however as this coincided with its modernisation program, huge debts were accumulated. Control passed from the Tsatsos family to the State, through state-owned banks and specialised organisations. In 1991, 70% of the shares was sold to Cal-Nat, a company formed by the National Bank of Greece and the Italian concrete producer Calcestruzzi. Calcestrucci's share was transferred to a non-cement related company, Concretum (then a member of the same Italian group, Feruzzi), that now controls Herakles.

The third Greek producer, Halkis Cement Co. SA was established in Athens, in 1926. In the 1980s, it ran into the same problems as Herakles and, after a long process lasting almost five years, was finally sold to Concretum. Effectively, Halkis is now controlled by Herakles, although it still has some degree of independence. Its shares are also expected to be re-introduced to the Athens Stock Exchange in 1999, after a suspension of trading that lasted seven years.

Halips, the fourth Greek company, was established in 1943, when it changed its legal status, evolving from a limited partnership formed in 1934. In 1990, the French producer Ciment Francais bought a controlling interest in the company, and now owns 85% of the shares, while the rest are publicly traded.

The essential figures for 1995 for all Greek cement producers are given in Table 3.1:

TABLE 3.1: Financial Results of the Greek Cement Companies for 1995

Companies	Sales (mil. Dr)	Net Income (mil. Dr)	Rate of Return	Net Profit Margin	Gross Profit Margin
Herakles	83,971	9,267	15.17%	11.02%	21.3%
Titan	63,982	10,432	23.03%	16.16%	29.3%
Halkis	22,653	-2,769 (1994)	-	-	2.94% (1995)
Halips	10,610	-1,073	-	-	18.8%

Source: Companies' Annual Reports; ICAP, 1997e

As can be seen from these numbers the two major producers have made significant sales, earning high profits. In fact, Titan was seventh among Greek manufacturing firms in terms of net profits, while Herakles was eighth and fifth in terms of sales (ICAP, 1997e). A closer examination of financial ratios shows these two companies having excellent rates of return (Net Income/Net Worth) with high net profit margins (Net Income/Sales), partly reflecting on the quality of their management. For the two smaller companies the picture is mixed. Halips is steadily improving, having reduced its huge debts. Halkis is still a long way from becoming financially healthy. Preliminary financial results, however, after its sale are very encouraging. A calculation of gross profit margins (Gross Profits/Sales) was deemed more appropriate for both smaller companies and the results are very encouraging for Halips, while Halkis is at least making a gross profit.

Production - Exports - Imports

The Greek cement industry was established in the first decades of the 20th century and by 1938, all four Greek cement companies were in operation. Their combined production in 1938 was 308,000 tons. At around the same time (1935), the first Greek cement exports were recorded. During the pre-war years, imports had a fluctuating share of domestic demand. In 1920, 4,000 tons of cement were imported to cover 17% of domestic demand. Then, as the refugees from Asia Minor came to Greece in 1922 imports surged and by 1925 accounted for 55% of domestic

consumption. However, because new Greek companies were being formed and the existing ones were investing in increased capacity, imports were reduced and by 1938 had reached the low levels of 22,000 tons (Association of Greek Cement Manufacturers, 1994).

Soon after the war production rose sharply and then, from 1950 until 1970, output almost doubled every five years. Also immediately after the war, in 1947, exports resumed, although at the very low level of 2000 tons. By 1955, exports had reached 232,000 tons, but, in the years that followed, expansion was greater in the domestic market while exports stagnated, and, by 1970, export volume had barely increased to 342,000 tons. During this period, imports were very low, starting at 2,000 tons in 1950 and stopping altogether in 1978 (Association of Greek Cement Manufacturers, 1994).

The favourable circumstances in the beginning of the 1970s caused a capacity expansion and this time all the extra production was exported. In 1975, cement production was 7.94 million tons, with Titan and Herakles producing about 3 million tons, Halkis producing 1.47 million tons and Halips 386,000 tons. At the same time, exports surpassed the 3 million tons mark and by 1980, had reached 5.9 million tons, or 46% of production. All companies increased their production almost every year until 1983, when Greek production peaked at 14.2 million tons, with Herakles being ahead, with 6.2 million tons, followed by Titan with 5.5 million, Halkis with 2 million and Halips with almost 0.5 million tons. The rise was also evident in export volume, until 1983, when 7.8 million tons, or 55% of Greek production, were exported. All four companies participated in the export surge, with Titan leading in the 1970s and Herakles in the 1980's (Association of Greek Cement Manufacturers, 1994).

Then, as all companies ran into financial difficulties, production levels fell slightly. Capacity levels remained approximately stable and production reached a low of 12.5 million tons in 1989. The 1980's crisis also affected exports that fell to 5.1 million tons in 1989. The two smaller companies were hit harder, with Halkis halving its exports and Halips stopping them altogether. Since then, production has been rising, having recently reached the 1983 levels, with Herakles accounting for approximately 43% of Greek production, Titan for 38%, Halkis for 14% and Halips for the remaining 5% (Association of Greek Cement Manufacturers, 1994; Karsamba, 1997: 37).

The new export rise started in 1993, however this time only Titan and Herakles register significant increases, with Halkis steadily exporting around 1 million tons. All three companies are still exporting around 50% of their production. In 1991, some imports reappeared, but the quantities were still very small.

The destinations of Greek exports indicate the responsiveness of the companies involved. Although cement is not easy to transport and usually needs certain unloading installations in the destination country, Greek cement companies have been very adept at finding new markets. In the beginning of the export boom, between 1974 and 1976, Greek cement was essentially exported to three countries, Libya, Algeria and Saudi Arabia. Then in 1977, Greek exports reached most Middle Eastern countries and some African countries like Egypt and Nigeria. In the first half of the 1980's, the two most important markets for Greek cement were Saudi Arabia and Egypt. However, both these countries developed their own cement industries and when oil prices started declining, major development projects in most Middle Eastern and African countries were scaled down. As soon as those trends were evident, the Greek industry changed its focus and without abandoning its traditional markets started exporting elsewhere.

The first major target was the USA market, which in 1988 received 38% of Greek exports, or 2.1 million tons. At the same time Greece exported to other EU countries, namely Italy and the UK. In the early 1990s, the shift was complete and European countries, along with the USA, accounted for most Greek exports. Although the slowdown of European markets in 1991-1992 caused an increase in the proportion of Greek exports going to the Middle East and Africa, to around 20% in 1993, the majority of exports still go to the USA and the big European markets of Italy (where Greece is the major importing country), Spain, France and Britain (Association of Greek Cement Manufacturers, 1994).

Investment in the industry has been high throughout its history. New factories were built and the productive capacity of the existing ones was increased many times, sometimes even as soon as two years after the establishment of a factory, as was the case in the Thessaloniki factory of Titan (Titan, 1992b). Since 1970 two other major targets of investments were the creation of terminals for unloading cement in bulk in most export markets where Greece was present and the replacement of petroleum as the fuel used in the kiln. Before 1983, major investments in production capacity took

place and investment from the cement industry registered year-to-year increases substantially higher than the whole of Greek manufacturing industries. Between 1983 and 1989, this trend was reversed, and only during the 1990's, the time of the ownership changes and good financial results, did investments pick up (Karsamba, 1997: 69).

3.6 Sources of Competitive Advantage

Factor Conditions

Cement is essentially a mixture of two minerals, one containing calcium chloride and the other silica. There are many types of materials that contain these substances, but the ones commonly used for cement production are limestone (as a calcium source) and clay (as a silica source) (Bianchi, 1982).

Greece has abundant deposits of both types of minerals, as do most cement producing countries. The Greek cement industry uses exclusively Greek raw materials and supplies are plentiful and easy to obtain. The cost of raw materials is usually around 15% of the cost of the final product (Kalloniatis, 1996a) and therefore the most important factor in sourcing raw materials is quality, with cost coming second. The quality and the exact composition of the limestone and clay used determine a number of parameters in the production process. Consequently, it is important that the properties of these materials be relatively constant and within certain limits.

As relevant studies (for example, Chrisochou, 1987; Karsamba, 1997: 23) and the interviews I conducted with managers in the industry indicate, Greek raw materials are of excellent quality and easy to extract. Also, as one source can provide large quantities of them, their properties are constant. Even more important is the fact that Greek industry has used, for over 90 years, limestone and clay with similar properties and has therefore made all necessary adjustments to the production process. Additional materials, like gypsum, used in most cements, or other additives, used in special kinds of cements, are also easily obtainable in Greece.

Labour costs are the second major cost component in cement production. Cement manufacturing is not labour-intensive and total employment in the sector in Greece is approximately 4,800 people. About 20% of those are working in each company's central offices, while the rest are located in the productive facilities. It is estimated by the Association of Greek Cement Manufacturers that more than 16% of those employed have Higher Education degrees. About two thirds of those are engineers, mainly chemical, mechanical and electrical engineers. These engineers, graduates of highly rated technical universities in Greece, possess an impressive breadth of knowledge but lack practical experience. This is why Greek cement companies expose newly hired engineers to every aspect of the production process. Titan, specifically, provides engineers with two months on-the-job training by rotating them among all four of the company's plants. At the end of the two-month period the trainee is expected to submit a lengthy report on several aspects of his work that is then evaluated by top executives. These reports often contain ideas for improvements, which, in some cases, are later adopted by the company.

The cement industry is considered highly competitive with steady employment prospects. Wages are substantially higher than the average for Greek manufacturing industries (Karsamba, 1997: 17). Therefore, the industry is able to attract top-level graduates from all educational levels. All workers undergo some, mainly on-the-job, training before they are given full responsibility and are then periodically trained as needs arise. The industry was well known for years for the skills of its machine operators who used to control the equipment by 'listening' to the process. They are now being replaced by highly automated production control systems, present in all Greek factories. The workers, however, are not laid off but their experience is used to fine-tune the automated systems. As they retire, the number of unskilled or semi-skilled personnel is being reduced. In fact, the proportion of unskilled workers has decreased from about 45% in 1980 to 23% in 1996 (Karsamba, 1997: 26).

Wages in the industry are higher than in other sectors of Greek manufacturing, but are still lower than wages, for example, in other EU countries that compete with Greece, like Italy, France or Belgium (European Commission, 1988: 30). Total labour costs have not increased disproportionately in the last fifteen years, as the number of workers has been constantly decreasing since 1981. The huge capital investments, especially in the 1970's, as well as the personnel reductions, have made the cement

industry among the three industries with the highest value added per employee in Greece in the last twenty-five years (NSSG, Annual Statistical Manufacturing Survey). Union activity has not changed this picture, as strikes are very few and most problems are solved through negotiations.

Capital requirements are high in the industry. However, as profits were rising before the 1980's crisis, the industry was able to finance its expansion through retained earnings and bank loans at competitive rates. In the 1980's, when needs became greater, capital was harder to find and, with the rise of inflation, nominal interest rates were high. Nevertheless, since the mid-1980's, the State, mainly through state-controlled banks, has been involved with three of the four cement producers and funds were again available at competitive rates of interest. The fourth company, Titan, has maintained a sound financial position for years, borrowing at low rates from Greece and abroad. In fact, all Greek companies have used foreign capital markets at some point in time.

The infrastructure whose state affects the cement industry is the transportation network. Roads are the main network for inland transportation in Greece. However, the road network is not in a very good condition outside the main motorways that connect the major urban centres. Moreover, the roads inside and around the main cities, and especially Athens, are not sufficient for the huge traffic loads. The Greek industry is therefore disadvantaged in terms of road transportation. There are, however, three major infrastructure projects under way that would probably ameliorate the situation in the years to come. Specifically, the modernisation of the main national motorway connecting Patras, Athens and Thessaloniki, that is in its last stages, the creation of a new motorway in the north of the country and the new bridge linking Peloponesos with the rest of Western Greece are expected to substantially improve the network's condition.

The way to work around the road network's problems has been to use the extensive ports' infrastructure in Greece. All cement factories are located near ports and all cement companies own ships (through a number of subsidiaries), as well as unloading facilities near most Greek cities. The long tradition of sea carriage in Greece has created an extensive port network, a large number of shipping companies and a big pool of highly skilled seamen. The port network is also under modernisation with funds coming mainly from the second Community Support Framework. Sea

transportation has not, therefore, been just a compensating factor for the road network problems. Greek companies have had a long experience in transporting the material by sea and operating port facilities, and have taken advantage of that experience in reaching foreign markets. This has been a major source of competitive advantage, since most of the exported cement in the world is transported by sea (Pheng & Bee, 1993).

Energy costs in the cement industry vary according to the parameters of the production process, but they usually represent 35-45% of the total production costs (Bianchi, 1982). Energy costs are split between the costs of operating the various grinding, mixing, drying, etc. plants and the costs of operating the kiln, where the main heating process takes place. In Greece, electricity is used for the operation of most of the machinery, apart from the kiln. Electricity prices in Greece are very close to the OECD average giving the Greek industry neither an advantage nor a disadvantage (IEA, 1996).

The kilns in all Greek factories used to burn oil that was 100% imported. However, since the first oil crisis it became evident that the costs of continuing that policy would be prohibitive. Greek companies, and mainly Herakles and Titan, experimented with various kinds of fuels, and finally decided that coal was the most cost efficient. The only drawback was that coal needed a number of special installations requiring high investments. These investments were made and now coal is the fuel principally used in all Greek factories. Coal is also imported and its supply or prices can in no way be affected by the Greek cement industry, giving it therefore a slight disadvantage. However, the fact that firms are not exposed to the highly volatile prices of oil to determine their operating costs is an advantage.

The initial impetus for the expansion of the Greek cement industry in the beginning of the 1970s, when it developed an internationally competitive position, came in part from Greece's proximity to the Middle East and to North and, to a lesser degree, West Africa. As the countries of these regions were importing large quantities of cement, Greece became a major source. Transportation expenses for Greek companies were lower than those of most other European and Asian companies, as Greece was for some countries the closest cement exporter. Greek firms were able to offer very competitive prices and, consequently, capture a large part of the Middle East and West African markets.

However, since the drop in oil prices and the creation of domestic cement industries in most of these countries, Greece has changed its export orientation. The Greek industry is now mainly exporting to countries of the EU and the USA. Although Greece is not very far from EU countries, all of them have strong local industries and are also close to each other, engaging in cement trade among them. Also, Greece is further away from the USA than its European or Asian competitors.

The R&D requirements of the cement industry are not very high. The production process has experienced few major improvements and most research is made with the purpose of automating the process and conserving energy. Some important innovations, which have occurred in the industry in the last decades, are related to the product itself. New types of cement are being produced, either for specialised uses, or to replace other expensive or rare materials. Existing cement types are being improved, usually with minor changes to their composition in order to meet stricter specifications.

Laboratories are present in most cement factories, mainly for quality control purposes, since the product is tested by governments or independent authorities in most countries. In Greece, all companies have their own laboratories that continuously examine the product. Titan and Herakles, the two major Greek producers, have large research units that conduct all types of research. These units have gained much experience by adjusting various properties in the cement mixture in order to satisfy regulations in many countries. This has enabled researchers to compare different types of cement and make detailed observations. Some of those employed in these research units are experts in production automation systems and have helped in the improvement of the production process. In the 1980's, the laboratories of Herakles were well-known for important discoveries. In the 1990's, Titan is exhibiting increased activity, participating in a number of EU initiatives, co-operating with companies in other industries and maintaining a close working relationship with most Greek Technical Universities.

There are no specialised cement departments in Greece. However, the Departments of Chemical Engineering in two of the Technical Universities, those in Athens and Patras, are conducting extensive research, connected to the industry. In this research, they co-operate with Greek companies, mainly Herakles and Titan, and

the results are used by these companies to improve production methods and manufacture cement of superior quality.

With the industry's initiative, the Association of Greek Cement Manufacturers has been established. In the past, especially when cement prices were regulated, some actions were taken by the association. The recent changes in the ownership of cement companies, along with the reduced need for intervention in the domestic market, have limited the role of the association, which now mainly deals with data collection and the maintenance of a small specialised library.

In summary, the Greek cement industry has several sources of competitive advantage among the attributes included in factor conditions. The abundance and good quality of raw materials, Greece's geographic position, and its reliable sea transport network have played an important role in the industry's formation and its subsequent growth. The industry has also upgraded both its human capital and the research and development it conducts, creating some specialised factors and thus possessing an advantage, at least towards most competitors. The availability and quality of energy, capital and specialised institutions have not been major sources of competitive advantage. However, through intensive efforts by the industry they have not proven very disadvantageous either. The country's road network has been the only major disadvantage for the industry.

Demand Conditions

Greek demand for cement mainly comes from building construction. Housing and non-housing construction accounts for almost 80% of cement consumption in Greece, while in most EU countries that number is usually around 75-80% (FEIR, 1982). Building construction is not only the bigger segment in most foreign markets but also the one where most of cement's direct substitutes are used. In addition, the profit margins in this segment are much higher, since public works contracts require big discounts. Greek manufacturers, therefore, have a slight advantage, since the building construction segment in Greece receives most of their output.

In terms of the buyers in the Greek market, half of the cement is sold to the ready mixed concrete industry and the other half either to the precast concrete firms that manufacture products ready to be put in buildings, or directly to construction companies. The ready mixed concrete industry manufactures fresh, unhardened concrete and then transports it to the production site. Although in Greece the first ready mixed concrete firm was established in 1968, later than in any other EU country, the industry has grown substantially and Greece is currently the sixth largest EU producer (ERMCO, 1997: 9.44). Ready mixed concrete is not a tradable product and, therefore, one cannot comment on the industry's competitiveness. Despite that fact, we should note that Greek demand is growing fast, recently at a yearly rate of 14.6% (ICAP, 1991: 9). There are 315 ready mixed concrete companies in Greece, most of them small or medium-sized (ICAP, 1991). Unlike the ready mixed concrete industry, the precast concrete industry in Greece is still very small compared to other developed countries. Construction companies are also many in Greece and they were considered competitive, especially in the 1970's. Recently, however, their foreign contracts have been reduced. It seems that the nature of buyers of Greek cement can be considered a slight advantage for the Greek industry, since there are many independent competitive buyers with an adequate level of sophistication.

The Greek market is not among the major markets in the world. However, in the period between the 1920s and the 1980s it has exhibited remarkable growth rates. Even in the pre-World War II period Greek consumption grew from 24,000 tons in 1920 to 330,000 tons in 1938. After the war, in 1947, consumption was at 175,000 tons. Then, demand took off, reaching 393,000 tons in 1950 and doubling every five years until 1965. In 1965, Greek consumption just surpassed the 3 million tons mark (Association of Greek Cement Manufacturers, 1994). This was also the period when investments, which increased productive capacity and the level of technological sophistication, were made in the industry.

After 1965, growth continued, at a slower pace. By 1970, the Greek market had expanded to 4.5 million tons, a level characteristic of the next five years also (Karra, 1985: 2). Then a further construction surge pushed consumption to 7.17 million tons by 1979 (Association of Greek Cement Manufacturers, 1994). This was also a period of increased investment in the industry and of creation of the very

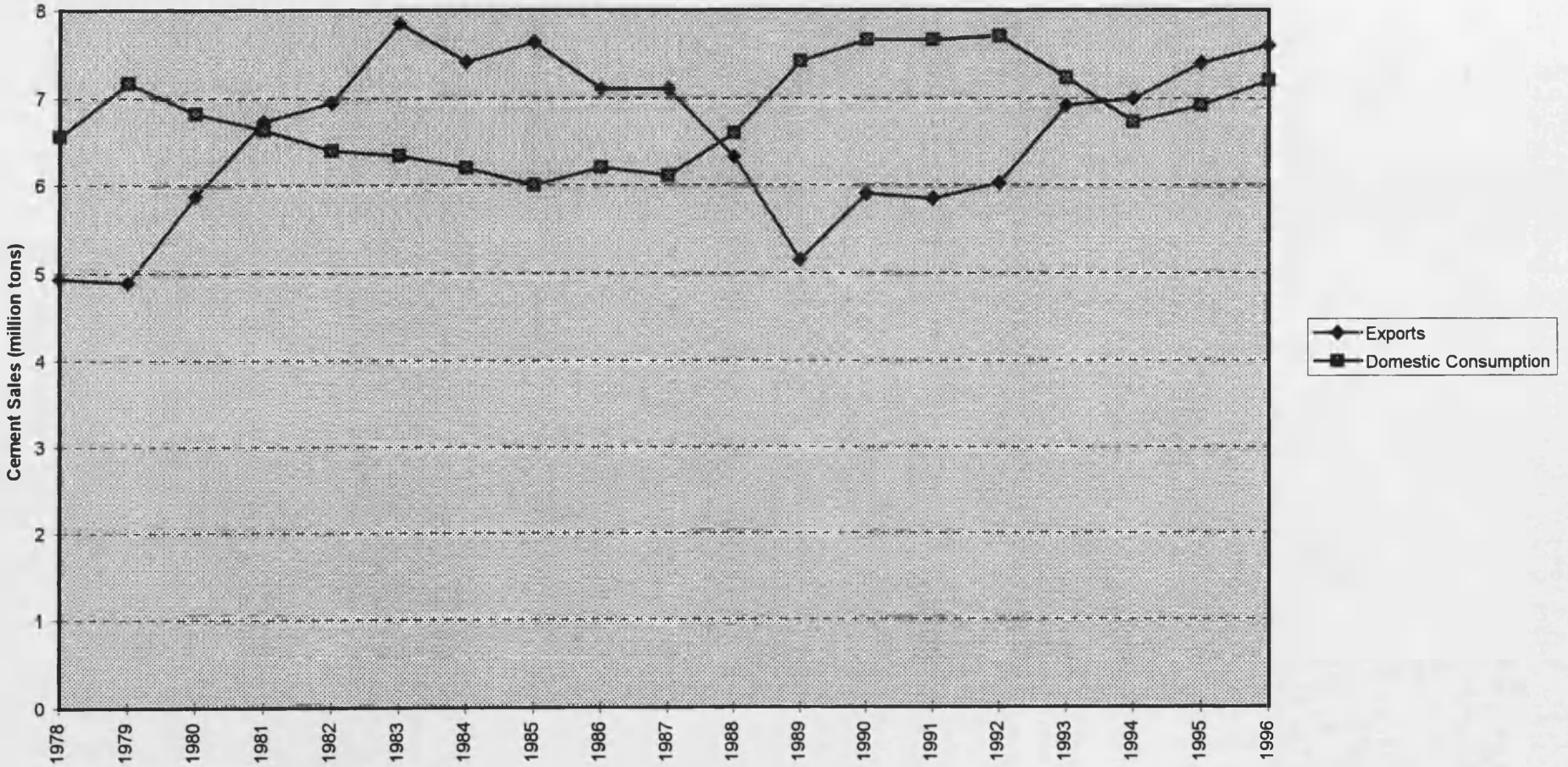
modern factory of Titan in Kamari in 1976, as well as the beginning of the construction of the second Herakles factory that was completed in 1982.

After decades of impressive growth, the Greek market in the 1980's appeared saturated. In the beginning of the 1980's demand started decreasing and by 1984 it had reached 6.2 million tons (Karra, 1985: 110). In the late 1980's and early 1990's, demand was again increasing and in 1992 consumption reached a new peak of 7.7 million tons (Association of Greek Cement Manufacturers, 1994). Since then domestic demand has remained around 7 million tons (Karsamba, 1997). Market saturation, according to Porter, is a major incentive for an industry to expand in the international market. This has been exactly the case with the Greek cement industry. The first export surge coincides with the slump in domestic demand between 1970 and 1975. Even after 1975, exports have consistently registered substantial increases in years when domestic demand has dropped. For example, between 1979 and 1982 annual consumption in Greece fell 11%, while exports increased almost 40%. These changes have followed the same trend in subsequent years, although somewhat less pronounced as can be seen in Figure 3.2.

The Greek market reached its saturation point with very high rates of per capita demand. Even among developed countries, Greece had a high per capita cement consumption. In 1984, when Greek demand was almost at its lowest, Greece was third in per capita consumption among the EU countries, with 680 kg per inhabitant, almost three times the UK per capita consumption, which was the lowest in the EU (253 kg). However, even these numbers fail to show the true picture. In developing countries, in 1983, per capita consumption was even lower with 35 kg/inhabitant in India, 93 kg/inhabitant in China and 73 kg/inhabitant in Kenya, with similar numbers for most countries, apart from some oil producers and the South East Asian tigers (Sinha, 1990). Although Greek per capita consumption has not increased dramatically, reaching just recently 710 kg, it is still among the highest in the world, 50% higher than the EU average of 470 kg (Karsamba, 1997: 13).

As was mentioned before, every country has its own regulations on the types of cement used within its border. Although Greek firms have created cement to fit the regulations in all the countries they export to, there is no indication that they have in any way affected these product regulations. However, Greece has affected foreign demand for cement through what Porter calls 'mobile buyers'. This was done in the

Figure 3.2: GREEK CEMENT EXPORTS AND DOMESTIC CONSUMPTION, 1978-1996



Source: Association of Greek Cement Manufacturers, 1994; Karsamba, 1997

beginning of the industry's exports to the Middle East when some of the construction projects in these countries were implemented by Greek construction companies. Local cement factories were non-existent and these companies, having used, with excellent results, Greek cement at home, preferred to use cement manufactured in Greece. This fact gave the Greek cement industry an additional impetus to export.

In summary, demand conditions have played some role in creating and sustaining the competitive advantage of the Greek cement industry, although some of the demand characteristics that Porter considers important were not clearly favourable. More significantly, the high growth rates and per capita consumption in the Greek market were major factors in promoting continuous investment and upgrading in the industry. The early saturation of the market, along with a number of mobile buyers affected the industry's export drive. The lack of a big market and of an 'internationalisation' of Greek demand were the only demand disadvantages for the industry, while the role of the local buyers was slightly positive.

Related and Supporting Industries

The Housing/Household cluster, of which the cement industry is part, represents a consistent part of Greek competitive exports. The cluster is among the four major competitive clusters of Greek industry, although usually its export shares are below the ones corresponding to the other three.

However, looking at the primary goods industries of this cluster, there are some, but not many, very competitive Greek industries. Therefore cement's success does not seem to be related to the 'primary goods' category of the cluster, something not surprising, since this consists mainly of products that furnish a house after its completion. The picture changes when observing the 'specialty inputs' category of the Greek Housing/Household cluster. In all the years studied, Greece had significant positions in most of the industries in this category.

Specifically, apart from cement, Greece had a very strong competitive position in 'worked building stone' and 'stone, sand and gravel', a significant industry since its output is used for concrete production. In the same 'specialty inputs' category,

Greece had a substantial presence in the 'lime and unfired mineral products' industry. In fact, Greece is competitive in a number of industries that extract and process crude minerals with world market shares that often exceed 1%. Cement companies have acquired a number of quarrying firms that specialise in the kinds of materials that they require. Therefore, close co-operation between suppliers and cement firms is extensive including monitoring of the quality and composition of materials.

Looking at the related Materials/Metals cluster, Greece is very competitive in most steel and aluminium building materials industries. This clearly indicates that cement is not an isolated case but part of a competitive range of building materials industries. One must also stress here the importance of the Greek shipping industry that has been internationally competitive for many decades. Cement production and sales are related to sea transportation since it is common for cement to be transported by sea, sometimes even within a country. Greek companies have used shipping services since the early 20th century, benefiting from the competitive shipping industry, and establishing their own shipping companies.

The machinery industry for cement production is a global oligopoly. The market is controlled by a handful of German, Danish, French and Japanese firms. The Greek industry imports all of its machinery, alternating among the suppliers. Although Greek firms have used this equipment very productively and have been very adept at creating a smooth production flow, they have no direct or indirect involvement in machinery development and production.

Other equipment needed for production like storage tanks and bricks is mainly being supplied by Greek companies. Since the State took control of some of the cement companies, a conscious effort has been under way to use Greek suppliers, especially for more basic products.

In summary, the Greek cement industry has benefited to a significant extent from the presence in Greece of a number of competitive raw materials industries that have also contributed to the evolution of the whole building materials sector. The group of competitive industries related to cement is not however complete, as Greece lacks both a cement machinery industry and many competitive Housing/Household industries. Overall, however, given the machinery oligopoly and the questionable

relation of cement to household primary goods, the Greek related and supporting industries have contributed to the industry's competitive advantage.

Firm Strategy, Structure and Rivalry

Up to the early 1980's, all the Greek cement firms had a similar ownership structure, a mix of family and public ownership. All four firms were listed on the Athens Stock Exchange very soon after their creation, a fact not common among Greek firms. However, a significant and usually controlling number of shares remained in the hands of a few families that were also heavily represented in the Board of Directors, a fact common in most Greek enterprises (Chapman and Antoniou, 1998).

Titan is still essentially controlled by the Kanellopoulos and Papaleksopoulos families and Herakles was under the guidance of the Tsatsos family until 1983. The situation changed in the 1980's when control of three of the four firms passed to the State. Nevertheless, their shares were still being traded in the exchange as the State essentially took over the interests of the controlling families. In the 1990's, the State's share in Halips has passed to Ciment Francais, Herakles has been sold to the National Bank of Greece-Concretum consortium, and Halkis to Concretum, the co-owners of Herakles, in a rare example of a string of successful privatisations in a Greek industry. Titan's ownership has not changed, although successive share capital increases have reduced the two families' share to just above 50%. It seems that the ownership structure in the Greek cement industry favoured tight control by a small group of individuals or the Greek State or, more recently, big foreign firms. This has probably eased the pressure for short-term results, enabling the industry to make big investments, not always, however, at the right time. Other results of the ownership structure are also not clear. The mix of family and public ownership was an asset until the early 1980's, while the period of State control for Halkis, Halips and Herakles gave mixed results. Since their privatisation, Halips, Halkis and Herakles have improved substantially their financial results and Herakles has kept its market share both in Greece and abroad. Titan, the fourth company, has had a consistent positive record.

The fact that the industry has been successful for a long time has attracted top talent to it, especially engineers with solid knowledge in their field and a wider understanding of non-engineering issues. Also, the policies of few layoffs, aided by the fact that during a period in the 1980's and 1990's, three of the companies were state owned, created a situation of near-lifetime employment. In fact, in the non-state owned Titan the average employee has been with the firm for more than eighteen years and this figure is almost constantly increasing (Titan, 1996b: 9). This has helped top management to push responsibility and authority downwards to middle managers and factory supervisors. Stock options and performance-related bonuses have provided an added incentive. The people rising to the higher managerial positions have a good understanding of the company's strong and weak points and a firm grasp of the peculiarities of the production process, something important for the cement industry. In fact, for Titan, as one of my interviewees claimed, most loan agreements have a covenant stating that the company's top management must not change substantially throughout the loan period.

The global cement industry is characterised by a vertically integrated structure (Pheng & Bee, 1993). Vertical integration has also been a conscious policy for all Greek cement companies, as they are all well integrated both upstream and downstream. Upstream, all cement firms own mining companies and the ones owned by Herakles and Titan are some of the biggest in the country. Downstream, a lot of ready mixed concrete companies are owned by the cement manufacturers, providing a steady source of demand for each company's cement. In addition, sea transportation of the finished product is mainly carried out through fleets owned by the relevant subsidiaries of the cement companies. Road transportation is usually handled by independent operators. Nevertheless, cement companies are frequently organising seminars for these drivers.

Greek cement companies have so far competed on lower costs and timely delivery of their product. This has forced them to invest in modern production technologies that would lower costs, and improve loading and unloading facilities in many locations. The effort has been continuous, as investment in acquiring modern equipment, in using cheaper fuels with increased efficiency and in automating production has been going on for over forty years. The factories created in the 1970's and 1980's are considered among the world's most modern, at least according to the

companies' annual reports. Titan has also built unloading terminals, sometimes in co-operation with local businessmen, first in the Middle East and Africa and then in Spain, Italy, France, the UK and the USA.

The export strategy of Greek companies has also been very successful. Although all companies claim that they give priority to the domestic market, they have shown considerable skill in penetrating foreign ones. All producers were quick to make the adjustments necessary in order to produce cement that would meet the quality and composition standards of many foreign markets. Then, they started shipping huge quantities to the rapidly developing oil producers of the Middle East and Africa as soon as petroleum prices increased. When oil revenues in these countries decreased, Greek companies were not satisfied with retaining their positions in these markets. While continuing to export to their traditional clients, they aggressively entered first the American and then the Western European markets, taking market shares from long established local companies. Titan has even taken the step of investing in the USA, through the wholly owned Carolina Cement Company, gaining a steady presence in the American market, where it also continues to export.

The strategy of being a low-cost producer, with a consistent-quality product, ready to be delivered anywhere in the world has proven well suited for the industry. The Greek industry's success is also documented by the efforts of many cement giants to enter the relatively small and mature Greek market, primarily intending to reduce Greek companies' domestic revenues. Given these efforts, and cement's transportation difficulties, the strategy of catering first to the domestic market also seems well founded.

The Greek market is characterised by an oligopolistic structure. The two major Greek producers, Titan and Herakles General Cement, have seen their market shares remain relatively stable for the last twenty years, ranging between 38% and 44% of the domestic market (Karra, 1985: 10; Karsamba, 1997). In the 1970s when one company's share increased, the other's decreased. However, for several years in the mid-1980s, as the other two smaller producers were experiencing difficulties, both companies achieved market shares close to the high end of the range. In the 1990s, the shares of the two large companies have slightly decreased and the smaller producers have rebounded with Halips capturing 6%-7% of the domestic market and Halkis 13%-14% (Karsamba, 1997: 97).

The oligopolistic structure is not uncommon in most world cement markets. The huge investments required for a new cement plant, in addition to the reluctance of authorities to permit such investments, for environmental reasons, has left the number of producers, especially in developed countries, steadily decreasing. In the European Union, some smaller countries have only one domestic cement producer, while it is common even for larger countries that the (usually three or four) dominant producers capture a combined market share of over 60%. In Italy four companies control 65% of the market, in Germany the four largest producers have a 62% share and in Spain a 69% share. Ireland, Sweden, The Netherlands and Norway have one dominant producer, while Portugal has two, and Belgium three (Karsamba, 1997: 88). Also, acquisitions among these producers are common and the result is a market controlled by very few companies.

The acquisition trend is under way in Greece too, as Halkis' control has passed to Herakles. Although Halips' share of the market is increasing and Halkis is following a relatively independent strategy, it is Herakles and Titan that now dominate the domestic market. This situation is not however new, as historically Halkis and Halips were not major players and usually their strategy followed that of Herakles and Titan.

What can be said about rivalry in Greece is that it has always been intense. Titan and Herakles have never entered into market or price 'agreements,' as many of their European counterparts have. Also, the recent changes in ownership preclude any such agreements in the future. In addition, since the Greek industry started exporting to the European markets there have been attempts by foreign rivals to enter the market and already the French Lafarge and the Mexican-Spanish Cemex-Valenciana have invested in Greek cement trading companies (Stoupas, 1997).

Overall, the small number of rivals in Greece is something to be expected given the nature of the industry. However, the presence of two major companies in a relatively small market has encouraged domestic rivalry. This rivalry has been intensified up to the 1980's by the fact that both companies were family-owned, and after that by the difference in the owners' nationality. The dumping policies followed by the debt-burdened Halkis until recently and the threat of new entrants, although just in the form of trading companies, have also not allowed Herakles and Titan to become complacent.

Porter considers geographic concentration a recurring fact in a number of competitive industries throughout the world. The Greek cement industry is no exception. All four companies have their headquarters and approximately 10%-20% of their employees in the capital, Athens. Productive facilities are also located in close proximity to each other. Although a lot of factors influence the location of a cement factory, the eight Greek factories are located on six of the country's 52 prefectures. Even more than that, seven of the eight factories are close to each other and not very far from Athens. The eighth is in Thessaloniki, the second major population centre in Greece still at a reasonable distance from Athens. All factories are also located near ports because of a long tradition in Greece to carry most of the cement produced by sea, to its destination. Specifically, the existing factories and their productive capacity in 1993 can be seen in the table below:

TABLE 3.2: Greek Cement Factories and their Productive Capacity

Greek Factories	**Productive Capacity (mil. tons)**
1. Herakles - General Cement Co.	
- Olympos Factory - Volos	4.8
- Herakles II - Milaki, Evoia	1.7
2. Titan Cement Co.	
- Patras Factory	1.65
- Boiotia Factory	2.65
- Eleusina Factory	0.15
- Thessaloniki Factory	1.45
3. Halkis Cement Co.	
- Halkis Factory	2.7
4. Halips	
- Aspropyrgos Factory	0.65
TOTAL	**15.75**

Source: Association of Greek Cement Manufacturers, 1994; Karsamba, 1997: 33

Although geographic proximity exists, it is mainly related to the Athenian market. The only firm that has explicitly followed a concentration strategy is Titan, mainly for reasons related to port facilities. There is no mention of co-operation between firms due to proximity either in published studies, or in the interviews I conducted. However, the mere proximity to Athens where the stock exchange, government agencies and sources of information for both the domestic and international markets are located, gives some credit to the geographic concentration argument, especially given the headquarters' location.

