COMPETITION AND COLLUSION:

AN ANALYSIS OF COMPETITION POLICY PERSPECTIVES WITH SPECIFIC REFERENCE TO CEMENT INDUSTRIES IN THE EUROPEAN UNION, UNITED STATES, AND TURKEY

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ABSTRACT

COMPETITION AND COLLUSION:

An Analysis of Competition Policy Perspectives

with Specific Reference to

Cement Industries in EU, US, and Turkey

submitted by Esra LaGro

The dissertation aims to discuss the economic theory behind legal provisions of competition policy with regard to collusive practices. Therefore, first it introduces the legal provisions relating to collusion in EU and in Turkey. Second, the theory of collusion and parameters of collusion detection are introduced. Next, the cumulative competition policy perspectives in EU and US are discussed with reference to cement industry in subsequent chapters. Then, Turkish cement industry is presented with its economic characteristics, and the privatization process followed by the analysis of competitive structure of the industry. This in return has been followed by an econometrical analysis of Turkish cement industry in order to answer the question whether the frequent price increases in the Turkish cement industry are stemming from collusive behaviour of the firms or not. As a result, it is found that the concentration levels in Turkish cement industry are pointing to collusive behaviour of the firms in the industry. This finding has been further tested by econometrical modeling made. According to the results, an increase of 100% in the concentration level amounts to approximately 25% increase in prices in the cement industry.

Keywords: competition policy, antitrust, collusion, industrial organization/ economics, cement industry, Turkey, EU, USA, competition law.

ÖZET

REKABET VE UYUMLU EYLEM:
Avrupa Birliği, Amerika Birleşik Devletleri ve Türkiye'deki
Rekabet Politikası Perspektiflerinin Çimento Sanayi
Bazında Gerçekleştirilmiş Bir Analizi

Bu tez piyasalarda firmaların uyumlu eylem veya paralel davranış içinde bulunarak rekabeti önleyici, bozucu, ortadan kaldırıcı anlaşmalar içinde bulunması konusuna ilişkin rekabet hukuku kurallarının arkasındaki iktisat teorisini tartışmaktadır. Bu amaçla çimento sanayi örnek sektör olarak ele alınmıştır. Bu bağlamda öncelikle Avrupa Birliği ve Türkiye'deki ilgili hukuk kuralları ortaya konulmuştur. Bunu bu kuralların temelinde yatan iktisat teorisnin tartışılması izlemektedir. Bu tartışmada endüstriyel iktisat / organizasyon teorisi açısından firmalar arasındaki uyumlu eylemler ve antitröst otoritesi açısından bu uyumlu eylemlerin ne şekilde saptanabileceği konusu tartışılmaktadır. Bundan sonraki iki birbirini takip eden bölümde Avrupa Birliği ve Amerika Birleşik Devletlerinde çimento endüstrisi bakımından gerçekleştirilmiş olan antitröst uygulamaları ele alınmıştır. Tüm bu tartışmalar doğrultusunda bir sonraki bölümde Türkiye çimento sanayi incelenmektedir. Bu doğrultuda sektörün tarihçesi, iktisadi yapısı, özelleştirme uygulamaları, sektörün rekabetçi yapısı irdelenmiştir. Eldeki verilere göre sektördeki yoğunlaşma oranının firmalar arası uyumlu davranışa işaret etmekte olduğu saptanmış ve bunu daha iyi test edebilmek amacıyla ekonometrik bir modelleme yapılmıştır. Sonuç olarak bu sektörde yoğunlaşma düzeyindeki 100% bir artışın, yaklaşık olarak yüzde 25 düzeyinde fiyat artışına neden olduğu bulgusu elde edilmiştir.

Anahtar Kelimeler: rekabet, antitröst, uyumlu eylem, endüstriyel organizasyon / iktisat, çimento sanayi, Türkiye, AB, ABD, rekabet hukuku.

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INTRODUCTION

The year 1994 marked an important step in terms of the harmonization of legislation towards customs union with European Union which was scheduled to take effect on January 1st, 1995, however, it only came into force one year later at the same date. As one of the landmarks of the preparation process towards the customs union the Turkish Competition Law (Law No.4054) was accepted on 7.12.1994 by the Parliament.

Both the process of harmonization of legislation, and the quest for a better working economy were the two main themes among the people who were taking part in the preparation process of the law. The economic rationale of the Turkish Competition Law had also taken its share of the discussions around the economic paradigms or rather trends which shaped or were shaping the competition policy in United States (hereinafter US) and European Union (hereinafter EU) and in general in the world as much as the legal context. A brief look at the text of the law makes it clear that the core provisions are highly parallel to that of Rome Treaty Articles 85 and 86 regarding the competition policy rules of the European Communities.[1]

Competition policy is one of the crucial factors in the making of a sound market system where not only productive and allocative efficiency concepts but also consumer welfare notion is employed as the classic rationale of the policy making. Here, it is also important to take into consideration that within the competition policy,

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[1] Article 12 of the Treaty of Amsterdam provides for the renumbering of the Articles of the EC Treaty to be valid as of 1.05.1999. Consequently, Articles 85 and 86 are numbered as 81 and 82, respectively. In order to avoid ambiguity, old numbering has been kept throughout the text.

the economic and legal rules go hand in hand and they cannot be thought independent of each other. This to an extent owes to the developments in the US where the leading example of competition rules were formed under Sherman Act of 1890 and continued to develop with successive legal acts later onwards. It also owes to the interdisciplinary nature of the competition concept. In the US, through the development of rich case law, Federal Trade Commission and the Supreme Court more and more employ economic assessment to the implementation of legal matters. The same trend is observed with the EU competition policy.[2] The European Commission, and European Court of Justice (hereinafter 'ECJ') are known to follow the US experience of competition policy, however, with one additional important concern that is the attainment of a single market in addition to other familiar issues.

The main scope of the thesis is centered around the discussion of the economic rationale behind the legal provisions of competition law, in particular, the agreements between firms which restrict or distort competition corresponding to Article 85 of Rome Treaty in EU, and the Articles 4 and 5 of Turkish Competition Act. The legal presentation will be followed by the detailed discussion of the economic theory, and modeling of the subject supported by a case study: the Turkish Cement Industry.

In order to pursue this topic it is thought to be appropriate to take into account the following phases. The initial phase is to see to what extent the core provisions of the Rome Treaty, mainly Article 85, and the Articles 4 and 5 of Turkish Competition Act overlap. This brings about a detailed analysis of the relevant legal provisions and pointing out similarities and possible differences between them. Second, the economic ground of these provisions will be discussed in a comprehensive and concise way. The discussion includes a concise presentation of the concept of oligopolistic interdependence, and a relatively detailed presentation of the theory of collusion and

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[2] For a detailed discussion of these issues and detailed account of economic trends in US and EU competition policy see Esen (1995).

collusion detection. Third, the discussions will be continued by the case study of cement industry in EU from view point of competition policy starting from late 1960s until now with reference to case law of European Court of Justice and European Union Commission decisions. This chronological outlook of competition policy regarding cement industry in EU will highlight also stages of maturity behind the policy implementation as well. Fourth, the case law regarding the cement industry in US will be presented with specific reference to delivered pricing systems and their impact on competition. Fifth, in tune with these discussions, the cement industry in Turkey will be presented as a case study. This part includes the presentation of economics of cement industry, the structure of the industry, regions, firms and groups, production, sales, exports, privatization and its effects on the sector, etc. Next, in parallel with the economic theory and the compiled sectoral data of the cement industry, an econometric modeling will be made. The model aims to find an answer to the question whether the frequent price increases in the Turkish cement industry stem from the constantly rising input costs as stated by manufacturers or anticompetitive practices. In other words, this chapter will indicate how a certain sector could be treated from view point of competition policy implementation.

Chapter I

RELEVANT LEGAL PROVISIONS OF COMPETITION LAW
IN EUROPEAN UNION AND TURKEY

I.1 Article 85 of Rome Treaty

In the Preamble to the Rome Treaty, "fair competition" is named one of the main concepts of EEC. Moreover, Article 3(f)[1] highlights within the activities of the Community "the institution of a system ensuring that competition in the common market is not distorted." Nevertheless, the meaning of competition itself has neither been defined by the Rome Treaty nor by the European Court of Justice (hereinafter ECJ).[2] It is believed to be treated as a self-explanatory term (Lasok and Bridge, 1991:498).

The Rome Treaty points out three sets of rules in terms of competition policy as indicated in Articles 85 to 94:

    a) rules applying to undertakings (Articles 85-90),

    b) rules against dumping (Article 91),

    c) rules governing state aids (Articles 92-94).

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[1] In Maastricht Treaty, this provision was renumbered as Article 3(g).

[2] Cases 56 and 58/64 *Consten and Grunding v Commission* [1966] ECR 299, [1966] CMLR 418.

The core of the competition policy is laid out in Articles 85 and 86 of Rome Treaty, and these rules were not amended by the Maastricht Treaty. In addition to these rules, there is rich case law, EU Commission regulations, decisions, and notices which provide a strong build up concerning the competition policy in EU.

In essence, the above mentioned three areas of rules on competition read as:

- rules on cartels: covering horizontal and vertical agreements, and concerted practices

- rules on the abuse of dominant position

- rules on concentration: where concentrations mainly in the form of mergers are not compatible with the common market and where these lead to the dominant positions and their abuse.

These three areas are believed to be the corner stones of not only the Community competition policy but of any competition policy. Whereas the issues of antidumping and state aids are relatively peripheral issues relevant to the interstate trade than to internal market itself.[3]

The scope of this thesis requires mainly detailed analysis of Article 85 with respect to Articles 4 and 5 of Turkish Competition Act, therefore, the other rules pertaining to competition policy in EU will be left out of the discussion and will be referred only in relevant sections so is any further general discussion on the topic.

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[3] This approach is believed to be more viable than the textual classification of Rome Treaty and is put forth during a written personal communication of Mr. Robert W. LA GRO of the LA GRO Law, the Netherlands who is a specialist in European competition and company law.

There are two main issues which should be mentioned before providing a detailed explanation of the relevant legal provisions concerning competition policy in EU. First, it should be kept in mind that EU competition law is marked with the political consideration of achieving a single market. Next, Article 85 applies to agreements from view point of their economic aims and/or effects rather than their legal form (Bellamy and Child, 1978:7; Whish, 1993:186). However, the view that sometimes European Court of Justice (ECJ) and the Commission are adopting formalistic approach to the application of Article 85 is also put forth time to time.[4]

Article 85 prohibits a large number of anticompetitive agreements between independent undertakings and declares them void. Moreover, the analysis of the agreements go parallel with their economic context. Therefore, Article 85 cannot be thought separate from its economic context.

Article 85 of Rome Treaty reads as follows:

"1. The following shall be prohibited as incompatible with the common market: all agreements between undertakings, decisions by associations of undertakings and concerted practices which may affect trade between Member States, and which have as their object or effect the prevention, restriction, or distortion of competition within the common market, and in particular those which:

a) directly or indirectly fix purchase or selling prices or any other trading conditions;

b) limit or control production, markets, technical development, or investment;

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[4] For a detailed account of this view see pp.207-211 in Whish (1993).

c) share markets or sources of supply;

d) apply dissimilar conditions to equivalent transactions with other trading parties, thereby placing them at a competitive disadvantage;

e) make the conclusion of contracts subject to the acceptance by other parties of supplementary obligations which, by their nature or according to commercial usage, have no connection with the subject of such contracts.

2. Any agreements or decisions prohibited pursuant to this Article shall be automatically void.

3. The provisions of paragraph 1 may, however, be declared inapplicable in the case of:

- any agreement or category of agreements between undertakings;

- any decision or category of decisions by associations of undertakings;

- any concerted practice or category of concerted practices;

which contributes to improving the production or distribution of goods or to promoting technical or economic progress, while allowing consumers a fair share of the resulting benefit, and which does not:

a) impose on the undertakings concerned restrictions which are not indispensable to the attainment of the objectives;

b) afford such undertakings the possibility of eliminating competition in respect of a substantial part of the products in question."

As it can be deduced from the wording of Article 85, in order to decide what type of actions fall under Article 85(1), the following points should be taken into account:

a. Is there any agreement, decision or concerted practice made or observed by undertakings?

b. Is competition within the Common Market prevented, restricted, or distorted via the type of agreement mentioned above?

c. May the trade between Member States be affected? (Bellamy and Child, 1993:38).

In order to clarify the meaning of Article 85 further, it is thought to be appropriate to treat the definitions of important concepts one by one, and present the stand of Commission and also ECJ in this respect until now.

I.2 Interpretation of Article 85 (1)

I.2.1 Undertaking

It is believed that the term undertaking can be considered from a number of perspectives:

a) its basic definition under Article 85,

b) as an answer to the question whether it is possible to consider two or more firms as undertakings which are related to each other by ownership or as a single entity,

c) and whether two firms could be considered as one undertaking where they are related by succession or not (Whish, 1993:187).

It is important to have an understanding of the above mentioned three issues since it is clear from the case law and other sources that the term undertaking carries the same meaning in terms of Articles 86 and 90 of Rome Treaty as well.

Article 85 is addressed to undertakings of both private and public origin. Although the term undertaking itself is known to have not been defined by the Rome Treaty, it is possible to define it by analogy and state the fact that neither Commission nor ECJ had any tendency to make a narrow definition concerning the term if one examines the Commission decisions and the rich case law (Lasok and Bridge, 1991:499). On the other hand, in some sources it is suggested that the phrase "business concern" can be accepted as a synonym for the definition of undertaking (Wyatt and Dashwood,1993:382).

An undertaking can be described as a legal entity engaged in a profit making activity. The legal entity in question could be a physical person, a corporation, or an association of other entities. However, non-profit making organizations, as well as organizations that are profit seeking but have not done so far for a substantial period of time can be accepted as an undertaking within the meaning of Article 85.[5] The Community Court had to define the meaning of the term in a number of cases.

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[5] Personal communication of Mr. Robert W. LA GRO, LA GRO Law, the Netherlands.

In an early case the ECJ had said that

> "an enterprise is constituted by a unitary organization combining personal, material and immaterial elements attached to an autonomous juristic subject and pursuing permanently a definite economic objective".[6]

In the Polypropylene decision[7] of the Commission, it is stated that the concept of an undertaking is not identical with the notion of legal personality as in company law but it may refer to any entity engaged in commercial activity. In more recent cases the ECJ underlined the fact that any legal or natural person involved in an economic activity regardless of its legal status and financial structure can be accepted as an undertaking within the meaning of Article 85(1).[8] In an other case, the Court of First Instance, made it clear that Article 85 is addressed to economic entities made up of a collection of physical and human resources being capable of taking part in infringements laid out in Article 85(1).[9]

It follows that the entities which are considered within the scope of the term undertaking by the Commission and the ECJ display a wide range of forms. Accordingly, companies, partnerships,[10] cooperatives,[11] a firm established to monitor a quota fixing agreement of a cartel,[12] a trade association and agreements between trade

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[6] Case 19/61 *Mannesman A-G v High Authority of ECSC* [1962] ECR 357.

[7] OJ [1986] L230/1, [1988] 4 CMLR 347, paragraph 99.

[8] Case C-41/90 *Höfner and Elser v Macrotron* [1991] I ECR 1979 [1993] 4 CMLR 306.

[9] Case T-6/89 *Enichem v Commission* [1991] II ECR 1623.

[10] Re *William Prym-Werke*, OJ 1973 L /296/24; [1973] CMLR D 250.

[11] Case 61/80 *Cooperative Stremselen Kleurselfabriek v Commission* [1981] ECR 851, [1982] 1 CMLR 240.

[12] *Italian Flat Glass* OJ [1980] L 383/19, [1982] 2 CMLR 61.

associations,[13] state-owned companies; governmental institutions which carry economic activities,[14] undertakings which are involved in supply of services or goods,[15] even an individual is known to qualify as undertaking.[16] The individuals could be identified as undertakings when they are involved in economic activity themselves or when they are in control of a firm.[17] Apart from these, associations of firms acting through a chairman or delegates of associates,[18] and even an association without formal constitution[19] and many more examples of relevant type could be under close legal scrutiny within the scope of Article 85.

Under certain conditions, two or more undertakings can be treated as one from view point of Article 85, if they are under same ownership or control, and have close economic relationship.[20] Apart from this, when an undertaking succeeds the other, the liabilities of the previous one can be attributed to the latter. The ECJ stated in a relevant case that

"a change in the legal form and name of an undertaking does not create a new undertaking free of liability for the anti-competitive behaviour of

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[13] Case 71/74 *FRUBO v Commission* [1975] ECR 563, [1975] 2 CMLR 123; Case 96/82: *IAZ International Belgium NV v Commission* [1983] ECR 3369, [1984] 3 CMLR 276; *Algemene Schippersvereiniging v ANTB* OJ [1985] L 219/35, [1988] 4 CMLR 698.

[14] Case 155/73 *Italy v Sacchi* [1974] ECR 409, [1974] 2 CMLR 177; Case 41/83: *Italy v Commission* [1985] ECR 873, [1985] 2 CMLR 368.

[15] Case 90/76 *Van Ameyde v UCI* [1977] ECR 1091 [1977] 2 CMLR 478; Case 45/85 *VdS v Commission* [1987] ECR 405 [1988] 4 CMLR 264.