In summary, managerial skill, promotion and layoff policies and a strategy that valued foreign expansion without neglecting the domestic market have been sources of competitive advantage for the Greek industry. The oligopolistic market and the trend towards vertical integration are common in the industry. Nevertheless, Greek rivalry has been relatively intense and although Greek companies are extremely vertically integrated, they have not greatly diversified into unrelated activities. The peculiarities of the ownership structure have had a mixed impact on the Greek industry.

The Role of Government

The industry has not been a major target of trade policy throughout this century. High import tariffs were abolished even before the war and although some tariffs were existent, as with most products, until the mid-1980s, the cement industry has not benefited substantially from some form of protection. Export subsidies, common in many industries, were instituted very late, in the mid-1970s, and then abolished after Greece's full integration in the EU. Despite the industry's apparent competitiveness, its environmental impact and its relatively low number of employees have halted the creation of strong pressure groups for the industry.

The industry has of course benefited from certain measures like investment incentives and export subsidies. However, for the reasons mentioned above, these benefits were fewer than in most other Greek industries and the bureaucratic delays associated with them, made their impact even less pronounced. Some bureaucratic

measures have also hindered the industry and my interviewees mentioned as examples the huge number of permits needed even for a minor investment in Greece or abroad and the usual bureaucratic delays. These delays are partly blamed for the late construction of Herakles' second factory that was decided on a period of high demand and completed in the beginning of a low-growth period. Another bureaucratic necessity mentioned in my interviews is the need to have all employees in quarrying operations registered with the police, because of the use of explosives in the mines.

The State's involvement in the mid-1980s, when it intervened to rescue the producers in trouble, was more active. However, most of the involvement, especially in Herakles, consisted of capitalisation and restructuring of debts and there were no large scale subsidies. In fact, the prices paid by the new owners for the state-controlled companies were above world market average and the government and the state banks were able to recoup part of their investment.

In summary, the government has had only a minor role in creating or upgrading the competitive advantage of the Greek cement industry. Help was given to the industry to sustain its advantage in the 1980's, but this cannot wholly compensate for the bureaucratic obstacles and the lack of specific measures leading, for example, to specialised factor creation.

The Role of Chance

The major chance event that contributed to the industry's international prominence was the first oil crisis in the early 1970s. The accrued revenues of the oil producing countries raised in a very short time the demand for cement. Greece was in an ideal geographic location, better suited than any other European country to satisfy the needs of Middle Eastern customers and also at a reasonable distance from the oil producers of West Africa. The Greek industry took advantage of that huge opportunity and expanded capacity to satisfy these needs. The industry was also able to quickly meet the quality standards of these countries and to ensure timely delivery by using Greek ships, usually company-owned, and specially made terminals.

As demand in these countries declined, a second chance event created serious problems for the Greek industry. The dollar's rise beyond any expectation in the 1981-1985 period increased tremendously the costs in an already cost-sensitive industry. Machinery needed for production modernisation, oil, that constituted almost a quarter of production costs, and other expenses were all paid in dollars. Revenues in dollars, however, were declining as cement prices fell and exporting opportunities became harder to find. The industry took steps to remedy the situation by seeking new export markets, and establishing a presence in some very competitive markets, substituting oil for coal and increasing the number of Greek suppliers of auxiliary equipment. Although the turnaround was successful, state assistance was necessary to guarantee the continued presence of three of the four cement firms.

Chance, therefore, in the form of global-scale events, played a role in shaping the Greek cement industry. However, this role has been mixed, with both favourable and unfavourable circumstances affecting Greek producers.

3.7 Summary

The Greek cement industry is part of the global cement industry which exhibits two main trends. It is an industry where most countries, especially those that have surpassed a certain development 'threshold', have their local firms and import usually in order to cover excess demand. It is also an industry dominated by large companies that control, directly or through subsidiaries, the main regional markets. In this environment, the four Greek firms that constitute the Greek industry were established, in the first decades of the century, as local players seeking to satisfy an increasing home demand.

Soon after the Second World War, the Greek market was firmly in their hands and the first attempts at expansion abroad were evident. Through a combination of factors this expansion was accelerated in the 1970's and the result was an internationally competitive industry able to hold its own, against companies with much higher production volumes. Despite the many changes since then, Greek firms

remain among the world's major exporters and, while still controlling the Greek market, they aggressively seek market share in many foreign countries.

An analysis of this performance, using Porter's diamond framework, revealed a competitive advantage based on several sources. Factor conditions, the first of Porter's groups of determinants, have been mostly favourable for the Greek industry. Basic factors, like good quality, cheap and abundant raw materials, as well as a good geographical position, were present in the case of Greece. These, however, were not enough and, as the industry evolved, it was able to use effectively more specialised factors, such as human capital and sea transportation networks. Other advanced factors, like R&D, are constantly being upgraded by the Greek industry and have reached a satisfactory level. Disadvantages in the availability of energy sources, the conditions of the road network and to a lesser extent in the availability of capital and specialised institutions, still exist. However, their effect is not substantial, mainly because of the industry's efforts. Factor conditions can partly explain the Greek industry's success.

Demand conditions offer a similar picture. The Greek market is not one of the largest in the world, and Greek demand patterns have not been 'internationalised'. Buyers are many and their sophistication is adequate. However, they do not represent a major source of advantage. Nevertheless, one of the most important attributes of Greek demand is the very high per capita consumption, among the highest in the world, related not only to the country's development level, but also to the preference for cement. In addition, the Greek market fits perfectly Porter's description of a high growth market that saturates early forcing the industry first to invest and then to expand to other markets. Overall, demand conditions, although not entirely favourable, have contributed substantially to the industry's competitive position.

Related and supporting industries represent a major source of advantage and an indication of sustainable competitiveness, according to Porter (1990). In the Greek cement industry, competitive material suppliers exist and are closely tied to the cement industry. A number of other building materials industries are also competitive in Greece, making cement a non-isolated case. However, the success of these industries has not spurred the creation of specialised technology-based industries, for example, a cement machinery industry. Therefore, related and supporting industries

have been a source of advantage, without, however, ensuring that this advantage is sustainable.

Firm strategy, structure and rivalry is the last of Porter's determinants and includes many attributes of an industry. Managerial skills, personnel policies and the companies' goals and strategies employed were important to the Greek cement industry. These attributes of the industry's success, as well as the geographic concentration of Greek productive units, are consistent with Porter's views. The industry has also benefited from somehow strong domestic rivalry, in a, nevertheless, oligopolistic environment, and a successful policy of vertical integration.

Government involvement is a characteristic of most Greek industries. The cement industry is no exception, although, only in the 1980's was the State's direct or indirect role a major one, with the intervention to rescue the financially troubled producers. In most other circumstances, the cement industry was not considered a 'targeted' one and, in fact, certain bureaucratic obstacles have disadvantaged the industry. Chance events have affected the Greek cement industry in a positive way in the early 1970's and a negative one in the 1980's and it is not clear what the overall effect has been.

There is sufficient evidence to support the role of all four groups of determinants of competitive advantage in the Greek cement industry case. These four groups, along with the effects of government and chance, form a coherent picture of the industry's competitiveness. What is even more important, is that none of these groups is unrelated to the others. A self-reinforcing system seems to be at work, where an advantage in one factor, affects the status of several other factors and this, in turn, upgrades the status of the original factor, in a circular way. However, gaps do exist and some of the attributes that Porter considers essential are absent or underdeveloped in the Greek cement industry.

CHAPTER 4

THE GREEK ROLLED ALUMINIUM PRODUCTS INDUSTRY

The second case study examines an industry from the Materials/Metals cluster. This cluster contains a number of very competitive Greek industries, including many aluminium-related industries. The rolled aluminium products industry is the one selected for a detailed analysis.

Aluminium production does not have a long history in Greece. However, in the last thirty years it has grown substantially, becoming one of the most dynamic sectors in Greek manufacturing. Increasing exports and improving profits have made aluminium firms stand out.

Although Greece is very competitive in every stage of aluminium production, the rolled aluminium products industry is a rather special case. Its competitive advantage is not directly related to the presence of bauxite in Greece as is the case with, for example, the alumina refining industry, so it cannot be classified as resource-dependent. Also, rolled products account for a large part of trade in aluminium products and the market is controlled by big, integrated producers. In this environment, the apparent competitive advantage of the Greek rolled products industry merits some interest.

4.1 Products and Processes

Aluminium: An Overview

Aluminium as an element is widely available in the earth's crust. However, metallic aluminium does not occur in nature, and there is great difficulty in obtaining

it from reducing its ores. The first successful attempt at isolating metallic aluminium is attributed to Danish chemist Hans Christian Oersted, in 1825. In 1827 a German, Friedrich Wohler, using metallic potassium, also produced aluminium in small quantities. It was in France, though, in 1854, that Henri Sainte-Claire Deville substituted sodium for potassium, and pioneered a process for obtaining large quantities of aluminium. The public was first introduced to aluminium at the World Exhibition in Paris in 1855. The process, however, for obtaining aluminium was still on a laboratory scale, too expensive for commercial use (GATT, 1987: 5-17).

The origins of the modern aluminium industry can be traced to 1886 when Charles Martin Hall in the USA and Paul L. T. Heroult in France, independently, used electrolysis to produce aluminium metal from aluminium oxide (or alumina), in what is now called the Hall-Heroult process. The patenting, in 1888, of Karl Joseph Bayer's process for obtaining alumina from bauxite marks the start of all the aluminium-related industries (Brown and McKern, 1987: 22-23).

The production of metallic aluminium comprises several stages, each one being an industry on its own with specific characteristics. The first stage is the *extraction of bauxite*. Bauxite is a generic term for the commercial aluminium-bearing ores, mainly the ores rich in hydrated oxides of aluminium. These ores are near the surface or in relatively small depths and undergo very little treatment, mainly consisting of washing and drying. The next stage is *alumina refining*. In this stage, the impurities are removed from bauxite, using the Bayer chemical process. The 99% pure product is called alumina and is the primary input in the next stage, *aluminium smelting*. There, through electrolytic reduction using the Hall-Heroult method, aluminium is produced usually in the forms of ingots. This is called primary aluminium and requires huge amounts of energy for its production. Another method for obtaining aluminium is through recycling scrap metal (both from fabrication waste and used products). The aluminium obtained this way is called secondary aluminium and its production requires much less energy.

Primary and secondary aluminium are then transformed into milled products and castings. The term aluminium fabrication is commonly used for the first stage in the production of aluminium products. This first stage is where aluminium is: a) extruded, to produce bars and rods, b) rolled, to produce sheets and plates, c) cast, to produce castings. Aluminium can also be forged, drawn, compacted and sintered or

machined and joined, using a variety of methods (Bunker and Ciccantell, 1994: 50). The products of aluminium fabrication are then used in manufacturing plants, where they either undergo some minor modifications and are sold to the consumer (for example, as aluminium foil, or aluminium pipes), or are used as inputs in other industries, such as the automotive, construction and packaging industries. The properties of aluminium products have made aluminium into the second most widely used metal in the world, after iron and steel (GATT, 1987: 2, 5)

Rolled Aluminium Products

The focus of this chapter is the rolled aluminium products industry. As a fabrication industry, it transforms aluminium into sheets and plates of various sizes. Most end uses have their own specifications in terms of the sheets' or plates' size and the aluminium alloys used for their fabrication. In some cases, there are additional requirements related to other properties of the products, the simplest example being their colour. Therefore, apart from the plain sheets and plates, there are painted sheets, can stock (specifically for the body, the end and the tab of cans), roofing sheets, tread plates, and general purpose, converter or food-containers' foil among many others.

The main use of rolled products is in the packaging industry, for the production of foil, cans, and food and cigarette packaging. Rolled plates are also used in the construction industry for roofs, floors, walls, etc. Moreover, a number of household items, such as cooking equipment, food containers and venetian blinds, are manufactured with the use of rolled sheets. Other customers for rolled products include transportation-related industries and electrical and mechanical equipment industries.

Production Technology

The fabrication of all aluminium products starts with the process of re-melting and alloying the metal. Aluminium, primary or secondary, is delivered from the

smelting plants and inserted in the furnaces of the fabrication plants. There the metal is re-melted at temperatures around 1100 ^{0}C, and other elements are usually also added. The resulting alloy is constantly tested to ensure its homogeneity. The molten metal is then poured to form ingots of particular composition. In some integrated firms, this molten metal is delivered from the aluminium smelting plant and is poured directly into ingots.

In the case of rolled products, these ingots are normally hot-rolled at the reversing hot mills. There the ingots are greatly reduced in thickness and increased in length, to form a rather thin 'slab'. The slabs are then cold rolled to the exact thickness required by the customer, with successive passes. The metal also undergoes other minor processes until it acquires the required properties. The sheets or plates produced are delivered to the customers (or to a plant of the same company) usually in flat or coiled form. These industrial customers then paint, cut and shape these sheets to produce houseware, building materials, packaging products, etc.

Aluminium is a metal that is easy to work with. Nevertheless, the varying requirements of different rolled products customers, make it necessary for fabrication plants to be flexible and able to respond quickly. Speed, of course, is not the overriding concern when a customer selects a supplier. What is more important is that a company is able to provide a product of consistent quality, where all orders have the correct composition and thickness, as required by the highly accurate machinery in the following stages of aluminium products manufacturing.

4.2 Recent Trends in the World Market

Aluminium is economically recoverable only in limited forms and limited locations. The first known bauxite reserves were found in the USA, France and Northern Ireland. Intense exploitation has decreased these reserves, but bauxite has been discovered in many other countries. Two-thirds of known reserves are concentrated in four countries: Guinea, Australia, Brazil, and Jamaica (Bunker and Ciccantell, 1994: 40-41). This concentration, along with the economies of scale

associated with alumina and aluminium production, has given rise to an oligopolistic structure in the whole aluminium sector.

Six international vertically integrated corporations are still controlling all stages of world aluminium production. These companies are: Canada's Alcan Aluminium, the USA's Aluminium Company of America (Alcoa), Reynolds Metal Company and Kaiser Aluminium, Pechiney of France, and Swiss Aluminium. They control 34% of the world's bauxite mining capacity, 55% of the alumina and 40% of aluminium production capacities. Most of the aluminium output of the 'Big-Six' is used in their own fabrication facilities, to manufacture aluminium products and the same is true for most of the other integrated aluminium producers in developed countries. In recent years, independent fabricators in developed countries have increased their output, and many fabricating firms have been created in developing countries. Rolled products fabrication, however, is still dominated by big firms in developed countries (GATT, 1987).

In 1992, out of the almost 8 million tons of rolled products manufactured, 4.1 million were produced in the USA, 2.1 million in Europe and 1.2 million in Japan. Other major producers are Australia (217,000tons), Korea (134,000 tons) and India (93,000 tons) (UN, Industrial Commodity Statistics Yearbook). In the same year, 64.4 % of exports of aluminium plates and sheet originated from Europe, 17.1% from the USA, 5.5% from Canada and 4.1% from Japan. These numbers are typical of the trend for the last twenty years, although Europe's share for 1992 was the lowest in this time period (UN, International Trade Statistics Yearbook).

4.3 The European Union: Customers and Competitors

The countries of the European Union have played a major role in the development of aluminium processing, from its very early stages until today. There is, of course, a shift over the years in the particular segments where EU production is greater.

As bauxite deposits in Northern Ireland were depleted and the French ones are now very limited, the only bauxite producers in the EU, are currently Italy, Spain and Greece, which possesses the largest deposits (Bunker and Ciccantell, 1994: 40).

However, in the alumina refining stage, there are seven major EU producers (France, Germany, Greece, Ireland, Italy, Spain and the UK) together accounting for 10% of the world's production. The figures are bigger for the next stage, aluminium smelting, that takes place in many EU countries.

The EU, with an annual production now reaching 2 million tons is the third largest producer of primary aluminium, after the USA and Canada. Secondary aluminium is also produced in most EU countries and the total EU production of around 1.5 million tons accounts for 22% of the world's total (EAA, 1997; UN, Industrial Commodity Statistics Yearbook).

In the fabrication stage, the EU accounted in 1994 for approximately 30% of the world's production. The 22 primary aluminium smelters in the EU are also active in the fabrication stage and the EU industry is very concentrated with a few integrated firms controlling most of the market. Concentration is much higher in the rolled products, where there are fewer independent firms than in the other fabrication industries (extrusion, casting).With consumption in the last ten years rapidly rising, production has also followed suit and in 1994 about 5.8 million tons of fabricated aluminium products were produced. This output was mainly directed to the transport sector (31%), the construction sector (22%) and the packaging sector (12%), with aluminium products also used by the electricity sector, household appliances and the mechanical and agricultural sectors (EAA, 1997).

The fabrication of rolled products, as was mentioned above, is very concentrated. Germany accounts for half of the EU's production (which reached 2.1 million tons in 1994), while Italy and the UK have a further 30%. Other major producers are Austria, Spain, Greece, France and Belgium, in that order (UN, Industrial Commodity Statistics Yearbook). The same countries are also the major EU exporters, with Germany having 20% of the world market in 1985 and 18% in 1992, being the world's leading exporter of rolled products, followed by the United States and France (UN, International Trade Statistics Yearbook). Germany was also the world's largest importer of rolled products in 1992, as these products are used as inputs in a number of industries where Germany has a strong position.

4.4 Concentration and Integration in Aluminium Production

The oligopolistic structure of aluminium production was initially a result of the limited bauxite reserves and the control of the Hall-Heroult aluminium smelting patents by Alcoa in North America and Alusuisse and Pechiney in Europe. Until the 1950's only a few more major firms had been established, mostly in Europe and Japan, with the major new North American entrants appearing in the 1940's, following the USA's government's antimonopoly actions. After the 1950's, however, the major producers adopted a new strategy, joint ventures, for gaining access to resources and markets. While this strategy lowered the big firm's capital costs and political risk, it created a number of private and state-owned competitors in both developed and developing countries (Bunker and Ciccantell, 1994: 58-59).

The firms of the traditional oligopoly still dominate all stages of aluminium production, aided by the concentration of bauxite reserves in a few countries, the use of bauxite of specific composition in most alumina plants, the need for access to huge amounts of cheap energy for aluminium smelting and the technological sophistication required for the production of most aluminium products. Capital requirements for establishing a new mining or production unit are also another entry-deterrent for aspiring firms.

Because of the lower capital costs at the fabrication stage, a lot of smaller firms have entered this stage. Nevertheless, large vertically integrated firms are still the major fabricators, especially in the rolled products industry, as a result of their ability to conduct extensive R&D and exploit the communication benefits of integration (Bunker and Ciccantell, 1994: 51). Recently, some of the big players, especially Alcan and Alcoa, have been acquiring smaller fabricators of rolled products (Alcan in Germany, Alcoa in Hungary, Spain, Italy).

4.5 The Greek Aluminium Industries

Historical Development

The first aluminium-related industry in Greece was that of bauxite mining. In the mid-1920's I. and G. Barlos formed the first bauxite mining company in Distomon, followed by H. Eliopoulos in the nearby mountains of Parnassos and Giona, in Central Greece. Production reached 4,000 tons in 1927 and 6,000 in 1929 and by 1939, as the major companies grew substantially, 200,000 tons of bauxite were extracted from locations in Central Greece and the nearby islands. In the early 1950's, after the Civil War, production reached high levels again, while discussions started for the creation of a processing operation in Greece. With this prospect bauxite production rose to 1 million tons in 1961 (Athanasakopoulos, 1997: 1).

An agreement between the Greek state and Pechiney, the French giant, granting the company certain privileges mainly related to electricity prices, led to the creation, in 1961, of Aluminium of Greece. Production of alumina and primary aluminium started in 1966, growing at a rapid rate. At the same time, a number of aluminium fabricators were established, completing Greece's presence in all aluminium-related industries. A few of these firms were operating before 1966, either using other metals or having a small production. However, as Aluminium of Greece's production rose and the company was ready to offer technical assistance to upstart fabricators in Greece, the number of aluminium fabricators increased.

Extruded products, mainly for construction purposes, were the main focus of production during the 1970's. Most of the major Greek firms were established between 1972 and 1979. Even now, as construction needs are still high, the extrusion industry is where most of the Greek aluminium-related firms are found. The Greek rolled products industry appeared in 1973, with the incorporation of the only fabricator of rolled products, Elval. Its production rose rapidly, reaching and surpassing the production of all the other fabricators.

Greece also has a few firms in the aluminium cables industry and the die-casting industry. Their production is small, compared to the other industries, and the limited home demand for their products makes it unlikely that these industries will

develop further. There is also one producer of secondary aluminium, Epalme, established in 1973, with 51% of its shares now belonging to Aluminium of Greece. In the 1980's an effort was made by the Greek Industrial Development Bank (ETVA), to create a new manufacturing facility in order to produce alumina, using the rich Greek bauxite deposits. However, the whole project was based on an inter-governmental agreement with the Soviet Union, who would have bought a large part of the alumina produced and transformed it into primary aluminium. As the Soviet Union collapsed, this agreement went into question, especially the parts related to the financial contribution of Russia, the Soviet Union's successor. Financial and other considerations brought the project to a halt in the 1990's, and the chances of the plant being built after all are now minimal.

Major Competitors - Ownership Structure

In the bauxite mining industry the main competitors are two. The first one is Silver and Baryte Ores Mining Co. SA, having absorbed the Bauxites Parnasse company, which has extracted bauxite from the Parnassos mountain since the 1930's. Its shares are quoted in the Athens Stock Exchange, however 75% still remains in the possession of the Kyriakopoulos and Eliopoulos families. The other competitor is Delphi-Distomon SA, established in 1975 as a subsidiary of Aluminium of Greece. In 1987, it absorbed Bauxites of Delphi, one of the original Greek bauxite producers and in December 1989, it acquired Hellenic Bauxites of Distomon, a mining firm operating since 1967.

For the alumina and primary aluminium industries in Greece, a monopoly situation has developed. The only company active in both industries is Aluminium of Greece SA, one of the largest Greek manufacturing companies. The stock is quoted in the Athens Stock Exchange and 40% of it, is controlled by individuals and institutional investors. The remaining 60% is owned by the Groupe Pechiney Usine Kuhlmann, one of the major aluminium producers in the world.

The fabrication industries that are most prominent in Greece are the extruded and the rolled products industries. In the extruded products industry, five companies account for almost 60% of Greek production in 1995 and 65% of domestic sales

(ICAP 1996: 45, 57). Three of these companies are family owned: Almaco Macedonian Aluminium SA, established in 1977 and owned by P. Zachariades, Profil Aluminium, established in 1974 and owned by L. Tzirakian, and a relatively new company, established in 1988, Alumil Mylonas SA, which has managed to capture 15% of the Greek market and has recently been quoted in the Athens Stock Exchange. The other two extrusion companies are: Exalco SA, member of the Viokarpet group of companies, incorporated in 1973, and Etem SA (founded in 1971), a member of the Viochalko group of companies.

In the rolled products industry there is only one fabricator, Elval, again a member of the Viochalko group. Elval Hellenic Aluminium Industry SA was incorporated in 1973 and is now quoted in the Athens Stock Exchange as a result of a merger with a company of the same group, Vepal SA. Still, almost 75% of the outstanding shares are effectively controlled by Viochalco, the holding company, Aluminium of Athens (a financial services company of the same group), and the Stasinopoulos family, the founders of the Viochalco group.

A picture of the aluminium-related firms' performance and of the differences among the various Greek industries can be obtained from an overview of the main competitors' financial statements for 1995 in Table 4.1 and the calculation of certain financial ratios. All industries made significant profits in 1995, with the highest being recorded by Aluminium of Greece, followed by Elval. These two companies have consistently been among the top 20 Greek manufacturing firms in terms of profits. In terms of profit margins, Silver and Baryte Ores Co. stands out, showing that their restructuring process, related to the situation in the world bauxite market, has improved the company's performance. As was mentioned already, fabrication companies can achieve substantial sales with lower capital requirements and that is demonstrated by their high Rates of Return on invested capital.

Elval has reached a very high level of sales, higher than that of the major extruded products fabricators combined. The high increase in sales over the last decade has not significantly affected the company's profit margins and also, return on equity is very high. In 1996, Elval further increased profits by 12.9%, for almost the same level of sales.

TABLE 4.1: Financial Results of Aluminium-Related Companies for 1995

Companies	Sales (mil. Dr)	N. Income (mil. Dr)	Return on Equity	Profit Margin	Gross Pr. Margin
Bauxite Mining					
Silver and Baryte Ores Mining Co.	13,251	3,059	35.32%	22.32%	38.85%
Delphi-Distomon	5,587	485	10.08%	8.63%	21.28%
Alumina-Aluminium					
Aluminium of Greece	90,034	9,770	14.48%	10.81%	14.29%
Extruded Products					
Exalco	11,805	748	41.92%	6.3%	20.4%
Etem	9,589	1,925	51.45%	20%	26.7%
Almaco	8,000	327	20.7%	4.1%	19.5%
Alumil Mylonas	7,745	1,131	32.33%	14.6%	26.1%
Profil Aluminium	6,198	410	27.1%	12.6%	19.7%
Rolled Products					
Elval	68,596	4,695	42.73%	9.88%	13.4%

Source: Companies' Annual Reports; ICAP, 1996.

Production - Exports - Imports

Production of bauxite reached its height in 1980, when the Greek aluminium industries were fully developed. The 3.2 million tons extracted ranked Greece eighth among world bauxite producers. Since then, Greek production has followed international trends, decreasing slowly and in 1996 it stood at approximately 2.3 million tons. Aluminium of Greece uses 60% of the Greek bauxite, while the rest is exported, making Greece an important bauxite exporter (Christodoulou, 1995: 2; Tsekrekos, 1998: 93).

Aluminium of Greece is the only alumina and primary aluminium producer in Greece. Using Greek bauxite, it started production in 1966 and by 1968 was

producing 223,000 tons of alumina. Production rose until 1980, when it reached 494,300 tons, and then fluctuated until 1990. Since then a further increase has pushed alumina production to about 650,000 tons annually. Half of that amount is exported, constituting 3% of world exports, while the other half is used by the company for the production of aluminium (Athanasakopoulos, 1997: 3).

Primary aluminium's production has followed the same trends as alumina, starting at 78,450 tons in 1968, reaching a high of 146,500 tons in 1980 and peaking again at around 150,000 tons in the 1990's. Approximately 50,000 tons are exported every year, mainly to other EU countries and especially Italy (Aluminium of Greece, 1996: 6). The rapid rise in the fabricators' production and their need for supplier diversification have necessitated significant aluminium imports, although the aluminium trade balance is still positive.

The fabrication industries had a production of 20,000 tons in 1969, one year after Aluminium of Greece started producing at normal levels. Since then, production has been rising, especially in the extruded and rolled products industries. Exports took off in the 1970's and have been growing since, with minor setbacks in the 1985-1986 and 1988-1989 periods. Until 1983, the main export markets for Greek aluminium products were the countries of the Middle East. Since then, the European Union has become the primary market for these products (Christodoulou, 1995: 6).

Until about 1979, both rolled and extruded products had almost the same shares of Greek production. In the years that followed, extruded products took a larger share and, in 1985, rolled products only accounted for about 40% of Greek production (with 36,000 tons), while the output of the extrusion industry was at 52,000 tons. The situation was again reversed in the 1990's and the data for 1995 shows Greek firms producing 180,000 tons of aluminium products.

Extruded products accounted for 37% of that number (or 65,700 tons), cables for 3% and die-cast products for 2%. The remaining 58%, or 102,550 tons, is the output of the rolled products industry. The reversal in production shares can be attributed to the differences in export growth between the two industries.

While, the extruded products industry has registered an average 2% rise in exports in the period 1985-1995, the rolled products industry has seen its exports increase much more rapidly, reaching 77,900 tons in 1995. There is also a difference in export destinations. While most of the extruded products exports go to the EU

(25,000 out of 31,250 tons in 1995), the rolled products exports show a more balanced picture. Specifically, 39,800 tons of Greek rolled aluminium products go to the EU, 6,400 to the Balkans and the Black Sea countries, 3,900 to the Middle East and 27,800 to other countries.

4.6 Sources of Competitive Advantage

Factor Conditions

Greece has very high bauxite deposits, 120 million tons of known reserves and another 500 million tons of possible reserves, which are the eighth largest for any country in the world and is also the major bauxite producer in the European Union and one of the few European producers (Christodoulou, 1995: 1-2). Both these factors provided the initial impetus for the creation of all aluminium-related industries in Greece. Another advantage of Greek bauxite is its high content in alumina (aluminium oxide) that is commonly around 57%, while it ranges between 30% and 62% in various deposits all over the world. There are, however, some peculiarities with Greek bauxite.

The first one is that it is very hard and therefore requires more energy for its treatment. The second one is that a lot of the Greek reserves are underground and can only be recovered by digging tunnels, while in other countries, like Australia or Jamaica, bauxite is mainly recovered by open pit methods. Some open pit mines still exist in Greece, but reserves there are being depleted and environmental objections to this method are growing (Christodoulou, 1995: 2). The declining use of open pit mining raises the cost of extracting bauxite and is added to the higher labour costs, which are around $6.7/ton, compared to a low of $0.7/ton for Brazil. Total net operating cost per ton in Greece is around $14, while in Brazil it is $3 (Bunker and Ciccantell, 1994: 43). These disadvantages, however, are not a major threat to the rolled aluminium industry as mining and milling of bauxite constitutes only about

1.9% of aluminium production costs and Aluminium of Greece has made the necessary adjustments in its alumina plant to deal with the hardness of Greek bauxite.

The price of the aluminium for the rolled products industry is determined in the world market. Therefore, the industry draws no price advantage from the presence of bauxite and alumina and aluminium plants in Greece. In fact, for diversification reasons and because Greek aluminium is not sufficient to cover Greek production, the industry imports part of its raw materials from several countries, both European (France, Germany, Norway, Russia) and Asian (Japan, Taiwan).

Elval is the only major company in the rolled products industry. It employs 570 people, 80% of which work in the plant and 20% are considered administrative employees. However, most of the administration functions are located in a building adjacent to the plant in Oinofyta, Boiotia, a fact permitting close contact between the production workforce and the administration staff. The closest contact is between the production planners and the sales people, since all of the production is made on order.

One of the big advantages of the company is its sales department. The personnel there is highly qualified in marketing activities, with appropriate University degrees, and employees are also encouraged by the company to pursue further studies. The sales department also includes some engineers to provide clients with the necessary technical expertise.

The workers in the factory are performing strenuous tasks. It was mentioned in my interviews that finding qualified personnel, willing to do the particular work required, is hard. However, the fact that the company is not far from Athens (about 45 mins. drive) or some other towns (a lot of workers come from the nearby town of Chalkida) has provided it with a good pool of applicants. Wages are satisfactory, given the company's excellent performance over the years, but are not considered exceptionally high relative to the average manufacturing firm. As far as labour relations are concerned, no major problems have been observed over the years and it is to be noted that a Union does not exist in the company. There is also a lot of personal contact with the main shareholders, the Stasinopoulos family, which prevents conflicts from escalating.

In the area of training, the company has an extensive program. The head of every department is responsible to ensure that all of his employees receive adequate training. The company has also sought funding for its training programs from the EU,

ever since these became available. There are usually two seminar periods every year, with 30-50 employees trained in each period, and on-the-job training, mainly for newcomers.

Elval's financing needs have so far been covered by bank loans and by funds provided by the Viochalco group. The fact that the company belongs to a group of very successful and profitable firms has helped it a lot. In fact, Viochalco is considered to have 'an excellent reputation in the local market and good relations with financial institutions' (ICAP, 1997d). The company's debt load is by no means excessive and the loan terms are usually favourable compared to the average Greek firm. Therefore, capital availability can be considered an advantage for the Greek rolled products industry.

The road infrastructure was mentioned in the previous case study as a disadvantage for the Greek cement industry. In the case of rolled aluminium products it is still a disadvantage but its effects are smaller. Raw material comes either from Aluminium of Greece, located in the same prefecture as Elval's plant, or arrives from abroad in a nearby port. The same situation is repeated in the transport of finished products. Most of the Greek customers of the company are located in Boiotia (Alouman), neighbouring Attica (Aluminium of Attica, Sanitas-Sanitas) or in Patras (Alucanco) and Korinth (Hellas Can), again not far from Elval's factory and in the part of Greece with the best motorways. The only problems with the road infrastructure are evident in the transport of products exported to European countries.

The remaining exports are shipped through the port of Piraeus, again not more than an hour's drive from Elval's factory. Shipping has not been as important for the development of the rolled aluminium products industry, as it was in the cement case, since the product is easier to carry, requires less specialised equipment and has a high price/weight ratio.

Energy requirements in the industry are not as high as in the cement industry or the primary aluminium industry. Therefore, the fact that Greek electricity prices are close to the OECD average (IEA, 1996) means that the Greek industry is not very disadvantaged. However, it is true that electricity prices in Greece are higher than in some of the main developed competitor countries (for example, Canada) and most of the developing competitor countries.

The Greek rolled aluminium products industry has benefited initially from geographical advantages. In the early stages of its development, exports were directed to the nearby markets of the then booming Middle East. Specifically, in 1976, 54% of rolled products exports went to the Middle East, while in 1983 the Middle East's share of Greek exports was 27% (FEIR, 1985: 34). Very soon, however, the European Union became the main export target (48% of exports in 1983) and geographical advantages became less important. Since the mid-1980's Elval has had customers all over the world, from Japan to the United States, and geography seems to offer no advantage.

R&D for aluminium industries is concentrated in the research laboratories of the few major multinational competitors. There is little R&D done outside these huge firms and therefore Elval cannot be expected to have a significant R&D contribution. However, the company has a team of engineers that deal both with maintaining the product's quality and with exploring the properties of various aluminium alloys, making some worthwhile discoveries and innovations in the process. It also has some know-how transfer agreements with Pechiney, the owner of Aluminium of Greece, and other foreign aluminium firms. Therefore, the disadvantage of the lack of extensive R&D has not been a major one for the industry. Efforts are also under way to enhance the company's R&D capabilities by hiring personnel with experience in research outside Greece. Furthermore, Elval is participating in European Community's programs, related to aluminium research and has started co-operation with the Technical University of Crete.

The industry has greatly benefited from the work of the Aluminium Association of Greece. Although there have been many contacts among all Greek aluminium-related industries since their establishment, it was only after the Association was founded in 1985 that firms in all these industries, from bauxite mining to aluminium fabrication, instituted a systematic co-operation. The Association has been adequately funded from its very start, mainly from Aluminium of Greece, and has been very active. It organises seminars for employees as well as workshops to present recent developments in the aluminium industries to the general public, government agencies and private organisations. It collects statistical data on all aluminium industries and conducts relevant studies. It also helps promote Greek aluminium products by organising international expositions in Greece, participating in

such events abroad and establishing contacts with Commercial Attachés of most foreign embassies in Athens. The Association has also operated, since 1986, an extensive recycling program, for the benefit of the industry and its image. Recently, fabricators have decided to create the Aluminium Manufacturers Association of Greece, which, in co-operation with the Aluminium Association, will promote further the fabricators' interests.

Factor conditions have been favourable for the Greek rolled aluminium industry. The initial impetus for the industry's creation has been the availability of bauxite, in large quantities, and with a high alumina content, as well as the establishment of alumina and aluminium plants in Greece. Geography has also been advantageous in the first years of the industry's development. Today, these advantages have become much less important. The industry is now in the process of creating specialised factors and the ones that currently provide it with an advantage are the quality of human capital, good labour-management relations, favourable terms in the supply of capital and a very active industry association. There are, however, still some problems related to the low level of R&D, the energy prices and the road network. The industry has worked towards ameliorating the situation by using the small part of the road network that is in good condition, and supporting a good amount of R&D relative to its scale. It still remains to be seen if specialised factors will be further developed.

Demand Conditions

The primary uses of aluminium were mentioned in previous sections. According to the Aluminium Association of Greece there are differences in the use of aluminium between Greece and Europe.

European production is mainly sold to four major groups of industries. These are: Packaging (27.1%), Construction (26.4%), Electrical Equipment/Household Products (26%) and Transport-related manufacturing industries (8%). Greek production is mainly sold to the packaging (38.3%) and construction (45.4%) industries, with smaller amounts being sold to the electrical equipment/household

products (10.3%) and the transport (0.5%) industries. Specifically, Greek rolled aluminium products were mainly sold to the packaging industry (68%), as well as the construction industry (17.2%) and the household products industries (8%). These patterns are in line with the peculiarities of the Greek market.

On the one hand, the transport-related manufacturing industries, besides ship manufacturers, are not very developed in Greece and the mechanical and electrical equipment industries are not very big or very competitive. This fact can be considered a disadvantage as these technologically sophisticated industries are essentially excluded from the consideration of the Greek rolled products industry. These industries, in fact, are very prominent in the developed markets of the EU, the USA and Japan.

On the other hand, the construction, packaging and household products segments, where almost all of the Greek production goes, are also the major segments in many foreign markets, especially for rolled aluminium products. Therefore, the emphasis on these segments has proven beneficial for the Greek rolled products industry as it has enabled it to expand its exports to an increasing number of countries.

The Greek aluminium packaging industry is the major local customer for the rolled products industry. Most of the output is used for the production of aluminium foil and cans, with a smaller amount used for other packaging products (ICAP, 1996). The number of buyers is not very big as the aluminium packaging industry is capital intensive and the Greek market is limited. However, these companies are very dynamic, have exhibited solid financial results and in the last ten years have had an impressive export performance. The major ones are: Alouman (family owned, exports 80% of its production), Sanitas-Sanitas (the major foil producer, operating since 1975), Hellas Can (publicly traded, controlled by the Carnaudmetalbox group, among the top 40 Greek firms in both sales and profits with significant exports), Alucanco (among the top 100 Greek firms in terms of sales, merged with Hellas Can in the fall of 1998), and Aluminium of Attica (publicly traded, with exports to European countries and Egypt). The combined sales of these companies for 1995 were 45 billion drachmas, with profits of 9 billion drachmas (ICAP, 1996). The interchanges between Elval, the aluminium fabricator, and these manufacturing companies are obvious as, according to estimates, 70% of the manufacturers' production costs can

be attributed to the raw materials, that is, mainly the aluminium plates and sheets (FEIR, 1993: 23).

Historically, the Greek market has not been a major one for aluminium products. This is, first of all, evident from the per capita consumption of aluminium. Due to the absence of major mechanical and electrical engineering industries in Greece, the per capita consumption of aluminium has been the lowest in the European Union. The initial development of the rolled products market was due to demand from the Greek construction and household products industries, which in 1976 used 33% and 26%, respectively, of the rolled products sold in Greece. By 1983, Elval had been able to produce more sheets appropriate for packaging products, and that shift in Elval's production coincided with a world-wide trend of increased use of aluminium in packaging. That year Elval sold 13,000 tons to the Greek market, 36% of which to the packaging industries, and, adding the 4,600 tons of imports, Greek per capita consumption of rolled products was 1.8 kg, a satisfactory figure, given the country's level of development (FEIR, 1985: 28-34).

The Greek market for rolled products remained stagnant between 1985 and 1989, registering increases of 1.1% per year (Christodoulou, 1996: 4-5). Since then the Greek packaging industry has shown significant growth and Elval has been supplying it with all the necessary inputs (for example, in 1983 there was no Greek production of aluminium cans, while in 1991 25% of rolled sheets went to the production of cans).

Greek demand has grown substantially since 1989, reaching 42,072 tons in 1993 and remaining at the same levels since. The share of imports in recent years has fluctuated from 46% to 32% and is on the decline. At the same time, since 1989 one can observe the phenomenon of rising exports in the years when Greek demand declines. It is striking that in 1992 Greek demand decreased by 18%, while exports increased by 34%, while in 1993 Greek demand increased by 37% and exports decreased by 6% (ICAP, 1996: 136-137). According to industry experts, part of the favourable export performance since 1992 can be attributed to the apparent saturation of the Greek market (Christodoulou, 1996: 5, Athanasakopoulos, 1997: 6).

In terms of 'mobile buyers' some of the initial export expansion to the Middle East was probably due to the strong presence of Greek construction companies there. Since the 1980's this presence has diminished and the bulk of rolled products is used

for packaging. The 1990's saw a re-emergence of 'mobile buyers' in the form of beverages companies which used aluminium cans manufactured in Greece for their sales to the Balkan countries, either directly or through local bottling facilities and packaging companies that sell part of their output to the same countries.

Demand conditions offer a more mixed picture than factor conditions. Greek demand exhibits a segment structure favourable for exports, and the competitiveness of independent buyers is one of the major assets of the Greek rolled aluminium products industry. However, the industry is disadvantaged by the small size of Greek demand and the lack of product innovation in Greece. Demand growth and market saturation, as well as 'mobile buyers', have also affected positively the industry's competitive advantage.

Related and Supporting Industries

The Materials/Metals cluster is the third most important for the Greek economy, both in terms of the number of competitive industries and in terms of the share that these industries' exports represent, which in some years exceeds 10% of all Greek exports. The two main groups of industries in this cluster are the iron and steel one and the aluminium one, with some copper industries completing the picture. The competitiveness of all these groups is, to a certain extent, related, as they use similar technologies and machinery, especially in the fabrication stage. Moreover, in Greece there is a lot of cross-ownership among these industries, something certainly true for Elval, which is part of a larger group of metal processing companies. Elval's competitiveness can also be linked with the satisfactory performance of the other main fabrication industry in Greece, the extruded aluminium products industry.

The data presented in Section 4.5, show a very competitive industry, with strong financial performance (increasing sales, for 16 extrusion firms, from 37 million in 1992 to 72 million in 1995, and 1995 combined Return on Equity: 23.65%). Exports of extruded products have also been high, for example in 1978 Greek products accounted for 2.33% of world trade of aluminium bars, wire etc., while in 1992, Greek aluminium firms exported 1.59% of world exports of bars, wire etc. and

2.6% of tubes and tube fittings. Both aluminium fabrication industries have benefited from the satisfactory performance of the construction industry, especially in the 1970's and 1980's. The rolled products industry, in particular, has also gained from Greece's strong position in the processed foods, beverages and tobacco industries, that use aluminium packaging extensively.

The competitiveness of the bauxite mining, alumina and primary aluminium industries, which were established before the rolled products industry, has been another positive factor for the industry's development and Figure 4.1 shows the entire group of competitive aluminium-related industries. Greece is essentially the only bauxite producing country in the European Union and the mining firms have exhibited sound financial results and exports that represented 3.82% of world exports in 1992. The Greek alumina plant accounts for 9% of the European capacity, and while Greece exports almost half of its production, capturing 3% of 1992 world exports, the rest of Europe imports 35% of the alumina used in aluminium production (Christodoulou, 1995: 3).

Aluminium of Greece, the only Greek aluminium producer, has consistently been among the top 20 Greek manufacturing firms in terms of assets, sales, market capitalisation and, usually, profits. Exports, almost 1% of world exports in 1992, are given attention by the company but the domestic market is not neglected either. In their early stages, fabrication industries have also benefited from technical assistance from Aluminium of Greece, while now co-operation exists mainly through the Aluminium Association.

Similarly to the cement case, there is no aluminium machinery industry in Greece. However, factory personnel is adequately trained to make even large scale adjustments to the machinery, if needed for particular orders.

Related and supporting industries have contributed to the Greek rolled products industry's competitive advantage. The industry is part of one of the most successful Greek clusters with competitive industries in both iron and steel, and copper production. It is also part of a group of very competitive Greek aluminium industries, which range from the supplier bauxite mining, alumina and primary aluminium industries to the related extruded aluminium products industry. Even the more loosely related construction, food and beverages, and tobacco industries have

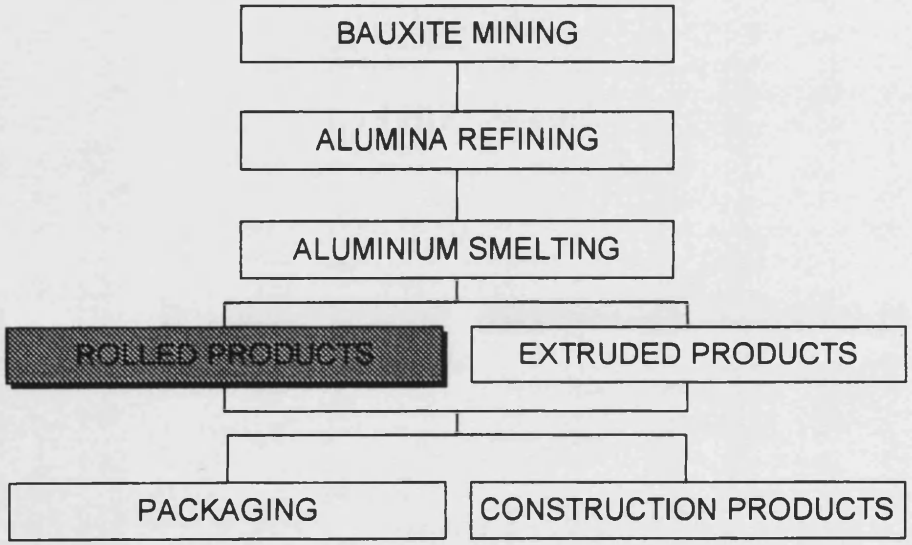


Figure 4.1: Competitive Greek Aluminium-Related Industries

had a positive impact. The picture is not complete, however, due to the lack of a competitive Greek aluminium machinery industry.

Firm Strategy, Structure and Rivalry

Elval, the only company in the Greek rolled products industry, is part of the Viochalco group of companies, one of the largest and fastest growing industrial complexes in Greece. Established in 1937, the group comprises a large number of manufacturing firms, mainly active in metal industries, and some trading companies, engaged in the sale of metal and fabricated metal products. Elval's ownership structure seems to have had a positive effect on the company. One of the reasons for this is that Elval is not part of a huge conglomerate of unrelated firms, but of a group of companies with closely related activities. In fact, the other main manufacturing firms in the Viochalco group are very successful and among the leaders in their fields, Sidenor (one of the largest Greek metal firms, 1995 profits: 1.8 billion drachmas) in iron and steel, Chalkor (the largest copper firm in Greece, 1995 profits: 3.8 billion drachmas) in extruded and rolled copper products, Hellenic Cables (the only Greek producer of certain kinds of cables, 1995 profits: 1.5 billion drachmas) with a 30% share of Greek cable sales, and Etem in extruded aluminium products (Viochalco, 1997). The group is committed to the metal industries and that partly explains the fact that it has been successful in most of its ventures in these industries.

Belonging to such a group has also another advantage. Sound management practices and able managers can be transferred from company to company, especially since they all are in related sectors. Elval, in particular, is considered well managed, certainly above Greek manufacturing firms' average, by all the industry experts interviewed. The same experts consider especially good the quality of the engineers managing the production line, as well as the sales managers. In creating a competent sales department, the company has benefited from its interactions with the trading companies in the Viochalco group.

Elval is facing tough competition from vertically integrated aluminium producers as well as independent fabricators which have appeared in most parts of the world. Rolled aluminium products are traded at high volumes and account for a large

part of aluminium trade. The fact that Elval holds consistently a significant share of world exports (more than 0.5%, some years well above 1%) demonstrates a successful export strategy. In fact, from its very start Elval realised the limitations of the Greek market for an industry requiring large production volumes. Therefore, it sought to achieve the production levels necessary in order to be cost competitive. Cost reduction has been a major target for the company. Investment in new machinery has been consistently high, although old machinery is not discarded but is used for auxiliary purposes. In terms of numbers, personnel is always at the levels appropriate for the company's needs, rising very slowly despite significant rises in output. Consideration is also given to transportation costs and if the company can secure low rates for a particular destination, then that destination is targeted by the sales agents.

Quality has also been instrumental in the company's foreign sales. Quality controls are performed throughout the production line and any products not meeting the specifications required are being re-melted and used for raw material. The combination of good quality and low prices has enabled the company to follow its aggressive export strategy.

Another part of that strategy has been the establishment of wholly-owned trading companies in many foreign markets, especially European, and the co-operation with well-established trading companies in other markets, mainly the distant ones such as Japan and Singapore. This dual strategy reflects the market conditions in every country, but is also a reflection of the company's export goals. Elval seeks to have a continued presence in major European markets, where its competitors are operating and where product innovations occur as well as in the Balkan markets, where geographical advantages are important. At the same time, it targets countries where the market is growing, such as the Middle East in the 1970's and Asia in the 1990's, with the flexibility that co-operation with a local company offers.

In terms of the geographic concentration of aluminium-related firms in Greece, the location of bauxite reserves in Central Greece dictated the location choices for the mining companies, with Silver and Baryte Ores Co. exploiting the mountains of Parnassos and Giona and Delphi-Distomon operating in Boiotia and Fokida, while some smaller companies are operating in the same prefectures (Boiotia, Fokida, Fthiotida). The alumina and aluminium plants of Aluminium of Greece are

located very close to the bauxite sources, at Distomon, in the Boeitia prefecture. In the extruded products industry, some firms are located in Boiotia (Profil Aluminium from the five major competitors) or in Attica (Etem and Vioprofal, Elmetal, Deco etc.), near the aluminium plants and the Athens market. Most of the others, and among them Almaco and Aloumil Mylonas, are near the second largest Greek city, Thessaloniki. Another big firm, Exalco, is located in Larissa, Thessaly's largest city, not far from Central Greece.

The fact that the rolled products industry essentially comprises one firm provides limited scope for analysing geographic concentration. However, some facts do provide support for Porter' geographic concentration argument. Elval has its main facility at Oinofyta (Boiotia), and two more smaller facilities, in Thiva (Boiotia), and Mandra (Attica), at a reasonable distance from the main factory. That main factory is close to the Aluminium of Greece facilities in Boiotia, where more than 50% of the raw material is produced, and also close to the bauxite mining firms, many of the extruded aluminium products firms and the only secondary aluminium producer (Epalme in Aspropyrgos, Attica). Elval's main domestic clients are also at a reasonable distance, either in Boiotia or in nearby Attica, Korinth and Achaia. Only two large factories are based in the north, near Thessaloniki. Of course, all these firms are located in prefectures in close proximity to Athens, the major population centre in Greece. However, there is close co-operation with the geographically concentrated firms, both between Aluminium of Greece and Elval and between Elval and its clients, that often visit the factory to discuss product specifications.

Strategy and firm structure have been sources of advantage for the Greek rolled aluminium products industry. The ownership structure has provided Elval with experienced and effective managers, ample capital and access to the resources of a group of leading companies, all committed to metal industries. Managerial skills have also been important in devising and executing a successful growth strategy, emphasising exports in all possible markets, low costs, and a product of consistent quality. Geographic concentration, viewed in a wider sense, has made a positive contribution to the industry's success. Domestic rivalry is the only element absent from the industry.

The Role of Government

The government has been neither a major help nor a major hindrance to the rolled products industry. Its direct involvement has been minimal, as the industry is capital-intensive and is little affected by government regulation. Of course, all aluminium industries are considered internationally competitive and, therefore, their reasonable demands are usually satisfied. Moreover, the existing incentives scheme supports the industry's investments. However, general bureaucratic obstacles, mainly related to delays in investment plans approvals, and local government objections to new facilities are thought to be important obstacles to Greek aluminium firms (Kalloniatis, 1996b: 94).

The Role of Chance

The Greek rolled products industry was started under favourable circumstances. Despite the fact that the Greek market was small and demand for aluminium products low in the 1970's, this was a time when the use of aluminium was increasing rapidly in every developed country, as well as in part of the developing world. Also, given the fact that the Greek market could not probably support more than one competitive firm, the setting up of that firm by a large industrial group, which provided funding and expertise in metals' processing, proved a positive circumstance.

4.7 Summary

Aluminium has been in use for a little more than 100 years. During that time, because of its properties and the intense research and marketing efforts of the major aluminium multinationals, aluminium production and consumption have risen substantially, making it the most widely used metal in the world after iron and steel.

From the various aluminium-related industries, such as bauxite mining, alumina refining and aluminium smelting, the one analysed here in detail is the rolled products fabrication industry. As with most other aluminium-related industries it is controlled by a few large, integrated multinationals, based in Europe and North America. However, in the last thirty years, a number of smaller fabricators, both from developed and developing countries, and, in some cases, State-owned, have emerged.

The history of aluminium-related industries in Greece starts with the establishment of the first bauxite mining companies in Central Greece, in the mid-1920's. The creation in 1961 of Aluminium of Greece, a subsidiary of the French multinational Pechiney, that would produce both alumina and aluminium, was also the starting point for the Greek fabrication industries. The rolled aluminium products industry appeared in 1973, when its only firm, Elval, was incorporated. Since then the industry has experienced rising production levels, increasing exports to more destinations and impressive financial results. The examination of the industry's sources of competitive advantage using the 'diamond' framework reveals several major interrelated sources of advantage coming from all sides of the diamond.

Factor conditions were important from the very beginning. The availability of abundant bauxite with high alumina content and of alumina and aluminium plants in Greece spurred the industry's creation. Geographic proximity to the rapidly developing Middle East markets provided an additional impetus for growth. However, aluminium is now a commodity traded all over the world and the Middle East markets have stagnated for a decade. Today, more specialised and advanced factors are important for the industry. These are the quality and productivity of human capital, good labour relations, favourable terms for the supply of capital, proximity of ports and the very active Aluminium Association of Greece which organises seminars, workshops, expositions, recycling programs, and many other activities. There are, nevertheless, still some gaps in specialised factors mainly related to the lack of extensive R&D and specialised University departments. The industry's efforts are therefore concentrating on increasing the scope of internal R&D, hoping that this will have wider effects.

Demand conditions are the weakest side of the industry's diamond. The only major source of advantage is the quality, competitiveness, and size of independent buyers in Greece, essentially the Greek aluminium packaging industry. The segment

structure of the Greek market, with demand from the packaging and construction materials industries, the presence of 'mobile' buyers as well as the market's recent high growth and relative saturation have affected the industry positively. Nevertheless, none of these attributes of Greek demand can be considered an important source of advantage. The size of the Greek market and the lack of early demand for improved products are two attributes that affect adversely the industry's competitive advantage.

Related and supporting industries represent a pivotal source of competitive advantage for the rolled products industry. The Materials/Metals cluster is among the most important and the most competitive in Greece. Moreover, all supplier aluminium industries, the bauxite mining, alumina refining and aluminium smelting industries, are internationally competitive with impressive export performances and satisfactory financial results. Even the related extruded products industry and the loosely connected food and beverages, tobacco and, to a lesser extent, construction industries are among the competitive Greek industries. The only gap is the absence of an aluminium machinery industry, a common feature for all competitive Greek groups of industries.

Firm strategy, structure and rivalry is a side of the diamond with two major sources of advantage, structure and strategy. The industry's only firm, Elval, is owned by the Viochalco group, a group of well-managed, fast-growing firms, all committed to metal processing industries. Moreover, the company's strategy has been appropriate for the industry, pursuing exports vigorously and constantly targeting costs, without compromising quality. Geographic concentration, that in this case can be viewed as extending to all aluminium-related Greek firms, has also been to Elval's advantage. The third attribute of this group of determinants is domestic rivalry, which in this case is non-existent.

The role of government has not been a major one for the rolled products industry. The help to the industry, coming from the government's positive attitude towards it, has been counterbalanced by the numerous bureaucratic obstacles to investment. Chance events, mainly in the form of foreign markets growth, have been positive during the development of the industry, but since then have played an insignificant role.

What is evident from this case is again that competitive advantage has a multitude of interrelated sources. For the rolled aluminium products in Greece, the presence of competitive related and supplier industries and the structure and strategy of the industry's only firm have worked to the industry's advantage in ways similar to what Porter expects. Factor conditions have also been important, with advantage shifting from basic factors to more specialised, advanced ones, although the transition is still not complete. Demand conditions are the only side of the diamond where results do not fully support Porter's views. The other gap, the absence of domestic rivalry, can also be attributed to the shortcomings of Greek demand, mainly its size and nature. Government and chance have only had a slightly positive effect on the industry's competitive advantage.

CHAPTER 5

THE GREEK TOURISM INDUSTRY

The third case study is selected from the Entertainment/Leisure cluster, a cluster less developed than most other 'Final Consumption Goods and Services' clusters. The tourism industry is an exceptional case, as it is not only among the few competitive industries in its cluster but also among the few competitive Greek services industries.

Tourism is very important for the Greek economy. Receipts, from the 10.1 million tourists that visited Greece in 1995, amounted to 4,136 million US dollars (NTO, 1996). A recent estimate of tourism's contribution to the Greek economy attributes 14.6% of Greece's GDP to tourist activities, which involve, directly or indirectly, 13.5% of the labour force (Arthur Andersen, 1997: 166). These numbers are more important if they are considered in their regional context, as most tourist spending is directed to regions where other activities are less developed.

Greece belongs to a group of Mediterranean countries (European , Asian and African) that represent the major tourist destination for approximately one-third of the world's tourists. The natural features of these countries (mainly the 3 S's, Sun, Sea and Sand) coupled with Greece's cultural monuments, provide Greece with a unique advantage in basic factors, one of the few major Greek advantages in basic factors or natural resources. This chapter aims at identifying other sources of competitive advantage for the Greek tourism industry, as well as assessing the effect that basic factor advantages have had on the industry's competitiveness.

5.1 The Tourist Product and the Tourism Industry

The tourist product comprises of goods and services consumed or used in many ways by tourists. It is, therefore, a complex product that includes natural elements, man-made facilities, services, and more abstract elements offering the tourist-consumer the appropriate atmosphere. Some of these goods and services are used exclusively by tourists, while others have many other uses. Although much has been written about the components of the tourist product, a broad categorisation can be the following: Attractions, Destination facilities, Access and Entertainment (based on Middleton, 1989: 573-574).

Attractions include natural attractions (landscape, climate, flora and fauna), built attractions (monuments, theme parks, etc.), cultural attractions (museums, festivals, etc.), and social attractions or opportunities to meet the inhabitants of the destination and to understand and experience their way of living. Destination facilities do not usually generate tourist demand. They are, however, complements of the attractions and contribute to the overall experience. Facilities include accommodation of all types, restaurants, bars and cafes, transportation (such as car rental), and any other service or facility necessary so that tourists can stay at their destination and enjoy the attractions or participate in entertainment activities. The category Access includes all the necessary means that are made available to the tourist for reaching his destination. Entertainment is a more complex category, which includes all the activities that a tourist enjoys, while staying at a destination, and are necessary to put the attractions in perspective and fill the tourist's time. Middleton includes in this category only abstract elements and calls it Images, meaning ideas and beliefs, which people hold about the experiences at a destination.

The tourism industry is a widespread complex network of businesses engaged in providing the tourist product, as defined above. The producers in the industry are, therefore, broadly grouped in four categories. The first one is those dealing with accommodations, such as hotels/motels, villas, camping sites, apartments, etc. The second category comprises those involved in transportation, that is, air carriers, sea carriers, railways, and car rental, coach and ferry companies. The third category consists of those involved in managing and maintaining the attractions, both natural

(beaches, mountains, etc.) and man-made (archaeological sites, museums, art galleries, theme parks, etc.). The fourth category is much broader and includes both public sector support services (ports, national tourist organisations, local information offices) and private sector support services (catering, financial services, etc.) that are not only operating within the tourism industry (Foster, 1985: 51).

Despite the peculiarities of the production process, the distribution chain is similar to that of many other products. The producers can sell either directly to the consumer or go through middle-men, wholesalers or retailers. Tour operators are the wholesalers in the tourism industry, buying a range of products in bulk and combining them in 'package' tours. These tours are then sold to travel agents, the retailers in the tourist industry, or directly to the customer-tourist. It must be stressed that the tour operators play the most decisive role, since they combine the goods and services they purchase in a unique way, and some theorists even consider them as real 'producers' of the tourist product (Holloway, 1985: 79). Travel agents can choose whether to sell the ready-made 'package' tours or offer to the client a custom-made combination. They usually do not charge for providing their services, since they receive fees either from producers or tour operators. They also do not purchase goods and services in advance but on demand from the customer. In any type of purchase, the customer-tourist plays an important part in the definition of his/her tourist product (Foster, 1985: 50-64; Holloway, 1985: 76-80).

5.2 The World Market: Historical Developments and Recent Trends

Tourism as a phenomenon of people travelling for short periods of time, from places to places, has existed since a very early stage in history. In ancient Egypt and Greece travel was mainly undertaken either for business purposes (trading or state business) or for religious purposes (pilgrimage). However, the Greeks and Romans expanded the scope of travelling. Ancient Greeks hosted international visitors in the Olympic Games and the wealthy Romans travelled long distances to enjoy a holiday, or visit friends and relatives, aided by a network of safe and well-maintained roads

and staging inns (Holloway, 1985: 22). Travel, however, remained limited for reasons related to income distribution and the availability of transportation means. Rome, Mecca, Jerusalem, Constantinople became centres that attracted pilgrims, while a few educated historians and 'geographers' were travelling to study foreign cultures and places.

In the nineteenth century, the preconditions for the development of tourism were present. A class of wealthy landowners and merchants appeared in Western Europe, and, in particular, Britain. They had both the time and disposable income to travel. Travelling for leisure purposes became popular and, since the industrial revolution brought with it the railways and steamships, it also became easier. Spas and seaside resorts were being rapidly developed and the first travel agents appeared in Britain. Among them Thomas Cook, who is considered the one with the greatest impact on the tourism industry (Holloway, 1985: 28-32).

As the wealthy middle class increased in Western Europe and North America, the tourism industry grew in the countries of these regions. That growth became evident in our century in all parts of the industry, from the constantly increasing number of hotels, and other accommodation facilities, to the improvements in the size and functioning of the transportation industries, especially those related to road and air transport. In recent decades, tourism is becoming a necessity, especially for inhabitants of developed countries. This is a result not only of a very developed tourism industry, but also of an increase in available free time and a rise in income and education levels in these countries, as well as of conscious efforts by many governments to accommodate the needs of travellers, by simplifying border procedures, promoting tourism's development and projecting an image of political and economic stability.

Throughout the 1970's and 1980's tourism accounted for over 5% of the world's exports annually. In the 1970's tourist arrivals increased constantly, from 160 million in 1970 to 274 million in 1979, while tourism receipts rose from $17.9 billion in 1970 to $83.3 billion in 1979. The first half of the 1980's was a period of slower growth due to a world recession. Nevertheless, tourism receipts reached, during this period, $110 billion in 1985 (Archer, 1989: 593). The last ten years have been another period of impressive growth for the tourism industry. Tourist arrivals reached 567 million in 1995, increasing every year with the lowest increase in 1991 (1.4%,

probably due to the Gulf War and the recession in Europe) and the highest in 1988 (9.5%). Tourism receipts rose to record levels, $372 billion in 1995, increasing as much as 23% per year (in 1987) (RIFT, 1997: 123). Increases in arrivals and receipts have been constant in many parts of the world during recent decades. However, three groups of countries are still the major destinations for the world's tourists: Europe, America and East Asia.

Europe had a 65.8% share of tourist arrivals in 1980 and a 60.3% share of receipts. Although these shares have been decreasing, Europe, in 1995, still accounted for almost 60% of arrivals and 51% of receipts. The second major destination has been the American continent, whose shares have remained relatively steady since 1980, around 20% of arrivals and 25% of receipts (RIFT, 1997: 124).

The third group of countries is the only one that is rapidly developing as a tourist destination. The countries of East Asia and the Pacific have managed in 1995 to capture almost 15% of arrivals and 18.7% of receipts. The concentration has remained steady in the last fifteen years and Europe, America and East Asia and the Pacific account for 94% of arrivals and 95% of receipts (RIFT, 1997: 124).

As more and more countries reach higher levels of development, the tourism industry is expected to continue on its present high growth path. This high growth will also be aided by the extended use of information technology for all parts of the tourism industry, facilitating the tourist product's production, marketing and distribution. It is also expected that, as tourists seek different experiences and are becoming more demanding, increasing importance will be placed on new, alternative forms of tourism and new ways of distributing the tourist product that cater to specific needs. New ways of distribution include time-sharing, an idea of the 1960's that took off in the 1980's, where timeshare companies offer every year to their clients rooms in hotels or houses all over the world for a fixed sum, paid every month, throughout the long-term timeshare contracts. Examples of new or alternative forms of tourism include agro-tourism or farmhouse tourism, mostly for young tourists, which includes various agricultural activities, cultural tourism, which places emphasis on visits to cultural sites and institutions, conference tourism, etc.

5.3 The European Union: Customers and Competitors

The European Union has remained by far the world's major tourist destination for many decades, ever since the phenomenon of mass tourism appeared. This is due to the fact that European Union countries combine tourist infrastructures and political stability with extraordinary cultural monuments and a wide variety of natural attractions.

Intra-EU tourism accounts for much of the tourism industry's record growth in the European Union. The EU countries, with their diverse attractions, are very close to each other and, therefore, a large part of the EU's tourist flows is between the member states. For Europe as a whole it is estimated that intra-European tourism accounts for 80% of tourist arrivals and that percentage is even higher for some major destinations, like Italy and Spain (Lavery, 1989: 141). The other major sources of tourists for the EU are the USA (almost two thirds of inbound tourists in 1990), Canada, Australia, Japan and the Middle East (European Commission, 1993: 22).

In the two decades between 1967 and 1987, Europe doubled its number of tourist arrivals. The greatest individual increases during this period were Greece (500%) and the United Kingdom (168%) (Lavery, 1989: 141). The period from 1987 to 1991 was still a period of growth, despite the fact that growth rates in the EU were lower than those in America or East Asia. Since then, EU growth rates have been around 2% for arrivals, lower in fact than those for Europe as a whole, while receipts are rising faster, since tourists in the EU spend more per capita (European Commission, 1997: 22.1).

Tourism is an important activity for the European Union. Its contribution to GDP is, on average, 5.5% and the tourism industry accounts for 6% of EU jobs. The countries where tourism is relatively more important for their economies are Spain and France, followed by Greece, Portugal and Ireland. In 1994, the EU accounted for 40.5% of international arrivals in the world and 41.4% of tourism receipts. More than 10 million international tourist arrivals in 1994 were observed in France (first among EU countries, with a total of 60.5 million arrivals), Spain, Italy, the UK, Austria, Germany and Greece. These figures do not account for domestic tourism, which in

1994 generated 62% of the approximately 2.8 billion nights spent by tourists in accommodation establishments (European Commission, 1997: 22.1 - 22.3).

Tourist investments in the EU has been high and in 1995 reached 192 billion ECU, or 15.5% of total investments. These investments increasingly go towards the creation of larger establishments and the reinforcement of partnerships. Still, however, out of over 1.3 million enterprises involved in hotel and restaurant activities, 96% employ less than 9 persons. The main trends in all the establishments' strategies have recently been the targeting of niche markets and the creation of innovative products to appeal to specific segments of the vast tourist market (European Commission, 1997: 22.4 - 22.5).

5.4 Economic Characteristics of the Tourism Industry

The economic characteristics of the tourism industry are related both to recent developments and to its nature, which differentiates it, not only from most of the manufacturing industries, but also from some of the service industries. The tourist product is formed by a number of elements, mentioned in Section 5.1, and can take a great variety of forms. It is also a product which is consumed at the exact location where it is produced, unlike many other services that can now be performed through the telecommunications or information technology networks. Its consumption, therefore, is closely linked to the external circumstances in the location of production, increasing the uncertainty of the producing firms.

The tourist product is composed of a series of products and services offered by independent or co-operating producers. There are countless combinations of these products and services, and this wide variety is part of the tourist product's appeal. In any case, these products and services are complementary to each other and this creates the need for co-ordination among the producers. Sometimes tour operators and travel agents assume such a co-ordinating role. Other times, mergers, acquisitions and strategic alliances between companies offering these complementary products and services become necessary for effective and inexpensive co-ordination. Consolidation

and vertical integration of the industry is on the rise, as opportunities for cost savings through integration increase (Patsouratis and Rosolymos, 1997: 75; Dimakouleas 1996: 52-54; European Commission, 1997: 22.5).

Another important characteristic of the tourism industry is the way it is affected by external, uncontrollable circumstances. Although all industries are affected by external factors, in the case of tourism some external factors (such as the weather conditions) are part of the tourist product and therefore any major disturbances are felt sooner and with greater intensity. Also, tourism is strongly linked with a country's infrastructures or political stability, issues where the industry can only marginally intervene.

The industry's development depends on investments by private sources, to create facilities without usually having secured the volume of required demand, and the public sector, to provide the necessary infrastructures (telecommunications, transportation, etc.) and amenities (museums, properly organised archaeological sites, etc.). Private investment and its rate of return are strongly affected by the level, timing and direction of public investment. Public investment, however, is usually available, since tourism is considered, by most governments, as a high growth industry with positive effects on income, job creation (since high amounts of labour are required) and regional development. Tourism, with the foreign currency receipts it creates, is also a means of improving a country's balance of payment, while increasing demand for other domestic products and services (Mylonas, 1996: 720-730).

A characteristic present in many industries but central to the tourism industry is seasonality. For reasons related to climate, tradition, common vacation periods for schools and workplaces, etc., tourists tend to travel more in specific times of the year with the result that there is an over-concentration of tourist arrivals during two or three months of the year (peak season). The peaking of tourist demand at certain times of the year creates a range of problems for the industry in the 'shoulder' and especially the 'off-season' periods, the most serious of which is under-utilisation of capacity and consequently decrease of revenues. So, a major challenge facing the industry is how to increase the number of people willing to take vacations in the off-season by developing and promoting new, attractive packages, targeting niche markets, making more efficient use of information channels, etc. (Fitzpatrick Associates, 1993).

5.5 The Greek Tourism Industry

Historical Development

Tourism has a long history in Greece. As was mentioned in Section 5.3, in ancient Greece people travelled to attend various cultural, religious, political and athletic meetings and events. Later, in Byzantine times and during the period of Turkish occupation, the only major travel in Greece was of religious character, as groups of pilgrims visited specific sites, usually well-known churches where the relics of saints were buried or where there existed icons believed to have miraculous powers. Organised tourism first appeared in 1895, after Greece's liberation and the creation of the modern Greek State (1830), when a non-profit making organisation, called 'Cycling Society', started organising excursions throughout Greece, that were also advertised in the British and French press.

Tourism was further developed by the creation of many similar Societies, which were intended to provide specialised tours, like walking tours, tours for observing the natural attractions of a region, etc. A number of tourists, mostly domestic, chose the various spas (Loutraki, Aidipsos, Methana, Kammena Vourla), principally near Athens, where the water was supposed to have healing qualities.

In the first decade after the Second World War, the State intervened directly in the promotion of tourist development. Emphasis was placed in reconstructing and improving the country's road network and, through a short-term credit policy, in modernising hotels units, especially in tourist centres well known before the war (Konsolas and Zacharatos, 1992: 58). These improvements were the impetus for the establishment of several tourism-related firms.

International tourist arrivals became a factor in the industry's development after 1954, as the 1953 currency devaluation and other liberalisation measures made Greece a cheap and, politically and economically, stable destination. This was the time when the state established the National Tourism Organisation (NTO) as the basic policy agency in the tourism industry. The NTO encouraged private investments in the industry, and at the same time assumed a leading role in promoting public investments in infrastructures and accommodation facilities (the Xenia hotel chain),

especially in regions where the private sector was reluctant to invest (Konsolas and Zacharatos, 1992: 58-59).

An increase in tourism investments became evident, mainly between 1958 and 1963. Political instability in the following years was a restraint for the tourist activity. However, since 1970, investment resumed its previous levels and has been high ever since. An important characteristic of this period, as well as the following and more recent periods was the shift of the weight of public investments vis-a-vis private investments from a ratio of 1:1.5 to a 1:8 ratio (and later 1:10) (Chiotis and Coccossis, 1992: 134). The investment boom resulted in the construction of many new hotels and other forms of facilities (camping, bungalows, etc.) which covered to a great extent the growing demand for tourist accommodations. The data presented below illustrate the rapid growth of tourism in the 1960's and 1970's.

In 1970 the nights spent in Greek hotels were 11.8 million and Greek citizens accounted for half of them. The first major increase was observed in 1976, two years after the restoration of democracy in Greece, when nights spent by Greeks doubled, compared to 1970, while nights spent by foreign tourists quadrupled, for a total of 31 million. Foreign arrivals were increased from 210,301 in 1956 and 741,193 in 1963 to 1.6 million in 1970 and 4.2 millions in 1976 (Lagos, 1990: 174).

Increases in the numbers of foreign arrivals and nights spent continued until 1980. The early 1980's were a period of stagnation for Greek tourism, that only recovered in 1984 and 1985, when tourist arrivals reached 7 million for the first time. Total nights spent reached 47 million, with Greek tourists accounting for 11 million. Since then tourist arrivals and tourist receipts have been rising, with the exception of 1991, when the Gulf War was under way, and 1995, when a small decrease was observed (NTO, 1996: 1). Nowadays, Greece has become a major destination, especially for European travellers and currently tourist arrivals have reached 11 million. Although the high growth of all indicators of tourist activity in the 1960's and 1970's has been followed by slower growth in the 1980's and 1990's, the industry continues to expand, undeterred by small declines.