[16] *AOIP v Beyrard* OJ [1976] 1 CMLR D14; *Reuter v BASF* OJ [1976] L 254/40, [1976] 2 CMLR D 44; *RAI v UNITEL* OJ [1978] L 157/39, [1978] 3 CMLR 306; *Vaessen BV v Moris* OJ [1979] L 19/32, [1979] 1 CMLR 511; Case 35/83 *BAT v Commission* [1985] ECR 363, [1985] 2 CMLR 470.

[17] See Commission decisions cited above, *AOIP v Beyrard; Reuter v BASF.*

[18] *Pabst and Richarz KG and Bureau National Interprofessional de l'Armagnac* [1976] 2 CMLR D 63.

[19] Re *Groupement des Fabricants de Papiers Peints de Belgique* [1974] 2 CMLR D102.

[20] Case 170/83 *Hydrotherm Geratebau v Andreoli* [1984] ECR 2999, [1985] 3 CMLR 224; Re *Johnson and Johnson* OJ [1980] L 377/16, [1981] 2 CMLR 287.

its predecessor, when, from an economical point of view the two are identical".[21]

In PVC[22] decision, the Commission highlighted the fact that the question of whether an undertaking can be liable for the past behaviour of another is a matter of Community law and changes in the organization of the company under the national company law is not decisive (Whish, 1993:190). In addition, the ECJ is also known to have developed a 'doctrine of enterprise' through case law. The doctrine establishes the fact that when material aspect of the commercial policy of the subsidiary is controlled by the parent company, the parent company is liable for the actions of the subsidiary against competition rules (Wyatt and Dashwood, 1993:385). One of the leading cases for the enterprise doctrine is the Dyestuffs[23] case which came before the ECJ after a Commission decision of price-fixing in dyestuffs (coloring material) sector. Last but not least, undertakings situated outside the common market which have an agreement effective within common market[24] and foreign trade organizations are undertakings within the meaning of Article 85.[25] However, it should be noted that the issue of main importance here is the territorial ambit of Article 85 rather than definition of these type of firms as undertakings under Article 85.[26]

As it is seen from the above brief discussion, the meaning of the term undertaking is rather broad, and numerous examples of case law and Commission decisions can be cited as to add to the meaning and the scope of the term.

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[21] Cases 29, 30/83 *Compaigne Royale Astruienne des Mines SA and Rheinzik GmbH v Commission* [1984] ECR 1679, [1985] 1 CMLR 688.

[22] OJ [1989] L 74/1, paragraph 42.

[23] Case 48/69 *ICI v Commission* [1972] ECR 619, [1972] CMLR 8161.

[24] Case 22/71 *Béguelin Import v SAG.L. Import Export* [1971] ECR 949 [1972] CMLR 81

[25] *Aluminum Imports from Eastern Europe*, OJ 1985 L 92/1 [1987] 3 CMLR 813.

[26] Personal communication of Mr. Robert W. LA GRO, LA GRO Law, the Netherlands.

I.2.2 Agreement

The meaning of the term agreement includes a contract but it is in fact broader (Korah, 1994:41). However, it is believed to be of less importance to know the precise meaning because the concept of 'concerted practice' is broad enough to absorb the shortcomings in the interpretation of the term (Whish, 1993:191). Another view in this respect is that the concepts of "agreement", "decision" and "concerted practice" overlap[27] (Bellamy and Child, 1993:43). There exists a conceptual difference between agreements and concerted practices as put forth in the Polypropylene decision[28] but there seems to be no reason to define where one exactly starts and the other ends. The Commission stated in its Polypropylene[29] decision that the important distinction should be made whether the agreement in question is collusive or non-collusive. It is known that these concepts have been reviewed by the Court of First Instance in its judgment of the Polypropylene cartel on appeal to the Commission decision by cartel members. The Court affirmed the Commission's decision.[30] The case involved a number of questions and one was related to whether the Commission was entitled to qualify one infringement as both agreement and concerted practice or not. The Court held that

> "Given such a complex infringement, the dual characterization by the
> Commission ...must be understood, not as requiring, simultaneously
> and cumulatively, proof that each of those factual elements presents the
> constituent elements both of an agreement and of a concerted practice,
> but rather as referring to a complex whole comprising a number of

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[27] *Fedetab*, OJ 1978 L 224/49, [1978] 3 CMLR 524; Cases 209-215, 218/78 Heinz *van Landewyck Sarl v Commission* [1980] ECR 3125 [1981] 3 CMLR 134.

[28] OJ[1986] L 230/1 [1988] 4 CMLR 347, paragraph 86.

[29] Ibid. at paragraph 87.

[30] Case T-7/89 SA *Hercules NV v Commission* [1991] II ECR 1711 [1992] 4 CMLR 84.

factual elements some of which were characterized as agreements and others as concerted practices for the purposes of Article 85(1) EEC, which lays down no specific category for a complex infringement of this type."[31]

In an early decision, Commission stated that

"...for article 85(1) ...to apply it is not essential that (the) agreement should take the form of a contract having all the elements required by civil law; it is sufficient that one of the parties voluntarily undertakes to limit its freedom of action with regard to the other."[32]

The Rome Treaty makes no distinction between horizontal and vertical agreements as to the application of Article 85.[33] However, the scope of the vertical agreements in this sense seems to be changing. Accordingly, with possible changes in certain block exemptions the vertical agreements tend to be regarded within a more relaxed regime.[34] It follows that the term agreement does not mean a binding contract[35] but an understanding of acting in agreement. By reference to case law, the term agreement is known to include the following: a gentleman's agreement,[36] a

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[31] Ibid, paragraph 256.

[32] Re *Franco-Japanese Ballbearings* OJ [1974] L 343/19, [1975] CMLR D8.

[33] Case 32/65 *Italy v Council and Commission* [1966] ECR 389; Cases 56 & 58/64 *Consten and Grundig v Commission* [1966] CMLR 418. For more information concerning the vertical agreements see Goyder, 1998:94-95; Van Bael and Bellis, 1994:32-33; also *Green Paper on Vertical Restraints in EC Competition Policy.*

[34] Personal communication of Mr. Robert W. LA GRO, LA GRO Law, the Netherlands.

[35] Case 8/72 *Vereiniging van Cementhandleren v Commission* [1972] ECR, 977.

[36] The well-known Quinnine cases constitute a good example in this respect: Cases 41, 44, 45/69: *ACF Chemie Farma and others v Commission* [1970] ECR 661.

general simple understanding where an understanding between trade associations was held to be an agreement,[37] a verbal agreement,[38] the constitution of a trade association is known to qualify as an agreement,[39] an agreement between two trading associations on behalf of their members,[40] a unilateral conduct in the context of a long term contract,[41] an agreement to create a European economic interest grouping or side provisions of establishment of this group is known to fall under Article 85.[42] More recent decisions like Belgian Roofing Felt,[43] Polypropylene,[44] LdPE[45] are landmarks for broadening the interpretation of the concept of an agreement under Article 85 by the Commission.

In brief, the term agreement under Article 85 covers any type of agreement under which the intention to coordinate the market conduct is clear through acceptance of legal or moral obligations by the parties involved. Another important aspect of the interpretation of the term is the parties to a certain agreement which constitute a question of fact. The Court cases and Commission decisions have established certain interpretations concerning the issue. The parties may include an

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[37] Re *Stichting Sigarettenindustrie Agreements* OJ [1982] L 232/1, [1982] 3 CMLR 702.

[38] Case 28/77 *Tepea BV v Commission* [1978] ECR 1391, [1978] 3 CMLR 392.

[39] Re *Nuovo* CEGAM OJ [1984] L 99/29, [1984] 2 CMLR 484.

[40] Re *FRUBO*, Case 71/74 *Nederlandse Vereniging voor fruit v Commission* [1975] ECR 563, [1975] 2 CMLR 123.

[41] Case 107/82 *AEG Telefunken v Commission*, [1983] ECR 315, [1984] 3CMLR 325. This case is also important to show the Court's extending the concept of collusion where there was tacit acceptance of a dealer system was put forth.

[42] *Twinning Programme Engineering Group* OJ [1992] C 148/8.

[43] OJ [1986] L 32/15, [1991] 4 CMLR 130. The decision is about price-fixing agreement between seven members of a trade association who protect their domestic market in this way.

[44] OJ [1986] L 230/1, [1988] 4 CMLR 347. In this decision, Commission investigated a complex cartel agreement where the agreement in question was oral, not legally binding and there were no sanctions for enforcement.

[45] OJ [1989] L 74/21, [1990] 4 CMLR 382. This also is a cartel agreement, where the agreement in question was a single and continuing one like the other two.

undertaking which assists, without direct participation, the infringement.[46] An undertaking which is not present at every meeting of a cartel is accepted to be a party to the agreement in question[47] (Bellamy and Child, 1993:49).

I.2.3 Decisions by associations of undertakings

The interpretation of the term association is defined as broad as the term undertaking. It certainly is not limited to a certain type of association. It could be an association without a legal personality,[48] non-profit making associations,[49] associations of associations,[50] and an association outside the Community.[51] It is possible to extend the number of examples in this respect as to the interpretation of the term.

It is argued that anything which accurately reflects an association's desire to coordinate its members conduct in accordance with its status[52] can be within the meaning of decision under Article 85(1). It follows that agreements which are implemented within the framework of the association in question can be interpreted in two ways from view point of Article 85. They can either be taken as decisions of the association[53] or as agreements between its members[54] (Bellamy and Child, 1993:52).

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[46] *Italian Flat Glass*, OJ [1980] L 383/19, [1982] 2 CMLR 61; *UK Agricultural Tractor Registration Exchange*, OJ [1992] L 68/19.

[47] Case T-7/89 *SA Hercules NV v Commission* [1991] II ECR 1711 [1992] 4 CMLR 84.

[48] *Cecimo*, OJ [1969] L69/13 [1969] CMLR D1; *Emo*, OJ [1979] L11/16 [1979] 1 CMLR 419.

[49] Cases 209/78, etc., *Heinz van Landewyck Sarl v Commission* [1980] ECR 3125 [1981] 3 CMLR 134.

[50] *BPICA*, OJ [1977] L299/18 [1977] 2 CMLR 43.

[51] Case 89/85 *Ahlström v Commission* [1988] ECR 5193 [1988] 4 CMLR 901.

[52] *Distribution of railway tickets by travel agents*, OJ [1992] L 366/47.

[53] *AROW/BNIC*, OJ [1982] L 379/1 [1983] 2 CMLR 240.

[54] *Belgische Vereniging der Banken*, OJ [1987] L 7/27 [1989] 4 CMLR 141; *Scottish Salmon Board*, OJ [1992] L 246/ 37.

The term decision includes recommendations[55] or resolutions of a trade association to its members regardless of their being binding.[56] In the case of recommendations the important point is to analyze whether the members complied with the recommendations during previous instances or not, and whether the recommendation has a significant effect on market conduct or not. The very existence of a trade association,[57] and any regulations[58] or rules made by it could be regarded as a decision leading to distortion of market behaviour of its members.[59] The non-profit making or non-trading nature of an association does not change anything in this sense as well.[60] Article 85(1) is also known to apply to association of trade associations[61] (Lasok and Bridge, 1991:503).

The main difference between a decision and a concerted practice is that a decision may have anticompetitive effects without an intentional horizontal agreement or understanding whereas the latter has (Whish, 1993:194).

I.2.4 Concerted Practices

The notion of concerted practice in EU Law has a problematic and complex stance since the application of law in this area is rather difficult and demanding. The first problem faced in this sense is the legal definition of a concerted practice, and the problem of proof which requires a detailed economic analysis of the market in question.

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[55] Case 45/85 *VdS v Commission* [1987] ECR 405, [1988] 4 CMLR 264.

[56] Commission Decisions: *Re FRUBO* [1974] 2 CMLR D89; Re *Rolled Steel* [1980] 3 CMLR 193, Re *Fire Insurance* [1985] 3 CMLR 246.

[57] Re *ASPA* OJ [1970] L 148/9, [1970] CMLR D25.

[58] Re *Publishers' Association - Net Book Agreements* OJ [1989] L 22/12, [1989] 4 CMLR 825.

[59] Commission Decisions: *Re Central Bureau voor de Rijwielhandel* OJ [1978] L 20/18 2 CMLR 194; Re *Rennet* OJ [1980] 2 CMLR 402.

[60] Cases 209-215, 218/78 *Heintz van Landewyck Sarl v Commission* [1980] ECR 3125, [1981] 3 CMLR 134.

[61] Re *Cematex* OJ [1971] L 227/26, [1973] CMLR D135.

The existence of the term "concerted practice" in Article 85 is believed to have the aim of bringing informal or implicit cooperation between undertakings which is outside the formal agreement or decision (Bellamy and Child, 1978:28).

I.2.4.a The Meaning of 'Concerted Practice' under Article 85

In an earlier case the ECJ has defined a concerted practice as "a form of coordination between enterprises that has not yet reached the point where it is a contract in the true sense of the word but which, in practice, consciously substitutes a practical cooperation for the risks of competition."[62] The well-known Dyestuffs,[63] and Sugar Cartel[64] cases enabled the ECJ to explain the concept further, and together with the Bank Charges[65] judgment they form the main stance of the Court in interpretation of the phrase "concerted practice."

The concerted practice could be defined as any conscious effort to act in a collective manner. One of the most important landmarks of the definition of the term was the Dyestuffs case as mentioned above. The Commission had fined many producers of dyestuffs due to price-fixing through concerted practices.[66] The ECJ depending on a variety of evidence collected by the Commission said that

"64. Article 85 draws a distinction between the concept of 'concerted practices' and that of 'agreements between undertakings' or of 'decisions by associations of undertakings'; the object is to bring within the

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[62] Case 48/69 *ICI v Commission* [1972] ECR 619, [1972] CMLR 557 at paragraph 64.

[63] See *ICI* case above.

[64] Cases 40-48, 50, 54-56, 111 and 113-114/73 *Cooperative Vereiniging Suiker Unie v Commission* [1975] ECR 1663, [1976] 1 CMLR 295.

[65] Case 172/80 *Zūchner v Bayerische Vereinsbank* [1981] ECR 2021 at pp. 2031-2032 where the reasoning of the Sugar case was rephrased.

[66] Re *Aniline Dyes Cartel* OJ [1969] L 195/11, [1969] CMLR D23.

prohibition of that article a form of cooperation between undertakings which, without having reached the stage where an agreement properly so-called has been concluded, knowingly substitutes practical cooperation between them for the risks of competition.

65. By its very nature, then, a concerted practice does not have all the elements of a contract but may inter alia arise out of coordination which becomes apparent from the behaviour of participants.

66. Although parallel behaviour may not by itself be identical with a concerted practice, it may however amount to strong evidence of such a practice if it leads to conditions of the market, having regard to the nature of products, the size and number of undertakings, and the volume of the said market."[67]

The concept has been further developed by ECJ following the Commission decision concerning various sugar producers that took part in concerted practices in order to protect the position of two Dutch producers in their domestic market.[68] The producers denied the fact that they have worked out a plan to have the effect of a concerted practice. However, Court followed the argument put forth in Dyestuffs case to a considerable extent and has stated that

"173. The criteria of coordination and cooperation laid down by the case law of the Court, which in no way require the working out of an actual plan, must be understood in the light of the concept inherent in

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[67] Case 48/69 *ICI v Commission* [1972] ECR 619, 1972 CMLR 557.

[68] Re *European Sugar Cartel* OJ [1973] L 140/17, [1973] CMLR D65.

the provisions of the Treaty relating to competition that each economic operator must determine independently the policy he intends to adopt on the common market including the choice of the persons and undertakings to which he makes offers to or sells.

"174. Although it is correct to say that this requirement of independence does not deprive economic operators of the right to adopt themselves intelligently to the existing and anticipated conduct of their competitors, it does however strictly preclude any direct or indirect contact between such operators, the object or effect whereof is either to influence the conduct on the market or to disclose to such a competitor the course of conduct which they themselves have decided to adopt or contemplate to adopting on the market."[69]

From these two cases it is possible to conclude that for the concerted practice to exist under Article 85, there should be a mutual understanding where competition replaced cooperation, and this can be achieved by any direct or indirect contact among the parties involved, and here it is important to note that *contact* is the key word.

In the Polypropylene cases, where Commission found satisfactory documentary evidence of collusion but hardly any evidence of its negative effects on the market, the Court of First Instance had the possibility of reviewing the issue of concerted practice and accepted the existence of intention of concerted practice as unlawful even if there were no actual effects on the market. The Court further ruled that

"126. Those schemes were part of a series of efforts made by undertakings in question in pursuit of a single economic aim, namely to

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[69] Cases 40-48, 50, 54-56, 111 and 113-114/73 *Cooperative Vereiniging Suiker Unie v Commission* [1975] ECR 1663, [1976] 1 CMLR 295.

distort the normal movement of prices on the market in polypropylene. It would thus be artificial to split up such continuous conduct, characterized by a single purpose, by treating it as consisting of a number of separate infringements. The fact is that the applicant took part - over a period of years- in an integrated set of schemes constituting a single infringement, which progressively manifested itself in both unlawful agreements and unlawful concerted practices ..."[70]

With reference to case law concerning "concerted practices", it is considered to be appropriate to assert the following points. A concerted practice exists where there is positive contact between the parties such as meetings, discussions, exchange of information regardless of their being written or not. Next, the *contact* in question should either have the object of affecting the market behaviour[71] or has the effect of sustaining the conduct of the undertaking in question outside the scope of competitive mechanism (Bellamy and Child, 1993: 57). In its Hasselblad decision, the Commission declared that "for a concerted practice to exist it is sufficient for an independent undertaking knowingly and of its own accord to adjust its behaviour in line with wishes of another undertaking."[72]

I.2.4.b The Proof of Concerted Practice

It is believed that the judgments of the Court in various cases provide guidance with respect to how questions of proof and evidence will be addressed in terms of concerted practices.