A closer understanding of the composition of foreign arrivals in Greece is essential for understanding the basic features of the Greek industry. American tourists constituted the major source of income and growth for Greek tourist enterprises in the 1950's and 1960's. Even as late as 1971, USA tourists represented 25% of

foreign tourists in Greece. Subsequent growth, however, in tourist numbers came from European countries that in 1981 accounted for 80% of foreign arrivals (Leontidou, 1991: 87). Greece's entry in the EU and the advantages this offered to EU travellers meant that these countries would account, from then on, for the bulk of arrivals in Greece. Since 1987, EU tourists account for more than two thirds of foreign arrivals in Greece, with the UK and Germany recently providing 2-2.5 million tourists each. The rest of the foreign tourists comes mainly from other European countries, while one million tourists come from outside Europe, mainly from the USA (around 250,000), Japan, Canada and Australia (NTO, 1996: 2).

Another characteristic of arrivals in Greece is their seasonality. Although, this is a characteristic of tourism industries in most countries, in Greece the problem is particularly acute. Greek hotels in most major resorts open in March and close in October or early November. July and August account for 40% of arrivals and nights spent in Greece, while June accounts for a further 11%. Of the other half of tourist arrivals, most occur in September (15% of total arrivals), October, April and May (NTO, 1996: 3-6).

Major Competitors

The major developments in the Greek tourism industry took place after 1950. This is when the first major travel services companies were established in the country. Since then, their number has grown enormously and it is now estimated that there are in Greece 5,313 travel agencies. In fact, Greece has the highest per capita number of travel agencies in the European Union (DRI Europe, 1997: 22.42, 22.46). Some of the biggest ones and their financial results for 1995 are presented in Table 5.1 (in parentheses the year of establishment for each agency):

TABLE 5.1: Financial Results of Greek Travel Agencies for 1995

Companies	Turnover (mil. Dr)	Net Income (mil. Dr)	Personnel
Plotin Travel (1979)	6,926	71	61-111
Manos Travel System (1965)	6,514	125	72
Airtour Greece (1971)	6,356	382	139-211
Marine Tours (1985)	3,370	68	60-65
Nouvelles Frontieres Hellas (1986)	2,494	22	15-30
Ginis Vacances (1975)	2,755	7	30
Amphitrion Holidays (1988)	2,411	13	46
Goldair (1990)	1,436	41	20
G.O. Tours (1976)	841	4	15
Key Tours (1963)	520	15	10

Source: ICAP, 1997b

What should be noted is that most travel agencies dealing with tourists in Greece are either subsidiaries of foreign, mainly European, tour operators or depend on these operators for a large part of their business. It is common for foreign tour operators to define exactly the 'package' sold to the customer and then use the Greek agencies in order to carry out the bookings. The major foreign tour operators and the number of tourists they sent to Greece in 1994 were: Thomson (588,000 tourists), TUI (330,000), Neckermann (295,000) and First Choice (290,000) (Patsouratis and Rosolymos, 1997: 82).

Another important part of the Greek tourism industry is lodging. It comprises establishments which vary widely, in terms of size and services provided (large or medium-sized hotels, small family-run hotels, houses or rooms for rent, etc.). Statistics on lodgings are not very accurate since they exclude a large number of rooms and houses which are not licensed. The official data cover all of the licensed hotels and a large number of rooms, houses and other types of lodgings. According to these statistics, for 1996, Greece had 7,916 lodging establishments with 301,829 rooms and 571,656 beds (NTO, 1997). According to the Hellenic Chamber of Hotels,

50% of these establishments have less than a hundred beds. Only 17% of lodging establishments have more than 400 beds (approximately 210 rooms). Therefore, the majority of establishments are small, independent and owner-operated. This is true for most of the Greek hotels.

Of the major Greek hotels, a few are part of big international chains. These are mainly situated in Athens and the chains represented are: Intercontinental, Hilton, Marriott and Sheraton. Hyatt, is also planning to open a hotel in Thessaloniki with a casino and a conference centre. A number of other big hotels are members of international marketing organisations, such as Best Western, Relais & Chateau and Leading Hotels of the World (Arthur Andersen, 1997: 168). There are also some domestic chains of which the most important are: Xenia (government owned, some of its hotels have been privatised), Chandris (with big hotels in Athens, Chios, Corfu and Mykonos), and Grecotel, the biggest and most dynamic Greek chain that owns or operates twenty hotels in most major Greek tourist destinations.

Another part of the tourism industry is the yachting companies and cruise ships operators, of which Greece has 105, due to its large number of tourist islands. Most of these companies are small, with only five of them having more than 100 employees (Arthur Andersen, 1997: 171). Some of the major ones are (in parentheses 1995 turnover and net income in million drachmas): Helliniki Etairia Diipirotikon Grammon (2272, (298)), Kyriakoulis Mediterranean Cruises Shipping (510, 332), Vernicos Yachts Shipping (242, 180) (ICAP, 1997b).

Other parts of the industry cater to the needs of both tourists and non-tourists. The most important is the one that includes the restaurants, bars, cafes, and other eating places. There are 19,200 such establishments in Greece, employing 50,980 persons (Fitzpatrick Associates, 1997: 22.10). In terms of transport-related companies, Greece has one domestic airline (Olympic Airways) and a large number of ferry and coach companies. There are also many car rental firms in Greece, with most of the international companies represented (Hertz, Budget, Europcar, Avis, Eurodollar).

5.6 Sources of Competitive Advantage

Factor Conditions

The climate and morphology of Greece are its main basic factor advantages for the tourism industry. The mild Mediterranean climate, in most parts of the country, ensures long, sunny summers with little rainfall and relatively short, mild winters. This is especially true for the southern part of the country, where the 'sand, sea and sun' tourism season lasts for more than six months.

The morphology of the country is another major advantage. The large number of inhabited and uninhabited islands is one of Greece's main attractions. Each island has developed its own local character and tradition and has different types of landscape. This offers a great variety for tourists, since several islands are well-known for their cosmopolitan character (Rhodes, Mykonos, Corfu), while others are ideal for a quite vacation. Some of the bigger islands even combine both, enabling the tourist to create his/her own mix.

The coastline, both of the islands and the mainland, is 15,000 km long, an impressive size given the country's total area of 131,957 sq. km. This includes a large number of beaches suitable for swimming, aided by the calm, warm Mediterranean water. The mainland, has also other things to offer. A series of mountains, ideal for climbing, hiking, and winter sports, dominates a great part of mainland Greece. In addition, the 3,500 caves and the 17 major spas offer the necessary variety, especially for repeated visits to Greece.

The multitude of Greece's cultural attractions is another major factor advantage for the industry. The significant monuments from its long past number in the thousands and their spatial distribution covers every region of the country, although in some regions there might be greater concentrations of monuments and sites of particular types or periods. These monuments range in date from the 7th millennium BC to the 19th century, but the most important ones belong to the prehistoric period (Minoan, Mycenean, etc.), the great classical era, the years of Alexander the Great and the Macedonian Dynasties, the Roman period and the Byzantine one and from the times when Greece was under Turkish or Frankish rule.

As every part of Greece developed its own character, or was occupied by different rulers, even monuments within the same time period can have wide variations (Konsola, 1993: 23).

The differences in development among parts of Greece and the variety of influences have led to the creation of many customs and traditions, unique to each part of Greece. Although these were starting to disappear with migration to the main cities or to other countries and with cultural 'homogenisation', tourist development has provided new opportunities for reviving and displaying these customs. Special clothes, artefacts, and traditional foods are also characteristic of many places and are important as part of a 'complete' cultural experience.

Greece is not very far from three of the top five tourist-generating countries (Germany, UK, France). However, a number of other countries (Spain, Italy) offering similar tourist products are even closer and access to them is much easier. Greece has no geographical advantages related to the other two major tourist-generating countries, the USA and Japan, and again it is other destinations, like Mexico or China, that benefit most from their geographic location. Greece's land borders are with low-income countries, which generate only a tiny part of the world's tourists.

By far, the majority of all visitors to Greece arrive by air transport. About 60% of tourists use charter flights, almost exclusively operated by foreign firms. Despite the fact that the Greek network of airports is not extensive or very modern, airports in tourist destinations have been upgraded and are able to deal with a large number of visitors. Some island airports such as the ones in Rhodes or Heraklion, in Crete, are handling over one million arrivals every summer on charter flights (NTO, 1996). A big new international airport is also being built in Spata, near Athens, which will be able to handle large volumes of passengers and act as a distribution centre for the regional airports. A lot of tourists also arrive by boat from Italy, the closest EU country. Again, a very efficient ferry system is in place between Patras and Igoumenitsa, in Greece and the major Italian ports in the Adriatic Sea, providing a reliable, fast and relatively cheap service.

Transportation infrastructures inside the country are of a lower standard. The road network, while extensive especially around tourist destinations, is rather out-dated. It is to be noted, however, that huge projects in the country's main arteries,

partly funded by the EU, will soon alter the picture, by linking most major mainland cities with a modern road network.

Sea transport compensates for the road network's problems. As most tourists are directed to the islands, or certain seaside mainland locations, the condition of sea transport is very important. This was realised very early, and regular ship lines have been operating between Athens, Thessaloniki, Patras and most islands. Recent investments in new ships or in refurbishment of old ones, meant that the majority of ships are now in good condition. Fares are also kept at reasonable levels and the major problem of sea transport in Greece is the condition of ports in some tourist islands.

Besides the problems with the road network, the telecommunications and information technology infrastructures are not at a satisfactory level. Although the whole country is covered, both by the fixed-lines operator (OTE) and by the three mobile phone companies (Panafon, Telestet, Cosmote), the network has still many problems. More than 50% of connections are still not digital and failure rates on call attempts are rather high. The information technology network is at a worse stage. Most small, family-operated hotels and lodging establishments outside Athens lack the IT infrastructure to process bookings. Even shipping companies have only recently introduced an integrated system for ticket sales. These shortcomings are important for a tourism sector which is concentrated outside the main cities, where all the improvements first occur.

As far as the cultural heritage is concerned there are problems in its preservation and management. Apart from the major archaeological sites, the focus of mass tourism, which are well preserved and properly organised, the majority of sites remain an unexploited resource and their state of preservation is not satisfactory. The same holds true for the numerous archaeological museums. There are several large or medium-sized museums with important works of art exhibited in modern halls, while tens of smaller museums function at a substandard level, because of lack of space, equipment, personnel, etc. (Konsola, 1993: 23-24).

It is estimated that 285,000 people are directly employed in the Greek tourist industry. Of those, 41% work in hotels and 33% in rooms and other lodging establishments. Almost 80% of them are low or medium-skilled and that figure is even higher in some parts of the industry, such as rented rooms (Mylonas, 1996:

727). Low or medium-skilled labour in Greece earns considerably less than in most Western European countries, even those with whom it directly competes in the tourism industry, like Spain or Italy. That advantage is, however, lost over other low-wage countries. Nevertheless, the structure of many Greek tourist establishments partly compensates for that. Family employment is common in many small hotels and houses offering rooms, in restaurants, bars and cafes, and other small tourist enterprises. This reduces wage and insurance costs, while providing a 'family atmosphere' for tourists. Other employees work seasonally, only in the summer, and therefore see tourism as a way to supplement their income, demanding lower wages and providing employers with a flexible pool of labour. In any case, the proportion of low or medium-skilled labour is rather high and many of the employees, especially the seasonal ones, receive little or no training.

Highly skilled labour is much harder to find, since demand is high from many competitive industries. The seasonality of tourism revenues and their dependence on external factors are not enticing for those wanting to join the industry. Despite the fact that a number of tourism-related education institutions produce graduates to fill most of the posts, only 60% of them end up working in the tourism industry, creating a shortage of specialised personnel (Mylonas, 1996: 728-729).

Capital availability is another problem for the Greek tourism industry, as commercial banks are reluctant to extend large loans to tourist firms and very few of these firms seek funds through the stock market. However, the state has created two development banks (ETVA, the Hellenic Industrial Development Bank, and Ktimatiki, the Mortgage Bank) that were required to help not only manufacturing industry, where guarantees were higher, but also all parts of the tourism industry, from hotels to yachting companies, trying to judge the prospects of firms, rather than the assets they had available for guarantees. Also, all state incentives schemes, for locating in less developed areas, were specifically extended to include all forms of tourists enterprises, although some saturated areas were exempt. The most recent development law (Law 1892/90 amended by Law 2234/94) offers grants for modernisation to most hotels ranging from 10% to 35% of the investment required, special financial assistance for investments over 25 billion drachmas and very high tax allowances for investments by most tourist enterprises (ETVA, 1996: 30-35).

One of the most important institutions for the development of the tourism industry has been the National Tourism Organisation. Although a separate 'Office for Foreign Visitors and Exhibitions' existed since 1914 in the Ministry for National Economy, the specialised National Tourism Organisation was established in 1929. Since 1951 it has taken its present form, with wide-ranging responsibilities on all tourism-related matters. In 1935, a special division of the police, called the Tourist Police, was established and has been in existence ever since.

Other state-related or independent institutions have helped the Greek tourism industry. The Hotel Chamber of Greece, and its localised chambers for every major tourism destination, have contributed to an integrated private and public approach on tourism issues. There are, also, many trade associations, for every part of the industry, such as the hotel-owners and operators, and the travel agents. Some of these organisations also have specialised research institutes that are constantly collecting data on the industry and producing many publications. Recent efforts for the establishment of a Tourism Chamber of Greece will further increase the number of specialised institutions dealing with tourism-related issues.

Moreover, there is a number of higher education institutions that are related to tourism. Major Universities include tourism-related courses in their business and management curricula and some of the professors responsible are among the leading experts in tourist research. In the second tier of Technical Educational Institutions (TEI), there are seven specialised departments for Management of Tourist Enterprises. There, students selected after a panhellenic examination (as for all other state Universities and Technical Educational Institutions) and required to know at least one foreign language, follow a three year course, which examines all aspects of tourist firms, offering a mix of theoretical and practical courses. In addition, there are a number of Schools for Tourism-Related Professions, independent of the rest of the state education system. Initially, these schools were designed to offer additional training to employees in the industry. However, since 1960, they have also administered a three year full-time course, with each year consisting of eight months of classes and four months of practical training. Private institutions, which are allowed by the state to offer limited educational courses, also have one, two or three-year programs leading to various certificates on tourism-related subjects. There is also a state-operated School for Guides, and only graduates (many of them with

archaeology degrees) of this two-year, intensive program are allowed to work as guides in archaeological sites or museums.

Basic factor conditions represent a pivotal advantage for the Greek tourism industry. Greece's mild climate, the morphology of the islands, the coastline and the mainland, the archaeological and cultural attractions as well as the extensive sea transportation network are among the major factors that have affected the industry's creation and development. Other basic factors provide a mixed picture, for example, capital, human capital and the preservation and management of cultural heritage, where efforts by the state and private companies have improved the situation. There are also factors like the road, telecommunications and information technology infrastructures, the country's location and the lack of a domestic charter firm that put the industry at a disadvantage. However, specialised factors are starting to provide additional sources of advantage in the form of the specialised educational and research institutions, trade associations and chambers, and the National Tourism Organisation.

Demand Conditions

Greek demand for tourist products is similar in many ways to demand from foreign customers. Greeks, like foreign visitors, are mainly attracted to the islands and especially the well-known ones like Rhodes, Corfu and Crete (Falirea and Kapsi, 1996: 15). They seek the same 'sand, sea and sun' combination and concentrate their vacations in the period from mid-July to mid-September. They are very important to the industry since, in periods when external factors limit foreign arrivals, they act as a buffer to fill part of the extensive capacity in the major destinations. They are also considered high spenders, stay for extended periods and favour the 'personal touch' in their dealings with tourist establishments, although they do not demand very high standards of service.

Some other characteristics, however, of Greek demand are not so favourable for the industry's further development. Greeks, when travelling inside the country, favour independent travelling to 'package' holidays (Falirea and Kapsi, 1996: 15, 19).

Even the 'packages' developed by Greek travel agencies are often for locations not preferred by foreign tourists. New forms of tourism are also slow to develop in Greece and Greek tourists do not seem to favour them. Business and conference tourism is also not highly developed, as most Greeks travel for holiday purposes or to visit friends and relatives. Industry experts, however, expect that these new forms of tourism will develop quickly as they fit well with the Greeks' preferences for independent travel.

The initial development of the industry was a result of home demand. The islands, beaches and cultural monuments attracted Greeks and their desire to visit villages from where their family originated was, and still is, strong. In the 1950's and 1960's home and foreign demand moved at the same pace, and by 1970, the number of nights spent were the same for Greek and foreign tourists. Very soon after that a significant change occurred as foreign demand was increasing at a much higher pace than home demand. By 1976, foreign visitors accounted for 67% of nights spent and that figure has recently reached 75%. Greek demand was at 10,480,070 nights spent in 1976 and by 1991 it had barely increased to 11,594,471 (NTO, 1996). Since then, however, increases have been constant and in 1995, nights spent by Greek tourists reached 12,542,011 (Falirea and Kapsi, 1996: 24). The level of trip taking in Greece is still lower than that of many major European tourist-generating countries such as Germany or the UK. However, Greeks favour home to foreign destinations to a much larger extent. In fact, according to a 1985 European Travel Commission survey, only 7% of Greeks travelled abroad, compared to the EU average of 32% (European Commission, 1993: 14, 15).

Demand conditions seem to have offered the industry some competitive advantage. Early demand by Greek travellers, especially for destinations that would then become popular for foreign visitors, was instrumental in the establishment and initial expansion of the industry. This initial high growth pattern along with the emphasis of Greek demand on the same attributes, time periods and, to a lesser extent, locations as foreign demand has been important throughout the industry's development. Greek demand has offered additional advantages in terms of providing a steady stream of income for firms in difficult periods and emphasising long stay and the 'personal touch'. However, some disadvantages are also apparent. They are

mostly related to the reluctance of Greeks to adopt both the 'package' tour and the new forms of tourism, which has restricted the development of these sections of the domestic industry, and the reduced emphasis on service quality.

Related and Supporting Industries

The highly competitive Greek cluster of Food/Beverages has been a major supplier of various parts of the tourism industry. The international competitiveness of many food and beverages industries has contributed to the tourism industry's success by providing high quality products at reasonable prices, especially those considered 'healthy' like fruits, vegetables and olive oil. These inputs were also differentiated from those of many other countries, helping to create a 'unique' image for Greek food, as well as for many of the beverages (for example, ouzo), and stress the well-known Greek culinary identity.

The shipping industry has also been important for the development of the Greek tourism industry. In the early stages of the industry's history, when ships were essential for the transportation of tourists, the extensive network of shipping lines was instrumental. Despite the decreased reliance on sea transport, the competitive shipping industry is still a source of advantage for most parts of the tourist industry.

The construction industry, and especially its capacity to handle large volumes of work, has contributed to the rapid development of the tourism industry in Greece. After the Second World War, Greek construction companies provided the tourism industry, and especially hotels, with easy access to construction services and a qualified pool of engineers and architects.

A contribution to the Greek tourism industry has also been made by the Textiles/Apparel cluster. Its output of traditional and modern fabrics and apparel, has been complementary to the Greek tourist product. A number of other industries have also complemented well the Greek tourist product. The most important ones have been the arts and crafts and housewares industries, some of which (floor coverings, silver jewellery) are very competitive.

Other related and supporting industries have not yet developed to a large extent. This has been a disadvantage to the Greek tourism industry, as, for example, a

competitive travel agency automation industry would have helped the industry's organisation and contributed to the reduction of reliance on localised services.

Related and supporting industries constitute a source of advantage for the Greek tourism industry. The food, beverages, shipping , construction, textiles, apparel and some arts and crafts and housewares industries provide products and services that contribute to the unique character of the Greek tourist product. The lack of some 'advanced' service industries is the only shortcoming regarding this determinant.

Firm Strategy, Structure and Rivalry

Greek tourist enterprises in all parts of the industry are relatively small. As was mentioned in Section 5.5, hotels and other lodging establishments usually have a small number of rooms. Of the 571,656 beds available, according to the NTO, only 25,744 are in 53 big luxury class hotels and a further 107,196 in the 378 first class hotels. The rest are in the smaller, lower category hotels and in the various houses and rooms all over the country (NTO, 1997). Given that this is the official data, which do not include the large number of unlicensed rooms, the proportion of small establishments must be even greater. The same is true for other firms, either in the industry or related to it. Travel agents on average employ three people, while restaurants, bars and cafes have on average 2.5 employees (Fitzpatrick Associates, 1997: 22.10; DRI Europe, 1997: 22.42, 22.44). The general picture is one of many small, independent, sometimes family-owned and operated establishments.

This structure was initially well-suited for an industry where the product is usually produced and consumed in the same location, where multiple offerings are essential and where the 'personal touch' and the opportunity to understand the culture through the employees in the industry is highly appreciated. However, recent world trends are pointing to the consolidation of the industry.

A series of mergers and acquisitions have created huge hotel and restaurant chains that are taking advantage of common services, such as centralised bookings, and the opportunity to transfer management expertise from one establishment to the other. This trend has also made an impact on the Greek industry, with the rapid

expansion of the Grecotel chain of hotels and the development of a few hotels by multinational chains, as well as with the first attempts to establish some restaurant chains, that have so far succeeded only in the fast food industry, where the domestic firm, Goody's, is the market leader in Greece and one of the major European chains (Fitzpatrick Associates, 1997: 22.14).

The small size and reduced co-ordination of Greek tourist firms has led to lack of strategic vision. Although several factors enable Greece to offer a differentiated tourist product, Greek firms have done little to enhance that differentiation. They have been very cost conscious and that has given the industry some cost advantage. However, this is not sustainable, especially as upward pressure on wages is already becoming evident. Most enterprises lack the scale and resources to mount extensive advertising campaigns in the major foreign markets. The National Tourism Organisation is, almost exclusively, organising marketing campaigns in other countries. However, a national organisation seeking to promote the interests of all national firms cannot effectively target the specific segments of the population that certain groups of firms need to attract. Marketing is currently product oriented and there are few attempts to segment the market and opt for a customer oriented strategy (Apostolopoulos, 1990: 232).

There are, nevertheless, several Greek firms emphasising customer satisfaction as their primary goal and seeking to attract higher income tourists in order to counteract the effects of the diminishing cost advantage. It is also important to note that most firms are committed to the industry, and the highly leveraged positions of some of them do not allow them to ignore market trends for long. In addition, a number of new entrants to the industry are developing large areas, equipping them with high standard accommodation facilities and offering specialised products like thalassotherapy and golf courses. They are hoping to attract customers from the high-income segment and induce them to increase their spending.

There is also scope for the further development of the mass tourist segment, which, after all, is the largest one internationally. The strategy of relatively competitive costs and easy access to natural attractions and cultural monuments can be effective if combined with the provision of services of a standard comparable to that of other countries. The increasing number of training seminars conducted by both the state and private firms, even smaller ones, is evidence that many firms are moving

towards that direction. There is still, however, much room for improvement as, for many firms, service is not among the highest priorities.

There is also a lot to be done in improving the amount of money spent, even by lower income tourists. Per capita spending of tourists in Greece for 1994 was only $364, much lower than in some of the direct competitors, such as Spain ($505), Italy ($870), Portugal ($419) and others (RIFT, 1997: 70). This is a result of the factors mentioned above such as the quality of service, the partial lack of product differentiation and the low level of marketing promotion.

The scope for rivalry among tourist firms is slightly reduced due to two separate factors. The first is that tourist firms in different parts of the industry are not competing with each other. On the contrary it is quite usual for them to co-operate in order to offer a more integrated and cheaper service. The second factor is that since tourist firms' activities are highly localised, there is reduced scope for competition with specific firms in a separate location. That second factor is especially important for Greece, where most firms are independent and there are few chains, where interests would conflict. However, when there are conflicting interests of major firms (especially in the ferry companies and some major hotel chains), rivalry is intense and other firms are viewed as threatening to the firm's existence.

Rivalry is evident and sometimes fierce at two other levels. The first one is among firms with similar activities within the same destination. There, rivalry is intense, especially in years when demand is low or in the 'shoulder' and 'off-season' months. Also, since a large part of the population of many resorts is involved with the tourist industry, rivalries are related to personal or family issues as well. The second level where strong rivalry is observed is between the small and the large firms in the industry, with the fiercest rivalry among hotels and rooms for rent. In many aspects, developments that are good for the small businesses (for example, a new big investment by a foreign firm that will increase arrivals in a particular region benefiting related firms) are contrary to the interests of large ones (which will face increased competition). This type of rivalry can also have negative effects on co-ordination among firms of various sizes and on government policy for the industry.

Geographic concentration is a defining feature of the Greek tourism industry. The presence of archaeological sites, natural attractions or a developed infrastructure have led firms to concentrate in a few resorts and urban centres. A small number of

islands and the cities of Athens and Thessaloniki account for the majority of hotel capacity and most other tourist firms are also located in these prefectures. Ten prefectures (out of the country's 52) account for 68% of total beds available in Greece. Specifically, Attica accounts for 16.5%, the islands of Dodecanese (including Rhodes) for 16.3%, three prefectures of Crete (Heraklion, Lasithi and Rethymnon) for another 15.2%, Corfu for 6.8%, the Cyclades (including Mykonos and Santorini) for 5.1%, Chalkidiki for 3.3% and Thessaloniki 2.6%. The proportion of beds accounted for by the top ten prefectures has been slowly rising over the years, as it was 67% in 1981 and 65% in 1971. These same prefectures, and especially Crete, Athens, Thessaloniki, Rhodes and Corfu, are also where most luxury hotels are located, with more than 70% of them in these five areas, while lower-rated, smaller establishments are slightly more dispersed. The Dodecanese is where the highest number of beds per 1000 inhabitants can be found (439.5), followed by Corfu (283.6) and the Cyclades (224.5) (Mylonas, 1996: 734, 746). More than 50% of travel agents are based in Athens, Macedonia and Crete, and most car rental and yachting companies are located in Athens, Thessaloniki and the major tourist islands (Arthur Andersen, 1997: 169-171).

As expected, given the available capacity, nights spent follow the same trend. More than three-quarters of them are concentrated at the same ten prefectures, most of them by foreign visitors. In terms of specific destinations, Athens' share is declining (now at 17.5%), while Crete and the Aegean islands registered increases between 4.8% and 6.8% in the last decade (Mylonas, 1996: 740-742).

The strategy and structure of most domestic firms in the tourism industry have not changed much over the course of the years of its development. The pre-eminence of small, family firms emphasising low cost provided a slight advantage in the industry's first steps. As, however, world trends favour consolidation of firms and high-quality services, the same characteristics are starting to impede further strengthening of the industry's position. Nevertheless, some firms have taken the appropriate steps to adjust to the new environment, while others are trying to target specific kinds of customers. Rivalry among firms is intense in the entire industry and especially fierce and personal in some segments. Geographic concentration is noticeable and has an increasing impact on the industry.

The Role of Government

The government's official involvement with the industry started in 1914, with the establishment of the Office of Foreign Visitors and Exhibitions. Major intervention, however, was evident after 1950 when the economic situation permitted it and the National Tourism Organisation became an autonomous agency. The 1950's and 1960's saw great investments in public infrastructures, to facilitate communications and create opportunities for the private sector, as well as in accommodation facilities. The Xenia chain of hotels, operated by the National Tourism Organisation, served as model hotels at the time, but are now being privatised after running in financial difficulties. In 1962, private investments surpassed public investments for the first time, as the state focused on providing loans and other incentives to private enterprises (Leontidou, 1991: 88-89).

Since 1974 the approach of the state has been more cautious. Incentives schemes and other similar laws have been in effect throughout the last 20 years. They all had specific targets related to the areas favoured to receive grants or subsidised loans. However, many mistakes were made as enterprises, until 1982, were forced to concentrate in a few already developed areas, because the high land prices there offered the guarantees necessary for bank loans, while in the 1980's, big hotels were not constructed deterred by the legally imposed limits on the size of establishments to be financially assisted by the State. Recent laws have used past experience and are moving in the right direction supporting the modernisation of existing hotel units and the construction of luxury hotels, as well as, the creation of 'Areas of Integrated Tourist Development'. It remains to be seen how well firms will respond to the new environment (Mylonas, 1996: 761-764).

The government's role in the industry has been fluctuating over time. While it is true that many of its efforts have been beneficial to the industry, mistakes and poor planning are responsible for some of the present problems.

The Role of Chance

Chance events have affected the Greek tourist industry for short periods, without however major long-term implications. The first decrease in the number of tourist arrivals was observed in 1967, coinciding with the start of the dictatorial regime. Soon after, in 1969, tourists started coming back to Greece in increasing numbers and Greek firms were benefiting from the dictators' policy of promoting tourist development. The fall of the dictatorship in 1974 caused a 31% drop in arrivals as the political situation was considered unstable. Again, however, it was not long before growth in both arrivals and receipts was resumed. The beginning of the 1980's was the most difficult period as the threat of terrorist activities prevented people, especially North Americans, from visiting Greece. The North American tourists never came back in the numbers witnessed before 1980. Nevertheless, European arrivals increased dramatically compensating for any other reductions, possibly aided by Greece's 1981 entry in the EU. Recently, the Gulf War in 1991, had a negative effect but since 1993 further increases in the industry's sales have been observed.

5.7 Summary

The mass tourism phenomenon of the last century has led to the creation of a wide-ranging and rapidly growing tourism industry. The tourist product is composed of many elements, such as attractions, destinations facilities, access and entertainment, and, therefore, requires for its production the output of a great variety of firms. The recent wave of mergers, acquisitions and strategic alliances has created a more integrated industry.

Greece is among the top 20 world destinations and the importance of tourism for its economy is evident by its high share of GDP and the labour force. The Greek tourism industry appeared at the turn of the century but its development for the first few decades was very slow. After the 1950's, due to the political and economic

climate, both the public and private sectors invested heavily in all parts of the industry. Since then, Greece has retained a steady and, most of the time, increasing flow of tourist arrivals which has provided large sums of foreign exchange and determined the economic development prospects of many regions in the country.

The initial advantage for the Greek tourism industry came from certain basic factors. The large number of picturesque islands in the mild Mediterranean Sea, the extended coastline and Greece's exceptionally rich cultural heritage provide a unique and sustainable advantage for the Greek tourism industry. Other basic factors like the sea transport network, the variety of available destinations in the country and the climate conditions have also been advantageous for the industry's development. The availability of capital and skilled labour have hampered the industry's efforts, however, favourable changes are occurring. The road, telecommunications and information technology infrastructures, the country's location relative to the major tourist markets and the lack of a major Greek charter operator are sources of disadvantage. Nevertheless, specialised factors, such as the educational and research institutions, and other organisations, are starting to have a very positive effect on the industry.

Demand conditions have also been slightly favourable for the tourism industry. Early demand for certain destinations and the subsequent early saturation have contributed to the industry's rapid expansion. The nature of home demand has also been advantageous with its emphasis on the same time periods, attributes and locations with foreign demand. Other characteristics of home demand have given a mixed picture, with positive effects from the high spending and long stay patterns but negative ones from the lack of emphasis on service quality and the reduced importance of 'package' tours.

The fact that the tourism industry has essentially incorporated most related activities reduces the magnitude of the effects of related and supporting industries. However, their output is often a complement or even part of the tourist product. In the Greek case, the very competitive food and beverages and shipping industries have assisted the tourism industry in many ways. The construction, textiles/apparel and some of the household products and arts and crafts industries have also complemented well the tourism industry's product. However, other industries,

especially the ones offering services, such as hotel management, or travel agency automation, are not adequately developed.

The strategy and structure of Greek firms have been favourable in the initial phase of the industry's development. The small, family firms enabled growth in many destinations and gave an extra 'personal touch', while the emphasis on low costs caused a rapid increase in foreign arrivals. The recent trends of industry consolidation and the required pursuit of quality, as the cost advantage is reduced, have not yet made their full impact on Greek firms. While some of them have adjusted and new entrants with high-quality, differentiated products have appeared, the majority of firms are still changing at a very slow pace. Rivalry has been intense in many cases, while geographic concentration is present and increasing constantly.

The role of government has also been very important during the industry's development up until the 1960's. Investment in tourist infrastructures, the building of the Xenia chain of hotels and the availability of loans on generous terms have been important for a growing industry. In the later period, state involvement concentrated mainly in providing incentive schemes and, despite the negative impact of some policy measures, the results of the intervention can be considered rather satisfactory.

The role of chance events has been mixed. Political turmoil and terrorist threats have taken their toll, especially on tourist arrivals in the few years following them. However, the political stabilisation of 1974 and Greece's entry in the EU in 1981 have had positive implications.

The Greek tourism industry developed because of the country's advantage in basic factors, which is still one of its major assets. Other determinants, such as early domestic demand, related and supporting industries, the firms' strategy, structure and rivalry, geographic concentration and government support have also affected the industry's competitive position in these early stages. More recently the developments are mixed, especially regarding firms' strategy and structure and some aspects of home demand. Also disadvantages in basic factors (such as the country's infrastructure), and specialised factors (like the availability of skilled labour) are persisting, despite recent improvements. Overall, though, none of the four groups of determinants is entirely disadvantageous.

CHAPTER 6

THE GREEK MEN'S OUTERWEAR INDUSTRY

This fourth case study examines an industry whose fortunes have changed dramatically throughout the last thirty years. The men's outerwear industry is part of the Greek Textiles/Apparel cluster, one of the two largest Greek clusters. Its importance was heightened during the first part of the 1980's when output, employment and exports were at their highest levels. Since then, declines in production, employment losses, and a worsening trade balance have changed the cluster's position in Greek manufacturing.

The men's outerwear industry has followed a path similar to that of the other Greek textiles and apparel industries. After a period of sustained export growth that characterised the 1970's and most of the 1980's, decline has been swift. In 1992, a part of the industry (the overcoats and other outerwear) had already been excluded from the lists of competitive industries. Since then, exports of the industry's products have been consistently decreasing and according to the latest 1995 data the entire industry can be characterised as uncompetitive by Porter's criteria. This slump in export performance has been accompanied by disappointing financial results for many of the firms in the industry, and lower production and employment levels, while industry experts consider its prospects as limited.

6.1 Products and Uses

The production of garments is an activity that dates back thousands of years. The production process has changed throughout the centuries, with the introduction of various kinds of mechanical devices. It remained, however, until this century,

mainly a household activity or, for the upper classes of the developed countries, an activity performed by skilled craftsmen. The whole textiles and apparel sector was gradually mechanised throughout the 18th and 19th century, starting from England and spreading to continental Europe and the USA. Other countries followed during the second half of the 19th century, most notably Japan and India (Singleton, 1997: 13).

In the 20th century, most countries of the world are engaged in garment production. Notable changes were made including the invention of man-made fibres and the relatively recent introduction of micro-electronics in some of the production phases.

The products that are the focus of this case study are men's outerwear. This specifically includes suits, trousers, jackets, overcoats and 'other outerwear' (as termed in the Standard International Trade Classification) such as raincoats, uniforms, etc. These garments are made of different kinds of fibres (for example, wool, cotton, man-made fibres, etc.), which are spun into long strands called yarn. The yarn is woven into a fabric, which is then usually bleached, dyed, printed or, more generally, treated to assume the desired properties. The fabric is then transferred from the textile producer to the apparel manufacturer and is thoroughly inspected for defects. At the same time, the apparel manufacturer completes the design process that determines the garment's characteristics, by producing a basic pattern. The first phase of the actual production is the cutting phase, where the various parts required by the pattern are cut from the fabric. These parts are sleeves, pockets, front and back panels, etc., and their number can be relatively high (for example, 40-45 in a typical man's suit). Some of these parts of men's outerwear are then fused with an interlining. Subsequently, all parts are sewed together in the assembly phase of the production. The fully assembled garment is then pressed, in what is usually referred to, as the finishing process, that might also include other operations such as inspection (ILO, 1994: 6-7; Hoffman and Rush, 1988: 51-59).

The finished garment is then distributed to a variety of wholesalers and retailers that range from small specialised shops, to department stores. The garments do not always bear the label of the producer as it is very common for companies to subcontract the manufacturing of their garments to other companies, keeping usually control only of design and distribution.

6.2 Recent Trends in the World Market

The world trade in men's outerwear has been dominated by Western European countries, the USA and Japan until the late 1940's. Since then a number of other competitors have emerged from countries with relatively lower labour costs and small but sufficient pools of available capital and have made significant advances in the world market. These competitors are usually concentrated in a few newly industrialised Asian countries, such as South Korea, Taiwan, Indonesia, Malaysia and Hong Kong (now part of China). As this trend was accentuated, industries in developed countries have been forced to seek government protection, invest in automating the production process and retreat in niche, high-priced segments of the market. Nevertheless, Europe, Japan and North America still control a substantial part of the world's output and exports.

In terms of specific products the picture is as follows. In men's jackets European countries produced 34 million units in 1995 with Spain, Portugal, Italy, Germany and the Czech Republic as the biggest producers. The largest European exporters were Germany (8.9% share of the world market in 1992) and Portugal. Asian countries, accounted for 91 million units, that is, the bulk of world production of 139 million units, as well as the bulk of world exports, with China, Hong Kong and Korea as the leading exporters. In men's trousers a more balanced picture is observed with Europe accounting for a little less than a third of the world's production, Asia for another third and other producers, mainly from North America, accounting for the remaining third. Export shares follow the same pattern, with Italy, Belgium, Germany, the USA, Hong Kong and China having the highest export shares (UN, International Trade Statistics Yearbook; UN, Industrial Commodity Statistics Yearbook).

In suits, again, Asian production was the highest with 24 million units in 1995, while European (18 million units) and North American (10 million units) productions have been declining for the last twenty years, with only sporadic increases. Although the same trend is evident in export shares, the reversal is not yet complete, as Germany and Italy still account for almost 30% of world exports, followed by China and Korea. Overcoats and raincoats is the only segment where, despite the presence

of the same trends, European production is still greater than Asian (UN, International Trade Statistics Yearbook; UN, Industrial Commodity Statistics Yearbook).

The change in dominance during the 1970's and 1980's, when European producers were losing ground to the Asian NICs, was primarily due to the significantly lower labour costs and the increased productivity of the workers of these Asian countries. The response from the European and North American producers, as previously mentioned, was three-fold. The first was the increased emphasis on niche, high-fashion segments, which are less price-sensitive, taking advantage of the increased fashion orientation of consumers. The other responses adopted by developed countries involved both their industries and their governments.

The introduction of automation in almost all stages of production was seen as the appropriate response to competitive pressures. Joint R&D initiatives, especially in Japan (like the Technology Research Association for Automated Sewing Systems) but also in the USA (National Apparel Technology Centre) and the European Union, produced important automation innovations that include the use of Computer-Aided Design systems, computer numerically-controlled cutting systems, robotic handling of fabrics, etc. However, these innovations have mostly affected the pre-assembly stage and have not altered the fundamentally labour intensive processes, primarily sewing (despite the limited application of automated sewing machines), which remain central in garment production (ILO, 1994: 3-4). Moreover, these automation technologies have now spread to producers in the NICs, and the European and North American producers are seeking further advancements that seem still a long way ahead. A more direct role was played by governments, especially in the USA and Europe, after constant lobbying by all the apparel industries since the early 1960's.

The result was the MultiFibers Agreement (MFA) that went into effect in 1974 and has been extended three times since. The agreement still governs part of the world trade in textiles and apparel but it is being slowly phased out and the textiles and clothing sector is expected to be fully integrated in the WTO regime by 2005.

6.3 The European Union: Customers and Competitors

The European Union's countries have for a long time been the leading producers and exporters of men's outerwear. Even as late as 1986, more than 50% of the global men's outerwear exports originated from the EU, aided in this by the MultiFibers Agreement. However, since then production in the EU has been steadily declining in all segments of the men's outerwear industry. A large number of firms, both small and large, have withdrawn from the industry, while others, especially the larger ones, have transferred the more labour-intensive processes to lower-cost countries close to the EU (OETH, 1995: 14.15).

The EU, however, continues to be the major producer among developed countries, and still accounts for almost 30% of the world's exports (UN, International Trade Statistics Yearbook). The main destination of EU exports are other developed countries and European brand-names still generate considerable demand. Nevertheless, the industry is suffering from a slump in domestic demand, throughout the EU markets. It is also attempting to adjust to a more demanding market where styles change every year and flexibility is necessary for a producer to maintain its market share (OETH, 1997b: 4.20-4.21).

In terms of individual countries, Italy and Germany are still the major exporters. Italy has restructured its industry, focusing on flexibility and speed and offering a differentiated 'fashion' product. This has enabled it to remain the world's third exporter, with shares only slightly lower than those in the 1980's. Belgium and Portugal are also among the EU countries that have effectively restructured their production units keeping (respectively) a 3.3% and 3% share of the world market. The UK, France and Germany have experienced larger production and exports declines. Nevertheless, they remain among the major producers, and many of the EU's largest men's outerwear companies (for example, the UK's Coats Viyella that is also the largest EU textile producer) are still based in these countries (UN, International Trade Statistics Yearbook; OETH, 1997a: 4.14; OETH, 1997b: 4.22).

6.4 Economic Characteristics of the Industry

The apparel industries have traditionally been among the first to appear during a country's industrialisation process. The high percentage of labour involved in the production of apparel and the low levels of investment required, makes these industries attractive, initially for import-substitution purposes and, eventually, as a major source of export revenues (Ghadar et al., 1987: 16). As a country develops, its domestic market for apparel is among the first to expand, thereby further increasing demand for the domestic industry.

The nature of the creation process for these industries affects the location of production-sites on a world-wide basis. As soon as countries begin to industrialise and a rudimentary capital market is available to offer financing to the apparel industries, the development of these industries is rapid. Because wages are still low and their participation in overall costs relatively high, these countries are able to make quick inroads in world markets and often gain a dominating position. As wages rise, competitive advantage declines and other lower-wage countries begin to dominate, especially in the lower-price segments.

This pattern has been repeated many times and is still in existence as Asian producers now dominate all apparel industries, including men's outerwear. The introduction of automation innovations, which appeared in many developed countries, and especially Japan during the 1980's, threatened to transform the industry into a capital-intensive, fully robotised one, where large, integrated firms would dominate. Despite the extensive use of technology in the design, cutting and distribution stages, the main assembly stage is still labour-intensive. The cost of introducing new technologies and the complexities of manipulating limp and distortable fabrics, as well as the increased flexibility required by the constant changes in styles, favour the existence of more flexible, modular, team-based firms (ILO, 1994: 3-4).

Firms from nations with high wage costs have also followed sub-contracting strategies, where the labour intensive assembly process is designated to smaller domestic firms that often use under-paid home labour or to foreign firms based in lower-wage countries. Investments in technology, sub-contracting and production of higher-priced 'designer' items, allow firms, in developed countries, to retain part of

their market shares, as dominance in the industry moves to less-developed countries. Mergers and acquisitions have been another type of response to competitive pressures in many countries.

Large firms enjoy certain important advantages. These include the ability not only to use cutting-edge technology and adapt it to the needs of the enterprise, but also, to conduct extensive market research, especially in foreign markets where preferences are often very different. Other advantages are related to the large-scale advertising campaigns, which increase brand awareness, the existence of strong design departments that set the trends for the rest of the industry and the economies of purchasing raw materials in bulk. Nevertheless, the role of small firms within an industry that remains relatively labour-intensive and emphasises flexibility and adaptability is important.

Although men's outerwear is among the most concentrated of the apparel industries, small and medium-sized firms still account for a high share of its production. Their ability to increase or decrease rapidly the number of their employees and adjust to new styles has contributed to their continued success.

Small firms are able to combine their flexibility with the advantages of larger businesses through the creation of extensive networks. These networks comprise either a leading major firm and a number of smaller ones that work as sub-contractors, or many small firms that operate at different levels of the production process, a pattern developed extensively in Italy during the 1970's. In the latter case, these networks are usually local, while in the former, they can be spread across many countries (Sefertzi, 1998: 93-94).

6.5 The Men's Outerwear Industry in Greece

Historical Development

The appearance of an organised men's outerwear industry in Greece coincides with the end of the Civil War, in 1949. Initially domestic demand was sluggish as the

quality of ready-made garments was not considered very high. The market gradually developed as more and more people abandoned the traditional tailors in favour of the manufactured products.

The combination of low wages and available capital enabled the formation of a number of relatively large enterprises during the last part of the 1950's. These firms initially sought to supply the Greek market, but as their products were price-competitive, they turned to exporting from the mid-1960's on.

The 1970's was a period of high growth for the industry. Most of the firms, which still account for contemporary Greek production, were established during this period. Exports surged from 1972. Much of this export growth, however, was due to sub-contracting arrangements concluded by these firms, mainly with large German producers. By the early 1980's more than 50% of exports were made as part of sub-contracting arrangements (Patsouratis, 1988: 74-75).

Output growth slowed down after 1980, affected by a stagnating domestic demand. However, exports continued to rise, due to Greece's accession to the EU in 1981, as all barriers to trade with the major European markets were eliminated and Greece obtained a privileged position over other relatively low-wage countries (Singleton, 1997: 19).

This phenomenal growth in exports continued until 1991. Then increased competition from the restructured Western European industries and from other countries(that took advantage of reduced tariff levels), constant wage increases (as wages during the 1980's were automatically adjusted for inflation), as well as decreasing demand in the EU markets, caused a decline for the first time in exports and a sudden surge in imports. Output had already declined to levels far lower than those of 1980 (Kalloniatis, 1995: 38). By the mid-1990's these trends resulted in a reversal of the industry's fortunes as exports constantly declined and imports continued to rise. Exports dropped by almost 20% between 1991 and 1994, while imports during the same years increased by the same magnitude (UN, International Trade Statistics Yearbook). Many firms, even some of the older and larger ones, went into bankruptcy, faced with fiscal difficulties and small prospects of recovery.

Major Competitors

The major firms that dominated the Greek industry have changed over time and these changes have been even greater during the last five years. There are about 125 major firms still active in Greece (ICAP, 1997a), and a large number of smaller establishments where craft production is taking place. The average number of employees in a men's outerwear manufacturing unit is 3.8 (Patsouratis & Rosolymos, 1997: 210). The dominant firms, with more than 50 employees, which also carry out their own production, are analysed below.

The major exporter, Katerina Ltd., is producing almost entirely under sub-contracting arrangements with foreign firms. It was incorporated in 1973 and is based in the town of Katerini, in the prefecture of Pieria, in Northern Greece, where also the main productive unit is located with 480 employees (ICAP, 1997a). It manufactures the whole range of men's outerwear, for other foreign and domestic firms. Since 1993 is has started producing garments under its own brand name which are sold mostly locally (ICAP, 1994).

Another firm that operates since 1969 mainly as a sub-contractor is Raptex SA. It currently produces only men's outerwear for foreign and domestic firms. About 15% of its production is sold locally under its own brand name (Isotimia, 1997).

A firm producing for the Greek and Cypriot markets, as a sub-contractor of other domestic firms and, to a lesser extent, under its own brand name of Boston Tailors is Evete SA. Established in 1970, the firm now has 280 employees in its production facility in Spata, close to Athens.

Best Form SA is also a firm located in Athens, supplying the Greek and Cypriot markets since its establishment in 1988. About 20% of its men's outerwear is produced under contract with other domestic firms (ICAP, 1994).

Again producing mainly under its own brand name and based in Thessaloniki is Kantzibatzakis D., & Co. SA. It employs 65 people and exports only about 2% of its production to Cyprus (ICAP, 1997a).

Other major firms, operating in the 1980's and early 1990's have now been closed or have discontinued their production activities, concentrating instead on importing apparel (ICAP, 1994: 7). The same trend is evident throughout the apparel

and footwear sector where from a high of 1532 manufacturing units that employed more than 10 people in 1992, only 910 are still operating in 1996 (Epilogi, 1998: 286). Very few new firms have been established since the early 1990's, although some of the newly established have started to export, at a very small scale.

The financial results of some of the major men's outerwear companies are outlined in Table 6.1:

TABLE 6.1: Financial Results of Men's Outerwear Companies

Companies	1994		1995	
	Turnover	Net Income	Turnover	Net Income
B & D	137,009	(119,524)	76,768	(24,241)
Best Form	618,743	66,396	505,424	8,574
Giannetos	292,661	2,137	275,573	3,242
Goulias	267,291	(45,545)	236,290	3,319
Baron	333,087	15,401	330,836	10,638
Evete	1,408,098	(162,978)	2,430,849*	65,719*
Kantsimbatzakis, D.	753,584	63,271	920,137	142,263
Katrerina	3,030,847	152,972	N.A.	N.A.
Maragos Bros	385,082	319	414,335	(9,137)
Raptex	1,076,362	32,776	974,991	(32,274)
Standard	533,503	48,327	466,112*	9,147*

N.A.: Not Available, *: Data for 1996
All figures in thousand Dr
Source: ICAP, 1997a; Isotimia, 1997

The financial results outlined above are characteristic of the performance of most businesses in the industry. Although often heavy losses in a year are then turned into profits, the overall profitability level (net profits/turnover) for the industry has remained under 1% since 1992 (ICAP, 1994; ICAP, 1997a). This has also affected the level of investment in the industry that has been low over the past few years. In fact, since the new investment scheme (Law 1892/90) has been put into effect (1991-1997) the industry has received government financing of 10 billion drachmas for 141 projects, representing a small fraction of the overall scheme (Isotimia, 1997).

6.6 Sources of Competitive Advantage

Factor Conditions

The basic raw material for garment production is fabric. In the case of the Greek men's outerwear industry, 80% of the fabric used is imported and only 20% is domestically sourced. In all of the major enterprises, imported fabric is almost exclusively used (ICAP, 1994: 5).

Fabrics are imported mainly from Italy, France and Germany but also from England, Portugal, Belgium and other countries. The reasons for the preference for foreign fabrics are related to their consistently good quality and the availability of a wide range of designs and patterns. Although Greek suppliers are considered price competitive, they are not able to offer the same range of fabrics and usually produce the most modern styles with a considerable time lag (ICAP, 1994: 5).

All my interviewees agreed on the prevalence of foreign fabrics for the reasons mentioned above. Moreover, they emphasised that the crisis in the domestic fabric industry has forced many firms to discontinue their operations, thereby limiting both the range of suppliers and the range of fabrics available. Also, as capacity in the fabric industry has declined, the ability of domestic producers to execute repeat orders in a short amount of time is limited, something very important as retailers and producers maintain lower stocks (OETH, 1995: 14.19). These developments have shifted the men's outerwear industry towards imported fabrics in the last ten to fifteen years.

Labour costs are the second largest component of costs for the men's outerwear industry, after raw materials. For the Greek industry, labour costs are estimated at around 20-22% of total cost and this proportion is among the highest in the EU (Drimousis and Zisimopoulos, 1988: 23).

In the industry's first stages of development, labour costs were a major source of advantage. In 1965, wages in the apparel industries were 2.5 times lower than those in all Greek manufacturing sectors. Since the mid-1970's this gap began to narrow and in 1980 the apparel industries' wages were only about 40% lower than the Greek manufacturing average. Even after these high increases, in 1981 the hourly

wages in the Greek apparel industries were far lower than those in most developed countries, and even 15% lower than those in Spain and Ireland. Greek wages were closer in range to those in Mexico. In 1984, some changes came about as Greek wage increases were much higher than those in most other developed countries (Patsouratis, 1988: 56-59).

Throughout the 1980's Greek wages were rising in nominal terms at around 18% per annum. In real terms, they did not rise substantially, or, according to some calculations, they might have dropped slightly, and, in the beginning of the 1990's, Greece was still among the low-wage developed countries in the apparel sector. Nevertheless, the constant real and nominal increases had driven Greek wages well above those in the Asian NICs, as well as those in Portugal and Turkey, countries that compete directly with Greece in the same segments and markets and for the same sub-contracting arrangements (Kalloniatis, 1995). The integration of Eastern European countries in the international trading system, brought on a new group of competitors with wages in the apparel industries only a fraction of those in Greece. Therefore, wages have now become a disadvantage for the industry, despite the fact that increases have been modest throughout the 1990's.

The availability and quality of skilled personnel is another area of concern for the Greek industry. In the 1960's and 1970's only low-skilled labour was required, as the entrepreneurs that started most of the firms essentially carried out the management tasks. As firms grew larger and automation was introduced, at least in the initial stages of production, the need for specialised personnel increased. According to my interviewees and other researchers (ICAP, 1994: 7; Patsouratis, 1988: 124), skilled personnel is still difficult to find and requires substantial training. The only way around their problem is to attract personnel from other competitors, although these employees demand much higher wages.

Capital has been available since the very first firms of the industry were established. As the initial capital required for production was low and went to buildings and machinery that was not usually specialised for the men's outerwear industry, banks were willing to lend at the prevailing interest rates. In recent years, as the companies' profitability declined, the guarantees required by the banks have increased. Moreover, interest rates for working capital, which is essential for the industry, have increased disproportionately after 1990 according to my interviewees

(see also Kalloniatis, 1995: 71; Patsouratis and Rosolymos, 1997: 238), placing a further burden on the industry's firms.

The location of production is influencing the destination of exports of finished products to a small extent. Location seems to matter more in the cases of large firms in developed countries that are sub-contracting the labour-intensive phases of the production process. In most cases, USA firms have used Mexican and Pacific Rim sub-contractors, while Western European firms have used Southern European sub-contractors. This was an advantage in the 1970's for the Greek industry and it became even more important after Greece's accession to the EU. In recent years, though, countries that are geographically close to Greece, such as Eastern European and North African countries, have been able to develop men's outerwear industries. As these countries have the advantage of substantially lower wages, they have attracted a large and increasing number of these sub-contracting arrangements, putting Greece's geographical advantage in question.

Very little research and development is being carried out in the Greek men's outerwear industry and by a very small number of relatively dynamic firms (Sefertzi, 1998: 103-104). The small scale of the enterprises and the lack of any co-ordinated schemes has not allowed firms to devote any funds to research into automation techniques (Sefertzi, 1998: 113). Fabric colours and designs are coming from other countries and Greek firms simply try to use the most modern ones. The actual design of the garments is also following international trends. A very small number of specialised firms operating at the higher end of the market are able to offer some innovations in design (Sefertzi, 1998: 110). Apart from these firms, most of the others make few adaptations to designs bought from foreign designers.

Training for most of the workers in the Greek industry is rudimentary and there are only certain seminars offered by the government-operated Organisation for Employment (OAED). There is a small number of departments in the Polytechnic Institutions (TEI) that teach design and cutting techniques, these being the only processes that require specialised personnel (Patsouratis and Rosolymos, 1997: 220-221). Very few institutions related to the industry are active to the point of affecting the industry's advantage. In fact, co-operation among the firms in the industry in the form of any organised institution has decreased.

At the early stages of its development the industry enjoyed some advantage in basic factors. Domestic raw materials were, to some extent, competitive and producers were also taking advantage of the relatively low wages prevailing in the industry. Geographic proximity to Western Europe was also another advantage for the industry, while capital was available at average rates. These advantages have slowly been eroded to the point that raw materials sources are now a major disadvantage for the industry, location is not a major source of advantage, and wage and capital costs are slightly disadvantageous. The industry has not been able to create the advanced factors necessary for its continued success. Skilled labour is still hard to find, there is very little research and development and specialised institutions are not developed. The few polytechnic departments and other specialised institutions are only a small base that must be expanded if the industry expects to derive any competitive advantage from advanced and specialised factors.

Demand Conditions

Consumer spending on clothing in Greece has been high, although it has dropped substantially in the last fifteen years. This trend has been evident throughout the EU, as consumer spending on clothing has fallen from 8.4% of total spending in 1980 to 7.4% in 1993 (OETH, 1995: 14-18). However, Greece has experienced even sharper declines throughout the last thirty years. In 1970, 10.4% of consumer spending went to clothing items, while in 1980 this proportion fell to 8.6%, still higher than the EU average. In 1993, consumer spending on clothing was 7% of total consumer spending, 0.4% below the EU average for the same year. Furthermore, the proportion for clothing expenditure per household spent on men's outerwear has declined, from 29% in 1982 to 25.7% in 1988 (Kalloniatis, 1995: 19, 21).

These developments in consumer expenditure for apparel are not uncommon, and are often observed in countries that experience sharp increases in incomes. Rises in income levels, however, are also associated with higher degrees of consumer sophistication that forces domestic producers to emphasise quality and fashion (Singleton, 1997: 63). This appears to be the case in Greece only to a small extent.

Although customers were characterised by my interviewees as discerning in their purchases, they are not usually seeking the best quality products and price is their most important consideration. In addition, the high fashion segment in Greece is still very small, much smaller than that of other developed countries. It appears that consumer demand has not pushed manufacturers towards creating new styles and upgrading to high-quality products.

Demand for ready-made men's outerwear first appeared in the 1950's, much later than in most developed countries. This first decade was a period of slow growth as domestic manufacturers expanded slowly. During the 1960's demand grew at a much higher pace, prompting the creation of new and larger firms. The 1970's was a period of high growth, with demand increasing every year and doubling between 1970 and 1980, along with most other apparel products. This was also the period when the industry constantly increased its production, as well as its exports, and in 1980 it had reached very high levels. The first years of the 1980's was the time when the market started to saturate and demand dropped slightly (Patsouratis, 1988).

Exports continued to rise in the 1980's, and the industry increased the proportion of its production to be exported. Nevertheless, production volume decreased along with domestic demand and the slight increases between 1987 and 1989 corresponded with increases in domestic demand (Kalloniatis, 1995). Since then demand has been decreasing at a slow pace and production has followed the same trend.

Greek demand has not had an effect on preferences in foreign markets. Greek designers have not set any trends in the men's outerwear industry and the products sold in Greece are mostly of the same type as those in other European markets.

Demand conditions are not a major source of advantage for the industry. The high growth of demand in the 1960's and 1970's and the substantial proportion of disposable income that went into apparel purchases, helped the industry at the time. In the 1980's as the market saturated and expenditure dropped in relative terms, production was affected and the initial increases in export volume did not continue in the 1990's. Sophistication of domestic customers did not increase substantially, as might have been expected, and the high fashion segment is still very small.

Internationalisation of Greek demand has not played an advantageous role for the industry.

Related and Supporting Industries

The men's outerwear industry belongs to a group of apparel industries that are responsible for a large part of the exports from the Textiles/Apparel cluster, the second largest cluster in Greek manufacturing. The women's outerwear industry is the one with the most similar production process. In fact, some of the firms active in the men's outerwear industry are also producing women's outerwear, although with lower volumes. The growth in output and exports of women's outerwear mirrors that of men's outerwear. High and growing exports in the 1970's and a share of over 1% of the world market in the 1980's made the women's outerwear industry even more successful than the men's outerwear one. In the early 1990's the decline was slower, but after 1992, it has become evident. Financial problems have also plagued the industry and overall its competitive position has deteriorated.

The other apparel industries have also grown throughout the 1970's and among them the knitted products industries have proven the most successful. These industries, along with fur products, have maintained their high export shares throughout the 1980's, with slight decreases in the 1990's. Both competitive and uncompetitive apparel industries are experiencing worsening trade deficits, decreases in export volumes and increased imports.

Greece is a major producer of raw cotton and this has given rise to an extensive yarn industry. Although various types of yarn are produced by the industry, the largest proportion is cotton yarn (about 77% of total production). The yarn industry has experienced declines in exports in the last few years, especially in non-cotton yarn. It remains, however, among the most competitive of the textiles industries. Nevertheless, the phenomena common in all other textile and apparel industries have appeared in this industry too. Bankruptcies have become more common after 1990, and production has declined from 213.000 tons in 1986 to 176.000 in 1990 and 140.000 recently (in 1997) (Karagiannopoulou, 1998: 39)

The situation is much worse for the direct supplier to the men's outerwear industry, the Greek fabrics industry. Although some parts of it were competitive in 1978 and 1985 (see Tables A.1, A.2 in the Appendix), only two kinds of cotton fabric were still in the competitive lists in 1992. Moreover, the industry has been characterised by the closure, throughout the 1980's, of some of its biggest firms. The firms that remained have attempted to invest in new technologies. Nevertheless, the Greek fabrics industry is considered the least modern among the EU industries (ICAP, 1997c).

The lack of a competitive machinery industry in the Textiles/Apparel cluster is not surprising given that it is a common feature of all Greek clusters. Moreover, more than 60% of textile and leather machinery world trade is controlled by three countries, Germany, Japan and Italy (Singleton, 1997: 79).

Overall, related and supporting industries is a group of determinants that is not entirely disadvantageous for the industry. However, any advantage seems to be diminishing over time as the competitiveness of almost all the textile and apparel industries is decreasing. In terms of suppliers, the competitive yarn industry shares little technology, distribution channels or other features with the men's outerwear industry and does not supply it directly with its output. The fabrics industry, whose product has a direct impact on the production of men's outerwear, has been in decline for even longer than the men's outerwear industry. Then, among the competitive apparel industries, the one more closely related to the men's outerwear is women's outerwear and this industry has also experienced financial and export losses in the 1990's. The few remaining highly competitive apparel industries, for example, knitwear, do not appear to have the dynamism to assist other industries, as they are faced with increasing imports and the need for sustained investment in automation.

Firm Strategy, Structure and Rivalry

Greek firms are consistently following a low cost strategy. The advantage of low labour costs in the 1960's and 1970's and the opportunities to conclude sub-contracting arrangements based on that advantage, especially throughout the 1980's,

favoured this approach, that initially seemed to lead to the industry's rapid expansion and increasing competitiveness. As Greece started exhibiting characteristics and wage costs similar to those in many developed countries, the same firms failed to make the necessary adjustments.

The differentiated, fashion-oriented strategy that was mentioned in previous sections as a response of industries in developed countries was only followed by a few traditionally up-market firms and a handful of new companies. These new companies sub-contract their entire production to other firms and rely on a recognisable Greek brand-name. The results, however, have been mixed. The traditional major producers have only recently started to develop and promote their own brand-names. They are still however very far from achieving recognition even in the Greek market.

The lack of a 'Greek' fashion in men's outerwear (Patsouratis, 1988: 67-68) is still forcing the industry to compete on costs. Greek firms have recently been more successful at controlling labour costs, however, their investment in automation procedures is still limited (ICAP, 1994: 7). Marketing and distribution are also among the activities receiving relatively little attention from Greek firms (Sefertzi, 1998: 108). With the emergence of other low cost competitors in neighbouring countries (Eastern Europe, North Africa), Greek producers need to offer a differentiated, branded product. The sustainability of the low-cost strategy will be seriously questioned in the coming years and the alternative strategies must produce results in a restricted time-frame.

The prevalence of small, family-owned and operated firms has been a characteristic of the Greek industry in its early stage of development. During the 1970's the average size of the enterprises increased and a degree of separation between owners and managers appeared. This process, however, did not lead to the large integrated companies so common in other countries. Small Greek firms are suffering from a lack of market knowledge, have difficulties in raising capital and attract few qualified managers (Patsouratis, 1988). Responsibility remains concentrated to the technical and the general manager, reflecting on the centralised nature of the firms and on the abilities of the middle managers and supervisors (Fotinopoulou and Manolopoulos, 1991: 26).

A response to the increasing competitive pressures on small Greek firms could be the creation of networks combining producers, designers and distributors. This

prospect is also supported by the Greek government's clustering initiatives, partly funded by the EU. So far, however, these efforts have had a limited impact on the Greek industry (Sefertzi, 1998: 115).

Geographic concentration is present in the men's outerwear industry but to a lesser degree than in other industries. The Athens region is where 34% of productive units are operating, employing 31.5% of the workforce (ICAP, 1994: 9). The second largest concentration of firms is in the Thessaloniki area, where a lot of the major enterprises are located. Given that these two cities, along with their surrounding areas, account for almost 50% of the Greek population, the concentration of men's outerwear firms is hardly surprising. Nevertheless, there are some large firms that are situated near other, smaller Greek cities.

There is intense rivalry among men's outerwear firms in Greece. The five leading firms in terms of sales, account for less than 40% of the total sales in the industry (Isotimia, 1997). Market shares are even more dispersed in the largest segment of the market, the men's trousers one, where even major firms have less than 3-4% of the market (ICAP, 1994). Firms are often co-operating in various forms of sub-contracting arrangements. Nevertheless, the shrinking size of the market and the large number of small and independent producers does not allow for collusion or any type of agreements distorting competition. However, price is the most important element of domestic competition.

Firms' strategy and structure were appropriate in the men's outerwear industry of the 1980's, where small, flexible Greek firms offered a low cost product. In the 1990's, the competitive pressures from lower-wage countries on the one hand and from developed countries with differentiated, quality products on the other, are threatening the Greek industry's position. The response has been very slow, with few firms reaching high degrees of automation to reduce costs, or improving product design and quality to increase differentiation. Most firms are still characterised by lack of extensive marketing and market research and a shortage of managers. Geographic concentration is relatively high but is strongly related to the country's population patterns. Domestic rivalry is intense and the limited co-operation among firms is not affecting the competitive pressures.

The Role of Government

The Greek government was relatively active in the first decades of the industry's development. Although there was no 'grand scheme' for the industry, the high tariff levels and the considerable export subsidies helped and protected the industry in the 1960's, 1970's and part of the 1980's (Sefertzi, 1998: 100). All types of export subsidies were discontinued under EU rules by the mid-1980's along with tariffs for EU products. Tariffs for non-EU producers have also been lowered in the last ten years, allowing increased import penetration from Asian countries. The firms in the industry can still take advantage of the various investment schemes and EU initiatives aimed at assisting modernisation, although it is only the largest firms that are adequately informed to do so. Moreover, the need for investing the firm's own funds along with the public money has prevented some firms from fully exploiting these resources.

The Role of Chance

Chance events have not been favourable for the Greek industry. In the mid-1980's as the industry was increasing its productive capacity, the country faced a series of stabilisation programs that restricted demand for the industry's products. A few years after this development, in the early 1990's, the major export markets for men's outerwear, those of the EU, faced a severe recession. The Greek industry did not change its export orientation and 75% of Greek exports still go to the EU.

6.7 Summary

The men's outerwear industry is in many ways a typical apparel industry, where competitive advantage is closely related to labour costs. Despite the relative automation of the pre-assembly procedures, such as garment design and cutting, the

assembly phases of production remain labour-intensive. Asian producers have capitalised on that characteristic of the industry and are now the dominant force both in terms of production and exports. Nevertheless, European Union countries are still controlling a considerable part of the world trade through a combination of differentiation strategies, investments in technology, and sub-contracting agreements with firms in countries near the EU's borders.

The men's outerwear industry appeared in Greece in the early 1950's with the establishment of small units. Larger firms were formed in the 1960's and 1970's and, taking advantage of Greece's relatively low wages, targeted not only the domestic but also many foreign markets. Export growth continued into the 1980's mainly through sub-contracting arrangements with German firms. A combination of increased competition, wage increases and stagnant demand caused a reversal in the industry's position with output now at half its 1980 level, low profitability and exports constantly decreasing. Competitiveness has been declining in the 1990's and according to the 1995 export data, the industry can now be characterised as uncompetitive.

Factor conditions are not favourable for the industry in the 1990's. The initial advantage of low wages has been slowly eroded to the point that Greece is now slightly disadvantaged against most other countries including its low-wage neighbours. The quality of human capital is another area of concern as skilled personnel is hard to find and expensive to train. Raw materials and especially fabrics are almost exclusively bought from foreign firms and the Greek industry has no control over their design or quality. Geographic proximity to Western Europe was one of the industry's initial advantages in basic factors. As, however, competitors emerged among Greece's close neighbours, location is not as favourable to the industry as it was ten years ago. Capital costs have also increased in the 1990's, to their highest levels. In terms of advanced factors, a small number of firms are conducting research, mainly on garment design, while some specialised educational institutions exist. Nevertheless, the lack of extensive R&D, the scarcity of educational institutions and the fragmented efforts of other industry-related organisations are disadvantaging the industry and hindering its restructuring efforts.

Demand conditions are not a source of advantage for the Greek industry. Domestic demand had grown in the 1960's and 1970's aiding the industry's

expansion. The saturation of the domestic market in the 1980's initially coincided with a surge in exports. However, demand in the 1990's remained stagnant or decreased in certain years and the industry was not able to compensate with any further export increases. Moreover, new fashion-related segments were slow to emerge in Greece as the sophistication of its consumers is not considered high.

Related and supporting industries provide a more mixed picture. Initially the men's outerwear industry was part of a rapidly growing group of apparel industries that pursued exports vigorously. The industry has been among the first to experience losses in competitive position, now shared by many of the other apparel industries and especially the closely related women's outerwear one. The competitive cotton and yarn industries have also had little effect on the industry's competitive advantage as its direct supplier, the fabrics industry, is suffering from low exports and a shrinking number of establishments.

Firms' strategy and structure were initially advantageous for the Greek men's outerwear industry. The successful small-scale structure and low-cost strategy has not been so effective recently, as wage costs have increased and the industry is not able to offer a differentiated, high-priced product. There are few firms that have been able to increase their brand awareness and product image while pursuing alliances in Greece and abroad. However, the low levels of automation, the lack of market research, and the absence of extensive firm networks are major disadvantages for the pursuit of a differentiation strategy. Geographic concentration is relatively high, mostly related to the large Athens and Thessaloniki markets. Domestic rivalry is also intense, although it is usually still based on price competition.

The Greek government's role was initially a strong one. Although the industry was not subject to substantial intervention, tariffs and export subsidies were present until well into the 1980's. Protection has decreased to a large extent in the last ten years and the various state and EU assistance schemes have only had a limited impact.

Chance events have also been a source of disadvantage for the industry. The stabilisation programs of the 1980's and 1990's have restricted domestic demand in a critical stage of the industry's development. Decreasing demand in the EU countries, which constituted Greece's major export markets in the early 1990's, has also disadvantaged the Greek industry.

The rapid and substantial decline in competitiveness of the Greek men's outerwear industry is related to a decreasing competitive advantage derived from the diamond determinants. Basic factors are not anymore a source of advantage for the industry, while advanced factors have not developed to a great extent. Demand conditions are also unfavourable, while firms' strategies and structures are not appropriate any more for the Greek industry. Government and chance have also affected the industry in a disadvantageous way since the mid-1980's.

One gap in the framework is the presence of some related and supporting industries that are still very competitive, although the direct suppliers to the industry are not and the most closely related industries have experienced competitiveness losses. Domestic rivalry is another major area of concern for the applicability of the diamond framework as it remains intense, although it is mostly focused on price.

CHAPTER 7

THE GREEK DAIRY INDUSTRY

The fifth case study deals with an industry that belongs to the largest and best developed Greek cluster, Food/Beverages. The dairy industry is among the many processed food industries in this cluster that have strengthened their competitive positions in the last decade.

The advantage of the most competitive Greek food and beverages industries is closely related to natural resources. These industries are mainly exporting raw or slightly processed agricultural goods and have been among Greece's major exporters for decades. In the last fifteen years, the number of processed foods industries in Greece has increased, along with their output and export volume. These industries exhibit reduced reliance on the available natural resources and although the initial impetus for their creation was the local availability of raw materials, their continued success depends on a multitude of other factors. The dairy industry is a characteristic example of these industries.

In its first steps, the Greek dairy industry depended on the local milk production. In recent years, however, the importance of basic factors has been reduced as the industry's increasing output and aggressive expansion in foreign countries has necessitated raw material imports, mainly of milk products. The Greek dairy industry's relatively recent surge in competitiveness is examined in this chapter.

7.1 Products and Uses

The use of milk for human consumption is an activity dating back thousands of years. Ever since sheep and, later, cows were domesticated, their milk was used for

man's nutrition. As early as 1500 BC, texts mention milk and milk products as something common in people's diet. In ancient Greek texts, there are extensive descriptions of the cheese-making process and the medicinal qualities of milk (Zigouris, 1952: 11-14).

In medieval times, the first, primitive farmer's organisations in Central and Western Europe started producing larger quantities of milk products. Traditional techniques were still being used, while a preference for specific types of dairy products, especially cheese, in every location emerged during that time. The origins of the modern dairy industry can be traced to the second half of the 19th century when the Danes Nielsen and Petersen and the Swede Gustav de Laval invented the centrifugal machines that facilitated the separation of cream and skim milk, enabling the large-scale manufacture of good quality butter. The second development that took place around 1880 was the extensive use of pasteurisation machines, where the heating of milk in high temperatures destroyed its bacteria. Although heating of milk was used since ancient times, the conduct of extensive scientific research on the temperature and duration of heating was a feature of the 19th and 20th centuries. At the end of the 19th century dairy production started to move away from the farms with the establishment of the first small-size industrial units in Scandinavia, the USA, the Netherlands, Germany, Switzerland and a few other countries (Vatin, 1990: 15-63).