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[70] Case T-1/89 *Rhône-Poulenc and others v Commission* [1991] ECR II-867, 1073.

[71] Case 40/73 *Suiker Unie v Commission* [1975] ECR 1663 [1976] 1 CMLR 295.

[72] *Hasselblad*, OJ [1982] L 161/18, 82 [1982] 2 CMLR 233.

There are two issues which should be taken into account concerning the problem of proof. First, it should be noted that the burden of proof rests with the Commission, however, the Court asserted that apart from the adequate proof, in some cases circumstantial evidence might be sufficient.[73] Second, the problem of proof naturally brings about an economic analysis of the market whether there is concerted practice or not. Economic analysis is mainly depending on the oligopoly problem of how to decide concerning the conduct of the firms in the market in question. Apart from the Dyestuffs case and Sugar Cartel cases, the economic discussion had its place within a considerable number of cases such as Zinc Producer Group[74], Peroxygen Products[75] and the significant Commission decision and ECJ judgment in Woodpulp.[76] The Commission argued that the producers of woodpulp were guilty of concerted practice by way of fixing the prices in the European Community and based its decision on two issues. First, Commission believed that there was information sharing. Second, the economic analysis of the market suggests a different conduct than what they observed in the woodpulp market. However, the ECJ was not sharing the same view in this sense and the Woodpulp judgment is where the ECJ has limited the scope of the concept of 'concerted practice'. Moreover, the Court once again established that the burden of proof regarding the existence of a concerted practice lies with the Commission.

"126. Following the analysis, it must be stated that, in this case concertation is not the only plausible explanation for the parallel conduct. To begin with, the system of price announcements may be

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[73] Cases 100/80, etc., *Musique Diffusion Française v Commission* [1983] ECR 1825 [1983] 3 CMLR 221.

[74] OJ [1984] L 220/27, [1985] 2 CMLR 108.

[75] OJ [1985] L 35/1, [1985] 1 CMLR 481.

[76] OJ [1985] L 85/1, [1985] 3 CMLR 474 and Cases C-89, 104, 114, 116, 117, and C- 125-129/85: *A. Ahlström OY and others v Commission* (Woodpulp II), [1993] ECR I-1307, [1993] 4 CMLR 407.

regarded as constituting a rational response to the fact that the pulp market constituted a long-term market and to the need felt by both buyers and sellers to limit commercial risks. Further, the similarity in the dates of price announcements may be regarded as a direct result of the high degree of market transparency, which does not have to be decided as artificial. Finally, the parallelism of the prices and the price trends may be satisfactorily explained by the oligopolistic tendencies of the market and by the specific circumstances prevailing in certain periods. Accordingly, the parallel conduct established by the Commission does not constitute an evidence of concertation.

127. In the absence of a firm price and consistent body of evidence, it must be held that concertation regarding announced prices has not been established by Commission."[77]

However, it is believed that the judgment is not contradictory in the sense that the parallelism observed in the market can be accepted to be the sign of concerted practice where there is no alternative explanation (Whish, 1993:199). This view can also be observed by means of the below presented excerpt from the judgment:

"71. ... it must be noted that parallel conduct cannot be regarded as the furnishing proof of concertation unless concertation constitutes the only plausible explanation for such conduct. It is necessary to keep in mind that, although Article 85 prohibits any form of collusion which distorts competition, it does not deprive economic operators of the

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[77] Ibid., paragraph 126 and 127.

right to adapt themselves intelligently to the existing and anticipated conduct of their competitors."[78]

The decision of ECJ in Woodpulp is known to have been criticized by many commentators. Here, it is important to note that the Woodpulp case has contributed to the understanding of unilateral conduct under Article 85(1). The ECJ is believed to counterbalance the tendency of Commission to put what seems as unilateral conduct at first sight under scrutiny through the concepts of agreement or concerted practice within the meaning of Article 85 in a number of cases (Whish, 1993:199-200).

As it is mentioned above, the issue of putting forth evidence of infringement in concerted practices is dealt by the Court. For instance, documents which are found within the premises of one member of the cartel can as well be used as an evidence against a different undertaking when there is suggestive evidence that the content of the document in question contains an objective reflection of the infringement process.[79] Furthermore, the Court has dealt with a number of important issues concerning the proof of concerted practices such as relevance of parallel behavior, acting on complaints, the duration of the concerted practice, etc. through which more specific definitions and interpretations were established as to the treatment of anticompetitive conduct of firms which fall under Article 85.

I.2.5 "Which May Affect Trade Between Member States"

As it has been mentioned before, one of the goals of Community competition policy is to create a sound common market system, and that is one of the reasons why the expression "which may affect trade between Member States" has importance.

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[78] Ibid., paragraph 71.

[79] Case T-3/89 *Atochem v Commission* [1991] II ECR 1523.

The interpretation of the word "affect" is known to have arisen certain problems and in an earlier case[80] Advocate General Langrage is known to have underlined the fact that Articles 85 and 86 should be approached in spirit rather than letter (Lasok and Bridge, 1991:505). It is argued that the meaning of the term "affect" is wide in scope and to be interpreted underlining the Community interest in free trade. It follows that it caries analogy to the concept of "interstate commerce" which exists in the USA as a federal concept (Lasok and Bridge, 1991:505).

The concept of trade is rather broad covering all the economic activities with respect to goods and services. It is also commented that the flow of profits from one Member State to another in itself constitutes "trade" between Member States (Bellamy and Child, 1993:109).

In the well-known case, Consten and Grundig v Commission[81] the Court said that

> "27. The concept of an agreement 'which may affect trade between Member States' is intended to define, in the law governing cartels, the boundary between the areas respectively covered by Community law and national law".

Furthermore, the Court added that

> "28. ...what is particularly important is whether the agreement is capable of constituting a threat, either direct or indirect, actual or

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[80] Case 13/61 *Société Kleidingverkoopbedrijf den Geus en Uitdenbogerd v Société de droit Allemand Robert Bosch GmbH* [1962] CMLR 1.

[81] Case 56&58/64 [1966] ECR 299, [1966] CMLR 418.

potential, to freedom of trade between Member States in a manner which might harm the attainment of the objectives of a single market between the States. Thus the fact that an agreement encourages an increase, even a large one, in the volume of trade between States is not sufficient to exclude the possibility that the agreement may 'affect' such trade in the above mentioned manner."

In Remia v Commission, the Court provides guidance as below:

"22. Taking first the condition with regard to the effect on trade between Member States, the Court would point out that, as it has consistently held, in order that an agreement between undertakings may affect trade between Member States it must be possible to foresee with a sufficient degree of probability on the basis of a set of objective factors of law or fact that it may have an influence, direct or indirect, actual or potential, on the pattern of trade between Member States, such as might prejudice the realization of the aim of a single market in all Member States."[82]

In another case, Court highlighted the fact that even if an agreement is confined to a single Member State it would be infringing Art.85(1). In Vereeniging Cementhandelaren v Commission[83], a Dutch trade association, which was made up of nearly all of the cement dealers in the market, gave recommendation for domestic

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[82] Case 42/84 *Remia BV and Verenigde Bedrijven Nutricia v Commission* [1985] ECR 2545, [1987] 1 CMLR 1

[83] Case 8/72 [1972] ECR 977.

market prices to its members but it was claimed that this recommendation did not cover the export prices, however, the Court ruled that

"29. An agreement extending over the whole territory of a Member State by its very nature has the effect of reinforcing the compartmentalization of markets on a national basis, thereby holding up the economic interpretation which the treaty is designed to bring about and protecting domestic production.

30. In particular, the provisions of the agreement which are mutually binding on members of the applicant association and the prohibition by the association on sales to resellers who are not authorized by it make it more difficult for producers or sellers from other Member States to be active in or penetrate the Netherlands market."

This rather strict stance of the Court has changed through time and in the later years it seems to be more relaxed. In interpretation of the phrase "which may affect trade between Member States" the concept of *appreciable effect* has importance. This concept was dealt by the Court in an early case,[84] and it is a question of fact which differs in each case. The decision of ECJ has established the main points about the concept,[85] however, it still largely depends on the economic assessment of the market in question together with definition of relevant product and geographical markets. This nature of the concept is argued to increase the unpredictability of the decisions as well (Korah,1994:54).

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[84] Case 22/71 *Béguelin Import v SAGL. Import Export* [1971] ECR 949 [1972] CMLR 81.

[85] For instance, it is stated that "as a result of Court decisions appreciable effect will usually be presumed where the parties concerned have more than five per cent of "the market" for the products concerned" (Bellamy and Child, 1993:120).

I.2.6 "Which have as their object or effect the prevention, restriction or distortion of competition within the common market"

The agreements which are restricting competition are prohibited under Article 85(1) however, it is important to highlight basic points in this respect in order to have a clear understanding of the bold phrase above. First, it should be noted that the application of Article 85 includes horizontal and vertical agreements equally. Second, it is believed that there is no medium which is defined as to applicability of Article 85 in this sense (Whish, 1993:202). Third, both the Commission and the Court do not limit their evaluation to actual competition in question but also to potential competition. This mainly happens in the area of research and development, and production joint ventures and by looking at their potential competitive effects. Fourth, external restrictions of competition like the regulations of national authorities do not necessarily infringe Article 85(1) where there is room to move for the firms to compete.[86] The fifth issue in question is whether there is an analytical difference between the agreements whose object or effect can prevent competition or not. In Société Technique Miniére v Maschinenbau Ulm[87] the Court said that it was first necessary to consider what the purpose of the agreement was, meaning that if the object of the agreement was not clear then it might be useful to look whether it could have anticompetitive effect. In a number of cases, the Court more or less put forth the same reasoning.[88] The Court clarified the meaning of the term object as the purpose of the agreement in its economic context in which it is to be applied.[89] However, the judgment of Court of First Instance (CFI) has brought a change in the case Societa

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[86] *Re Stichting Sigarettenindustrie Agreements*, OJ [1982] L 232/1, [1982] 3 CMLR 702.

[87] Case 56/65 [1966] ECR 234, [1966] CMLR 357.

[88] Case 45/85 *VdS v Commission* [1987] ECR 405, [1988] 4 CMLR 264 at paragraph 39; *Scottish Salmon Board* OJ [1992] L 246/3 paragraph 20.

[89] Cases 29 and 30/83 *Campaigne Royale Asturenne des Mines SA and Rheinzink GmbH v Commission* [1984] ECR 1679, [1985] 1 CMLR 688 paragraphs 25-26.

Italiano Vetro[90] where Court's reasoning meant that even in most obvious cases of horizontal agreements there should be analysis of the market in question and it is not enough to establish the object of the agreement. The market analysis together with the further effects of the agreement is necessary in order to decide the relevant weight of the infringement and the amount of fines going with it.

If the object of the agreement is not clear enough to prove to be anticompetitive, then a detailed analysis of the agreement within the economic context and the market it operates should be made. In the case Brasserie de Haecht v Wilkin[91] the Court said that

> "415. ... it would be pointless to consider an agreement, decision or a practice by reason of its effect, if those effects were to be taken distinct from the market in which they are seen to operate, and could only be examined apart from the body of effects, whether convergent or not, surrounding their implementation."

In these type of cases, as it is with the one to be cited below, it is believed to be necessary to asses the relevant market with its entire conditions and economic structure. In the well-known Delimitis[92] case concerning a beer supply agreement, the Court has referred to Brasserie de Haecht v Wilkin Case and said that

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[90] Cases T-68/89 and T-77/89 *Societa Italiano Vetro v Commission* [1992] ECR II-1403, [1992] 5 CMLR 302.

[91] Case 23/67 [1967] ECR 407, [1968] CMLR 26.

[92] Case C-234/89 *Delimitis v Henninger Bräu*, [1991] ECR I-935, [1992] 5 CMLR 210 at paragraph 13.

"13. If such agreements do not have the object of restricting competition within the meaning of Article 85(1), it is nevertheless necessary to ascertain whether they have the effect of preventing, restricting or distorting competition.

14. In its judgment in Case 23/67 Brasserie de Haecht v Wilkin [1967] ECR 407, the Court held that the effects of such an agreement had to be assessed in the context in which they occur and where they might combine with others to have a cumulative effect on competition. It also follows from that judgment that the cumulative effect of similar agreements constitutes one factor amongst others in ascertaining whether, by way of a possible alteration of competition, trade between Member States is capable of being affected."

I.2.7 De Minimis Rule

The notion of the de minimis rule is important in EU competition policy. The applicability of Article 85(1) depends on the criteria that the agreement in question must have the object and effect of restricting competition, and an actual or potential effect on trade between Member States which is appreciable. The latter depends on the economic analysis of the case. In other words, a practice can be outside the prohibition so long as it has an insignificant effect on trade between Member States. In the leading case Völk v Vervaecke[93] the Court established the de minimis rule where it had confirmed that an implied condition that the restriction of competition and possible effects on trade between Member States should be noticeable. The Commission tried to make this concept more explicit by issuing a Notice on Minor Agreements in 1970

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[93] Case 5/69 [1969] ECR 295, [1969] CMLR 263.

and amended forms of it in 1977 and 1986,[94] respectively. Accordingly, agreements between undertakings which are producing or supplying goods are not caught under Article 85(1) if the total market percentage of the goods or services in question do not exceed 5%, and if the 'annual turnover of the undertakings involved does not exceed 200 million ECU.' However, it should be noted that the Notice in question is only providing guidance to the business and it is not binding upon ECJ (Lasok, 1992:252).

During the beginning of December 1997, the Commission published a new Notice on Minor Agreements to replace the 1986 Notice. The 1997 Notice,[95] is not a simple update but a new approach to the subject where the maximum market share percentages to which the Notice applied is still 5% for horizontal agreements, and mixed horizontal and vertical agreements; but it is 10% for vertical agreements. But these thresholds are not applicable for horizontal agreements which contain price-fixing or production quota clauses or market sharing. Moreover, the thresholds are not applicable for vertical agreements that have a price-fixing clause or give certain territorial protection.

1.2.8 Final Remarks on Article 85(1)

The scope of the implementation of Article 85(1) is defined, undoubtedly with reference to Article 85 itself, through case law and Commission decisions and it is hardly possible to bring all of them into perspective here. However, it is still possible to highlight a couple of points as to the implementation of Article 85(1) such as a number of agreements which do not fall under this provision. The first group constitutes the Commission notices which are not binding but are guidelines showing what to do and what not to do concerning the application of 85(1) from view point of the Commission. Second is the agreements which take place within a single economic

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[94] OJ 1986, C 231/2.
[95] OJ 1997, C 372/13.

unit like parent and subsidiary, contractors and subcontractors, etc. However, this issue should be treated with care, while a reasonable agreement may not infringe Article 85, a manipulative relation between parent and subsidiary may.[96]

I.3 Article 85(2) Nullity

Article 85(2) declares that all the agreements, decisions, and concerted practices which are caught under 85(1) are void in other words without legal effect.

I.4 Article 85(3) Exemptions

The third part of the Article 85 comprises of certain exemptions where some agreements or categories of agreements may be considered outside the Article 85(1) when they have certain characteristics as laid out in 85(3). These characteristics are as follows with reference to its wording:

1) they should improve the production and distribution of goods, or promote technical and economic progress,

2) consumers should benefit as a result of these type of agreements,

3) the agreements in question should not impose on the undertakings involved restrictions which are not indispensable to the attainment of these objectives,

4) and they should not eliminate competition in the relevant market substantially.

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[96] Re *Kodak* OJ [1970] L 147/24 [1970] CMLR D 19.

The system of exemptions is twofold: individual exemptions which are granted by Commission in specific cases, and block exemptions arise from Community legislation.

I.4.1 Individual Exemptions

This type of exemptions are granted or refused by Commission whose decisions are subject to judicial review by ECJ. The process involves the notification of the Commission by the applicant who is responsible from proving that the conditions of exemption exists. The qualification of exemption for an agreement means that it must cover the four points set out in 85(3). Since the right of granting an exemption lies with the Commission, the Commission faces a huge amount of work in this sense so acting under the powers conferred upon it by regulations of Council of Ministers, the Commission can produce block exemptions.

I.4.2 Block Exemptions

They provide a certain degree of explicit ground for undertakings. These exemptions are not to be notified to the Commission and they are valid without any specific authorization. In order to benefit from a block exemption, an agreement should possess the characteristics envisaged by the Commission in the relevant regulation. When it is not the case the undertaking in question should apply for individual exemption[97].

The Council Regulation 17/62[98] is not only the forerunner of the regulations for enforcement of Articles 85 and 86 but also it gives Commission the power of granting block exemptions. The subsequent regulations provided for block exemptions

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[97] Case C-234/89 *Delimitis v Henninger Bräu* [1992] 5 CMLR 210.

[98] OJ [1962], 204; [1959-1962], 87 came into force on 13 March 1962.

on specific grounds. Regulation 19/65[99] enabled the Commission to grant block exemptions to exclusive dealing agreements and licenses of intellectual property rights. Regulation 2821/71[100] was issued for standardization agreements, research and development agreements. Regulation 1983/83[101] was issued for exempting bipartite exclusive distribution agreements. Regulation 1984/83[102] covers exclusive purchasing agreements. Regulation 2349/84[103] is a block exemption granted to various licenses of patents and analogous rights which later was amended in 1993. Regulation 417/85,[104] replacing the previous Regulation 3604/82,[105] grants block exemption to certain types of specialization agreements was later amended by Regulation 151/93.[106] Regulation 418/85[107] deals with R&D agreements. Regulation 4087/88[108] covers franchise agreements with respect to distribution of goods and services. Regulation 559/89[109] is on know-how licensing. There are also block exemptions issued on specific sectors, i.e. Regulation 1534/91[110] concerning the insurance sector, which was later amended by Regulation 3932/92[111], and Regulation 1475/95[112] concerning the distribution of cars.

Apart from these, when granting an exemption the Commission is also entitled to take certain measures as to prevent future anticompetitive practices. In its previous decisions, the Commission took measures such as forbidding exchange of information,

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[99] OJ [1965], 533.

[100] OJ [1971] L 285/46.

[101] OJ [1983] L 173/1.

[102] OJ[1983] L 173/5.

[103] OJ [1984] L 219/15, later amendment OJ [1993] L 21/8

[104] OJ [1985] L 53/1

[105] OJ [1982] L 376/33

[106] OJ [1993] L 21/8

[107] OJ [1985] L 53/5

[108] OJ [1988] L 359/46

[109] OJ [1989] L 61/1

[110] OJ [1991] L 143/1

[111] OJ [1992] L 398/7.

[112] OJ [1995] L 145/25.

requiring to be informed of share holding links, staff exchanges between the parties involved, licenses granted, requiring meeting minutes to be supplied, etc. (Bellamy and Child, 1993:172).

I.4.3 The Opposition Procedure

This procedure is a compromise between block exemption and individual exemption procedures. If certain agreements do not totally satisfy the requirements of block exemption it is possible to have an accelerated exemption procedure, in other words, opposition procedure, whereby the time-consuming procedure of individual exemption is left aside. Although this procedure is relied upon theoretically, it is believed to be not a success practically (Whish, 1993:241). In the year 1991, the Commission received only eight requests for the application of the opposition procedure, however, none of these were applicable[113] whereas in the year 1990 there was no application at all.

I.5 Articles 4 and 5 of Turkish Competition Act

The legal rules which are parallel to Article 85 of Rome Treaty are Articles 4 and 5 of the Law on the Protection of Competition (Law No:4054) which was accepted by the Turkish Parliament on 07.12.1994 and became effective as of 13.12.1994 when it was published in the Official Gazette. However, the Competition Authority, which is also established by the relevant provisions of the same law, could be able to start its activities on 05.03.1997 as the Competition Board of Turkey. Since then, the Board has started investigations on a number of sectors however, there is not much to discuss as to implementation as yet since there has been no court cases and there are only a few number of decisions. Therefore, the discussion concerning the legal provisions will be limited to the wording of the relevant provisions. The activities

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[113] *21st Report on Competition Policy.*

of the Board will also be summarized later in this chapter in section 1.8.

These articles correspond to the Article 85 of Rome Treaty but since it is meant for national legislation they are more detailed in their scope. The articles read as follows[114]:

"**Article 4 :**

Agreements and concerted practices of the enterprises, and decisions and practices of the associations of enterprises the object or effect or the possible impact of which is, directly or indirectly, to prevent, distort or restrict competition in a certain market for goods or services are unlawful and prohibited.

Such practices are, in particular, as follows:

a. To fix the purchase or sales prices or the factors such as cost or profit which form the price or all other trading conditions concerning purchase and sales of goods and services;

b. To share the markets for goods and services or to share or control the market sources and components;

c. To control or to determine the quantities of supply or demand in the markets for goods and services outside the market conditions,

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[114] The English version of the law is based upon the official publication of the Competition Board, Publication No:2.

d. To impede or restrict the activities of the competitors or to eliminate other enterprises operating in the market by boycotts or by other practices or to prevent the newcomers in the market:

e. Except exclusive dealing agreements, to apply dissimilar conditions to persons which have equivalent transactions with equal rights and obligations;

f. Contrary to the nature of the agreement or to the commercial customary rules, to make the conclusion of contracts subject to the purchase of other goods and services or acceptance by the intermediary purchasers to display of other goods and services or acceptance of resale conditions for the goods or services concerned.

In cases where the existence of agreement cannot be proved, if the price changes or the balance of supply and demand or the areas of activity in the markets of the enterprises concerned are similar to those of the markets where competition is prevented, distorted or restricted, this constitutes a presumption that the enterprises concerned are engaged in a concerted practice.

Each such party thereto, may avoid liability if the contrary is proven on economic and national grounds.

Article 5:

The Board, in the existence of all the conditions stated below and upon the application of parties concerned, may declare the

provisions of Article 4 inapplicable to any agreement or concerted practice between enterprises or decision by associations of enterprises which:

a. Contributes to new developments and progress or technical or economic improvement in production or distribution of goods or in providing services;

b. Allows consumers to get a share from the resulting benefit;

and which does not:

c. Eliminate competition in a substantial part of the relevant market;

d. Induce a restraint on competition that is more than essential for the attainment of the objectives set out in paragraphs (a) and (b);

A decision for exemption shall be issued for a specified period of not more than five years. Certain conditions and/or obligations may be attached to an exemption decision. Upon the termination of the specified period of exemption, the decision for exemption may upon the application of parties concerned, be renewed if the requirements for exemption continue to be satisfied.

In cases where the requirements stated in the first paragraph are satisfied, the Board may issue communiqués by which certain categories of agreements shall be exempted as group and the conditions attached thereto are shown."

In Article 3 of the Law on the Protection of Competition, some terms are defined for the purposes of this law specifically. According to this provision, the terms which are used in Articles 4 and 5 are defined as follows:

> "**Competition:** shall mean the contest among the enterprises in the markets for goods and services, which enables them to take their economic decisions independently;

> **Enterprise:** shall mean any natural or legal person who produces, markets or sells goods and services and who forms an economic whole, capable of acting independently in the market;

> **Association of Enterprises:** shall mean any association whether with or without a legal personality, which is formed by enterprises to carry out certain objectives;

> **Goods:** shall mean any kind of movable or immovable property which may be subject of trade;

> **Services:** shall mean any kind of intellectual or physical or both intellectual and physical activity which is carried out in return of a price or an interest;

> **Board:** shall mean the Competition Board."

1.6 Brief Comments on Turkish Law on the Protection of Competition

As it can be seen from the text of the legal provisions, there is a great deal of parallelism between Article 85 of EEC Treaty and Articles 4 and 5 except the fact that

competition rules of EEC Treaty have the political objective of attaining a common market.

Turkish law on competition is more detailed in its text. In Article 4, for instance, the phrase "the possible impact of which" is not existing in wording of Community law and it is established by case law later. This phrase will be very important in the implementation of competition policy towards tacit collusion and concerted practices with the support of the next paragraph in the above mentioned provision.

Finally, it should be noted that during the preparation of Turkish competition law not only the EU experience but also US experience of competition policy was taken into consideration.

1.7 The Process of Approximation of Legislation Between European Union and Turkey with Specific Reference to Competition Policy

The Ankara Agreement, or in other words, The Association Agreement between European Communities and Turkey signed in 1963 constitutes the first step in terms of harmonization of legislation between EU and Turkey. Section III, Part I of the Supplementary Protocol signed in 1970 is about the approximation of legislation in competition, taxation, and laws within the context of approximation of economic policies as laid out in Section III. Article 43 explicitly states that the Association Council defines the implementation conditions of Articles 85, 86, 90, 92 of EEC Treaty within a period of six years after coming into force of the Protocol. Second paragraph of the same article states the fact that during the transition period Turkey can be accepted to be within the situation laid out in Article 92(3), and therefore, aids for the economic development of Turkey are accepted to be in tune with the implementation of Association Agreement.

Moreover, the Association Council Decision No. 1/95[115] concerning Customs Union of Turkey with EU includes an extensive part[116] dedicated to competition rules which basically contains the Articles 85, 86, 92 of EEC Treaty laid out as an harmonization objective for Turkey. These are the Articles 32-43 of the said Decision. Article 32, 33, 34 are nearly exact copies of Articles 85, 86, 92 of EEC Treaty with only difference of addressing customs union instead of the common market in its wording.[117] Community legislation involving competition rules are set as the guidelines with regard to the implementation of the said provisions in Article 35. Articles 36, 37, 38 deal with the implementation concerning the competition provisions by the joint authorities of Community and Turkey. Article 39 goes even further and puts forth the fact that Turkey should have a competition law before the entry into force of Customs Union in tune with Articles 85 and 86 of EEC Treaty. Moreover, Turkey should establish a competition authority in order to "apply these rules and principles effectively." If we take into consideration that the Law on the Protection of Competition was enacted in 1994, these provisions were not that demanding. However, it is argued that the requirements imposed on Turkey in principle were stronger than it should be for a customs union agreement when there were Member States which did not have these rules and the authority going with it for many years.[118]

1.8 The Competition Board of Turkey and Its Activities Until Now

The first important point which should be highlighted concerning the Competition Board is that with reference to Article 20 of the Law on Protection of Competition it is established as an institution with an administrative and financial autonomy which is extremely important in implementing a competition policy.

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[115] 22.12.1995 on implementing the final phase of the Customs Union. (96/142/EC).

[116] Decision No.95/1: Chapter IV, Section II on Competition.

[117] For a detailed account of Customs Union agreement, see Kabaalioglu (1998:122-123).

[118] Ibid., p.123.

The Competition Board, since the beginning of its establishment in 1997, tried to cover the time interval between the enactment of law and its establishment and issued a number of communiqués as laid out in the Law. The Communiqués which are in effect as of June 1998 are as follows:

Communiqué 1997/1: on the Mergers and Acquisitions Calling for the Authorization of the Competition Board

Communiqué 1997/2: of the Competition Board on the Procedures and Principles for Notification of Agreements, Concerted Practices and Decisions of Associations of Undertakings Pursuant to Article 10 of the Act

Communiqué 1997/3: the Block Exemption on the Exclusive Distribution Agreements

Communiqué 1997/4: the Block Exemption on the Exclusive Purchasing Agreements

Communiqué 1997/5: on the Completion of the Organization of the Competition Authority.

Communiqué 1997/6: on the Rights and Obligations of the Undertakings and Associations of Undertakings, arising from the Act No 4054 after the organization of the Competition Authority is completed.

Communiqué 1997/7: on Increase of Administrative Fines Arranged in the Articles 16 and 17 of the Act on Protection of Competition No. 4054

Communiqué 1998/1: on Increasing the Administrative Fines Provided in the Articles 16 and 17 of The Act on the Protection of Competition No. 4054, being valid until the end of 1998 Budget Year.

Communiqué 1998/2: on the Change to the Article 4 of the Communiqué No. 1997/1 Concerning the Mergers and Acquisitions Calling for the Authorization of the Competition Authority

Communiqué 1998/3: on Group Exemption Regarding Distribution And Servicing Agreements In Relation To Motor Vehicles

In addition, the statistical figures concerning the activities of the Competition Authority between 5.11.1997-10.06.1998 can be summarized as follows:[119]

- Exemption and Negative Clearance 161

- Mergers and Acquisitions 33

    Authorized: 25

    Still under preliminary examination: 8

- Applications for Infringement of Competition :61

    First Examination: 26

    Preliminary Research: 15

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[119] Source:Competition Board.

Investigation: 7

Not under the scope of Act No.4054: 16

Still under examination: 19

- Total number of applications: 255.

I.9 Brief Economic Coverage of the Article 85 of Rome Treaty and Articles 4 and 5 of Turkish Competition Act

After a concise introduction of the relevant legal provisions, it is thought to be appropriate what these provisions mean from view point of economic theory. In other words, this section will present, albeit briefly, the headings of economic concepts behind these provisions since the detailed discussion will be presented in the next chapter.

Article 85 has in its scope the problem of oligopoly. As it is often declared within the literature of industrial economics / organization, since it is hardly possible to explain the markets only with the assumption of neoclassical perfect competition model or monopoly, the real world markets are examined within the scope of oligopoly. Article 85 specifically addresses collusion which can be explicit or implicit. It condemns price-fixing; is against limiting or controlling production, markets, investments, etc.; concerns the phenomenon of market sharing; prohibits the application of dissimilar conditions to equivalent transactions with other parties; prohibits to put supplementary obligations into contracts like most favoured customer clauses, etc. In other words, Article 85 condemns collusion be it explicit or implicit. Explicit collusion includes, cartels, horizontal mergers, joint ventures, etc. Tacit collusion includes concerted practices, conscious parallelism and the like.

Article 4 of Turkish Competition Act has also parallel provisions. It prohibits

price-fixing; condemns market-sharing; prohibits information sharing; condemns boycotts and barriers to entry; calls implementation of different conditions among competitors as illegal; prohibits most favoured customer clauses and the like within contracts which would help competitors to monitor their rivals. To sum up, collusion is condemned.

The economic rationale behind all these prohibitions stem from the problem of oligopolistic interdependence and collusion which will be discussed in detail in the next chapter. In the meantime, it should be kept in mind that efficiency and consumer welfare are accepted to be the founding pillars of a sound economic system, and the legal provisions which are introduced and briefly discussed have the scope of attaining these objectives.

Chapter II

THE THEORY OF COLLUSION

This chapter aims to present the economic theory behind the legal provisions discussed in the previous chapter. These legal provisions have the theory of oligopoly, more specifically, the theory of collusion as their economic background. Therefore, collusion theory has an important stand in terms of economic assessment of individual antitrust cases appearing before competition authorities and the courts. The use of game theory in assessment of dynamic nature of markets in recent years has also extended its scope and provided better insight to the specific problems within this context.

II.1 Definition of Collusion

The traditional industrial organization view of causal link between structure, conduct and performance of firms in a market has been refined. The former approach that market structure determines the conduct and performance of the firms in a market is believed to have lost its ground. According to "New Industrial Organization" theory, the focus is on the central role of market conduct, detailed analysis of business behaviour, and constructing well-defined microeconomic models for complex relationships characterizing the Structure-Conduct-Performance (SCP) paradigm (Jacquemin, 1987:1). It follows that there emerged an increasing recognition of the importance of the strategic behaviour of firms which lead to application of game theory. Strategic behaviour is a fundamental element of conduct, and it is not by chance that the New Industrial Organization theorists accorded the key role to conduct (Jacobson and Andrésso-O'Callaghan, 1996:14).

It is clear that one of the strategic choices for a firm is to decide upon collusive and non-collusive behaviour in an oligopolistic market. Here, it becomes necessary to define what collusion is before it is proceeded further. Collusion can be defined as deliberate restriction of competitive behaviour or conduct by a group of rival oligopolists towards sustaining joint profit maximization. The profits, in this context, are nearer to monopolistic profits in the spectrum between monopoly and perfect competition.

Collusion can take place either in a single area of business activity such as prices or in a wider range of limitations like market sharing, production and capacity adjustments, etc. which can also be distinctively classified as price collusion, capacity collusion, and market area collusion (Kantzenbach and Kruse,1989:27,31,34). Collusion can take two forms as explicit and tacit collusion. Explicit collusion can be practiced through formalized agreements as in cartel or restrictive trade agreements. On the other hand, tacit collusion is operated by more informal means such as information agreement, concerted practice or price leadership (Pass and Lowes, 1994:139).

II.2 Types of Collusion

There are three types of collusive behaviour such as price collusion, capacity collusion, and market area collusion, and it is possible to introduce other competitive parameters within the context of these three for analysing collusive behaviour (Kanzenbach and Kruse, 1989:26).

II.2.1 Price / Quantity Collusion

It constitutes the common type of collusion which focuses on price as the first competitive parameter. Let us think, for instance, that there are firms in an oligopolistic market which utilize their capacity up to a level so that they have identical

costs. In this market whenever the firms behave collectively to raise their price over their marginal cost, it is possible to say that the price collusion exists.

This situation, in return, brings about the incentives to cheat on part of the colluding firms. The incentive will be greater when the demand elasticity is greater. It follows that firms which do price cutting can increase their sales and increase their profits. Rival oligopolists can easily monitor price cutting because the price cutting firm captures a sales ratio which it cannot do otherwise. This leads to one of the key factors concerning the stability problem of collusion; the conflict between the individual and collusive rationality.