Production of milk and milk products is still carried out in many farms around the world. Most commonly, however, modern production of dairy products takes place at industrial sites, where, under strict guidelines, milk is pasteurised and homogenised and then kept at low temperatures, ready for consumption. Other processes transform raw milk or some of its ingredients into 'long-life' or UHT (Ultra High Temperature) milk (that can be consumed up to 9 months from the date of production), milk cream, milk powder, yoghurt, butter, various types of cheese and several other products. All of them are either consumed directly or used as ingredients in other food products, for example in the sweets and confectionery industries.

7.2 Recent Trends in the World Market

The dairy industry is present in most countries of the world. Milk is mainly consumed within the country where it is produced, while dairy firms use primarily local sources of milk for their products (Crocombe et al., 1991: 63-64). Therefore, the largest consumers are usually the largest producers, although in many countries non-industrial production is still dominant. Production in industrial units is concentrated essentially in three areas, the European Union, Eastern Europe and North America. Both the European Union and the United States have experienced modest growth in the production of most dairy products in the last ten years. However, as production is affected by various government support measures for milk, growth figures are not necessarily indicative of the industry's potential. The other large producer, the Russian Federation, has seen some production declines since the 1991 political and economic changes. However, Eastern Europe's share as a whole, of world production, has slightly increased with higher output in most other Eastern European countries. A few Asian countries, along with Australia and New Zealand, are the remaining major industrial producers of dairy products (UN, Industrial Commodity Statistics Yearbook).

The international trade in dairy products represents only a fraction of total world production. It often consists of surplus production that is channelled to foreign markets, although some countries are systematically producing above their domestic consumption and exporting a substantial part of their output. Countries of the European Union account for 75.3% of 1995 world exports of milk, cream and most other dairy products, while in the case of cheese exports that figure is even higher. Australia and New Zealand account for the bulk of the remaining exports, while Switzerland is also an important exporter of cheese. Europe's share peaked around 1987 and has been declining since, while New Zealand and Australia continue to show a strong export orientation. The USA's share has also been slightly increasing, remaining, however, around 3% (UN, International Trade Statistics Yearbook).

The two major consumption trends, present for the last three decades, are the shift towards branded products and the increased consumption of low-fat varieties. Branded products, feverishly promoted by large multinationals and large local firms,

are gaining ground, especially in the major markets, over more traditional, unbranded products (Crocombe et al., 1991: 64). This trend is augmented by the introduction of many new product varieties to satisfy particular consumer needs. Among them, the need for healthier eating has prompted a substantial rise in the consumption of low-fat dairy products. In fact, in many of the Western European markets, already in the mid-1980's, semi-skimmed (fat content between 1.5 and 1.8%) and skimmed (less than 0.5% fat content) milk consumption had surpassed the consumption of regular milk (with around 3.5% of fat content) (FEIR, 1991: 136-139).

7.3 The European Union: Customers and Competitors

The dairy industry is an important part of the European food industries. In terms of production volumes, the largest producing countries are Germany and the UK, which account for about 40% of the EU's production of fresh milk products and drinking milk. In terms of value added, France and Italy have taken the lead, as the industries of these countries are concentrating less on milk and more on branded products. In most dairy products, such as cream, milk powder, butter and cheese, it is France and Germany that produce more than 50% of the EU's total, with the exception of concentrated milk, where the Netherlands have the second highest share. The dairy industry is a major industry of the food sector in many countries. This is evident by the production specialisation ratios of EU countries that are calculated as the ratio of dairy production over the country's total manufacturing output, divided by the same ratio for the EU. Denmark and Ireland have the highest ratios of 2.24 and 3.38 respectively, for 1994. The industry is also important in the Netherlands (1.60) and Greece (1.50). In fact, among all EU countries, Greece has shown the highest rise in the industry's importance between 1985 and 1994 (Nomisma, 1997).

The fragmented nature of the EU industry is slowly changing. Although small firms and co-operatives still account for a large share of the production of dairy products, especially drinking milk and butter, large firms are increasing their market shares across the EU. To some extent, this is the result of a wave of mergers,

acquisitions and alliances, where usually small local producers are taken over by larger local firms or by the EU multinationals (ICAP, 1995: 144-146).

Despite the integration of companies across the EU, consumer tastes seem to be well rooted in individual cultures. The uses of various products are different from country to country and regional product variations are also evident, for example, in the multitude of cheese types in the EU. Nevertheless, the world-wide trend for healthier eating has affected all EU countries. Butter consumption is declining as a result of its 'unhealthy' image, while low-fat cheese sales are growing faster than any other cheese product in the last few years. Overall, demand for dairy products is slowly increasing, while demand for milk is slightly decreasing. The products that are experiencing above average growth rates are yoghurt, fermented and flavoured milk drinks, and soft cheese (Nomisma, 1997: 3.55-3.56).

Export markets for the EU products are increasing at a slow pace. The large EU producers, Germany, France and the UK, are controlling most of the world exports of milk and milk products, other than butter and cheese. The Netherlands (12.4% share of world exports in 1995) and Belgium are also major exporters of dairy products. Butter exports are dominated by the same countries with the addition of Ireland and Denmark. The world trade in cheese is almost entirely the result of exports from the EU (with France, Germany, the Netherlands, Denmark and Italy having a combined 70% share of world exports in 1995) and Switzerland (UN, International Trade Statistics Yearbook).

7.4 Economic Characteristics of the Dairy Industry

The dairy industry has adopted many technical developments in the last few decades. These developments have led to the improvement of the genetic quality of cattle, the wider and more efficient use of cereals and high protein feeds and the use of breeds with better feed conversion ratios. As a result, the average yield per cow has risen substantially. In the absence of a corresponding rise in consumption or a fall in cow numbers, milk production surpluses are occurring in many countries.

Consequently, since the early 1970's, most major milk producing countries have been operating schemes limiting milk deliveries, through the application of levies, or quotas, or through other measures, such as the encouragement of beef over dairy production (OECD, 1983: 51-70).

The dairy industry, and especially its milk producing part, has also been the subject of other types of government regulation. These interventions had two main goals. The first was to ensure a regular, reasonably priced, good quality supply of milk and dairy products to the consumers. The second goal was to provide farmers with a more or less guaranteed income, and to prevent rural depopulation (the second being especially important in most European countries). Although rural employment is affected by measures throughout the agricultural sector, milk production has been targeted because of the small size of the producing units and the high labour input it requires.

These characteristics of milk production, even in most developed countries, have led to guaranteed prices for milk and dairy products, supplemented by high import levies and quotas. Policies of this nature are currently being administered in Canada, the United States, Japan, Australia, the European Union and most Eastern European countries (OECD, 1997). Governments have also supported producer co-operatives, which increase the bargaining power of milk producers, given the small sizes of their farms. These co-operatives often carry out extensive manufacturing operations.

Domestic interventions in the markets for milk and dairy products affect prices in the international markets. In some of these products, however, competition is almost entirely based on price, despite the, sometimes successful, efforts of some countries to emphasise quality and delivery reliability (Crocombe et al., 1991: 63). Nevertheless, international competition is expected to intensify. The results of the Uruguay Round in the GATT negotiations, regarding market access and export subsidies for dairy products, were substantial. Tariffs are to be greatly reduced, non-tariff measures are to be converted into tariffs, and export subsidies limited in order to reduce global subsidised exports by more than 21% (GATT, 1994).

Apart from supporting the liberalisation efforts in basic commodity dairy products, major dairy firms are also concentrating on the creation of specialised products that command price premiums and are little affected by government

controls. Moreover, the attempts to build brand awareness through marketing, not only in the home country but also in foreign markets, complemented by acquisitions and strategic alliances, have led to the establishment of many recognised brand-names. These brand-names are then exploited to increase consumer loyalty and build extensive distribution channels.

7.5 The Dairy Industry in Greece

Historical Development

The production of cheese and the use of milk for food are activities that date back thousands of years in Greece. During the 19th century, farmers' co-operatives and individual merchants financed an expansion of production facilities in many Greek locations. Merchants also distributed milk around Greece and developed export markets for feta cheese, in countries with large Greek communities (for example, Egypt, and later the USA). The first industrial dairy manufacturer in Greece was M. Margaritis, who in 1900 established a butter-producing unit in the island of Corfu, near Italy. After 1910, in another Greek island, Crete, a co-ordinated effort was made to establish farmer's co-operatives and promote cheese production. The establishment in 1916 of a School for Cheese Manufacturing in Ioannina (Epiros), which in 1932 was expanded into the School for Dairy Manufacturing, also contributed to the production of high-quality varieties of dairy products in the 1930's. At the same time production of certain types of cheese increased more than 50% and exports, primarily to Egypt, the USA and South Africa, followed, with high volumes since 1933. During the war, production was substantially reduced and trade completely halted (Zigouris, 1952: 16-45).

In 1934, the first major industrial unit, Evga SA, was incorporated in Athens, while five smaller industrial units were operating in other Greek cities. Evga controlled the market for fresh milk, while small independent producers had a major share, especially of the cheese, butter and ice cream markets. Farmers' co-operatives

also started to play a more active role in the dairy industry. In the 1950's, the adoption of 'industrial' fresh milk was rapid, especially in major cities. Total milk production doubled between 1952 and 1962, surpassing the pre-war levels for the first time in 1954. Other products, still mainly manufactured in small 'traditional' establishments, also experienced similar substantial increases in output (Ministry of Commerce, 1963).

The 1960's was a period of change. A number of small producers who had built a local client base and a reputation for quality decided to expand. A few of them soon established large manufacturing facilities, and among them the most prominent one was Delta, which produced pasteurised milk. Competition intensified in the 1970's as a number of firms entered the industry, and co-operatives increased their output and established their brand-names. Fage was among the most significant entrants, developing from a small shop in Athens before the war and a small-scale yoghurt producer in the 1960's to a major manufacturer in the 1970's. A similar route was followed by Mevgal, in Thessaloniki, in Northern Greece.

In the 1980's, Delta became the leader in fresh milk and some of the milk products in Southern and Central Greece, with Mevgal and Agno (a co-operative of farmers from Northern Greece) controlling the market in Northern Greece. Fage developed the branded, 'industrial' yoghurt market, while in the ice-cream segment Evga, Delta and Lever Hellas (a subsidiary of Unilever) were competing to gain market share. Production rose slowly in the early 1980's, but then in the period 1987-1990 the increases were constant and substantial. Exports became a target of Greek companies in all segments of the industry. Imports also increased as consumers sought greater variety and local raw materials were not sufficient for the rapidly expanding industry (FEIR, 1991).

Exports and domestic competition were the major areas of change in the early 1990's. Yoghurt exports, that were already high in the late 1980's, increased further, especially by the market leader Fage, that saw its domestic share decline with Delta's entry in the yoghurt segment in 1994. The brand-name Fage is already well-known in the UK, while Delta's yoghurt is being sold in France under the Delios brand name by Danone. The same companies (Fage and Delta) competed in the ice-cream market since Fage bought Evga in 1988. The third competitor, Lever Hellas, was the major exporter, primarily to Italy.

The packaged cheese market, that was very small in previous decades, did also expand in the 1990's and domestic consumption and exports grew accordingly. All cheese exports have doubled in dollar value terms between 1991 and 1995. The introduction of a great number of new product varieties is another characteristic of the 1990's (ICAP, 1995).

Foreign direct investment is a more recent development. Delta has chosen ice-cream, a high value-added product with no particular 'Greek' characteristics, as the appropriate product to be manufactured and sold throughout Eastern Europe. Three factories are currently being operated by Delta in Bulgaria, Romania, Yugoslavia, while there are plans for a fourth one in the Ukraine. This year, foreign ice cream sales in the Balkans, surpassed domestic sales for Delta, for the first time (Tsaraglis, 1998: 12). Fage has made the same choice of product, and its owner, K. Filippou, has bought Cas-Ice Cream in South Africa.

Major Competitors

Despite the presence of four large producers (Delta, Fage, Mevgal and Agno), which are active in almost all segments of the dairy market in Greece, there are other companies with high market shares in particular products. Farmers' co-operatives are also still operating, while acquisitions and alliances are affecting the industry.

The fresh milk market is essentially controlled by the four major producers. Delta Dairy SA, incorporated in 1968, has been listed on the Athens Stock Exchange since 1990. Nevertheless, the founding Daskalopoulos family still owns a large part of the shares. In addition to its factories in three Balkan countries, Delta has a strategic alliance with the French dairy company Danone, that also holds 20% of Delta's shares.

The other major Greek dairy company, Fage, was initially established in 1926 as a small enterprise, owned by I. Filippou. Its reputation for quality helped it open more shops and then a small manufacturing unit. In 1977 it was incorporated under the form of an SA and started producing in a much larger facility. Since then it has grown enormously, acquiring in 1988 the first major Greek dairy company, Evga.

Fage also holds shares in other smaller producers, especially cheese manufacturers, and sells their products under its own brand names.

The third largest Greek dairy company, Mevgal was established in 1966, also as a small cheese manufacturing unit. In 1976 it was incorporated as an SA. It is based in Thessaloniki and is currently expanding under a modernisation program. Besides its share of the fresh milk and yoghurt markets, Mevgal has been a pioneer in packaged cheese production.

Agno is the largest co-operative firm in the Greek dairy industry. Established in 1950 and based in Lagadas, near Thessaloniki, it is among the few major dairy companies in Greece that produce their own raw milk. Despite recent modernisation efforts that have ensured the company's market share in Northern Greece, financial difficulties have been mounting for the past five years.

Two more major co-operative firms are Dodoni SA and Neogal SA. Dodoni operates since 1963 in the Northern province of Epiros, and is the largest producer of feta cheese. It exports almost 30% of its cheese and yoghurt production to many European countries, the USA and South Africa and accounts for almost 25% of Greek cheese exports (ICAP, 1995: 28). Neogal, established in Drama (Macedonia) in 1965, is currently controlled by the farmer's co-operatives of the Drama and Kavala prefectures, where most of its sales take place.

In terms of other types of milk and milk products, Greece has a relatively high, but steadily declining, consumption of concentrated milk. This is primarily imported, while the only producer in Greece is Nestle Hellas SA, that was incorporated in 1973, as a subsidiary of Nestle. The six companies already mentioned also control the milk cream market, while Fage, Delta and Mevgal are responsible for most of the 'industrial' yoghurt production, and Agno being the major producer of 'traditional' yoghurt.

Evga (owned by Fage), Delta and Agno also account for a large part of the ice cream production in Greece. The fourth competitor in that market is Lever Hellas, a subsidiary of Unilever, that sells its ice cream under the Italian brand name Algida. The small and shrinking butter market in Greece is covered by the co-operative firms (including Agno). The only other large producer is Alpino SA, established in 1980 and based in Thessaloniki.

The cheese market is the most fragmented among the segments of the Greek dairy market. The 'industrial' branded cheese market is still small, especially in feta cheese, the type of cheese that accounts for almost half of the Greek cheese consumption. The production of packaged feta cheese was initially carried out only by Mevgal. Currently, Fage SA is also selling under its own brand name the feta produced by the smaller company Pindos SA, established in 1989. Two more companies that entered that market in 1995 are Dodoni and Epiros SA (established in 1994 but growing very fast) and all four firms are exporting part of their feta production (ICAP, 1995).

The financial situation of the major Greek dairy producers is presented in Table 7.1:

TABLE 7.1: Financial Results of the Greek Dairy Companies

Companies	1994		1995		1996	
	Sales	Net Income	Sales	Net Income	Sales	Net Income
Fage	65,230	1,116	69,208	1,508	73,072	2,229
Delta	61,215	6,124	62,991	3,067	72,244	6,124
Mevgal	25,479	914	28,248	524	31,355	530
Agno	20,884	5	22,204	(1,153)	20,791	(58)
Dodoni	18,443	161	18,064	43	19,998	31
Nestle Hellas	17,344	1,015	18,004	841	18,682	1,491
Evga	16,120	621	18,237	511	N.A.	N.A.
Tyras	7,804	170	6,514	226	5,260	42
Alpino	3,711	14	3,603	25	3,531	88
Neogal	2,632	160	2,999	248	3,214	217

All figures in million Drachmas; N.A.: Not Available
Source: Companies' annual reports; ICAP, 1997a.

The Greek dairy industry is still in an expansion period. New firms are being established, especially in the markets where there is a high growth potential. Among the large firms, sound financial management has ensured a high level of profit for

Delta, Nestle and Evga. Although profit margins are not very high in the industry, there is a constant effort by Greek firms to invest in new product lines and upgrade their production facilities. Investment has been very high since 1989, making the Greek dairy industry among the most capital intensive Greek food industries (Patsouratis and Rosolymos, 1997: 43).

7.6 Sources of Competitive Advantage

Factor Conditions

The raw milk used by the industry is primarily of Greek origin. Cow's milk accounts for 40% of total Greek production, sheep's milk for 35% and goat's milk for 25% (ICAP, 1995: 7). The split among the various kinds of milk is not typical. About 90% of raw milk produced in the world is cow's milk, and only 3% is sheep's and goat's milk (Crocombe et al., 1991: 61).

The conditions in most small-size Greek milk farms created a disadvantage for the industry. The lack of specialised personnel and the low level of mechanisation did not allow the animals to produce high yields or superior quality milk. The first signs of improvement were evident with the increases in cow's milk production in the late 1980's, which were due to the increased yields from imported cows (FEIR, 1991: 53). In the last few years, however, improvements have been substantial. Farmer's co-operatives have traditionally helped farmers by providing loans and technical support. For the 1990's, as my interviews and a very recent study (Patsouratis and Rosolymos, 1997) indicate, the same policy is followed by the other dairy companies as well. The companies have limited the number of supplier farms (for example, Delta now uses 2000 farms, 10,000 less than in 1986) but are providing their suppliers with extensive support, in a kind of 'contractual' production of raw material. This has led to the creation of modern farms with very high standards, able to supply milk of the quality required by the industry and in a consistent manner. Smaller firms, mainly some of the

cheese manufacturers, are still suffering from the inconsistent quality of the milk produced by their suppliers (Patsouratis and Rosolymos, 1997: 42-43, 60).

Other raw materials and especially condensed milk are primarily imported from other European countries. Greece is still not self-sufficient in cow's milk and Greek milk can not be considered superior to that of other competitor countries. Quality, however, has improved considerably in the 1990's and yields have risen a further 20% (Ministry of Agriculture, 1996). The only clear advantage of the Greek industry is the adequate production of sheep's and goat's milk that is used in many of the traditional Greek products (like feta cheese), which ensures their superior quality.

The dairy industry is not labour intensive. Most of the personnel is either in sales and marketing or in the operation of complex machinery. The level of skill required is high for both categories. However, none of the major companies experience any problems in hiring qualified employees as wages are considered above average for the manufacturing industry. Moreover, the large companies conduct extensive training seminars using company, government and EU funds. Smaller companies are still operating with limited personnel of lower skill. Nevertheless, as soon as small companies increase their production and expand beyond their local market, they hire qualified managers and skilled technicians.

Capital is not considered a major problem for the industry. Fage, Delta, Mevgal and some of the other large firms have consistently had good financial results and have recently targeted foreign capital markets with bond issues and bank lending. Co-operative firms, the more recent example being Agno, have experienced financial difficulties but have been able to draw funds from various incentive schemes of the Greek government, the Agricultural Bank of Greece and the EU, for modernisation purposes.

The majority of dairy products are transported through the road network. Given the rather poor condition of the roads, the need for constant deliveries in all parts of Greece has been a disadvantage for the industry for many years. Recently, as exports increased towards Balkan and other Eastern European countries the situation has changed. The experience of large companies in solving problems related to road infrastructure has been valuable in dealing with the less developed road networks of these countries.

Dairy products are very often sold to countries in close proximity to the exporting country. As Greece is not close to the major Western European markets, location was a disadvantage for the industry. In recent years, as the Eastern European markets opened up, geography has been more favourable to the Greek industry, which has taken advantage of it, establishing distribution networks in neighbouring countries. Delta, in addition to its three factories, has 35,000 points of sale in the Balkans and 1,000 more in Russia (Sideri, 1998: 21).

Most of the innovations in the Greek dairy industry have been driven by marketing needs. Extensive market research is conducted by the large companies and marketing departments are constantly been asked to introduce new varieties. Research and Development and Engineering departments in these companies are then adapting the production process to suit the manufacturing of the new products. Major improvements in production are less common and most of the production technology is imported.

There are very few educational or other industry-related institutions. Co-operation between universities and companies has been minimal. The industry association has been relatively active in assisting producers and certain co-operatives have assisted farmers. Farmers have also benefited from some research on animal production by a few related university departments and the Ministry of Agriculture's laboratories.

Factor conditions have been slightly advantageous for the industry. The adequate production of sheep's and goat's milk, the availability of skilled personnel and capital and an active industry association have helped the industry since its early steps. More recently, the improvements in raw milk production, the high levels of product R&D and the changing role of geography and infrastructure have played a role in shaping the industry's competitive advantage. The lack of other specialised institutions, and the quality and availability of cow's milk and other raw materials remain sources of relative disadvantage for the industry.

Demand Conditions

Variations in the consumption patterns of dairy products are widespread even among neighbouring countries or countries with similar levels of development. Exporting patterns often follow local consumption preferences. The case of New Zealand is a characteristic example, where per capita consumption of milk and butter is among the highest in the world, while cheese consumption is well below that of other developed countries, matching its export patterns of very high milk and butter exports and relatively low cheese exports (Crocombe et al., 1991: 66; UN, International Trade Statistics Yearbook).

Greek consumption of dairy products has been low compared to other developed countries (FEIR, 1991: 128). Per capita consumption of fresh milk, milk cream and most other dairy products is among the lowest in the European Union. On the contrary, cheese consumption has been the second highest in the EU, second only to France (ICAP, 1995: 161). The export patterns of the Greek industry match these consumption preferences. About 80% of Greek dairy exports in recent years have been cheese products, while the remaining 20% consists primarily of yoghurt and ice cream exports (UN, International Trade Statistics Yearbook). In fact, yoghurt and ice cream are the only other dairy products where Greek per capita consumption is comparable to that of other developed countries (FEIR, 1991).

Sophistication of Greek consumers was low until the mid-1980's. Besides fresh milk, most other products were unbranded and variety was limited. Then, the introduction of some new products, that were already available for many years in foreign markets, and the wider availability of branded yoghurt and other dairy products reversed the situation. Production of low fat milk surged from less than 1% of fresh milk production in 1985 to more than 20% in 1988. 'Industrial' yoghurt that accounted for slightly more than 50% of Greek yoghurt sales in 1984, increased its share of sales to 75% in 1990 (FEIR, 1991: 58-63).

In the 1990's as more companies entered all the segments of the dairy market, new products were being continuously introduced. Greek consumers are now able to choose from many different kinds of yoghurt, ice cream and milk desserts, while the market for branded cheese is constantly expanding (ICAP, 1995). Variety is now comparable to that in other developed countries but only in particular segments. Most

new products are copies of foreign ones (Patsouratis and Rosolymos, 1997: 61), although large firms have been able to introduce a few innovative products with a Greek 'character'. In this environment, customers have become more quality-conscious, demanding greater variety and rapidly adopting the new products. Customer sophistication, however, is still not a major advantage for the Greek industry, over its main foreign competitors.

Dairy products have consistently increased their participation in Greek food consumption. In 1980, 14% of private consumption spending on food was spent on dairy products. This proportion rose to 15% in 1984 and then increased even further to 16% between 1985 and 1989 (FEIR, 1991: 5). In the early 1990's, that proportion remained around 16%, until 1993 when it jumped to 17.5% (ICAP, 1995: 5). In terms of quantities the same trends are evident. Small increases until 1986 (even decreases in some years) were followed by successive large changes between 1988 and 1994. The major increases were in yoghurt, cheese and milk cream consumption, while ice cream and fresh milk demand rose much slower (FEIR, 1991: 8; ICAP, 1995).

Internationalisation of Greek demand has certainly been an advantage during the industry's development. Greek immigrants abroad were the first sources of demand for exports of Greek dairy products and especially Greek cheeses. Then as tourist arrivals increased, both cheese and yoghurt became popular among foreign, and especially European, consumers. Many people were also introduced to these products by the increasing number of Greek restaurants abroad, as soft cheese and 'Greek-style' yoghurt form an essential part of the popular 'Mediterranean diet'.

In the 1990's, after the opening of the Eastern European markets, Greek brands gained a 'high-quality' image, particularly in the Balkan countries. Dairy firms exploited that advantage and exported heavily to these countries, while Delta has already established production facilities there. Exports to Eastern Europe often consist of products that are not 'Greek' in any way, such as ice cream.

Demand conditions have recently been advantageous to the Greek dairy industry. The low per capita consumption of most dairy products and the low consumer sophistication were major disadvantages in the industry's first decades. Since 1985, growth has been substantial, especially in certain segments, while improvements in product quality and variety have increased customer sophistication.

Internationalisation of Greek demand has been the only part of demand conditions that has continuously been advantageous, with a greater importance in the 1990's.

Related and Supporting Industries

The Greek dairy industry is part of the most important Greek cluster, Food/Beverages. The increased competitiveness of the Greek dairy industry, coincides with an increase in exports for the whole cluster in the 1990's. New industries have been added to the competitive lists between 1985 and 1992 and most of them have been processed food industries.

Although the dairy industry shares few common technologies with other food industries, it has been using their products throughout its development. Greek fruits have been used for some years in dairy products, as the variety of such products has been increasing since the mid-1980's. Recently other products, such as honey, have been combined with, in this case, yoghurt, to provide a new flavour.

In terms of direct suppliers the raw milk producing farms, like most animal-related industries in Greece are lagging in competitiveness, facing a number of structural problems (CPER, 1991). However, through the efforts of farmer's co-operatives and large dairy companies a large segment of milk farms have been modernised, producing milk of very high quality.

Other milk-related industries are not developed in Greece. All the dairy machinery is imported, primarily from Germany, while industries related to, for example, the genetic improvement of animals are still in their infancy stage in Greece. Nevertheless, the very competitive Greek packaging industry has been a source of advantage, providing a high quality, affordable product. The variety of such products has helped the Greek dairy industry expand its own product variety.

Related and supporting industries have been only slightly advantageous for the Greek dairy industry. The industry is part of a well-developed cluster, whose competitiveness has been rising in the last decade. In terms of direct suppliers, the competitiveness of the milk farms has been increasing during the same time period. Other supporting industries have not appeared, not surprisingly, however, given the

complete lack of competitive machinery industries in Greece. The only exception is the very competitive Greek packaging industry.

Firm's Strategy, Structure and Rivalry

The two main dairy firms in Greece, Fage and Delta are controlled by two families. Their growth in the last fifteen years has necessitated the expansion of their management team, although they are still headed by members of the respective families. Delta is now listed in the Athens Stock Exchange and part of its shares is owned by the French multinational Danone. The presence of a professional management team combined with the mixed ownership structure has been successful so far, creating little tension and increasing the sources of input to the major decisions.

Fage's ownership is concentrated to the Filippou family. Diversity, however, is provided by the number of acquired or allied companies, that are still managed with some degree of autonomy. Co-operative firms have been less successful in recent years. A number of them have faced financial problems which led them to bankruptcy. Others have resorted to financial assistance from the Agricultural Bank of Greece.

The strategy of most Greek dairy firms in the 1980's, when their output consisted mainly of low-margin products, has been to target costs. Through extensive automation of the production process, they were able to keep costs down, while producing a more standardised product of higher quality (Patsouratis and Rosolymos, 1997: 67). The more streamlined production process and the emphasis on quality control and packaging allowed them to increase their product variety in the 1990's without compromising their low cost position. It was only at this stage, when a low cost, consistent quality product was being produced, that exports were pursued vigorously mainly to developed Western European markets. For that purpose Fage and Delta secured firm relations with established distribution networks in these countries. Delta also pursued the less developed Eastern European markets creating its own distribution network and a number of production facilities.

Domestic rivalry has been a major driving force for the industry's expansion. First, the establishment of Lever Hellas, immediately increased the level of

competition in ice cream. New products of improved quality were the result in only a few years. Then in the early 1990's, the most profound changes took place. First, in 1993 Fage entered the fresh milk market capturing almost 21% by 1994 (ICAP, 1995: 47). This affected the price, quality and packaging of fresh milk for all of the main competitors. Partly as a reply to that move, Delta entered the yoghurt market that until then was almost exclusively under the control of Fage. Again, a host of new products, both in the plain yoghurt segment, especially the low-fat varieties, and the yoghurt with fruits and other additions segment, were immediately released by the main competitors, Fage, Delta and Mevgal (ICAP, 1995: 67). The cheese segment is where competition is now increasing. After the initial steps by Mevgal and a smaller company, D. Kolios Ltd., Fage entered the market, mainly using the products of two smaller companies, Tyras SA and Pindos SA. Other small and larger companies, most notably Dodoni and Epiros, which also show a strong export orientation, are now producing packaged cheese. Competition has led to an expanded variety of cheese types and cheese products of excellent quality.

Geographic concentration is increasing in the Greek dairy industry. With the declining performance of most co-operative firms and the increasing share of Fage and Delta, that are both producing in locations near Athens, Attica's share of total production is very high, especially in pasteurised milk (about 60%), 'industrial' yoghurt (more than 70%) and ice cream (about 75%). Thessaloniki, the second largest city in Greece and its surrounding area, is where Mevgal, Agno and Alpino are located. Butter and milk cream production is concentrated in the prefecture of Thessaloniki, which also has the second highest share in pasteurised milk (30%) (ICAP, 1995). Lever Hellas, the third ice cream producer, is located in Greece's third largest city, Patras. Cheese production is widespread in most areas of Greece. Besides the major players, other companies are located in Thessaly (Tyras SA, Olymbos SA) and Epiros (Dodoni SA, Pindos SA).

Firm's strategy and structure has been an advantage for the major Greek dairy companies. Their ownership structure along with their expansion strategy have been appropriate for the industry. Smaller companies, and especially the co-operative ones, have been less successful. Nevertheless, a few of them have responded to the competitive pressures, adopting appropriate strategies. Intense rivalry among all firms

in the industry has also shaped the industry's competitive advantage. Geographic concentration is present and increasing, though there are variations among the different products.

The Role of Government

Traditionally, the Greek government has strongly intervened in the dairy industry. A number of products have been under pricing guidelines, while some of the co-operative producers were rescued by the Agricultural Bank of Greece, under the government's guidance. In recent years, these firms were allowed to go bankrupt, while some were sold back to the farmers.

Pricing controls have also been relaxed and the government's involvement has decreased. Funding, mainly through EU initiatives and incentive schemes, has also increased in recent years, with the emphasis placed on equipment modernisation and acquisition of production technology.

The Role of Chance

The recent move towards healthier eating has affected positively demand for yoghurt in developed countries. Yoghurt, along with fresh and soft cheese, has been the major area of demand growth in the EU market (Nomisma, 1997: 3.52) The Greek industry has taken advantage of that trend, targeting most Western European markets and, in some cases, establishing its brand-names. Changes in Eastern Europe have also affected the industry. An extensive, underdeveloped market was opened up, with few established brand names. Greek companies were quick to project a 'quality' image and establish extended distribution networks. Sales of many Greek dairy products, produced both in Greece and in other Balkan countries, have been substantial in the 1990's.

7.7 Summary

The industrial production of milk and dairy products is about 110 years old. The initial producers, Western Europe and North America, are still controlling a large part of the market, while the role of Australia and New Zealand has increased. Branded and low-fat products is where most of the expansion of the market is taking place. Growth of international trade is still limited by government intervention and some products' short shelf-life. Recent moves, and especially the latest GATT agreements, are changing the picture, increasing the opportunities for unsubsidised trade. Within the largest producer and exporter, the EU, it is Germany, France, the UK and Italy that account for most of the production, while Ireland, Belgium, Denmark and the Netherlands are among the world's largest exporters.

The Greek dairy industry has evolved very slowly since the beginning of the century. Although the first major industrial enterprise (Evga) was established in the 1930's, it was only in the 1960's when its dominance was first challenged by small units rapidly expanding. The 1970's was a period of growth for most companies, and in the early 1980's the competitive landscape changed, with a number of efficient competitors in most products. In the mid-1980's production increased along with product variety. This led to an expansion of the industry in the 1990's with exports reaching unprecedented heights. For the first time, production facilities were established in foreign countries, by Delta in the Balkans and Fage in South Africa.

Factor conditions have played a modest role in the industry's development. In terms of raw materials, the availability of sheep's and goat's milk and the recent improvements in the quality of cow's milk, are counter-balanced by the lack of adequate supplies of raw cow's milk and other materials. Personnel and capital are available for the dairy industry and the level of R&D and employee training are adequate, although not very high. Geography has been beneficial in the 1990's, as have the activities of the industry association and some government laboratories. The lack of other specialised institutions remains a source of disadvantage for the industry.

Demand conditions were an impediment in the industry's early stages. The sophistication of customers was very low, since mostly unbranded products were available, and consumption levels were among the lowest for developed countries. In

recent years, however, the high consumption of certain products, especially cheese and yoghurt, along with the greater sophistication stemming from the available variety of branded products have changed the role of demand conditions. Internationalisation of demand has also contributed to that positive change.

Related and supporting industries in the wider sense have been advantageous for the industry. The improved performance of the entire Food/Beverages cluster since the mid-1980's has created a positive environment, especially as the dairy industry is now using the products of other related food industries. Raw milk producers have also improved their performance, which was not impressive before the 1980's, while other industries, for example, machinery, are absent. A very strong packaging industry has also been a source of many dairy innovations in Greece.

Firms' strategies, and structures and domestic rivalry have had a positive influence on the Greek industry. The strategy of low cost, automation and export orientation along with the structure of family ownership combined with a professional management team have been key elements in the industry's success. Vigorous domestic rivalry has also been important in stimulating product innovation. Geographic concentration is evident but only in certain products.

Government intervention in the industry was initially high, controlling the market and often distorting competition by supporting failing co-operatives. More recently, the influence of government measures has been lessened and the promotion of various funding initiatives has helped the industry. Chance's role has been positive during the last fifteen years. The 'healthy eating' trend along with the opening of the Eastern European markets has had beneficial implications for Greek companies.

This is an industry where some basic factors were present since its early stages of development. In the last fifteen years these factors have been complemented by advanced factors, improved demand conditions, better related and supporting industries, coherent strategies and a domestic rivalry stronger and intensely personal. This case also vividly illustrates the interactions among Porter's diamond determinants and the self-reinforcing nature of the diamond, as the improvements in some determinants immediately affected other sides of the diamond. The lack of certain advanced factors, and questions about the extent that certain aspects of home demand are at a satisfactory level again cast doubts on the applicability of these parts of the framework.

CHAPTER 8

CONCLUSIONS

This part of the work presents a synthesis of the case study material. It also integrates this material with the observations made in the first chapter, on Porter's *The Competitive Advantage of Nations*, and the second chapter's analysis of the competitive advantage of Greece. The goal is to arrive at certain conclusions on the one hand regarding Porter's work and on the other the Greek economic environment.

The first section deals with the implications of the five case studies for every element of the diamond framework. Then, the most important points, concerning many aspects of the application of Porter's work in the five case studies, are analysed further. Finally, the last section examines the implications of the state of the Greek industries studied for the wider Greek economy, in the context of its integration with the other EU economies.

8.1 Implications of the Case Studies for the Diamond Elements

The five Greek industries (cement, rolled aluminium products, tourism, men's outerwear, and dairy) analysed in detail, revealed a multitude of sources of competitive advantage. A synopsis of those sources, and the mechanisms through which they acted in each individual case, is given at the end of the relevant chapters. The focus of this section, therefore, is on the implications of these individual conclusions for each diamond determinant.

The sources of advantage for each case are summarised in Table 8.1. The table is organised around the diamond elements, so that a general picture can be

TABLE 8.1

SOURCES OF ADVANTAGE IN THE FIVE GREEK INDUSTRIES

DIAMOND ELEMENT → INDUSTRY	FACTOR CONDITIONS	DEMAND CONDITIONS	RELATED & SUPPORTING INDUSTRIES	FIRM STRATEGY, STRUCTURE & RIVALRY	THE ROLE OF CHANCE[1]	THE ROLE OF GOVERNMENT[1]
CEMENT *(very competitive)*	H	H (*)	H	H	L	M
ROLLED ALUMINIUM PRODUCTS *(competitive)*	H	M	H (*)	M (-)	L	L
TOURISM *(competitive)*	H (*)	M	H	M (-)	L	H
MEN'S OUTERWEAR *(uncompetitive, loss in position)*	L	L	M	L	L	M
DAIRY *(competitive)*	M	M	M	H	H	L

The effect of each diamond element in shaping the industry's competitive advantage has been assessed as 'High' (H), 'Medium' (M), or 'Low' (L). The asterisk (*) denotes an element where the Greek industry possesses an 'unusual' advantage. The minus sign (-) indicates an element where there is a wide variation among its different components.