II.2.2 Capacity / Output Collusion

This type of collusion is about the scale or productive capacity choices of firms in an oligopolistic market. The firms can either lessen or increase their capacity depending on their rational decision concerning avoiding competitive conditions. As it is clear (with reference to microeconomic theory) when the supply is decreased, the prices go higher and so are the profits. One important aspect of this type of collusion is that the incentive to cheat is less in the short or medium run. It is mainly because in such a collusive process the firms involved are more committed to the agreement due to the fact that they have cut their own capacity to produce to a certain extent. They could, of course, deviate from it but in this type of collusion firms usually operate nearly with full capacity and deviating from it means to take into account the time factor, irreversible investment, and also the risk of the possible encounter with rival colluding oligopolists. Therefore, capacity collusion is of stable type since there is no possibility of cheating before others learn about it. The investment decisions will be too clear for the rivals. This fact also serves as a platform for clarifying strategies to each other and supporting tacit collusion.

II.2.3 Market Area Collusion

It involves agreements concerning the division of markets according to product or region. The division is made according to their strategic reciprocal acceptance of each other and this restricts otherwise competitive actions. The test of such a collusion involves analyzing the mobility barriers between market segments and low substitution between comparable products. Here the homogeneity of the products is not so important. The segmentation of the markets, in fact, might make it easier to come with a collusive agreement and the incentive to cheat is also weak.

II.3 The Role of Demand Elasticity and Irreversibilities in the Assessment of Collusion

Entering into collusive conduct, cheating incentives and sustaining collusion are all dependent on factors like demand elasticity and irreversibilities among others.

II.3.1 Elasticity of Demand

The importance of demand elasticity can be twofold: the elasticity of demand in a market as a whole and the individual firm's demand elasticity. The market elasticity of demand is a sign of the competitive environment among the firms in a market. The individual firm's demand elasticity is an indication of competitive interactions between different firms in a market. But compared to market elasticity of demand which indicates collusion and the incentives to cheat going with it, there is no possibility of establishing a direct link to indicate collusion among demand functions of the individual firms.

The price elasticity of market demand has clear impact on both reaching a collusive agreement and the incentives to deviate from it. A high price elasticity of demand suggests that the overall demand could go down when the prices are increased

collectively or when the restraint of quantity supplied via collusive agreement occurs. Collusive behaviour will be less favoured when the price elasticity of demand rises. If collusion is based on price only, this will be followed by large cuts in quantity provided which in return raises the marginal cost. On the other hand, if demand elasticity is low the ability of firms to reach and sustain collusion will be greater. Finally, it is possible to state that the price elasticity of market demand is linked to reach and sustain collusion (Kantzenbach et al, 1995:16) and it is an important factor of assessment in this sense.

II.3.2 Irreversibilities

Another important factor for assessment of collusive conduct is the irreversibilities and it is defined as follows:

> "Irreversibility is an expression of the extent to which a production factor is 'committed' to a certain economic application... Many production factors to be used over several points have- once they have been firmly committed to a planned application- a significantly lower value in any other economic application. The difference between the lower value and that which applies in the best "alternative application" determines the degree of irreversibility" (Kantzenbach and Kruse, 1989:50).

Within the context of capacity collusion irreversible investment plays an important role in sustaining collusion because such investments limit the scope of action on part of the colluding oligopolists, discourage cheating, and create exit barriers from the market as well.

The concept of irreversibilities is an important parameter in assessment of competition especially under game theoretic analysis. It is used as an instrument of identifying and analyzing important factors relating to strategic interactions of rival oligopolists.

II.4. Collusion and Game Theory

Non-cooperative game theory has provided many results with the aim of explaining the phenomenon of collusion, especially the repeated games. The well-known games like prisoner's dilemma, tit for tat, game variety of Cournot and Bertrand models, stick and carrot and so on are the main models used in order to explain collusion in general and tacit collusion in particular (Jacquemin and Slade, 1989: 442-449). Since it is not possible to cover every aspect of game theoretic modelling of collusion here, only very basic models and strategies will be mentioned in this section.

II.4.1 Prisoner's Dilemma and Collusion

Prisoner's dilemma has turned out to be an integral part of collusion analysis, although it is not the only one. This game theoretic model provided the economists with an important tool to assess and define collusive agreements in theory and practice. The logic underlining the prisoner's dilemma game itself corresponds to explanation of difficulties behind reaching and sustaining collusive agreements.

Prisoner's dilemma can be presented as below within the context of economic theory. Let us consider a market with two firms which need to make a simultaneous decision concerning the prices as high and low. If both of them charge high prices they will have high profits, and if both of them charge low prices they will have normal profits. If only one of them charges high price when the other does not, it will lose its market share and face losses. As it is clear, the dominant strategy for these firms is to

charge low price when the rival is charging high price. The payoff matrix of this game, depicting a one shot game with the outcome of Bertrand-Nash equilibrium, is as follows:

		Firm A's Price	
		LOW	HIGH
Firm B's Price	LOW	(0,0)	(2,-1)
	HIGH	(-1,2)	(2, 2)

Figure 2.1 Prisoners' Dilemma

Since the game is a static game of imperfect information the dominant strategy for both players will be charging low price. The outcome of this strategy is bad for both players because by cooperating they could be able to earn more. However, self-interest prevails and they prefer low price as the strategic choice. If the prisoner's dilemma is played within the framework of finitely repeated games, the outcome may not be different as well. Suppose that the play will be repeated ten times. The players still have to make simultaneous decision as to charge low or high price. Since they both know that the tenth strategy will be low price for their rival, they will charge low price during the last stage. Then, the ninth strategy turns out to be the last strategic decision, they will again charge low price. So by backward induction method, they will end up charging low price in all stages and earn less. Varian comments that "After all, playing the game for the last time is just like playing it once, so we should expect the same outcome" (Varian,1996:486). If the players would be able to coordinate their action the result could be different than the Bertrand style of outcome. They could play a multi-stage game with capacities, or capacities and prices together. If in the sample game above the players / firms could be able to play in many stages through

time using a number of strategies, or in other words, if this game is played within the framework of infinitely repeated games, the outcome of the players would be different including the possibility of engaging in tacit collusion. Within the context of repeated games any solution to prisoner's dilemma is believed to be characterized by both an ability to detect cheating and ability to punish the cheaters. In the absence of these, the collusive agreement will not last for a long time (Waldman and Jensen, 1998:179).

II.4.2 Repeated Games and Factors Determining Collusive Outcomes

One way of going beyond the limitation of static oligopoly models is the use of repeated games in which each firm makes its own decisions concerning price or quantity and can respond to choices of its rivals. The repeated games are defined as follows:

"The model of a repeated game is designed to examine the logic of long-term interaction. It captures the idea that a player will take into account the effects of his current behaviour on the other player's future behaviour, and aims to explain phenomena like cooperation, revenge, and threats" (Osborne and Rubinstein, 1994:133).

It follows that

"The main idea behind the theory of repeated games is that if the game is played repeatedly then the mutually desirable outcome is stable if each player believes that a defection will terminate the cooperation, resulting in a subsequent loss for him that outweighs the short-term gain" (Osborne and Rubinstein, 1994:133).

One important question which can be asked here is whether noncooperative collusion is possible in a repeated game or not, or in other words, whether repeated games are relevant in collusion analysis or not. The answer to this question is, "it depends". There are minimum four issues which are relevant:

- how many times the game is repeated,

- whether the players are fully informed about the market and their rivals' objectives and possibilities,

- whether the players know about the previous moves of the rivals,

- discount rate; the weight given to future (Vickers, 1996:8).

If the discount rate is high, noncooperative collusion[1] can be sustained.[2] One way of this is the trigger (punishment) strategies which constitute a Nash equilibrium or a self-enforcing agreement.

The repeated games have two types. These are finitely and infinitely repeated games (supergames), respectively. The results acquired via these two types are different as mentioned before within the framework of prisoner's dilemma game. Moreover, during the application of the model of repeated games, there is a need to determine whether finite or infinite time horizon is appropriate or not.

The theory of repeated games provides the simple basic understanding concerning the effects of long-term competition. However, it should be noted that the

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[1] It is noncooperative in the sense that the firms independently pursue their individual best strategy given the strategies of others.

[2] The discount rate will be reflecting a firm's cost of capital (Rees, 1996:25).

mere repetition is not enough to explain the (individual) self-interest in collusion in long-term game situations (Kantzenbach et al, 1995:26). It should also be kept in mind that the environment is unchanging and firms cannot make lasting commitments (Shapiro, 1989:357). The outcome of games depicting collusive behaviour indicate a significant change when the players do not know which stage game[3] is the final game period. The argument is that when cheating occurs on part of the colluding oligopolists, it is important whether there is another period for taking retaliatory action by the rivals. If there is, depending also on the discount factor, the cheating firm will be brought back to the collusive stage again through a number of possible strategies which will be mentioned further.

In finitely repeated games, cooperation or collusion is not a sub-game perfect equilibrium[4] and it is not the optimal or rational choice for the participants. On the other hand, in infinitely repeated games or, in other words, the supergames, collusive behaviour can be explained. Since there is no final stage to the game, the retaliatory measures turn out to be credible threats towards possible cheaters. In essence, supergames provide a better means of explaining collusive behaviour in terms of game theory. It also shows which determinants are particularly highlighted by game theory from competition policy perspective. The following concepts presented below are important in terms of supergame theoretic explanations of collusion.

Trigger Strategy

There are a number of well-known retaliatory measures in game theory which should be familiarized. One of them is the trigger strategy. In this type of strategy each

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[3] A *stage game* is a game theoretical term corresponding to one of the phases of the game in repeated games.

[4] A *sub-game perfect equilibrium* is a refinement of Nash equilibrium in line with dynamic games. This equilibrium is not based on any credible threats or promises. Whatever happens, the players will continue their part of the game given that other players are also doing the same.

player cooperates in period t as long as all the players cooperated in t-1 (meaning the period before t). However, if a player did not cooperate in the previous period then the other 'pulls' the trigger and plays non-cooperative all the time (Shy, 1996:31). This means that if there is no adherence to collusive behaviour then each player in return play according to their Nash equilibrium. It should be noted that the workability of this simple game as a threat largely depends on the discount factor.

Folk Theorem

It is argued that one of the problems of supergames is that they permit a large number of sub-game perfect equilibria.[5] It follows that there are also more complex retaliatory mechanisms which are employed other than simple trigger strategies where nearly all the outcomes are corresponding to an equilibrium behaviour. This situation is known in game theory as the folk theorem. The folk theorem shows that any payoffs for two firms which give each more than zero and sum to less than monopoly profits (per period) can be sustained in an equilibrium, if the future is weighted heavily enough for each (Kreps, 1990:75).

There are well-known punishment strategies which are commonly grouped into three in game theoretic literature especially due to their weight of credibility (Rees, 1996:26). These are Nash reversion, minimax punishment, and simple penal codes, respectively.

The Nash Reversion

The conventional wisdom underlines the fact that the collusive profits firms receive would exceed the profits in a one-shot Nash equilibrium, therefore the firms have incentive to collude. It follows that as a retaliatory measure the Nash reversion or

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[5] Tirole comments that supergame theory is "too successful in explaining tacit collusion". He calls the large set of equilibria as "an embarrassment of the riches" (Tirole,1988:247).

returning to Nash equilibrium for one or a number of periods in case of cheating could be successful. However, it is a weak measure in the sense that it could not amount to much loss of profits compared to collusive outcome and the discount factor is another key for its being credible punishment strategy.

Minimax Punishment

A firm in a market is able to define its profit maximizing move and the best possible response to its rivals. It is, then, also possible to define, by reference to others in the market, the minimum level of profit for this firm where the firm in question cannot afford to go down any more. So if the firm in question deviates from collusive agreement, the other firms can force it to its maximum level (the minimax profit). The deviating firm should see a balance between the minimax profit and the possible deviation profits, which has to do with its discount rate as well. This punishment strategy takes place under the theory of repeated games, more specifically, the folk theorem.

Simple Penal Codes[6]

"A simple penal code is an n-vector of strategy profiles defined by an n-vector of punishments" (Abreu, 1988:384). Abreu builds this definition on the concept of optimal penal code which is described as "an n-vector of perfect strategy profiles" (Abreu, 1988:384). The criterion of an optimal penal code is to determine whether a path (or a punishment) is the outcome of a perfect equilibrium. Abreu's theory of simple penal code is containing "stick and carrot" type of games which are particularly observed in real world oligopoly markets as in the form of price wars. The "stick and carrot" name owes to the fact that each player has its own path of punishment which is composed of two phases.

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[6] Abreu (1988) gives a detailed account on simple strategy profiles, optimal punishments, and simple penal codes and it is a landmark on the theory of supergames.

The stick phase is the severe punishment of the player that is caught in cheating or deviating from collusive agreement where the prices are lowered down to such a degree that the cheater will not earn any profits at all via increased supply beyond the Nash equilibrium level. The carrot phase occurs when there is a return to collusive output level and sustaining the agreement once again. The stick period can be pursued to the level beyond the minimax profits so that the cheater has a motivation to cooperate after the punishment phase. On the other hand, the punishing firms become aware more than ever that if they deviate from collusive agreement they will face the same situation. To sum up, an important conclusion about the supergame theoretic analysis is that

"when none of the competitors have any knowledge of how or when their market interaction will end, they are in a position to enforce agreements by means of suitable deterrent strategies even when there is no outside supervisory body involved" (Kantzenbach et al, 1995:31).

It follows that there is no need for a cooperative infrastructure to enforce explicit or tacit agreements. This idea is quite significant to note in terms of its policy implications, especially when it comes for a competition authority to decide for a collusive agreement.

II.5 Reaching and Sustaining Collusion

The conventional understanding among the economists is that for any type of collusion to occur, be it explicit or tacit, there are certain difficulties on part of the rival firms during each stage of the process. First, an agreement should be reached among the colluding oligopolists. Next, cheating or deviating from the collusive agreement should be detected. Third, the consequent punishment strategy should be

defined in order to discourage cheating and sustain collusion with supra-competitive profits.

II.5.1 Reaching an Agreement

As it is emphasized before, the analytical approach of the New Industrial Organization theory takes market behaviour as the central concept. It follows that the emergence of collusive behaviour is examined by incentives for concerted action which are offered by the conditions in the market in question.

One of these incentives is the collusive agreement which is believed to occur when the market conditions are favorable for it to develop. A collusive agreement in this context is a communication of rational, individual microeconomic strategies of firms to other firms in the market directly or indirectly. So the term agreement is defined in a broader sense to include all behavioural strategies of firms taking into account their oligopolistic interdependence (Kantzenbach et al, 1995:32).

.As the chart presented below clearly indicates reaching an agreement is only the beginning of the collusion process.

AGREEMENT

⇒ CHEATING

⇒ DETECTION

⇒ PUNISHMENT
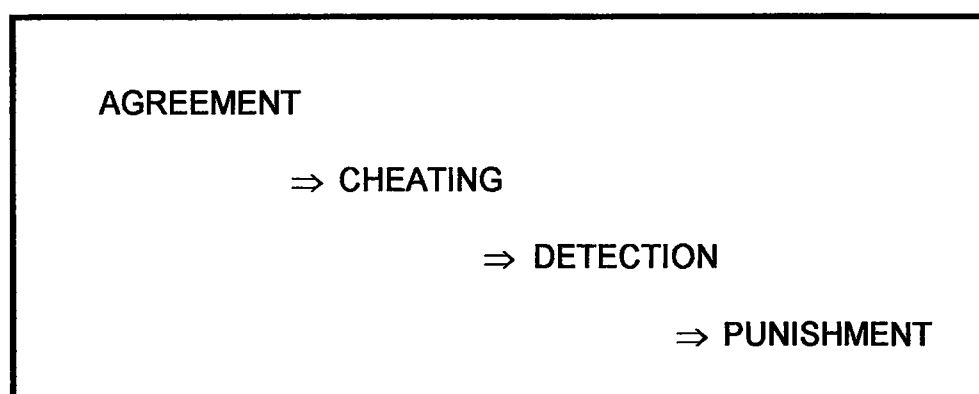
Figure 2.2 The Process of Collusion. (Source; Kantzenbach et al, 1995:33)

A variety of empirical studies have come up with a number of results relating to relative ease of reaching an agreement under certain economic conditions and also the reverse. One argument is that when firms are symmetric reaching an agreement is easy. In this case, needless to say, the collusive profit will equal the monopoly profit. However, this is only the simplest starting point of the argument. When firm heterogeneities or, in other words, firm asymmetries are introduced reaching an agreement becomes more and more difficult. Kurz proves that the differentiated products and larger number of active firms in a market makes it difficult to collude (1985:23). An empirical evaluation of Kurz's findings suggests that the set of cooperative oligopoly equilibria is equivalent to set of implementable agreements (d'Aspremont et al., 1985:1).

The firm heterogeneity can be discussed mainly in two forms: product and cost differences. When product differences are introduced there emerges the need for an agreement on a whole list of prices and outputs which makes it more difficult to come up with an agreement. When there are cost differences, there emerges the difficulty of dividing the profits. Consequently, firms which have different marginal costs should tune the level of their output and this leads to unequal profits and in some cases closing down of the inefficient firms. A general argument is that side payments can be the most effective way of obtaining an agreement under the case of firm asymmetries. However, side payments are difficult to administer and most of the time illegal (Jacquemin and Slade, 1989:418).

There are also other important issues to be taken into account which play important role in reaching a collusive agreement. One of them is the discount rate. Discount rate can be defined as a measure of the rate of time preference (Martin, 1994:155). Let us consider a firm A and a firm B in a certain market. Firm A could be a firm for which the profits earned in the short run, no matter that it may attract entry of new firms, is more important than the profits earned in the long-run. In this case, firm A is said to have a high discount rate. Whereas, firm B could give more weight to

profits earned in the long-run in contrast to firm A's situation, then firm B is said to have a low discount rate. It follows that when colluding oligopolists have nearly the same discount rates, their possibility of reaching an agreement is greater than that of the otherwise situation.

When all the information is known to firms in an industry it becomes again easy to reach an agreement compared to other firms under uncertainty due to imperfect information.

Technical change is an other factor which determines the way towards reaching an agreement. Since technical change can create differences in production costs and demand conditions, it is considered among the important factors of reaching a collusive agreement.

Until now, the arguments that mainly focus on price and output decisions are presented on part of the colluding firms. However, there are also other means such as advertising, product quality, productive capacity and R&D expenditure which can be chosen by firms as instruments of rivalry (Jacquemin and Slade, 1989:420).

II.5.2 Incentives to Cheat

Reaching an agreement is one thing but sustaining it is another. After reaching an agreement it is not always sure that the participants of the agreement will adhere to it. There can always be firms who will try to cheat if there is not a strong mechanism to detect and punish cheating firms. Here, before further proceeding towards these issues, it is important to answer the question, what could be the incentives for firms to cheat?

The conventional example is given from view point of cartels. It is believed that the more the price goes higher, the more there is incentive to cheat. The standard

theoretical argument is that a cartel is a self-destructing institution itself mainly because of profit sharing and cheating problems. However, Osborne (1976) shows that it is possible for a cartel to be stable depending on certain parameters. One factor, for instance, in the case of a price-setting cartel, is the elasticity of individual firm demand curve. The more elastic it is, the more emerges the incentive to cheat by cutting price and increasing the sales. Marginal and fixed costs can also be counted among the parameters of cheating. Moreover, the longevity of detection lags constitutes another parameter in cheating.

II.5.3 Detection of Deviations from Collusive Agreement

Detection is very important in terms of the survival of collusive agreements. However, it certainly is not so easy to detect cheaters, and it depends on certain variables. If price is taken as the variable and there is imperfect information in the market, the firms have to depend on their sales performance. If there are few firms in the market, a secret price cut can easily be observed. Therefore, in tune with the conventional argument on this topic, it is possible to state that collusion is more stable when there are few firms in a market.

Information concerning the rival behaviour is an important asset in detecting cheating. Therefore, oligopolists try to take certain measures in order to shorten information lags and sustain collusion (Tirole, 1988:241). One step in this sense is to create a trade association[7] to pool information and enable its members to cross-check the information in the industry. Next, oligopolists may impose resale price maintenance on the wholesalers or retailers. These methods enable the oligopolists to monitor deviations from collusive behaviour or possible cheaters in the market. Third, is the rule of thumb pricing which is employed to observe rival's behaviour in the case of complexity as in the case of big department stores which sell thousands of different

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[7] See for example Vives (1990) concerning role of trade association in this sense.

products. Fourth, is the standardization rules imposed by trade associations as to output or price as in the case of industries like sugar, steel, cement where basing point pricing is considered a standard tool for collusion.[8]

The well-known study by Green and Porter (1984) is an important and still relevant analysis in terms of showing how important an information infrastructure is for oligopolists to sustain collusion. Green and Porter show that random fluctuations in demand can give rise to imperfect information which, in return, can lead to price wars or, in other words, punishment. The information lag can cause an unstable understanding of the market by rival oligopolists and it becomes impossible to decide whether there is cheating or a random fall in demand. This situation, then, induces punishment. The studies made by economists like Rotemberg and Saloner (1986), Shapiro (1989), Rees (1993) contain further useful elaborations on the topic.

II.5.4 Prevention of Cheating

Once the cheating is detected, there should be preventive measures going with it so that it constitutes a credible behavioural pattern to sustain collusion. Credible threats as they are named in game theory are important in order to discourage cheating.

Oligopolists employ a number of devices to deter cheating and the traditional examples are self-imposed commitments concerning supplier-customer relationships of contractual basis. The most favoured customer clause or meeting competition clauses[9] are the best known examples. The most favoured customer clause ascertains the fact that the customer will not pay more than any other customer. With this clause,

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[8] The basing point pricing system and its relation to collusion will be presented later in detail within the chapter on US cement industry.

[9] See for example Neilson and Winter (1993), Holt and Scheffman (1987) for a detailed discussion on the topic.

cheating can be detected however, the firm in question ties its own hands as well. This clause makes cheating rather costly both because a possible price cut will be offered to all customers at the end, and the possible price cut will be easily detected by other firms in the market. Meeting competition clause, on the other hand, makes it clear that if a rival seller offers a lower price to the customer, the contracting firm will match the lower price or will release the buyer from contract.

These two clauses create an incentive on part of the buyers to inform the sellers about rivals which are involved in price cutting. Thus the detection process ceases to be a problem (Kantzenbach et al, 1995:39).

II.6 Empirical Studies

The factors which are mentioned above with regard to facilitating devices of collusion have also been subject to empirical testing by several economists. But among these there are two studies which should be mentioned in detail.

The study made by Hay and Kelley (1974) is thought to be important to highlight especially the role of trade associations in collusion because of its relevance to the case study to be presented concerning the cement industry. Hay and Kelley, give a detailed account of factors facilitating collusion and summarize these as common factors such as the small number of firms in a market, high concentration and homogenous product. They also find that in several cases the US Antitrust Division has sought the dissolution of industry trade associations.

The study of Hay and Kelley is based on the price-fixing conspiracies handled by US Antitrust Division and they put forth the outcome as an evidence of factors which affect collusion. They find that in 79% of the conspiracies, the number of colluding firms is ten or less supporting the argument that the number of firms and market concentration are important parameters in collusion. Another important result

of this study is that "in seven out of eight cases with more than fifteen firms in the conspiracy, a formal industry trade association was involved" (Hay and Kelley, 1974:21). Product homogeneity is another important parameter which leads to sustainable collusion.

Another study through these lines was made by Kantzenbach and Kruse (1987), the follow up of which is the study by Kantzenbach, Kottman and Krüger (1995). They have made an economic assessment of a number of Commission Decisions between the years 1991 and 1994 which amounted to 27 cases. Their findings indicate that homogeneity of suppliers, contract clauses, homogeneity of products, discount rates, multimarket contact, links between suppliers, market area collusion, and transparency are common factors as devices which facilitate collusion.

Apart from these, there are also studies contributing to the methodology of econometric studies made in this field. Gasmi, Laffont and Vuong (1990) suggest a structural approach to the analysis of collusive behaviour as opposed the behavioural ones and others.

II.7 Types of Horizontal Collusion

There are two distinct types of collusion, explicit and tacit collusion, respectively and they are presented in a concise way below.

II.7.1 Explicit Collusion

Explicit collusion refers to formal cooperation agreements such as cartels, joint ventures, and mergers. The analysis here will be limited to the above mentioned three as distinctive forms in order to the explain explicit collusion.

II.7.1.a Cartels and Cartel Enforcement

A cartel can be simply defined as formal cooperation of a group of independent firms in order to make joint price and output decisions and thus pursue monopoly profits, if it includes all the firms in an industry or if the concentration level of cartel members in relation to the market is above 50% or more depending on the benchmark established by the competition authorities. Since explicit cartel agreements are banned by antitrust authorities on the national level, nowadays it is more relevant to talk about explicit cartel agreements in international trade, i.e. export cartels. On the other hand, implicit cartels are important and posing a problem to the antitrust authority in terms of identification and proof. This section on cartels focuses on cooperative oligopolies in which the small number of firms coordinate their actions for joint profit maximization.

As it has been mentioned before, for collusion to be successful, an agreement should be reached and adhered to, and cartels are not an exception to this. The existence and duration of a cartel depends on the agreement reached, and the ability of cartel members to enforce the agreement. Here, it is necessary to point out the factors which lead to cartel formation and among these there are three factors to be highlighted.

One important factor in this sense is that a cartel should be able to fix a price which will not attract substantial entry into the market in question. Moreover, the more inelastic market demand a cartel faces, the higher the profits will be for a cartel. In this case it will be more possible for cartel members to pursue near monopoly profits if they hold a big share of the market. But suppose that the demand is relatively elastic, this will cause a fall concerning the quantity sold and the profits will be relatively less. Consequently, if a cartel's expectations to keep prices are high enough for a long time and also to keep the new possible entrants out of the market, the idea of creating a cartel becomes feasible (Carlton and Perloff, 1994:184).

The second issue is whether there is punishment especially by the government by way of cartel laws, and whether the profits to be gained from creating a cartel will exceed the possible legal enforcement or in other words the amount of fines and criminal penalties. One of the most important factors which leads to a cartel agreement is the current costs involved in the cartel agreement. If the firms are few in number, the negotiation of cartel agreement and sharing of profits will be relatively easy compared to greater number of firms, and this will lead to smooth construction of a cartel. The other relevant issues relating to costs are the level of market concentration, the product homogeneity, and the existence of a trade association. If the market share of two or three firms is near to a monopoly level, it will be easy for them to control the prices without negotiating, and the other costs going with it. The basic idea behind this comment is the interdependence of the rival firms in an oligopolistic industry. For instance, if there are three firms with a large market share, they can easily ignore the fringe firms and each of them can decrease its output with the idea that the others will follow him. Thus the cartel will be formed without the organizational costs. Empirical evidence suggests that cartels are more likely to occur in markets with high concentration levels. The study made by Hay and Kelley (1974) clearly confirms this.[10] In the 76% of the price fixing cases in United States, the market concentration exceeded 50%.[11] Again the same study indicates that homogenous product also increased the cartel possibility. Another important factor which should be highlighted is the trade association which is also relevant to collusion in general, and in forming cartels in particular. The study of Hay and Kelley (1974) indicates that in nearly 85% of the price fixing cases which is consisting of great number of firms, i.e. more than 15, a trade association is involved.

No matter that the conditions are optimal for forming a cartel, if there exists

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[10] This study has been already mentioned in an other scope, and the date it was made could seem irrelevant today. However, the study has a big impact still within the industrial organization literature and is one of the landmarks.

[11] In this study more than one concentration ratio was used. Apart from CR4, they used "product concentration ratios", "Census ratios," and these were compared as well.

cheating on part of the cartel members, it is not possible to sustain a cartel for a long time. There are some factors which help to detect possible deviations from a cartel agreement These factors are actually the same factors which facilitate collusion, and they have been mentioned before. However, it is useful to analyze them within the framework of a cartel.

First, when there are relatively few firms in an industry, the cartel has the possibility of monitoring cheating. This, in return, depending on the discount rate of the firms, will make the possible cheaters think twice before deviating from the agreement. The study of Hay and Kelley (1974) indicates that cartels which existed more than ten years consisted of relatively few firms. Second, in an industry where there are fluctuations in demand or other factors, the prices may change accordingly. This, of course, makes it difficult for the cartel to decide about or monitor cheating. If the prices are always publicly known, however, it is rather easy to detect deviations. Information sharing especially via a trade association, etc. makes it more easy to sustain a cartel. A single sales agent, for instance, is known to be used very frequently in European cartels (Perloff and Carlton, 1994:193). As Shapiro puts it cartels very much work like firms within a tacit collusive agreement without the existence of binding contracts. The methods for a cartel to discourage cheating on part of its members also carry out the similar aspects of the general theory. Most cartels focus on price-fixing or quantity cutting (and therefore raising the prices) and there is always the possibility that a member of the cartel could indulge in secret price cutting or quantity expansion which can create instability on part of the cartel. However, a cartel can go beyond mere price-fixing but establish rules for market sharing, information sharing or operate through the sales quotas. In addition, the cartel, in order to stabilize its situation, could also introduce the contractual clauses which were introduced previously. It is also important to note that cartel members might decide beforehand on strategies that will eventually restore the cartel under unstable market conditions. For instance, if the market price goes down, the cartel members might chose to return to their precartel settings in the market but when the market conditions are stabilized,

it will be possible for members to establish their previous cartel agreement without the need for further negotiations.

It is argued that large price fluctuations in a market is a sign of a cartel breaking apart and a government policy is not needed since the cartel will fall into pieces anyway. However, the observed price fluctuations could as well be a sign of consistent cartel policy (Carlton and Perloff, 1994:196). This argument has been examined through two different perspectives. The first argument discussed mainly in the studies of Green and Porter (1984), and Staiger and Wolak (1992) holds that price wars are more likely to occur during unexpected recessions or depressions when prices decrease due to falling demand. The second argument is put forth in a leading article by Rotemberg and Saloner (1986) which supports the idea that price wars occur during booms. The idea is that there will be more incentive to do secret price cutting since there is high demand and high profit going with it compared to following the cartel price. Both arguments have their own distinctive reasoning and it can be possible to say that the cartel stability depends on stable economic conditions if the empirical literature is taken into account as a whole.

A study made by d'Aspremont, Jaskold-Gabszewicz, and Weymark (1983) is an attempt to define alternative notions of cartel stability. Their results can be summarized as follows:

a) A cartel can be internally stable, for instance, when a cartel member leaves, the prices could be depressed enough to discourage any form of cheating.

b) A cartel could be externally stable, for instance, when a fringe firm in the market decides to join the cartel, the price increase going with it is not exceeding the profit earned by free riding. The basic assumption behind these results is the idea of joint profit maximization.

II.7.1.b Joint Ventures

Joint ventures are an important topic within the framework of cooperative agreements[12] and explicit collusion. It is suprising to see that despite its relevance to competition policy from view point of collusion, joint ventures are treated less within the industrial organization literature compared to other types of cooperative agreements, and mostly examined under the transaction cost economics perspective.[13] Moreover, the concept of joint venture is nearly equalized to the R&D joint ventures.

A joint venture is a form of explicit agreement which is in the middle of the spectrum between cartels and mergers. A joint venture is formed when two or more independent legal partners establish an independent legal firm for a defined purpose. The difference between a bidding consortium and a joint venture lies with the fact that the former exists in only one project. The most common example of a joint venture, as mentioned before, is R&D joint venture where parent companies come together to produce a new product or an input. This type of joint venture constitutes an example to vertical joint venture. Another possibility on part of the parent companies is to enter a new geographical market in order to share risks going with it, which constitutes an example for horizontal joint venture.

Horizontal joint ventures are important from view point of public policy or rather competition policy because they are known to facilitate collusion and cartelization via the communication taking place among the parent companies (Mariti and Smiley, 1996:290). The empirical research realized by Mariti and Smiley (1983) is an important contribution in the analysis of cooperative agreements in general, and

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[12] Before defining a joint venture it is thought to be appropriate to define what is meant by cooperative agreement. A cooperative agreement as defined by Mariti and Smiley is "any long term explicit agreement among two or more firms" (1996:276). It follows that a cooperative agreement can take various legal forms and joint venture is one of them.

[13] For such a treatment of joint ventures see Buckley and Michie (1996) chapters 9, 14, 15 respectively and the references therein.

joint ventures in particular. Their study depends on the examination of published reports of all cooperative agreements that took place in 1980 in European financial press and interviews with senior executives of European firms which were involved in a large number of the agreements. The total number of these agreements was 70. The study reveals important issues concerning the motives behind the joint ventures and the trends going with them. The high industry concentration, for instance, is an important component of strategic decision-making and entering into joint ventures. Horizontal joint ventures which are aimed to exploit economies of scale could at the end decrease competition, since the production of independently produced products could decrease or they are not produced at all. In essence, horizontal joint ventures should be under close scrutiny in concentrated industries due to two reasons. The removal of competition through a joint venture in an industry with few firms will lead to elimination of competition. Next, these few firms are in general large enough to make profit from economies of scale and learning in parallel with the joint venture (Mariti and Smiley, 1996:290).

It is believed that one of the most striking features of joint ventures from view point of competition policy is the establishment of interorganizational linkages especially in the form of information sharing. Suppose that firm A and firm B establish a joint venture C. They will naturally share information depending on the nature of the joint venture but this might be carried further even after the agreement ends, also. The parent firms could chose not to be rivals in the future, too. Pfeffer and Nowak mention the possible varieties of interorganizational linkages within the framework of joint ventures (1996:385). Firms, for instance, can interlock their boards of directors. Interlocking the boards of directors can easily be used as a device facilitating collusion through information sharing.[14] The empirical research, which involved 70 joint ventures in the iron and steel industry of United States, and done by Fusfeld (1958) indicates the fact that such linkages among the firms do restrict competition.

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[14] See, for example, Dooley (1969) on the topic.

It is also argued that joint ventures could be undertaken by firms when mergers are difficult to establish due to strong opposition from view point of competition authorities (Pfeffer and Nowak, 1996:394).

Buckley and Casson identify four alternative configurations of a joint venture as shown in the diagram below (1996:419).