[1] In the government and chance determinants, the symbols H, M, and L demonstrate the overall effect of the determinant in creating the industry's competitive advantage and not the degree of their involvement in the industry's development.

formed on the impact of every determinant in all the cases studied. This general overview will then be explored in detail.

Factor Conditions

The overall picture of factor conditions seems to conform with Porter's views. Indeed, the cement, rolled aluminium and tourism industries derive substantial advantage from factor conditions, the less competitive dairy industry presents a more mixed picture, while the uncompetitive men's outerwear industry is disadvantaged by the changes in factor conditions during the last fifteen years. This picture, however, is primarily due to basic factor conditions.

Indeed, the cement and aluminium industries draw a lot of advantage from the availability and quality of raw materials, labour and capital, while for the tourism industry basic factors represent an 'unusual' advantage with Greece's combination of geography, climate and unique cultural heritage. The men's outerwear industry, on the other hand, has experienced its most important changes in labour costs and raw material availability, and the dairy industry has emphasised the improvement of the quality of its domestic raw materials and its personnel.

Advanced and specialised factors are much less developed in the Greek industries studied, although, again, a variation exists among them, depending on their competitiveness. This is certainly true in the cement, dairy and men's outerwear industries. In the rolled aluminium and tourism cases, gaps exist in the availability of advanced and specialised factors, like R&D, skilled labour, a modern telecommunications network and IT infrastructure. Of course, the mediocre state of certain infrastructures in Greece (telecommunications, roads) is a major impediment for all the industries studied. Nevertheless, depending on the nature of the industry and its products, the effects have not been uniform and some industries have been able to circumvent the infrastructure problems, sometimes treating them as selective factor disadvantages. For example, the cement industry has used the poor condition of the road network as an incentive to develop an efficient sea transportation infrastructure which later became an essential part of the industry's export drive.

Overall, factor conditions seem to work according to Porter's expectations. The important role of basic factors is something to be expected, given their central part in most theories of international trade. However, Porter's detailed classification enables a more in-depth analysis of them. Specialised and advanced factors exhibit certain deviations from the neat pattern of basic factors. Nevertheless, their constant upgrading confirms Porter's emphasis on the interactions between the various attributes of the diamond. The presence of selective factor disadvantages was evident in some of the cases. Again, the condition of the other determinants and the presence of some other factors (for example, the competitive shipping industry in the cement case) were instrumental in creating a more sustainable competitive advantage.

Demand Conditions

Demand conditions have played a role in determining the competitive advantage of the Greek industries studied. The small size of the Greek market has been a hindrance to some of the industries studied, primarily the rolled aluminium products industry and, to a lesser extent, the dairy industry. Nevertheless, it seems that the other attributes that Porter emphasises have had a considerable impact on most of the competitive industries.

In the cement case, the per capita consumption (among the highest in the world), along with the phenomenal growth rates and the early saturation of the market, which forced companies to export, have given the industry an 'unusual' advantage. Demand growth and 'mobile buyers' have also been important for the rolled aluminium products industry, while per capita consumption and growth rates have determined the export success in particular segments of the dairy industry.

'Industrial' customers present a more mixed picture. They had a very substantial role in enhancing the competitive advantage of the rolled aluminium products industry, though their sophistication in terms of seeking the latest innovations is questionable. In the cement case, the ready mixed concrete and construction industries are not among the most competitive Greek industries. Nevertheless, their level of sophistication in terms of the specific product can be considered adequate.

In the more consumer-oriented industries, a clearer trend emerges. Sophistication is a key attribute in the industries' competitiveness. The long-stay, high-spending pattern of Greek tourists has been important for the industry's success, it has not, however, compensated for the lack of emphasis on quality and new or alternative forms of tourism. In the dairy case, customer sophistication is where the changes before and after the late 1980's are more evident. Low customer sophistication has contributed to the decreasing competitiveness of the men's outerwear industry by failing to provide the stimulus for its upgrading from a cost-oriented to a differentiation-based producer.

Overall, it appears that Porter emphasises the correct demand attributes. However, in the rolled aluminium products, cement and tourism industries the role of some of these attributes, such as buyer sophistication and competitiveness, is not entirely clear.

Related and Supporting Industries

The importance of this determinant has been the least contested part of Porter's work. Although part of the influences of this determinant has been captured in factor and demand conditions, the role of interchanges among related and supporting industries has been very strong in the Greek cases.

The rolled aluminium products industry derives an 'unusual' advantage from the presence in Greece of most aluminium-related industries, from bauxite mining and alumina refining to aluminium smelting and most fabricated products industries. The tourism and cement industries have also greatly benefited from the presence of internationally competitive related and supporting industries. In the dairy industry, the recent rises in competitiveness are also a characteristic of many of its related and supporting industries, while the opposite is the case in the declining men's outerwear industry. An aberration in this pattern is the presence, still, of some competitive related industries in the men's outerwear case. These industries, however, are part of a wider cluster that was very competitive until the early 1980's. Since then all of its industries have experienced substantial declines, especially those more closely linked with the industry studied.

The other aberration from what Porter (1990) expects (at least for a developed country) is the lack of competitive machinery industries and other 'advanced' service industries, like travel automation systems in the case of tourism. Of course, Greece's level of development is lower than most of the countries studied in Porter's original work (Porter, 1990). Moreover, most of the relevant machinery industries are global oligopolies, and Greece would probably not be expected to have a strong presence.

Firm Strategy, Structure and Rivalry

The role of this determinant in creating and sustaining the competitive advantage of Greek firms is mixed. The dairy industry has benefited from intense rivalry between its principal firms and from their appropriate strategies and structures. The cement, tourism and rolled aluminium products have drawn less advantage from this determinant. Specifically, firm strategy and structure has been instrumental in the rolled products industry, and a major impediment to the uncompetitive men's outerwear industry. Certain shortcomings were evident in the strategies and structures of many tourist firms. Domestic rivalry, however, exhibits a different picture. The competitive rolled aluminium products industry is composed of one single firm. In the cement industry an oligopoly (four firms, two main competitors) has been present from its very first steps, in the dairy products there are many firms active, although, the two leading companies have combined market shares of more than 50% in some products, and in the uncompetitive men's outerwear industry competition is intense. Individual explanations can be found for each case.

In the dairy industry, the two leading firms are involved in a fierce, and sometimes personal, rivalry, attempting to upstage each other wherever one company holds a dominant position, and using foreign market penetration as a way of gaining what Porter (1990: 119) calls 'bragging rights'. Moreover, new companies are constantly entering the industry, offering innovative products and capturing a substantial proportion of exports. The cement industry is also a case where the two main rivals, along with the other two companies, have been involved in intense competition. Moreover, cement is a industry with a high level of concentration in

foreign markets as well, with few companies (often one or two) having a controlling share of the local market, even in large and developed countries. The lack of rivalry in the rolled aluminium products and the intense rivalry in the uncompetitive men's outerwear are, however, much harder to explain.

Another problem with this determinant, that has already been pointed out in the evaluation of the determinant in Section 1.3, is the inclusion of two different components in one element. Firm strategy and structure, deals entirely with the firm, while domestic rivalry, is a characteristic related to the industry. This problem becomes more acute in the rolled aluminium products and tourism industries. The Greek rolled aluminium industry is composed of a monopolist firm that has, nevertheless, greatly benefited from its goals and strategic moves, as well as from its structure. The tourism industry, on the other hand, has most of its firms stuck in an inappropriate strategy, with a structure that offers little help, despite the presence of extensive, and often personal, domestic rivalry. In addition to those two cases, the men's outerwear industry also has firms with inappropriate strategies and structures in an environment of intense rivalry.

Overall, it is certain that Porter's emphasis on firm-level attributes and domestic rivalry is important, especially given his attempts to reconcile industry, firm and country views on competitiveness. The effects, however, of each of the two components on the other along with the pivotal role that domestic rivalry is assumed to play in the sustainability of competitive advantage merit further discussion.

The Role of Chance

Chance appears to have had little impact on the competitive advantage of most Greek industries studied. In two of the cases, tourism and rolled aluminium products, its effect has been small. In the men's outerwear industry it has played a negative role during its recent decline period, while the dairy industry has drawn advantage from positive developments in the last decade. Cement has been the industry where chance has played a much greater role, with events in the early 1970's and 1980's heavily influencing the industry. The combination of very favourable and unfavourable events appears to have had a mildly positive effect on the industry,

partly because of the presence of another outside influence to the diamond, government.

Again, the inclusion of chance in the framework appears to be justified. Its role appears to be indirect in the five Greek cases, even in the ones where chance events have been important.

The Role of Government

A slightly stronger role was played by government. Its impact has been mostly felt in the tourism industry, where government activity, especially in the 1960's and 1970's, has been undoubtedly instrumental in creating the industry's advantage. The rolled aluminium products and dairy industries on the contrary do not owe a lot to the government's interference, while for the men's outerwear industry the initial positive influence appears to have been reduced. Cement is again a special case with government actions in critical times either helping or hindering the industry.

The government has been involved in most sectors of business activity throughout the history of the Greek state, as analysed in Section 2.1. However, this strong role is expected by Porter (1990) in a relatively less developed country. In the tourism industry, the fact that the government's help and direct involvement came in the industry's early stages is not far from Porter's relevant views.

8.2 Overall Implications for the Applicability of Porter's Framework

This section presents the overall evaluation regarding the diamond framework's applicability in the case of Greece. A critical analysis is made both of issues raised in the previous section and of more general points, related to clustering and geographic concentration and the dynamics of competitive advantage.

The issue of domestic rivalry is one that merits further discussion. Porter's (1990) own applications as well as those made by independent researchers (Oz,

1997), have indicated that a competitive industry can exist in the absence of domestic rivals. Despite that fact, there is no doubt that Porter (1990) considers rivalry an essential element of the diamond, that facilitates the workings of all other elements. The Greek cases, and specifically the four manufacturing industries studied, do not offer unconditional support for this view.

The oligopolies in the cement and dairy cases can, however, be attributed to the particular circumstances in these industries, as they were analysed in Section 8.1. Moreover, the strong rivalry that exists between the dominant firms provides the stimuli for upgrading competitive advantage. The other two aberrations, in the men's outerwear and rolled aluminium products industries, are much harder to explain and indicate an area of concern for the diamond framework.

The intense competition in the uncompetitive men's outerwear industry can be justified by the fact that it is entirely price-driven. It has had, thus, little impact on the upgrading of the quality of the industry's products or on any other of the diamond determinants, and, in fact, Porter characterises price rivalry as destructive, in his latest work (Porter, 1998: 15). The rolled aluminium case, where a domestic monopoly is present, can also probably be explained using Porter's own assertions. Porter (1990: 121) claims that 'a completely open home market along with extremely global strategies can partially substitute for the lack of domestic rivals in a smaller nation', while in the corresponding footnote (Porter, 1990: 788) he gives the example of an industry (central office telephone switches) with huge economies of scale. Greece certainly fits the description of a small open market for most products, including rolled aluminium. The industry is also scale sensitive, while the dominant Greek firm has an extremely global outlook, with most of its sales efforts directed at foreign markets. It should be noted, however, that Porter considers this a 'second best' solution that cannot confer to the industry the same advantages as intense domestic rivalry.

Rolled aluminium products, along with tourism and men's outerwear, are also the cases where a further aberration in the firm strategy, structure and rivalry determinant is apparent. The influence of firms' structures and strategies in all three of these cases is very different than that of domestic rivalry. The explanations given above for the rivalry in the rolled aluminium products and the men's outerwear, can help settle the issue in those cases. In the tourism case, another justification can be

offered, that is, that certain tourist firms, the largest and most dynamic ones, which represent an increasing part of the Greek tourism industry, are changing rapidly their strategies and adapting their structures, thus matching the positive role of the intense domestic rivalry. What is, however, evident in these three cases is the weak links between firm strategy and structure and domestic rivalry. The grouping of domestic rivalry with firm strategy and structure is, therefore, an area that requires further research, especially in terms of the mechanisms that link the two components.

Another grouping, demand conditions, has also not worked entirely the way Porter expects. Most attributes in all cases have exerted their influence in line with Porter's views. Customer sophistication is, however, an attribute that varies among industries. Of course, Porter (1990) mentions in several instances that customer sophistication is among the last attributes to appear when a country's progresses in the development path. In the Greek case, however, another explanation may be offered, in conjunction with the country's level of development. As Greece has progressed substantially in the last four decades, changes in customer sophistication have varied among industries. In the dairy industry, improvements have been rapid in the last ten years, while in the rolled aluminium case it has taken more than fifteen. As for the tourism case, it is still an ongoing process after decades of competitive development. An interesting observation connecting these cases is the state of basic factors. The dairy industry, in recent years, has seen improvements in basic factor conditions, it does not, nevertheless, rely on them extensively. The rolled aluminium products industry on the other hand has seen its advantage in basic factors slowly decline and this process has been paralleled with a rise in customer sophistication. Finally, in the tourism case basic factors are still essential to the industry. Therefore it appears that the persistent central role of basic factor advantages are related to a low level of customer sophistication, at least in the competitive industries.

Another interesting fact is that in two of the cases (rolled aluminium products and dairy) increased customer sophistication is partly a result of efforts by domestic firms, rather than other country-specific influences. Firms seek to produce differentiated, innovative, premium products that can provide the necessary revenue to offset any cost disadvantages, from the reduced importance of basic factors (in the aluminium case) or the strong domestic rivalry (in the dairy case), thus 'educating' their buyers. This process, however, is not automatic and is probably related to the

condition of the other diamond determinants as is indicated by the men's outerwear industry, where this has failed to happen.

The industries' geographic concentration, is another one of Porter's (1990, 1998a, 1998b) strong findings. In the Greek cases, geographical concentration has been very beneficial to the aluminium-related industries, where interchanges among the firms in these industries were common. However, the apparent concentration in the cement and dairy cases does not appear to have produced a high level of interaction among the firms and is mostly a result of the need to be close to the large markets of Athens (with 35% of the Greek population living in Athens and the surrounding area) and Thessaloniki (the second largest city) in order to minimise transportation costs. In the tourism case, the proximity of basic factors is again the defining characteristic for the firms' location. Therefore, although geographic concentration is a phenomenon present among especially the competitive industries studied, the types of advantage derived can vary widely and are sometimes closer to more traditional notions of industry concentration.

The two major contributions of Porter's (1990) book, apart from the diamond framework, have been the emphasis on the industry level and the clustering concept. Regarding the former, Porter's emphasis on the industry instead of the country provides the appropriate perspective for examining competitiveness. A lot of the influences on the competitiveness of the industries studied in Greece would not appear in a more general study of the country. This does not mean that country-level attributes are not important, and Porter's (1990) title (The Competitive Advantage of Nations) indicates that. However, it is ultimately the industry-specific attributes and circumstances that determine that industry's competitiveness. The notion of country competitiveness is not only theoretically weak, but also offers little on the reasons why particular industries rise and fall.

The clustering concept is recognised by most scholars as another of Porter's (1990) main contributions. It has also been the focus of much of his subsequent work (Porter, 1998b). Besides the lack of machinery industries, which is common in all Greek clusters and probably related to the country' level of development as Porter (1990) expects, Greek competitive industries form well-defined clusters. Firms in every cluster have also affected positively the development of related industries. Cross-ownership in the Materials/Metals, Food/Beverages and Housing/Household

clusters has been high and it is a result both of acquisitions and of the creation of new firms in related industries ('related diversification'). The only cluster where this trend has been much less pronounced, Textiles/Apparel, is also a cluster whose competitive position has been steadily declining.

In individual cases, interchanges among industries were found to be common in the cement, tourism and, to a lesser extent, dairy industries, while few and decreasing links were characteristic of the uncompetitive men's outerwear industry. The aluminium sector, also reveals close links among its industries. Firms involved in a supplier-buyer relationship are in contact regarding product-related issues, while the association brings together the entire sector. The rolled aluminium products industry has also benefited from the fact that its dominant firm is a member of a group of related companies active in metal processing.

Overall, the diamond framework was proven a valuable tool for the analysis of the competitive advantage of the Greek industries studied. Important influences on the industries' competitiveness were highlighted using the framework and the majority of determinants worked in ways similar to what Porter expects. Interactions among the 'four-plus-two' diamond determinants have been at the heart of the process of the creation of competitive advantage. The dairy industry, where rivalry changed the nature of home demand or the men's outerwear industry, where inappropriate strategies hurt factor creation mechanisms, are characteristic examples of a phenomenon obvious in all cases. Moreover, the emphasis on the clustering concept, and the geographic concentration of industries provided additional insights on the geographical and sectoral structures of the Greek industries.

Greece's lower level of development, than that of the countries studied by Porter (1990), did affect the conditions of certain advanced and specialised factors, demand attributes, and related and supporting industries in ways, however, similar to those described by Porter (1990). Less related to the level of development are the observations on the relationship between domestic rivalry and firms' strategies and structures, the influences on demand sophistication and the role of geographic concentration. These are the issues that demand further investigation. Additional cases might provide a more conclusive answer.

8.3 Implications for the Greek Economy

From the application of Porter's methodology in five particular manufacturing and service industries, certain implications for the Greek economy become apparent, especially for the direction of government policy and company strategies. The presentation, however, of an integrated proposal is undoubtedly beyond the scope of the present study, since it demands the analysis of a larger number of cases, and the use of many additional data and of specialised surveys on particular issues. The goal of this section is therefore to put the case studies in the wider perspective of the Greek economy and to combine them with the analysis of trade data and Greece's economic environment.

Currently, Greece's main economic goal is to satisfy the Maastricht criteria for Monetary Union, including the toughest one, inflation, by the end of 1999. For this goal, the government is implementing strictly a Convergence Programme. Thus, the monetary policy remains on a restrictive course and the incomes policy (in the form of wage increases) is kept under control. On the other hand, the privatisation policy and the restructuring of the fiscal system are not implemented with the necessary expedience. Industrial production is on the rise, with a 7% increase estimated by OECD for 1998 (Nikolaou, 1998: D4).

Inflation was reduced to 4.7% by the end of 1997 and is now 3.9%, while GDP growth has accelerated to 3.5%, as the Ministry for National Economy's provisional data show (Bank of Greece, 1998: 17, 75). The goal of Greece's monetary policy is now for inflation to fall under 2% by the end of 1999 (Bank of Greece, 1998: 25, 26).

If, however, the recent growth of the Greek economy is to continue, it is necessary to implement certain policy measures aimed at improving the competitiveness of Greek industries. Greece can benefit from the increased export opportunities arising from its possible inclusion in the European economic and monetary union, only if many of its industries are internationally competitive. In any other scenario, the negative implications might be severe. The Bank of Greece has repeatedly emphasised that, in the absence of devaluation as a tool for improving competitiveness, the dynamism of the economy will depend on 'the effective

functioning of the markets for products and services, labour and capital' (Bank of Greece, 1998: 70).

Any measures, however, aimed at the improvement of the international competitiveness of Greek industries must take into account Greece's specific features that often pose important constraints on many Greek industries.

In particular, Greece has no land borders with the other European Union states. Its mountainous terrain, as well as a very large number of islands, create internal barriers and increase infrastructure and transportation costs. Also, more than one-third of the population and the economic activity are concentrated in the region of Attica. For these and other reasons, the country still has significant infrastructure deficiencies mainly in terms of its links with the European Union and the connections between all parts of its territory.

Government Policy

The entry into the EMU by the year 2001 and the stimulation of economic development must be the two main targets of macroeconomic policy. To this end, fiscal stability, inflation control and decreased public deficits are important priorities, which will improve the international competitiveness of all Greek industries. However, beyond this macroeconomic policy, there is a series of measures that should be taken.

A constant strategic priority for Greece has been the investment in various infrastructures such as industrial parks, transportation facilities (roads, airports, railways, harbours), telecommunications and energy networks. Infrastructure networks and nodes should also be the main targets of the public investment programmes, at least in the coming decade. The connection of the Greek infrastructure networks with the ones of the Balkans and Western Europe, will facilitate economic activity and reduce the shortcomings of Greece's peripherality.

The skill level and adaptability of personnel in Greece is another major concern for the industries' competitiveness. The country's educational system is being modernised and integrated, slowly, into the European Union's one. Substantial funds are spent on improving standards in all levels of education, in vocational training and

in introducing new specialisations. The grants from the European Social Fund and the various programmes that combat unemployment are also contributing to the improvement of the education and training process in Greece. However, a central problem still remains. It is the need to rebalance supply and future demand for specific skills in certain industries, as skills shortages were apparent in almost all the industries studied. The public sector is also suffering from lack of specialised personnel and from the lack of middle and high level managers with the appropriate training, that is also characteristic of many other industries.

Public administration was considered a major impediment in all industries studied because of its complicated processes. The various modernisation programmes have not been implemented with the necessary speed and their scope has been limited. The successful decentralisation of services was not combined with any radical changes in their structures. Further efforts should be made towards eliminating bureaucratic procedures, which create obstacles in business-government relations.

Another major problem in Greece is the low levels of R&D spending (of which 80% is spent by the public sector), the limited production innovations related to local research results and the lack of extensive co-operation between Universities and enterprises. Technology transfer should be promoted by relevant initiatives, while the creation of Technopoles or Science Parks can help in that direction. Firms must be given the incentives to seek new technologies, the 'venture capital' industry, that is still in its infancy stage, must be helped, and educational and other governmental or private institutions should be encouraged to create 'spin-off' companies.

In terms of domestic competition, the abolition of price controls has already created the necessary circumstances for its increase. Nevertheless, the strengthening of the existing Competition Commission of the Ministry of Development is necessary, along with the continuation of the current privatisation programme for public monopolies, especially in energy and telecommunications, with the caveat that these will not be turned into private monopolies.

One of the major tools of the Greek economic policy has been the incentives scheme for the promotion of economic and regional development. In particular, productive investments are encouraged by cash grants, tax allowances and interest subsidies. Despite the criticisms that this system has received, it has, nevertheless, been effective in increasing the level of investments. Possible modifications to this

system could be the reduction of bureaucratic procedures, the improved screening of proposed investments - even at the risk of approving substantially fewer projects - and the increased emphasis on innovative activities. In addition, strict environmental criteria must be set and the whole system can be linked to the various schemes for increasing employees' skills.

The banking system in Greece has not been very effective in financing small and medium sized enterprises, firms in new industries, or high-risk activities and part of the responsibility resides with the government, since a large proportion of the system is state-owned. The recent privatisations and the increased autonomy of state-owned banks have enabled more firms to receive funds at favourable rates. The elimination of public sector deficits, along with a reduction in the taxation levels of banking activities, might contribute further to a reduction in cost of capital for Greek firms.

Greek industries were found to be extensively clustered and, in many cases, this was a central element that contributed to their competitive advantage. Therefore, cluster development, mainly at a sectoral, but also at a spatial, level, must be aided by appropriately co-ordinating banking institutions, research centres, Universities and training centres. New business formation should also be encouraged, while small and medium sized enterprises in industries that are part of, or related to, competitive clusters must be helped.

Company Strategy

The exposure of Greek companies to international competition has been gradual. Although certain industries have been open since the beginning of this century, others were shielded behind walls of tariffs and other measures. Liberalisation of markets is in its last phase in Greece and most industries are now part of the global competition. In this environment, competitive advantage is a combination of national and firm-specific attributes. Firm strategy must then take advantage of national circumstances, which are partly shaped by government, industry associations and other firms. Each firm, however, has its own unique capabilities and each industry its unique characteristics, which affect the strategies of its firms. These

variations among industries and firms also make any attempt to provide general recommendations very difficult. Realising these limitations, an attempt is made here to highlight certain areas affecting competitiveness in a wider range of industries.

The emphasis on costs, for many Greek industries, has been beneficial. To this end, the presence of additional attributes such as effective marketing and distribution was essential. Greater emphasis should now be placed on those two areas, along with attempts to improve product performance and quality. Wage costs are on the rise in Greece and price advantages have disappeared in globally traded raw materials. Efficient marketing, improved product features and rapid distribution are important in order to command the price premiums necessary to balance the cost increases. This strategy should primarily be followed in industries where Greek demand already exhibits favourable trends and customers can appreciate the changes made.

The quality of human resources has been a major concern for Greek industries, with the more competitive ones taking extensive steps for its improvement. Marketing, production processes and information technology skills will be central for sustaining a superior labour force. Extensive European Union support will probably contribute towards this goal.

Management must also evolve, primarily in its attitude towards seeking new ideas, and favouring expansion to foreign markets. Leadership has so far been provided to a great extent by the entrepreneurs that were responsible for the companies' creation or expansion. Other high-level executives, however, need to be involved as well in the setting of company strategy. Managers should also gather intelligence not only on domestic but also on foreign markets. Knowledge of foreign needs, distribution channels and regulations is not only useful for foreign expansion and a more global outlook, but also as an indication of future industry trends.

New ideas might also come from local sources. Co-operation, with the producers of innovation, and original research and strengthening of internal R&D departments provide firms with an early and in-depth understanding of evolving technologies, products and processes and an opportunity to influence the direction of such research.

The environment of the European Union offers an additional challenge to Greek firms. The opportunity to access foreign markets, especially the more sophisticated ones, must be seized. Mergers, acquisitions and alliances will also

become easier, but should be concluded with caution as a proactive step to impending market changes rather than a reaction to declining prospects. European Union initiatives are also an excellent source of funds and an opportunity to co-operate with foreign partners.

The expected entry in the EMU in the year 2001 and the restructuring of the private and public sectors, which is already under way, will provide the necessary challenges for businesses and government at all levels (national, regional, local) to promote the competitiveness of the internationally oriented industries. These changes will also help sustain the Greek economy in its present high growth path, contributing to the social well-being of Greek citizens.

APPENDIX

TABLE A.1: CLUSTERS OF INTERNATIONALLY COMPETITIVE GREEK INDUSTRIES, 1978

Primary goods	**MATERIALS/METALS** IRON AND STEEL **Ferro-alloys, exc. ferro-manganese*** **Iron,simple steel coils** **Tinned plates, sheets** *Iron,simple steel blooms* *Iron,steel, tubes and pipes* Thin plate,rolled,of iron or simple steel FABRICATED IRON AND STEEL *Iron,steel fencing wire** Iron,steel cables, ropes etc. METAL MANUFACTURES **Steel transport boxes etc.** Metal fencing, gauze etc.** NON-FERROUS METALS **Aluminium and alloys, unwrought** **Aluminium bars,wire etc.** **Aluminium plates,sheets,strip** *Master alloys of copper** *Copper tubes, pipes* Copper plates, sheets and strip OTHER MATERIALS AND WASTE **Clay** **Other crude minerals,exc. clay*** *Refractory bricks etc.* Natural abrasives** Metaliferous non-ferrous waste
Machinery	
Specialty inputs	**Aluminium ores and concentrates** **Alumina(aluminium oxide)** **Zinc ores and concentrates** **Chromium ores and concentrates** **Lead and tin and other base metals ores and concentrates*** *Sulphur*
Services	

Primary goods	**FOREST PRODUCTS** WOOD **Wood,simply shaped,and wood based panels***
Machinery	
Specialty inputs	
Services	

Primary goods	**PETROLEUM/CHEMICALS** PETROLEUM PRODUCTS **Motor, aviation spirit** **Kerosene, including jet-fuel** **Petroleum bitumen and bituminous mixtures*** *Fuel Oils, not elsewhere specified* *Lubricants(high petroleum content) etc.* INORGANIC **Metallic oxides of zinc, chromium, iron, lead etc.** Inorganic acids POLYMERS **Polyvinyl chloride in the form of monofil, seamless tubes, etc., waste and scrap*** *Polyvinyl chloride plates, strip* Polystyrene, not in primary form* ORGANIC CHEMICALS Halogenated derivatives of hydrocarbons OTHER **Fungicides, disinfectants for retail*** **Anti-knock preparations etc.** Plastic packaging containers, lids Articles of plastic not elsewhere specified,exc. packaging*
Machinery	
Specialty inputs	
Service	

Primary goods	**SEMICONDUCTORS/COMPUTERS**
Machinery	
Specialty inputs	
Services	

Primary goods	**MULTIPLE BUSINESS** INSTRUMENTS *Meters and counters not elsewhere specified*
Machinery	
Specialty inputs	
Services	

Primary goods	**TRANSPORTATION**
Machinery	
Specialty inputs	
Services	**Shipping#**

Primary goods	**POWER GENERATION AND DISTRIBUTION** *Insulated wire,cable,bars etc.* Inductors and parts electric power machinery** Printed circuits and parts not elsewhere specified*
Machinery	
Specialty inputs	
Services	

Primary goods	**OFFICE**
Machinery	
Specialty inputs	
Services	

Primary goods	**TELECOMMUNICATIONS**
Machinery	
Specialty inputs	
Services	

Primary goods	**DEFENSE**
Machinery	
Specialty inputs	
Services	

Primary goods	**FOOD/BEVERAGES** BASIC FOODS **Flour of wheat or meslin** **Other cereal meals and flours** *Crude animal materials, exc. gut, bladders** Fish,fresh or chilled, exc. Fillets Rice in the husk or husked Rice, broken* Spices** FRUITS AND VEGETABLES **Potatoes fresh, exc. Sweet** **Other vegetables*** **Oranges,fresh or dried** **Lemons,grapefruit etc.** **Grapes,fresh** **Grapes,dried(raisins)** **Stone fruit,fresh** **Figs and other fruit,fresh or dried*** *Crude vegetable materials,exc.seeds,bulbs etc.** Mandarines,clementines etc.,fresh or dried* PROCESSED FOOD **Fruit or vegetable juice, exc. Orange*** **Fruit,preserved exc. fruit juices*** **Vegetables,prepared,preserved** *Shell fish,prepared,preserved* Cereal preparations,exc.malt and bakery products** Pastry, cakes etc. Molasses,honey,syrups,caramel* Sugar candy, non-chocolate Coffee roasted and coffee substitutes cont. coffee* EDIBLE OILS **Olive oil** *Other soft fixed vegetetable oils** Soya bean oil BEVERAGES **Spirits obtained by distilling wine or grape marc** *Wine of fresh grapes* *Grape must, vermouths, flavoured wines** Non-alchoholic beverages n.e.s. Other alcoholic beverages or compounds*(11249*)-
Machinery	
Specialty inputs	**Durum wheat, unmilled** **Oil-cake and other residues exc. of soya beans*** *Feeding stuff for animals,exc. Oil-cake etc.** Seeds for other fixed oils, exc. copra**
Services	

Primary goods	**TEXTILES/APPAREL** FABRICS *Knitted or crocheted natural fabrics** *Tulle,lace,ribbons etc.* *Linens,etc.* *Made-up articles,exc.linens and other furnishings** APPAREL **Men's overcoats,other outer garments,not knitted*** **Women's other outwear,not knitted of cotton** **Women's other outer garments of man-made fibres** **Undergarments,of textile fabrics,exc. shirts*** **Other outer garments,accessories*** **Under garments,knitted,of cotton, non-elastic** **Articles of furskin** *Women's suits,exc. of cotton or man-made fibres** Under garments,knitted,other than of cotton* ACCESSORIES *Clothing accessories knitted* *Artificial fur and articles** FOOTWEAR **Footwear exc, rubber,leather footwear*** *Leather footwear* OTHER **Hides and skins, raw, exc. bovine*** **Furskins tanned or dressed** Leather, exc. Of other bovine cattle* Industrial leather,saddlery,etc.*
Machinery	
Specialty Inputs	FIBRES AND YARNS **Cotton yarn,exc. 40-80 km per kg*** **Cotton,carded or combed, inc. linters,waste*** **Yarn,of discontinuous synthetic fibres** **Yarn of regenerated fibres** *Pile and chenile fabrics of man-made fibres* *Raw cotton, exc. linters* *Yarn of synthetic fibres,exc.discontinuous uncombed** *Yarn of wool or animal hair,exc. wool tops**
Services	

Primary goods	**HOUSING/HOUSEHOLD** FURNISHINGS **Floor coverings exc. knotted carpets and carpets of man-made materials*** HOUSEHOLD EQUIPMENT/APPLIANCES *Domestic refrigerators* Household equipment of base metal,exc. domestic type heating and cooking apparatus** OTHER HOUSEHOLD PRODUCTS *Cutlery*
Machinery	
Specialty inputs	**Cement** **Building stone, worked** **Lime and unfired mineral building products*** *Stone,sand and gravel*
Services	

Primary goods	**HEALTH CARE** PHARMACEUTICALS **Medicaments containing antibiotics**
Machinery	
Specialty inputs	
Services	

Primary goods	**PERSONAL** Combustable products**
Machinery	
Specialty inputs	**Tobacco, unstripped,non-Virginia type*** Essential oils,resinoids
Services	

Primary goods	**ENTERTAINMENT/LEISURE** *Recorded disks,tapes and other recorded media*
Machinery	
Specialty inputs	
Services	**Tourism#**

KEY

Courier	0.26% world export share or higher, but less than 0.52% share
Italics	*0.52% world export share or higher, but less than 1.04% share*
Bold	**1.04% world export share or above**
*	Calculated residuals
**	Added due to significant export value in a segmented industry
#	Added based on in-country research
##	Added due to high export value

TABLE A.2: CLUSTERS OF INTERNATIONALLY COMPETITIVE GREEK INDUSTRIES, 1985

Primary goods	**MATERIALS/METALS** IRON AND STEEL **Ferro-alloys, exc. ferro-manganese*** **Iron, other steel bars, hotrolled** **Iron,simple steel hoop,strip** *Tinned plates, sheets* *Iron,simple steel coils* *Iron,simple steel wire rod* *Iron,steel, tubes and pipes* *Thin plate,rolled,of iron or simple steel* METAL MANUFACTURES **Steel transport boxes etc.** Metal fencing, gauze etc.** NON-FERROUS METALS **Copper tubes, pipes** **Aluminium bars,wire etc.** **Aluminium foil** *Aluminium plates,sheets,strip* *Aluminium and alloys, unwrought* *Copper plates, sheets and strip* *Aluminium powders,tubes,tube fittings** Silver unwrought Copper,aluminium cables,ropes OTHER MATERIALS AND WASTE **Clay** **Asbestos** **Other crude minerals,exc. clay,asbestos*** **Refractory bricks etc.** *Natural abrasives* *Other refractory construction material** Metaliferous non-ferrous waste
Machinery	
Specialty inputs	**Aluminium ores and concentrates** **Alumina(aluminium oxide)** **Lead and tin and other base metals ores and concentrates*** *Zinc ores and concentrates*
Services	

Primary goods	**FOREST PRODUCTS** WOOD **Wood,simply shaped,and wood based panels*** Plywood of wood sheets PAPER Paper and paperboard bulk,corrugated,converted and fibre building board** Paper etc. containers
Machinery	
Specialty inputs	
Services	

Primary goods	**PETROLEUM/CHEMICALS** PETROLEUM PRODUCTS **Motor, aviation spirit** **Kerosene, including jet-fuel** **Lubricants(high petroleum content) etc.** *Fuel Oils, not elsewhere specified* Gas oils## INORGANIC *Inorganic acids* *Other inorganic chemicals** POLYMERS **Polyvinyl chloride in the form of monofil, seamless tubes, etc., waste and scrap*** Polystyrene, not in primary form* ORGANIC CHEMICALS *Halogenated derivatives of hydrocarbons* OTHER **Anti-knock preparations etc.**
Machinery	
Specialty inputs	
Service	

Primary goods	**SEMICONDUCTORS/COMPUTERS**
Machinery	
Specialty inputs	
Services	

Primary goods	**MULTIPLE BUSINESS** INSTRUMENTS *Meters and counters, not elsewhere specified*
Machinery	
Specialty inputs	
Services	

Primary goods	**TRANSPORTATION** **Trailers for goods,containers***
Machinery	
Specialty inputs	
Services	**Shipping#**

Primary goods	**POWER GENERATION AND DISTRIBUTION** *Insulated wire,cable,bars etc.*
Machinery	
Specialty inputs	
Services	

Primary goods	**OFFICE**
Machinery	
Specialty inputs	
Services	

Primary goods	**TELECOMMUNICATIONS**
Machinery	
Specialty inputs	
Services	

Primary goods	**DEFENSE**
Machinery	
Specialty inputs	
Services	

Primary goods	**FOOD/BEVERAGES** BASIC FOODS **Rice in the husk or husked** **Flour of wheat or meslin** **Groats,meal and pellets, of wheat*** *Edible nuts,fresh or dried* *Fish dried,salted exc. cod* Crude animal materials, exc. gut, bladders* Rice, broken* Spices FRUITS AND VEGETABLES **Potatoes fresh, exc. sweet** **Other vegetables*** **Oranges,fresh or dried** **Lemons,grapefruit etc.** **Grapes,fresh** **Grapes,dried(raisins)** **Stone fruit,fresh** **Figs and other fruit,fresh or dried*** Crude vegetable materials,exc.seeds,bulbs etc.* Apples,fresh PROCESSED FOOD **Shell fish,prepared,preserved** **Fruit,preserved exc. fruit juices*** **Vegetables,prepared,preserved** *Orange juice* *Fruit or vegetable juice, exc. orange** *Pastry, cakes etc.* *Cereal preparations,exc.malt and bakery products** *Sugar candy, non-chocolate* EDIBLE OILS **Olive oil** **Soya bean oil** BEVERAGES **Other alcoholic beverages or compounds*** **Grape must, vermouths, flavoured wines*** *Wine of fresh grapes* Spirits obtained by distilling wine or grape marc
Machinery	
Specialty inputs	**Chemical potassic fertilizers exc. potassium chloride*** **Nitrogen,phosphorus fertilizers** **Durum wheat, unmilled** *Oil-cake and other residues exc. of soya beans** *Feeding stuff for animals,exc. oil-cake etc.** *Cotton,sunflower,rape,colza seeds* Maize(corn),unmilled Seeds for other fixed oils, exc. copra**
Services	

Primary goods	**TEXTILES/APPAREL** FABRICS **Made-up articles,exc.linens and other furnishings*** *Pile etc. cotton fabrics* *Cotton fabrics,woven,finished,exc. pile fabrics** *Other woven textile fabric** *Linens,etc.* Grey woven cotton fabric Tulle,lace,ribbons etc.** APPAREL **Men's trousers,of cotton** **Woman's coats and jackets,of man-made fibres** **Woman's coats and jackets,exc. of man-made fibres*** **Women's dresses,exc. of man-made fibres*** **Women's skirts** **Women's blouses,of man-made fibres** **Women's other outwear,not knitted, of cotton** **Jerseys,pull-overs,of synthetic fibres** **Jerseys,pull-overs,of cotton or regenerated fibres*** **Women's dresses,suits,etc.,of synthetic fibres** **Women's dresses,suits,etc.,exc. of synthetic fibres*** **Other outer garments,accessories*** **Under garments,knitted,of cotton, non-elastic** **Articles of furskin** *Men's trousers,exc. of cotton** *Men's jackets,blazers etc.* *Men's overcoats,other outer garments,not knitted** *Women's dresses,of man-made fibres* *Women's blouses,exc. of man-made fibres* *Women's other outer garments of man-made fibres* *Women's suits,exc. of cotton or man-made fibres** *Undergarments,of textile fabrics,exc. shirts** *Under garments,knitted,other than of cotton** Men's suits ACCESSORIES Clothing accessories knitted Leather clothes, accessories FOOTWEAR *Leather footwear* OTHER **Hides and skins, raw, exc. bovine*** **Furskins tanned or dressed** *Leather, exc. of other bovine cattle** Industrial leather,saddlery,etc.*
Machinery	
Specialty Inputs	**Raw cotton, exc. linters** **Cotton yarn,40-80 km per kg** **Cotton yarn,exc. 40-80 km per kg*** **Cotton,carded or combed, inc. linters, waste*** **Yarn,textured of continuous polyamide fibres** **Yarn,of discontinuous synthetic fibres** **Yarn of regenerated fibres** *Yarn of wool or animal hair,exc. wool tops** Old textile articles,rags
Services	

Primary goods	**HOUSING/HOUSEHOLD** FURNISHINGS **Floor coverings exc. knotted carpets and carpets of man-made materials*** HOUSEHOLD EQUIPMENT/APPLIANCES *Household equipment of base metal,exc. domestic type heating and cooking apparatus* OTHER HOUSEHOLD PRODUCTS *Cutlery*
Machinery	
Specialty inputs	**Cement** **Building stone, worked** *Lime and unfired mineral building products** *Stone,sand and gravel* Articles of cement,artificial stone
Services	

Primary goods	**HEALTH CARE** PHARMACEUTICALS **Medicaments containing antibiotics**
Machinery	
Specialty inputs	
Services	

Primary goods	**PERSONAL** *Other articles of precious metal* Tobacco,manufactured exc. cigarettes Precious metal jewellery Combustable products**
Machinery	
Specialty inputs	**Tobacco, unstripped,non-Virginia type*** Essential oils,resinoids
Services	

Primary goods	**ENTERTAINMENT/LEISURE** Recorded disks,tapes and other recorded media
Machinery	
Specialty inputs	
Services	**Tourism#**

KEY

Courier	0.24% world export share or higher, but less than 0.48% share
Italics	*0.48% world export share or higher, but less than 0.96% share*
Bold	**0.96% world export share or above**
*	Calculated residuals
**	Added due to significant export value in a segmented industry
#	Added based on in-country research
##	Added due to high export value

BIBLIOGRAPHY

Agapitos, G., 1993, *Developments and Structural Problems of the Greek Economy (1950-1993)*, Athens: To Oikonomiko. (in Greek)

Aluminium of Greece, 1996, *Annual Report 1995*, Athens: Aluminium of Greece. (in Greek)

Apostolopoulos, Th., 1990, 'A new strategy for tourist development', *Tourism and Economy*, 144 : 228-238. (in Greek)

Archer, B., 1989, 'Trends in International Tourism', in: S. F. Witt and L. Moutinho (Eds.), *Tourism Marketing and Management Handbook*, New York: Prentice Hall, pp. 593-597.