(a)
Forward integration into a JV

(b)
Backward integration into a JV

(c)
Buy-back arrangement

(d)
Multi-stage arrangement
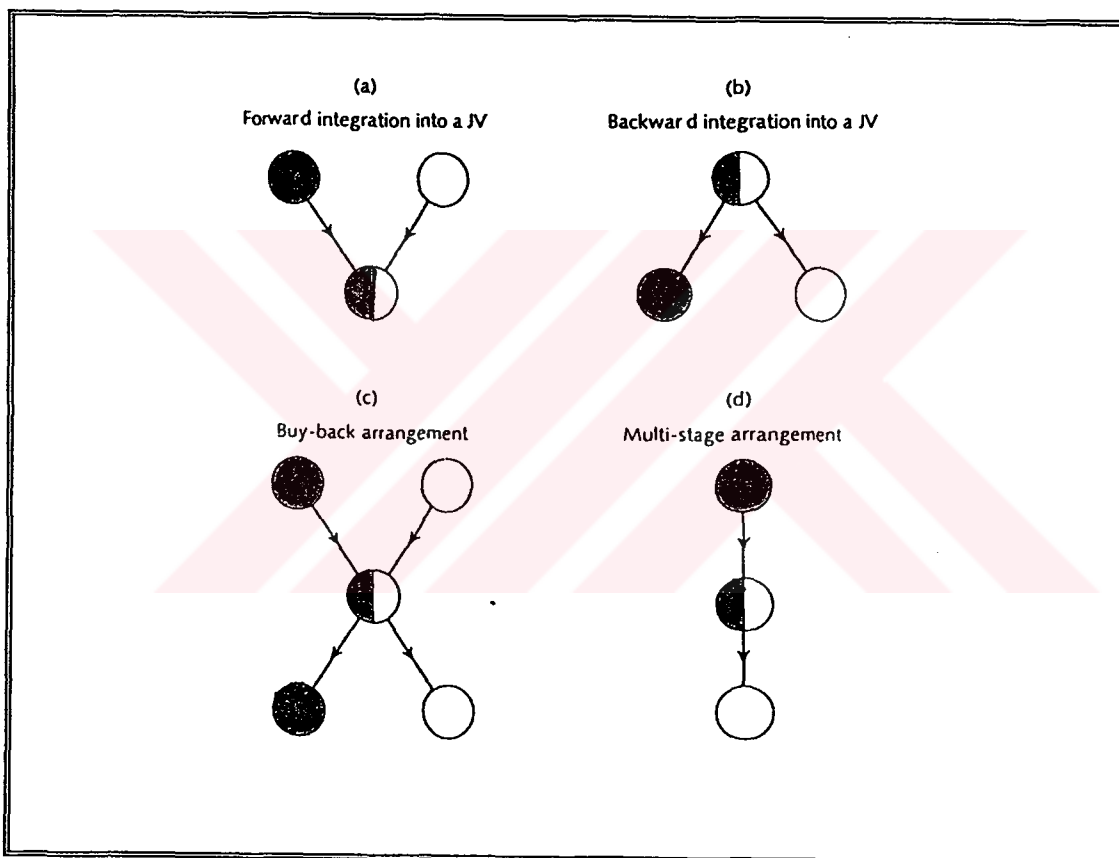
Figure 2.3 Alternative Outlook of Joint Ventures

A joint venture is called to be symmetrically positioned when each partner have exactly the same relation to the joint venture operation. More specifically, the term *symmetry* in these configurations relate to immediate connections between the joint venture and the rest of the parent companies' operations (1996:414-415). Buckley and

Casson further argue that the forward integration case of the joint venture can be accepted as an alternative to cartel (1996:419). If, for instance, two established duopolists, who would benefit from price fixing or quotas in pursuit of joint profit maximization, have an opportunity for colluding in their sales policy, they can possibly act as a cartel through their joint venture. This will enable them to monitor cheating and there will be less incentive to cheat from view point of profits because the profits gained via the joint venture would exceed the otherwise situation.

Jacquemin and Slade argue that joint ventures which are managed by parent companies can serve as possible tools of both explicit and tacit collusion. The parent companies can possibly share cost and output information, and this could, in return, create a common policy and possibility of monitoring cheating. A common subsidiary can constitute an efficient tool for enabling side payments in pursuit of a cartel or other types of collusive agreement. Moreover, a joint venture can serve as an entry barrier. Last but not least, joint ventures could be established under a variety of financial arrangements. One of them is the partial-equity interest[15] whereby, the output of a joint venture is selected by one partner and the profits are divided according to each partner's share of the equity (1989:438).

To sum up, it is important to note that not all the joint ventures are collusive structures, however, they should be treated with care. It is necessary to take into account the market itself, its structure, and the potential effects of a joint venture from view point of competition policy.

II.7.1.c Mergers

Mergers are the other end of the explicitly collusive spectrum, way from the cartels and through the joint ventures as being the absolute form of collusion. A

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[15] This type of arrangement is used by the European cement cartel which will be discussed later.

merger comes into existence, as the name suggests, when the two firms merge or integrate as to be a single unit and cease to exist as single entities. Mergers are of three types as horizontal, vertical, and conglomerate. Among the three, horizontal mergers are the most important from the competition policy perspective due to their impact on market concentration. The main discussion concerning mergers centers around the two paradigms of market power and market efficiency. It is argued that the net impact of a merger on market performance depends mainly on the above mentioned two issues or paradigms (Martin, 1994:261).

In order to keep the discussion about the mergers concise, the incentives towards establishing mergers and the economic assessment going with it will be kept out. The main emphasis will be on horizontal mergers since it provides a clear example of possible anticompetitive effects. Horizontal mergers occur among the firms within the same market and this in return reduces the number of firms in the market which, then, leads to increased market power. Thus by definition a horizontal merger connotes negative economic impacts which are associated with market power. Here, the conventional discussion between the two schools of economic thought prevails: market power versus market efficiency, and it becomes the main point.[16] According to the followers of market power paradigm, to put it simply, market power leads to misallocation of sources and results in excessive profits on part of the merging firms whereas the consumers face a relevant welfare loss. The advocates of market efficiency paradigm, on the other hand, underline the fact that horizontal mergers can increase the level of effective competition if two firms merge, for instance, in order to break the power of a dominant firm in the industry. It follows that the horizontal mergers may also result in real economies of scale and socially desirable cost savings. It is also argued that horizontal mergers can serve as a protection against x-inefficiencies. For instance, an inefficient firm could be taken over by a rival firm, and the managers of inefficient firm could try to prevent the under-valuation of firm's capital stock and that might facilitate efficiency (Waldman,1986:88).

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[16] For a detailed discussion on the topic, see Esen (1995).

The theoretical and empirical studies concerning the mergers are of great variety, however, the issues which the empirical studies centered around are modest in number. One of the main issues that is questioned on part of mergers is their effect on industrial concentration (Jacquemin and Slade, 1989:436). The result of these studies reveal that with the latest merger wave the aggregate concentration increased considerably. Next issue is about the effects of mergers on profitability and it is rather difficult to test due to the time factor involved. It is argued that the profitability study of a merger at one point in time, usually at the time when it is finalized cannot always be reliable (Jacquemin & Slade, 1989:437). Another possible issue in merger analysis is the effect of the merger on shareholder returns.

There seems to be no agreement as to whether horizontal mergers are anticompetitive or not. The followers of both market power and market efficiency paradigms come up with their own findings and arguments. From competition policy view point, since the horizontal mergers increase market concentration they should be put under close scrutiny by competition authorities. This, of course, is the beginning point. Next, the industry structure should be analyzed, and the relevant market definition should be made. The competition authority also needs to differentiate whether the merging firms are competitors or potential competitors. Needless to say, the potential cost of the merger should be analyzed. These are the main points in order to make a fair analysis of mergers both on part of the consumers and on part of the merging firms.

II.7.2 Tacit Collusion

The theoretical literature on tacit collusion suggests that there are many possible ways of explaining the phenomenon, and same is true from view point of game theory (non-cooperative) which provides many outcomes for modeling tacit collusion.

The interpretation of tacit collusion also shows variety. It is argued that collusion

refers to a form of conduct from competition policy perspective and not the value of outcome. It follows that "it is tacit not simply because of absence of legally enforceable agreement but because of absence of any explicit whatsoever" (Rees, 1996:28). Tacitly collusive firms do not need to come together to talk about prices, output, quotas, etc. In a case of duopoly for instance, the firms can behave collusive simply by being conscious of their oligopolistic interdependence, and pursue monopoly profits. The important point about tacit collusion is to be able to answer "what form is it likely to take?" (Jacquemin and Slade, 1989:443). Conscious parallelism or concerted practice are rather well-known concepts which exist within the framework of tacit collusion in real life and constitute an important challenge to competition authorities mostly because of the problem of identification and proof.

The conventional arrangements which lead to tacit collusion are parallel to that of the previously mentioned forms above. However, it is useful to go through them from view point of the present topic as well.

Sharing information, especially on costs is one of the essential factors and it is realized most of the time via industry trade associations. The trade associations serve as a pool of information about costs, outputs and prices and thus help sustaining tacit collusion. This type of service received through the medium of trade association proves to be very useful, in the absence of formal agreement.

Signaling or as a form of it price leadership is another possibility for tacit collusion. Scherer (1980) identifies three types of price leadership, whereas Martin (1994) identifies two. According to Scherer (1980), the types of price leadership are dominant firm, collusive, and barometric, respectively. In dominant firm price leadership, the biggest or the dominant firm in the market leads the way for the prices to be set, also by taking into account the supply reactions of other firms, none of which sees itself having definite influence on the industry as a whole.

The collusive price leadership, originally defined by Markham (1951:901-3) is said to exist when five conditions coexist in the market; tightly oligopolistic market, products being close substitutes, similar firm cost curves, barriers to entry, and inelastic industry demand.

The collusive price leadership coinage has been followed by barometric price leadership which means that the price leader is acting as a barometer of the existing market conditions (Scherer, 1980:176).

Furthermore, it is argued that "conscious parallelism in prices associated with price leadership is the very essence of tacit collusion" (Rees, 1996:29). Certain pricing rules are also used to realize tacit collusion. Among these rule of thumb pricing, focal points and delivered price systems[17] are well-known ones.

Due to a number of reasons such as high fixed costs, economies of scale, etc. firms may create an R&D joint venture. The advantage of this type of a joint venture comes together with the patent licenses rising out of this type of arrangement. The patent licensing agreements are known to be popular among the business community due to their being legally tenable before the antitrust authorities. There are many possibilities for using patent licenses to establish or sustain tacit collusion. It can be used as barriers to entry when the new possible entrants are denied these licenses. Second, licenses can be used for market segmentation. Third, it is possible to define the price of the patented product as a provision of the license. Fourth, output restrictions can be put into force through them (Scherer, 1980:197). It is argued that patent licenses are actually a form of tacit collusion (Rees, 1996:30).

Empirical research on the above mentioned issues suggest that few number of firms, high industry concentration, homogeneity of products, existence of a trade

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[17] Delivered pricing systems will be dealt in detail within the framework of US cement industry later.

association, and pricing rules, i.e. basing point system, focal points, etc. are common features among industries where tacit collusion is observed and contested by competition authorities (Hay and Kelley, 1974; Asch and Seneca, 1975).

Moreover, in countries where persistent high inflation is an integral part of economy, concerted practices or tacit collusion are more likely to occur in oligopolistic industries.[18] Since in an inflationary economy the costs might go higher rather frequently, the prices naturally follow this trend. The question here is that who is going to increase the price first. If we recall the prisoner's dilemma example given above, the situation will be clear. The firm which increases the price first does not know whether it will be followed, and if it is not followed it will lose out. So this brings conscious parallelism on part of the firms since they will be better off if they increase prices simultaneously or following a price leader. This is a problem in most of the developing countries with high inflation, and it is a topic which needs further elaboration and empirical studies.

II.8 Collusion Detection

From view point of competition policy, detecting and proving that a tacit collusion exists in a certain industry is extremely important. Moreover, it is also important in order to cease the negative welfare consequences of collusion both on part of the individual consumer, and the society as a whole, as well.

The industrial organization theory does not prescribe a single method for identifying collusion or collusion detection from policy point of view but many. There are definite reasons for this. First, collusion detection is an industry specific issue and different industries have naturally different characteristics. Second, it is argued that game theoretical models could be applied in real market phenomena. However, though the game theory can introduce methodology into general theory, it can not always solve the

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[18] See Katırcıoğlu (1998) on this topic with specific reference to Turkish cement industry

practicialities faced in real markets. Third, although certain issues concerning a particular market may suggest that there is collusion, the burden of proof is still there and theoretic assumptions are not always proved with certainty. Moreover, apart from the collusion detection for a market in general, antitrust authority also needs to identify the participants in collusion which is also a difficult task.

It is believed that the analysis to be done for collusion detection on part of an antitrust authority should be done taking into account various factors, if, of course, there is no document found during the investigation which clearly confirms the existence of collusion on part of the firms and their executives or, in other words, "a smoking gun" exists.

It should be noted that the factors which hinder collusion cannot be thought separate from the factors facilitating collusion, and factors which sustain it within the industry in question. Whether collusion is tacit or explicit is not that important in assessing its effects or outcomes. It is believed that the factors which are important in collusion detection can be summarized as follows.

Market Structure and Market Concentration

The structure of the market is important in assessing whether collusion exists or not. It follows that number and size of firms in the market and the level of market concentration are of importance.

It is argued that when the market structure is an oligopoly with few firms in it, the possibility of collusion is higher. Moreover, when the level of the concentration in the market is high for a few number of firms, it could be a sign of collusion in most of the cases. The measuring of concentration in the market is done by a number of indexes such as CR4, Hirschman-Herfindahl Index, Lerner Index, etc., and with small differences

these indexes are usually consistent in the assessment of concentration level in an industry.

Characteristics of the Industry in Question

Industry characteristics are important in assessment of collusion. This involves a variety of issues like

- characteristics of the product

- elasticity of demand

- elasticity of supply

- ease of entry and exit to the market

- rate of technological advance

- cost structure

- lumpiness and frequency of sales

- irreversibilities

- existence of industry trade association

Market Conduct

It is the behaviour of individual firms which carry clues as to the existence of

collusion. The following points are important in the assessment of market conduct:

- links between producers and customers

- level of information

- multi-market contact

- pricing methods

- interlocking board of directors

- managerial incentives

As it is clear, collusion detection is a very complex issue and it is difficult to prove. This fact, in return, is challenging on part of the industrial economists since it provides a vast area for empirical research both on econometric and game theoretical basis.

Chapter III

EUROPEAN UNION COMPETITION POLICY AND CEMENT INDUSTRY CASES FROM PAST UNTIL PRESENT

European cement producers have been the target of Community competition law starting from 1960s and more recently due to a recent Commission decision dated 30.11.1994, they have been fined ECU 248 million. The cement producers appealed to the Court of First Instance concerning the Commission decision and the hearings are still continuing.

The cement cases are important in the sense that they present the implementation of competition policy towards this particular industry by the Commission and the European Court of Justice. Next, they are in a way indicating that the latest Commission decision of 1994 has not come into existence without reason. They also highlight the fact that detailed market analysis of the markets in question are integral part of the decisions concerned.

III.1 The First Case: "Noordwijks Cement Accoord"

The first significant Community cement case[1] involves what is known as the "Noordwijks Cement Accoord" which was an agreement between 74 undertakings (44 German, 28 Belgian, and 2 Dutch) starting from 6.07.1956.

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[1] Joined Cases 8 to 11/66 *Société Anonyme Cimentaries CBR Cementbedrijven NV and others, Cementfabriek Ijmuiden (Cemij) NV, Eerste Nederlandse Cement Industrie (ENCI) NV,* and *Alsen'sche Portland-Cement Fabrieken KG and others v Commission of the EEC* [1967] ECR 75, [1967] CMLR 77.

The **legal grounds** of the case were Article 189 of EEC Treaty; Articles 85 and 86; Council Regulation No.17, Article 15.

The **substance** of the case addresses a procedural issue whether the notice sent by the Commission to cement producers was legal or not. However, the case involves a big cartel agreement, therefore it constitutes a significant example since the agreement in question or in other words the "Noordwijks Cement Accoord" (hereinafter "NCA") formed the basis of another decision at a later stage which involved the original cartel members and the trade organization, "Cementregeling voor Nederland."[2]

The **facts** of the case were as follows. The NCA, as mentioned before, involves a cartel agreement covering 74 undertakings in Europe. According to this agreement, the market was divided with respect to supply of cement and clinker by quotas. The agreement also contained collective price-fixing and conditions of sale, obligations for exclusive sales and purchases, a number of prohibitions on exports. Moreover, it contained clauses regarding the building of new cement works.

On 31.10.1962, the agreement was notified to Commission in accordance with Council Regulation No.17, and exemption under Article 85(3) was also requested. On 8.04.1965, the undertakings which were parties to the above mentioned agreement received a letter from a member of Commission that their agreement cannot be exempted under Article 85(3) with its present content and that some of the clauses should be changed since it is otherwise clearly prohibited under Article 85(1).

Then mutual meetings were held between the members of the Commission and

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[2] Commission Decision, *Cementregeling voor Nederland* OJ [1972] L 303/7, [1973] CMLR D149. The following Commission decisions are also relevant *Cimbel* OJ[1972] L 303/24, [1973] CMLR D167; *Nederlandse Cement Handelsmaatschappij NV* OJ [1972] L 22/16, [1973] CMLR D257.

the representatives of the agreement in question, and also letters were exchanged. Finally, on 14.12.1965 Commission took a decision, and on 3.01.1966 informed the parties by a letter that the agreement in question is under preliminary examination, and the agreement should be finished as of the date of receipt of the letter.