Arthur Andersen, 1997, *Yield Management in Small and Medium-Sized Enterprises in the Tourism Industry: General Report*, Luxembourg: Office for Official Publications of the European Communities.

Association of Greek Cement Manufacturers,1994, *Production, Imports and Exports by Country of Destination*, Athens: Association of Greek Cement Manufacturers.

Athanasakopoulos, A., 1997, *Bauxite-Alumina-Aluminium*, Athens: Aluminium of Greece. (in Greek)

Baltzakis, P. and Katsos, G., 1996, 'International Competitiveness of Manufacturing', in: B. Droukopoulos (Ed.), *Proposals for Structural Policy for Industry and Employment*, Athens: CPER, pp. 135-144. (in Greek)

Bank of Greece, 1978, *The First Fifty Years of the Bank of Greece, 1928-1978*, Athens: Bank of Greece. (in Greek)

Bank of Greece, 1998, *Annual Report*, Athens: Bank of Greece.

Bellak, C. and Weiss, A., 1993, 'A Note on the Austrian Diamond', *Management International Review*, 33 (special issue 2): 109-118.

Bianchi, P., 1982, *Public and Private Control in Mass Product Industry: The Cement Industry Cases*, Studies in Industrial Organisation, Volume 3, The Hague: Martinus Nijhoff Publishers.

Brown, M. and McKern, B., 1987, *Aluminium, Copper and Steel in Developing Countries*, Paris: OECD.

Bruce, N., 1991, 'The Cost of Capital and Competitive Advantage', in: T. J. Courchene and D. D. Purvis (Eds.), *Productivity, Growth and Canada's International Competitiveness*, Ontario: John Deutsch Institute for the Study of Economic Policy, pp. 77-117.

Bunker, S. and Ciccantell, P., 1994, 'The Evolution of the World Aluminium Industry', in: B. Barham, S. Bunker, and D. O'Hearn (Eds.), *States, Firms and Raw Materials: The World Economy and Ecology of Aluminium*, Madison: The University of Wisconsin Press, pp. 39-62.

Cartwright, W., 1993, 'Multiple Linked "Diamonds" and the International Competitiveness of Export-Dependent Industries: The New Zealand Experience', *Management International Review*, 33 (special issue 2): 55-70.

Cembureau, 1997, 'Cement', in: European Commission, *Panorama of EU Industry 97*, Volume 1, Luxembourg: Office for Official Publications of the European Community, pp. 9.33-9.36.

Chapman, M. and Antoniou, Ch., 1998, 'Uncertainty Avoidance in Greece: An Ethnographic Illustration', in: P. Buckley, F. Burton and H. Mirza (Eds.), *The Strategy and Organization of International Business*, London: Macmillan Press, pp. 55-70.

Chiotis, G. and Coccosis, H., 1992, 'Tourist Development and Environmental Protection in Greece', in: H. Briassoulis and J. van der Straaten (Eds.), *Tourism and the Environment*, Dordrecht: Kluwer Academic Publishers, pp. 133-143.

Chrisochou, N., 1987, 'Cement Industry Raw Materials', in: Greek Association of Chemical Engineers, *The Greek Cement Industry and its Development Prospect*, Conference Proceedings, Volos, May 14-15, pp. 39-55. (in Greek)

Christodoulou, Ch., 1995, 'The Chain Bauxite - Alumina - Aluminium' (in Greek), Speech in the workshop *The Aluminium Sector in Greece*, Athens, 16 March.

Christodoulou, Ch., 1996, 'The Greek Aluminium Sector in Europe and the World', Speech in the Exhibition *Aluminium '96*, Athens, 8 November.

Cooper, W., 1992, 'On Porter's Competitive Advantage of Nations', *Omega International Journal of Management Science*, 20 (2): 137-138.

Co-ordination Ministry, 1976, *National Accounts of Greece, 1948-1975*, Athens: Co-ordination Ministry. (in Greek)

Côté, M., 1991, 'Agents of Change and Economic Growth', in: T. J. Courchene and D. D. Purvis (Eds.), *Productivity, Growth and Canada's International Competitiveness*, Ontario: John Deutsch Institute for the Study of Economic Policy, pp. 301-337.

Coutsoumaris, G., 1963, *The Morphology of Greek Industry*, Athens: Centre of Economic Research.

CPER, 1991, *Animal Production*, Report 20 for the Plan 1988-1992, Athens: CPER. (in Greek)

Crocombe, G., Enright, M., and Porter, M., 1991, *Upgrading New Zealand's Competitive Advantage*, Auckland: Oxford University Press.

Czernin, W., 1980, *Cement Chemistry and Physics for Civil Engineers*, Berlin: Bauverlag.

Daly, D., 1993, 'Porter's Diamond and Exchange Rates', *Management International Review*, 33 (special issue 2): 119-134.

De Man, A., Van den Bosch, F. and Elfring, T., 1997, 'Porter on National and Regional Competitive Advantage', in: F. A .J. van den Bosch and A. P. De Man (Eds.), *Perspectives on Strategy: Contributions of Michael E. Porter*, Dordrecht: Kluwer Academic Publishers, pp. 45-59.

Dimakouleas, T., 1996, 'World Ranking of Units: Spectacular Mergers and Acquisitions in World Hoteling', *Tourism and Economy*, 215 : 52-66. (in Greek)

Dobson, P. and Starkey, K., 1992, 'The Competitive Advantage of Nations', *Journal of Management Studies*, 29 (2): 253-255.

Drakatos, K., 1997, *The Great Circle of the Greek Economy (1945-1995)*, Athens: Ekdoseis Papazisi. (in Greek)

DRI Europe, 1997, 'Travel Services', in: European Commission, *Panorama of EU Industry 97*, Volume 2, Luxembourg: Office for Official Publications of the European Community, pp. 22.40-22.46.

Drimousis, I. and Zisimopoulos, A., 1988, *Vocational Training in the Textiles and Clothing Industries in Greece*, Berlin: CEDEFOP.

Dunning, J., 1992, 'The Competitive Advantage of Countries and the Activities of Transnational Corporations', *Transnational Corporations*, 1 (1): 135-168.

Dunning, J., 1993, 'Internationalising Porter's Diamond', *Management International Review*, 33 (special issue 2): 7-15.

EAA, 1997, 'Aluminium', in: European Commission, *Panorama of EU Industry 97*, Volume 1, Luxembourg: Office for Official Publications of the European Community, pp. 11.12-11.15.

Enright, M., 1990, *Geographical Concentration and Industrial Organisation*, Ph.D. Dissertation, Harvard University.

Epilogi, 1998, 'Apparel-Footwear', in: Epilogi, *The Greek Economy*, pp. 285-288. (in Greek)

ERMCO, 1997, 'Ready mixed concrete', in: European Commission, *Panorama of EU Industry 97*, Volume 1, Luxembourg: Office for Official Publications of the European Community, pp. 9.43-9.45.

ETVA, 1996, *Invest in Greece*, Athens: ETVA.

European Commission, 1988, *Le "Cout de la non-Europe" des Produits de Construction*, Luxembourg: Office for Official Publications of the European Communities.

European Commission, 1993, *The Evolution in Holiday Travel Facilities and in the Flow of Tourism Inside and Outside the European Community, Part I: Main Findings*, Brussels: European Commission.

European Commission, 1997, 'Tourism: Overview', in: European Commission, *Panorama of EU Industry 1997*, Volume 2, Luxembourg: Office for Official Publications of the European Communities, pp. 22.1-22.9.

Express, 1993, *Special Report on Construction: The Strong Position of the Greek Cement Industry*, Athens: Express. (in Greek)

Falirea, L., and Kapsi, N., 1996, 'Domestic Tourism: Aspects and Trends', *Tourism and Economy*, 206 : 14-24. (in Greek)

FEIR, 1982, *Sectoral Report: Cement Industry*, Athens: FEIR. (in Greek)

FEIR 1985, *The Greek Aluminium Fabrication Industry, in 1983*, Athens: FEIR. (in Greek)

FEIR, 1991, *The Greek Milk Industry*, Athens: FEIR. (in Greek)

FEIR, 1993, *Metallic Packaging*, Athens: FEIR. (in Greek)

Fitzpatrick Associates, 1993, *All-season Tourism: Analysis of experience, suitable products and clientele*, Brussels: European Commission.

Fitzpatrick Associates, 1997, 'Restaurants', in: European Commission, *Panorama of EU Industry 97*, Volume 2, Luxembourg: Office for Official Publications of the European Community, pp. 22.10-22.16.

Foreign Ministry, 1980, *Greece in the European Community*, Athens: Foreign Ministry. (in Greek)

Foster, D., 1985, *Travel and Tourist Management*, London: Macmillan.

Fotinopoulou, K. and Manolopoulos, N., 1991, *Technical Training Requirements of Middle Management in the Greek Textile and Clothing Industries*, Berlin: CEDEFOP.

GATT, 1987, *Background Study on Aluminium and Aluminium Products*, Geneva: GATT.

GATT, 1994, *Summary of the Results of the Uruguay Round in the Dairy Sector*, Geneva: GATT.

Geelhoed, L., 1997, 'The Netherlands: more than flower power', in: F. A .J. Van den Bosch and A. P. De Man (Eds.), *Perspectives on Strategy: Contributions of Michael E. Porter*, Dordrecht: Kluwer Academic Publishers, pp. 61-66.

Ghadar, F., Davidson, W. and Feigenhoff, C., 1987, *U.S. Industrial Competitiveness: The Case of the Textile and Apparel Industries*, Lexington: Lexington Books.

Giannitsis, T., 1983, *The Greek Industry: Development and Crisis*, Athens: Gutenberg. (in Greek)

Giannitsis, T., 1988a, *Accession to EEC and Effects on Industry and Trade*, Athens: Foundation for Mediterranean Studies. (in Greek)

Giannitsis, T., 1988b, 'External Exchanges and Greece's Position in the International Labour Specialisation in the Prospect of the Year 2000', in: H. Katsoulis, T. Giannitsis and P. Kazakos (Eds.), *Greece Towards the Year 2000, Politics, Society, Economy and External Relations*, Athens: Ekdoseis Papazisi, pp. 310-334. (in Greek)

Giannitsis, T., and Vaitsos, K., 1987, *Technological Transformation and Economic Development*, Athens: Gutenberg. (in Greek)

Glytsos, N., 1995, 'Human Capital', in: A. Kintis (Ed.), *The Greek Economy in the Eve of the 21st Century*, Athens: Ionian Bank, pp. 275-332. (in Greek)

Grabowski, R. and Shields, M., 1996, *Development Economics*, Cambridge, MA: Blackwell.

Grant, R., 1991, 'Porter's "Competitive Advantage of Nations": An Assessment', *Strategic Management Journal*, 12 (7): 535-548.

Gray, H., 1991, 'International Competitiveness: A Review Article', *The International Trade Journal*, 5: 503-517.

Greenaway, D., 1993, 'The Competitive Advantage of Nations', *Kyklos*, 46 (1): 145-146.

Harris, R. and Watson, W., 1991, 'Three Visions of Competitiveness: Porter, Reich and Thurow on Economic Growth and Policy', in: T. J. Courchene and D. D. Purvis (Eds.), *Productivity, Growth and Canada's International Competitiveness*, Ontario: John Deutsch Institute for the Study of Economic Policy, pp. 233-280.

Hassid, I. and Katsos, G., 1992, *European Integration and Greek Industry*, Athens: FEIR. (in Greek)

Hassid, I., 1994, *Adjustments and Competitiveness in Greek Industry*, Athens: FEIR. (in Greek)

Hodgetts, R., 1993, 'Porter's Diamond Framework in a Mexican Context', *Management International Review*, 33 (special issue 2): 41-54.

Hoffman, K. and Rush, H., 1988, *Micro-Electronics and Clothing: The impact of technical change on a global industry*, New York: Praeger.

Holloway, J., 1985, *The Business of Tourism*, Second Edition, London: Pitman.

ICAP, 1991, *Construction Materials* , Athens: ICAP. (in Greek)

ICAP, 1994, *Ready-made Men's Formal Outerwear*, Athens: ICAP. (in Greek)

ICAP, 1995, *Dairy Products*, Athens: ICAP. (in Greek)

ICAP, 1996, *Aluminium Rolled and Extruded Products*, Athens: ICAP. (in Greek)

ICAP, 1997a, *Greek Financial Directory, Volume 1: Manufacturing*, Athens: ICAP.

ICAP, 1997b, *Greek Financial Directory, Volume 3: Services*, Athens: ICAP.

ICAP, 1997c, *Fabrics*, Athens: ICAP. (in Greek)

ICAP, 1997d, *Company Reports: ELVAL, Delphi-Distomon, Alouman, Silver & Baryte Ores Mining, Aluminium of Athens, Sanitas-Sanitas, Hellas Can, Etem, Aluminium of Greece, Almaco, Profil Aluminium*, Athens: ICAP. (in Greek)

ICAP, 1997e, *Company Reports: TITAN, Herakles, Halkis, Halips*, Athens: ICAP. (in Greek)

IEA 1996, *Energy Prices and Taxes*, Paris : OECD.

ILO, 1994, *The effects of technological changes in the clothing industry*, Geneva: ILO.

Ioakeimidis, P., 1996, 'European Union: Selection of Basic Bibliography 1981-1996', *Oikonomikos Tachydromos*, 51 (2224), 19 December: 154-160. (in Greek)

Isard, W., 1960, *Methods of Regional Analysis: an Introduction to Regional Science*, Cambridge, MA: The M.I.T. Press.

Isotimia, 1997, 'Men's Formal Outerwear: Stagnation and Reduced Investment Interest', *Isotimia*, 20-21 December: 59. (in Greek)

Jacobs, D. and De Jong, M., 1992, 'Industrial Clusters and the Competitiveness of the Netherlands', *De Economist*, 140 (2): 233-252.

Jasinowski, J., 1990, 'Although Michael Porter ...', in: L. A. McCauley (Ed.), Letters to the Editor, *Harvard Business Review*, May-June, 90 (3): 196-198.

Jelinek, M., 1992, 'The Competitive Advantage of Nations', *Administrative Science Quarterly*, 37 (3): 507-510.

Kalloniatis, K., 1995, *The Sector of Ready-made Garments*, Athens: FEIR. (in Greek)

Kalloniatis, K., 1996a, 'Recovery of the Cement Producing Industry', *Epilogi*, 338: 51-58. (in Greek)

Kalloniatis, K., 1996b, 'Positive - Under Circumstances - are the Prospects of The Aluminium Sector', *Epilogi*, 340: 88-95. (in Greek)

Kanellopoulos, K., Kousoulakos, I. and Rapanos, V., 1995, *Underground Economy and Tax Evasion: Measurements and Financial Consequences*, Athens: CEPR. (in Greek)

Karagiannopoulou, D., 1998, 'Shrinking and Competition are Threatening the Greek Yarn Industry', *Isotimia*, 12-13 December: 39. (in Greek)

Karra, S., 1985, *The Cement Industry (Complement to the Basic Report 1982)*, Athens: FEIR. (in Greek)

Karsamba, D., 1997, *The Cement Industry*, Athens: FEIR. (in Greek)

Kintis, A., 1995, 'Manufacturing Industry: Performance, Crisis, Prospects (?)', in: A. Kintis. (Ed.), *2004: The Greek Economy on the eve of the 21st century*, Athens: Ionian Bank, pp. 527-588. (in Greek)

Kofos, E., 1977, 'Period 1869-1875', in: Ekdotiki Athinon, *The History of the Greek Nation*, Volume IC, Athens: Ekdotiki Athinon. (in Greek)

Konsola, D., 1993, 'Cultural Tourism and Regional Development', in: D. Konsola (Ed.), *Culture, Environment and Regional Development*, Athens: Regional Development Institute, pp. 19-43.

Konsolas, I. and Oz, O., 1996, 'The Evolution in the Competitive Structures of Turkish and Greek Industries', in: L. G. Brusati (Ed.), *Business, Government and Society, Proceedings of the Second AIDEA Giovani International Conference* (Milan, June 6-8, 1996), Milan: CUEM.

Konsolas, N., 1992, 'EEC Regional Policy and Integrated Mediterranean Programs', in: M. Tykkylainen (Ed.), *Development Issues and Strategies in the New Europe*, Aldershot: Avebury, pp. 41-52.

Konsolas, N., 1998, 'The Development Perspective of the "Kapodistrias" Programme', in: Epilogi, *The Greek Economy, 1998*, Athens: pp. 222-226.

Konsolas, N., and Zacharatos, G., 1992, 'Regionalisation of Tourism Activity in Greece: Problems and Policies', in: H. Briassoulis and J. Van der Straaten (Eds.), *Tourism and the Environment*, Dordrecht: Kluwer Academic Publishers, pp. 57-65.

Kottis, G., 1981, *Selected Economic Issues*, Athens: Papazissis. (in Greek)

Krugman, P. and Obstfield, M., 1997, *International Economics: Theory and Policy*, Fourth Edition, Reading, MA: Addison-Wesley.

Lagos, D., 1990, 'The Structural Problems of Greek Tourism', *Tourism and Economy*, 136 : 168-178. (in Greek)

Lavery, P., 1989, 'European Destination Marketing', in: S. F. Witt and L. Moutinho (Eds.), *Tourism Marketing and Management Handbook*, New York: Prentice Hall, pp. 141-146.

Lea, F., 1970, *The Chemistry of Cement and Concrete*, Glasgow: Edward Arnold.

Leamer, E., 1984, *Sources of International Comparative Advantage*, Cambridge, MA: The MIT Press.

Leontidou, L., 1991, 'Greece: prospects and contradictions of tourism in the 1980s', in: A. M. Williams and G. Shaw (Eds.), *Tourism & Economic Development: Western European Experiences*, Second Edition, NewYork: Belhaven Press, pp. 84-106.

Lianos, Th., and Lazaris, S., 1995, 'The Evolution of the Basic Indicators of the Greek Economy in the Post-War Period', in: A. Kintis (Ed.), *The Greek Economy in the Eve of the 21st Century*, Athens: Ionian Bank, pp. 45-84. (in Greek)

Lolos, S. and Papagiannakis, L., 1993, *Greek Industry in the European Community*, Athens: Academy of Athens. (in Greek)

Magaziner, I., 1990, 'Michael Porter's message ...', in: L. A. McCauley (Ed.), Letters to the Editor, *Harvard Business Review*, May-June, 90 (3): 189-192.

Makrydimitris, A., 1996, 'Public Administration', *Oikonomikos Tachydromos*, 51 (2224), 19 December: 124-130. (in Greek)

Malecki, E., 1997, *Technology and Economic Development: the Dynamics of Local, Regional and National Competitiveness*, Second Edition, Harlow: Longman.

Maucher, H., 1990, 'The Competitive Advantage of Nations ...', in: L. A. McCauley (Ed.), Letters to the Editor, Harvard Business Review, May-June, 90 (3): 188-189.

Middleton, V., 1989, 'Tourist Product', in: S. F. Witt and L. Moutinho (Eds.), *Tourism Marketing and Management Handbook*, New York: Prentice Hall, pp. 573-576.

Ministry of Agriculture, 1996, *Development of Milk Production*, Athens: Ministry of Agriculture. (in Greek)

Ministry of Commerce, 1963, *Study on Greek Cheese*, Athens: Ministry of Commerce. (in Greek)

Mitsos, A., 1989, *Greek Industry in the International Market*, Athens: Themelio. (in Greek)

Mylonas, A., 1996, 'Tourism: Trends and Prospects', in: A. Kintis (Ed.), *The Greek Economy in the Eve of the 21st Century*, Athens: Ionian Bank, pp. 719-773. (in Greek)

Narula, R., 1993, 'Technology, International Business and Porter's "Diamond": Synthesizing a Dynamic Competitive Development Model', *Management International Review*, 33 (special issue 2): 85-107.

Negreponti-Delivani, M., 1986, *The Problematic Greek Industry and Some Solutions...*, Second edition, Thessaloniki: Paratiritis. (in Greek)

Nicholson, P., 1991, 'Comment on Harris and Watson: Three Visions of Competitiveness', in: T. J. Courchene and D. D. Purvis (Eds.), *Productivity, Growth and Canada's International Competitiveness*, Ontario: John Deutsch Institute for the Study of Economic Policy, pp. 281-296.

Nikolaou, N., 1998, 'Industrial Take-Off', *To Bima*, 22 November: D4. (in Greek)

Nomisma, 1997, 'Dairy Products', in: European Commission, *Panorama of EU Industry 97*, Volume 1, Luxembourg: Office for Official Publications of the European Community, pp. 3.52-3.60.

NSSG, *Annual Statistical Manufacturing Survey*, Athens: NSSG, var. ed.

NSSG, *National Accounts*, Athens: NSSG, var. ed.

NTO, 1996, *The Progress of Tourism in Greece: 1981-1996*, Athens: NTO - National Technical University of Athens. (in Greek)

NTO, 1997, *Lodging Capacity 1995-1996*, Athens: NTO. (in Greek)

O' Donnellan, N., 1994, 'The Presence of Porter's Sectoral Clustering in Irish Manufacturing', *The Economic and Social Review*, 25 (3): 221-232.

OECD, 1983, *Positive Adjustment Policies in the Dairy Sector*, Paris: OECD.

OECD, 1997, *The Market of Dairy Products and Dairy Policies in the OECD and Observer Countries: Developments Since 1st August 1995*, OECD Working Papers, Vol. V, No. 4, Paris: OECD.

OETH, 1995, 'Clothing', in: European Commission, *Panorama of EU Industry 95/96*, Volume 1, Luxembourg: Office for Official Publications of the European Community, pp. 14.15-14.21.

OETH, 1997a, 'Textiles', in: European Commission, *Panorama of EU Industry 97*, Volume 1, Luxembourg: Office for Official Publications of the European Community, pp. 4.9-4.16.

OETH, 1997b, 'Clothing', in: European Commission, *Panorama of EU Industry 97*, Volume 1, Luxembourg: Office for Official Publications of the European Community, pp. 4.17-4.23.

Ohmae, K., 1990, *The Borderless World*, London: Harper Collins Publishers.

Oikonomikos Tachydromos, 1996, 'The Painful War and Occupation Period', *Oikonomikos Tachydromos*, 51 (2224), 19 December: 58-60. (in Greek)

Oikonomou, N., 1977, 'Greek Society and Economy in the First Decade of the 20th Century', in: Ekdotiki Athinon, *The History of the Greek Nation*, Volume ID, Athens: Ekdotiki Athinon. (in Greek)

Oz, O., 1997, *The Competitive Advantage of Nations: The Case of Turkey*, Ph.D. Dissertation, The London School of Economics and Political Science.

Parisakis, G., 1981, *Chemistry and Technology of Cement*, Athens. (in Greek)

Patsouratis, V., 1988, *The Industry of Ready-made Garments*, Athens: FEIR. (in Greek)

Patsouratis, V. and P. Rosolymos, 1997, *Panorama of Economic Activity*, Athens: Commercial and Industrial Chamber of Athens. (in Greek)

Pavlopoulos, P., 1987, *The Underground Economy in Greece*, Athens: FEIR. (in Greek)

Penttinen, R., 1994, *Summary of Critique on Porter's Diamond Model*, Discussion Papers No. 462, Helsinki: The Research Institute of the Finnish Economy.

Petropoulos, I. and Koumarianou, A., 1977, 'Period 1833-1862', in: Ekdotiki Athinon, *The History of the Greek Nation*, Volume IC, Athens: Ekdotiki Athinon. (in Greek)

Pheng, L. and Bee, T., 1993, *The Global Cement Industry*, Singapore: Singapore University Press.

Pindyck, R. and Rubinfeld, D., 1991, *Econometric models and economic forecasts*, New York: McGraw-Hill.

Pitelis, Ch. et al., 1997, *Report on Competitiveness and Industrial Strategy in Greece*, Athens: Ministry of Development. (in Greek)

Porter, M., 1990, *The Competitive Advantage of Nations*, New York: Free Press.

Porter, M., 1992, 'A Note on Culture and Competitive Advantage: Response to Van den Bosch and Van Prooijen', *European Management Journal*, 10 (2): 178.

Porter, M., 1998a, 'Introduction', in: M. Porter, *On Competition*, Boston: Harvard Business Review Press, pp. 1-17.

Porter, M., 1998b, 'Clusters and Competition: New Agendas for Companies, Governments, and Institutions', in: M. Porter, *On Competition*, Boston: Harvard Business Review Press, pp. 197-287.

Porter, M. and Monitor Company, 1991, *Canada at the Cross-roads: The Reality of a New Competitive Environment*, Ottawa: Business Council on National Issues.

Prodromidis, K., 1976, *Foreign Trade of Greece: A Quantitative Analysis at a Sectoral Level*, Athens: CPER.

RIFT, 1997, *Greek Economy and Tourism*, Issue 3, May. (in Greek)

Rostow, W., 1961, *The Stages of Economic Growth*, New York: Murray Printing Company.

Rugman, A., 1991, 'Diamond in the Rough', *Business Quarterly*, 55 (3): 61-64.

Rugman, A. and D'Cruz, R., 1993, 'The "Double-Diamond" Model of International Competitiveness: The Canadian Experience', *Management International Review*, 33 (special issue 2): 17-39.

Rugman, A. and Verbeke, A., 1993, 'Foreign Subsidiaries and Multinational Strategic Management: An Extension and Correction of Porter's Single Diamond Framework', *Management International Review*, 33 (special issue 2): 71-84.

Sefertzi, E., 1998, 'Crisis, Restructuring and Innovative Development in the Textile and Apparel Industry', in: E. Sefertzi (Ed.), *Innovation*, Athens: Gutenberg. (in Greek)

Sideri, M., 1998, 'DELTA becomes more Powerful in SE Europe', *Kathimerini*, 4 September: 21. (in Greek)

Singleton, J., 1997, *The World Textile Industry*, London: Routledge.

Sinha, S., 1990, *Mini-cement: A Review of Indian Experience*, Intermediate Technology Publications.

Smit, R., 1997, 'Rotterdam seen through Porter-coloured glasses', in: F. A .J. Van den Bosch and A. P. De Man (Eds.), *Perspectives on Strategy: Contributions of Michael E. Porter*, Dordrecht: Kluwer Academic Publishers, pp. 67-79.

Smith, S., 1993, 'The Competitive Advantage of Nations', *Journal of Development Economics*, 40 (2): 399-404.

Solvell, O., Zander, I. and Porter, M., 1992, *Advantage: Sweden*, Second Edition, London: The Macmillan Press.

Stefanidis, D., 1952, *Introduction to the applied social economics*, Volume B, Athens. (in Greek)

Stopford, J. and Strange, S., 1991, *Rival States, Rival Firms: Competition for World Shares Market*, Cambridge: Cambridge University Press.

Stoupas, K., 1997, 'AGET Hostage to the "Cartel", *Ependitis*, 22-23 February: 11. (in Greek)

Thurow, L., 1990, 'Competing Nations: Survival of the Fittest', *Sloan Management Review*, 32 (1): 95-97.

Titan, 1992a, *80 Years Titan*, Athens: Titan. (in Greek)

Titan, 1992b, *Production*, Athens: Titan. (in Greek)

Titan, 1996a, *Annual Report 1995*, Athens: Titan. (in Greek)

Titan, 1996b, *Social Report 1995*, Athens: Titan. (in Greek)

Tsaraglis, Y., 1998, 'Delta's Ice Cream "Floods" the Balkans', *Ependitis-Oikonomia*, 5-6 September: 12. (in Greek)

Tsekrekos, V., 1998, 'The Promotion of Bauxite is in Greece's Favour', *Oikonomikos Tachydromos*, 2318, 8 October: 92-93.

UN, *Industrial Commodity Statistics Yearbook*, New York: UN, various years.

UN, *International Trade Statistics Yearbook*, New York: UN, various years.

Vamvoukas, G., 1991, 'Public Deficits: Causes, Side-effects, Proposals for Economic Policy', in: N. Tatsos, (Ed.), *Public Finances in Greece*, Athens: To Oikonomiko. (in Greek),

Van den Bosch, F. and De Man, A., 1994, 'Government's Impact on the Business Environment and Strategic Management', *Journal of General Management*, 19 (3): 50-59.

Van den Bosch, F. and Van Prooijen, A., 1992, 'The Competitive Advantage of European Nations: The Impact of National Culture - A Missing Element in Porter's Analysis?', *European Management Journal*, 10 (2): 173-177.

Vatin, F., 1990, *L' Industrie du Lait: Essai d' Histoire Economique*, Paris: Editions L' Harmattan.

Vernon, R., 1966, 'International Investment and International Trade in the Product Cycle', *Quarterly Journal of Economics*, May, 80 (2): 190-207.

Viochalco, 1997, *Information Bulletin on the Group's Mergers*, Athens: Viochalco.

Weber, A., 1929, *Theory of the Location of Industries*, (translated by Carl J. Friedrich), Chicago: The University of Chicago Press.

Wexler, I., 1983, *The Marshall Plan Revisited*, Westport: Greenwood Press.

Zigouris, N., 1952, *The Milk Industry*, Second Edition, Athens: Ministry of Agriculture. (in Greek)

LIST OF INTERVIEWS

Athanasakopoulos, A., General Manager, Delhpi-Distomon SA, President, Association of Greek Mining Firms, Personal Interview, Athens, 4 April, 1997.

Avgerinos, I., Sales Department, Elval SA, Personal Interview, Oinofyta, 21 April, 1997.

Dailianas, K., Executive, Cement Manufacturers Association of Greece, Personal Interview, 9 January, 1997.

Dimitriadis, P., General Manager, Transworld Travel, Personal Interview, 11 July, 1997.

Ganakou, E., Staff Member, Aluminium Association of Greece, Personal Interview, Athens, 10 April, 1997.

Georganas, I., Board Member, Delta SA, Personal Interview, Athens, 26 January, 1998.

Giannetos, D., General Manager, Giannetos SA, Personal Interview, Athens, 14 January, 1998.

Kalogeridis, Bauxite Mining Department Executive, Silver & Baryte Ores Mining SA, Personal Interview, Athens, 1 April, 1997.

Kondilis, P., Financial Executive, Titan Cement Co. SA, Personal Interview, Athens, 16 January, 1997.

Lagos, D., Tourism Industry Expert, Personal Interview, Athens, various dates, 1997.

Lidorikis, M., Board Member, Aluminium Association of Greece, Personal Interview, Athens, 10 April, 1997.

Lalaitou, R., Staff Member, G.O. Tours, Personal Interview, Athens, 30 June, 1997.

Meyir, A., Sales Executive, Elval SA, Personal Interview, Oinofyta, 19 April, 1997.

Nikitaridis, M., Staff Member, ICAP, Personal Interview, various dates, 1997.

Nikolaidis, K., Foreign Operations Executive, Delta SA, Personal Interview, Athens, 26 January, 1998.

Politakis, G., General Manager, Evete SA, Personal Interview, Spata, 22 January, 1998.

Psaropoulos, G., Fabrics Importer, Personal Interview, Athens, 29 January, 1998.

Sclavounakos, S., Executive, National Tourism Organisation, Personal Interview, Athens, 31 July, 1997.

Simeonidis, K., Production Executive, Titan Cement Co. SA, Personal Interview, Athens, 23 January, 1997.

Vassiliou, K., Executive, ETVA, Personal Interview, Athens, 4 April, 1997.