It follows that the parties to the cartel agreement applied to European Court of Justice for the annulment of the Commission decision of 14.12.1965 which was sent on 3.01.1966 by a letter.

The **decision** of the Court was the annulment of the Commission decision.

Here, the procedural substance of the case might seem irrelevant at first sight for the purposes of the present chapter. But for a country like Turkey, newly starting the implementation of competition policy, it is important in the sense that it indicates the very first experiences of the Community regarding competition policy with specific reference to cement industry. Therefore, it is worth examining. The NCA, an extensive cartel agreement, was later replaced by "Cementregeling voor Nederland" (CRN) in 1971, and was declared incompatible with Article 85(1).

III.2 The Second Case: "Vereeniging van Cementhandelaren"

The second case to be discussed is a well-known case, Vereeniging van Cementhandelaren v Commission,[3] which is often cited as to the implementation of Article 85 in the Community with special reference to interpretation of the phrase "decisions by associations of undertakings" and alternative price-fixing agreements. It will be discussed here in order to highlight the implementation of Article 85 with specific reference to cement industry.

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[3] Case 8/72 [1972] ECR 977, [1973] CMLR 7. See also Commission Decision, *VCH* OJ [1972] L 13/34, [1973] CMLR D16.

The **legal ground** of the case is Article 85.

In **substance**, the Vereeniging van Cementhandelaren (Cement Dealers' Association) requested the annulment of the Commission decision dated 16.12.1971 regarding finishing its practice of being a long established cartel, and which also denied exemption under Article 85(3). The Association in question diverted the application in terms of both decision and procedure following the example of the precedent in 1967 case.

The **facts** of the case are as follows. Vereeniging van Cementhandelaren (Cement Dealers' Association), hereinafter "VCH", was formed on 4.04.1928 in Amsterdam. By its very constitution, the object of VCH was to defend the interests of its members in Netherlands cement market with regard to manufacturers. Like in the previous case, on 30.10.1962, according to Council Regulation No.17, the VCH notified the Commission a number of agreements which had to do with the sale of cement in the Netherlands.

On 17.12.1965 amendments and additions to the above mentioned agreements were notified to the Commission. In addition, various communications were sent to Commission concerning the validity of these agreements and decisions under Article 85.

The documents which were sent to Commission included the following:

- the constitution of VCH

- general and price provisions of VCH

- price lists

- internal regulations

- arbitration rules

- disciplinary rules

On 26.01.1971, the Commission informed VCH concerning its objections and VCH submitted its observations back to Commission. The mutual communication of the parties continued until the Commission decision of 16.12.1971 rejecting the application of VCH for exemption under Article 85(3), and ordered VCH to end the infringements concerned. The VCH applied for the annulment of the decision on the grounds of formal defect in the notification of objections.

The **decision** of the European Court of Justice was to dismiss the application of VCH.

The case not only involves legal questions but also the economic assessment of the market in question, and constitutes a precedent in case law. Throughout the case, first economic grounds were discussed. Second, the influence on trade between Member States was put forth. Next, influence on competition within the common market was dealt with.[4]

In essence, VCH was a national cartel involved in price-fixing, setting target prices and trading conditions. And its stand was affecting trade between Member States as established by the economic assessment.

The Court gave its opinion with regard to two basic issues apart from the

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[4] The opinion of Advocate-General Mr. Mayras discusses these issues in detail.

procedural aspect of the case. These were as follows:

- "Adverse effect on competition within the Common Market"

- "Influence on trade between Member States"

The Court held that price-fixing agreements between undertakings in the same Member State may fall under Article 85 even if they do not cover exports or imports between Member States. An excerpt from the Court decision reads as follows:

"29. An agreement extending over the whole territory of a Member State by its very nature has the effect of reinforcing compartmentalization of markets on a national basis, thereby holding up the economic interpenetration which the Treaty is designed to bring about and protecting domestic production.

30. In particular, the provisions of the agreement which are mutually binding on the members of the applicant association and the prohibition by the association on all sales to resellers who are not authorized by it make it more difficult for producers or resellers from other Member States to be active in or penetrate the Netherlands market."

III.3 The Third Case

The third case relating to cement industry in Europe again involves discussion around Article 85.[5] It differs from the previous cases in the sense that it is referred by a

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[5] Case 319/82 *Société de Vente de Ciments et Bétons de l'Est SA v Kerpen & Kerpen GmbH* and CO KG [1983] ECR 4173, [1985] I CMLR 511.

national court under Article 177 of EEC Treaty for preliminary ruling and it only involves two undertakings in two different Member States.

The **legal grounds** of the case were Article 85(1) and Article 85(2).

In **substance** the Court had to decide the compatibility of the contract in question with reference to Article 85(1) and 85(2) which provided nullity as an answer to the questions raised by the national court.

The **facts** of the case involved the provisions in a contract made between a French exporter of cement and a German importer which imposed on the buyer an obligation to use the goods supplied only for his own needs, not to resell goods in a specified area, and consult the seller before doing business in another specified area. The contract in question covered 10% of the total cement exports between France and Germany.

In its **decision**, the Court ruled that the contract made between the two parties had the object of prevention, restriction or distortion of competition within the Common Market with reference to the 10% volume it had. Next, the Court stated that the contract in question was void and held that for agreements the provisions of which are incompatible with Article 85(1), the automatic nullity provided by Article 85(2) is valid.

III.4 Joined Cases of 1992

The next line of cement industry cases[6] are mainly procedural in substance, however, they are the forerunners of the present cement cases before the Court following the relevant Commission decision concerning the European cement industry

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[6] Joined Cases T-10/92, T-11/92, T-12/92 and T-15/92 *Cimenteries CBR and others v Commission* [1992] II ECR 2667, [1993] 4 CMLR 243.

in 1994 which ended with considerable amount of fines to the parties involved.

The **legal grounds** of the case were Article 173 of EEC Treaty; Council Regulation No.17; Commission Regulation No. 99/63.

The **facts** can be summarized as follows. On 25.04.1989, acting on its own initiative, the Commission carried out a number of investigations at the premises of ten undertakings or associations of undertakings in several Member States as part of an investigation concerning the possible existence of agreements or concerted practices within the European cement industry.

With reference to the documents gathered during these investigations, the Commission concluded that a system of agreements or concerted practices possibly existed on both national and international levels among European cement producers with the support of the industry trade associations. The findings of the Commission pointed out that the system included certain anticompetitive practices, i.e. market sharing.

It follows that the Commission initiated proceedings for infringements which fall under Article 85(1) against 76 undertakings or associations of undertakings in the European cement industry, and sent a Statement of Objections in November 1991 to each of the parties involved concerning their being involved in infringement of Article 85(1). The Statement of Objections also informed the parties about their liability for fines imposed upon them.

In its Statement of Objections, Commission makes a distinction between conduct on national level and conduct on international level. The latter involved the meetings held within Cembureau, a European association with many national associations as its members. The full text of the Statement of Objections was not sent

to all parties but only the relevant parts of the text was sent to the related parties.

As a result, a number of undertakings and associations of undertakings requested full access to documents claiming relation to the other parts of the text due to their inter-industry relations, i.e. contracts with an other undertaking, etc.[7] The Commission rejected access to full document. Finally, the parties involved applied to Court for annulment of Commission decision which refused access to the full text.

In its **decision**, the Court dismissed the applications as inadmissible after a detailed assessment.

III.5 The Commission Decision of 1994 Concerning European Cement Industry

Following the above mentioned joined cases mentioned above, Commission prepared a detailed decision concerning the European cement industry which addressed issues both on national and international level.[8] Apart from that the decision addressed many other issues with a detailed economic description of the cement industry.

The fines imposed on the undertakings and associations of undertakings, the anticompetitive conduct of which was discussed in detail within the decision, amounted to ECU 248 million and stated as to be highest ever imposed.[9] One of the reasons behind such a big amount was that according to the Commission the

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[7] Here the claim of relevance and access to full document in itself, might be interpreted as an implicit confirmation of the complex relationships between the producers as well. Since the producers or undertakings in question establish the existence of some of the common agreements or contracts among themselves while requesting full access.

[8] OJ [1994] L 343/1.

[9] *EC Competition Policy Newsletter*, (1994:7).

infringements continued since 1983, and the cartel was affecting a considerable volume of production in Europe.

The Commission decision can be outlined as follows in order to provide an overview:

⇒ The economic structure of cement industry is explained in detail.

⇒ The documents found during the investigations have been examined based on the economic rationale.

⇒ The legal analysis is made taking into account the economic background of the legal provisions regarding competition.

⇒ A detailed presentation of the anticompetitive practices is made on the basis of both individual undertakings and trade associations including Cembureau.

⇒ Following the previous steps the decision is put forth together with the specific distribution of fines.

⇒ The decision itself and annexes to it are presented as the final.

The summary of the Decision[10] is as follows. Part I of the decision consists of the factual findings, together with the economic analysis of the cement industry.

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[10] The summary is based on the original text of the Decision which was published in the Official Journal of European Communities.

In Chapter 1 the proceedings, and undertakings and associations of the undertakings which are subject to the decision are listed. The list indicates the relationships between the parties involved in terms of holding shares, joint ventures, agreements, etc.

Chapter 2 provides the economic characteristics of the European cement industry under several specific headings.

a. Characteristics of cement as a product

- Cement is derived from clinker

- There are two basic manufacturing processes for clinker as 'dry' and 'wet'.

- Clinker is an intermediate product in the production of cement, and it is traded between cement producers. Therefore, it is accepted as a product with its own market.

- Cement could be produced as different types depending on the ratio of clinker and secondary raw materials used in its production.

- Cement is divided into four main categories with reference to its composition as

  * Portland cement
  * Pozzolanic cement
  * Blast-furnace cement
  * High alumina cement

- Cement is divided into two groups by its resistance level as normal cement and high resistance cement.

- Gray cement is a homogenous product with insignificant inter-brand competition since it should have a certain standard in every country all the time.

- White cement is produced less due to the scarcity of raw materials required. Its cost is higher than gray cement and sales price is twice as much. Consequently, it has a different market.

b. Industry characteristics

- Cement industry is a heavy, capital intensive industry where an average plant life is between 20 and 30 years.

- Cement industry is geographically dispersed, and the cement plants are generally close to the sources of raw material.

- Supply is rigid.

- Demand is also rigid despite the availability of alternative prices.

- Cement industry is suitable for achieving economies of scale which has a major influence on fixed costs and on labor.

c. Cost of production

The Commission found that the fixed and variable costs are more or less equal in cement industry. The statistical comparison of labor costs and industrial electricity prices in Member States are given as the example to explain the possibility of differences in production costs, which the cement producers have previously claimed to be the same for all producers.

d. Transport costs

- Cement is a heavy product of low value, therefore transport costs are important in determining the final price.

- The Commission provides its observations as to the unit cost of road transport per tone.

- Three main methods are cited for adding transport costs to the production cost in determining the final price. The first method is the basing point pricing system. It is stated that in USA it was outlawed in the forties,[11] and it was adopted by Article 60 of ECSC Treaty. Next method is zone pricing. Third is fob mill pricing and its two variants. The discussion of these systems are presented in association with the academic work made in the field.

e. The relevant market

- It is stated that gray cement, white cement, and clinker constitute different product markets since the production requirements are different.

- The relevant geographic market is established as a set of markets overlapping with each other and it covers Europe.

- The size and extent of each specific market overlap is determined by the distance from the factory where the cement could be sold. It is stated that there is no agreement concerning this distance among the producers, and the Commission confines itself to factual findings in this respect. It follows that the transport distances depend on issues like the production costs, economies of scale, and the

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[11] The US case law regarding the cement industry is discussed in the next chapter with reference to basing point system and other delivered pricing systems.

means of transport used such as road, rail, sea, etc.

f. Supply

The Community is stated to be the largest producer of cement in the world. It has over capacity and overproduction. According to Commission's findings, the leading European cement producers control approximately 20% of world supplies. High capital costs lead to concentration of producers usually by way of controlling shares of companies. On Community level, five groups control 45% of cement supplies, and on national level in different Member States the oligopolistic structure turns out to be more concentrated varying between 50% to 80%, and in one country there is a monopoly.

g. Demand

It is stated that demand for cement consumption is determined both by the building and the construction industry, and by the proportion of the cement products used as a raw material in building and construction activities. Since the cement prices have low impact on building and construction costs, demand is said to show little sensitivity to it.

h. Trade flows

Community is known to be a net exporter of cement, mainly to overseas countries such as USA, Middle Eastern countries, etc. According to the documents found at the premises of undertakings and associations of undertakings, the export sales prices are lower than the cement sales prices within the Community.

Chapter 3 presents the international cement organizations, more specifically,

CEMBUREAU (European Cement Producers Association) the objectives and the structure of which is examined in detail.

The constitution of Cembureau until 6.06.1989 included the following provisions:

"1.exchange of information between members

2. collection of statistical and other data

3. study of economic questions

4. cooperation in market development

5. cooperation in technical and related fields

6. the provision of an information centre about the cement industry"

After 6.06.1989 the third and fifth provisions were changed.

The circulation of price information between Cembureau members dating back to 1978 is established by the Commission via the documents found. Moreover, it is also proved that there has been extensive circulation of specific information for the meetings held by Cembureau involving members from various countries. The rest of this part continues on country level and supported by found documents as to the competitive or anti-competitive structure.

It is clear from the documents included in the decision that the Cembureau members have established a common pricing system according to their understanding of "fair competition." Part of the document relating to Executive Committee meeting

of 25.03.1983 reads as follows:[12]

"1. If possible,

-list of delivered prices

-and ex-works prices available

2. These price lists to be calculated assuming for a price leader company identical basing-point prices ex-works for all destinations, even for sales beyond borders.

3. Within a relevant market, alignment on the price leader.

4. Outside the relevant market application of 2 or occasional alignment."

Here, the Commission underlines the fact that the basing point system is in itself anti-competitive with reference to economic assessment. There is an extensive reference given to a study made by a well-known economist Louis Phlips which is as follows:

"In oligopolistic industries producing heavy products of low unit value, these systems [meaning basing-point system, etc.] indicate the existence of tacit price-fixing agreements. They should be prohibited if the prohibition of the price-fixing agreements is to work. Otherwise, explicit price-fixing agreements will be replaced by tacit agreements workable through the perfection of information and the freight absorption rules which characterize these systems."[13]

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[12] Doc.33126/1602-11613 in p.24.

[13] *Spatial Pricing and Competition,* Competition - Approximation of Legislation Series - 1976, No.29, p.54.

The rest of this part of the decision continues with factual findings concerning Cembureau and its members with regard to their anticompetitive conduct.

Chapter 4 of the Decision relates to bilateral and multilateral relations between the Community producers. These are established by the documents found by the Commission. Accordingly, information sharing, concerted practices, market sharing, boycotts on sales were among the practices of the producers which amounts to complete infringement of Article 85 of EEC Treaty.

Chapter 5 is a detailed presentation of what is called "Cembureau Task Force" or "European Task Force" which was established to take action against the Greek cement exports into Western Europe. As it can be seen from the documents cited the Cembureau members felt the urge to protect themselves from cheap imports into Europe and Greek cement was one of these subsidized by the Greek government. One document prepared for the Stockholm meeting[14] contains even more interesting evidence concerning oligopolistic coordination within the meaning of Article 85 part of which is as follows:

> "A 'stick and carrot' approach has been adopted separating short term punitive and supportive measures for immediate implementation from those solutions involving political and structural changes in the relevant 'destabilizing' cement industry."

In the theory of industrial economics/organization, the phrase "stick and carrot approach" relates to a method employed by cartel members in order to punish cheaters from the cartel agreement be it implicit or explicit, and to sustain the position of the

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[14] Document 33126/18755.

cartel. Here the European producers define their carrot action as buying cement from the destabilizing producers and re-export it outside the Community. On the other hand, the stick measures include complete defense of domestic markets by all types of administrative obstacles, actions to be taken by national associations and their members. Next stick action is to directly attack the export markets of producers destabilizing the market. In addition to these measures, setting up a commercial joint venture in order to pursue the stick actions in the short run, and creation of an export cartel as a long term action turned out to be the final outcome of the task force meetings. These measures worked out by the European Task Force have also been carried out on national levels, and in between the producers by means of agreements against the destabilizing third parties.

Chapter 6 deals with the factual findings concerning European Cement Manufacturers Export Committee (ECMEC) with details of its establishment and functions. It also emphasizes the US Federal Trade Commission inquiry concerning the possible collusion between European producers exporting to USA. Later ECMEC has been dissolved, instead European Cement Export Committee (ECEC), and Export Policy Committee (EPC) worked as two distinct bodies. The establishment, objectives, structure, and membership of the two bodies together with their active functions are highlighted in detail as part of factual findings. Accordingly, ECEC has published data, recommended export prices to be charged at certain destinations, and given detailed accounts on market conditions, i.e. supply - demand analysis. ECEC was dissolved in 1993 with resignation of a number of its members.[15]

The difference between ECEC and EPC is that the members of the former were national trade associations, whereas the members of latter are chief executives. Moreover, EPC is an informal body unlike ECEC.

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[15] Turkish Cement Manufacturers' Association was one of these resigning members.

The rest of the factual findings in this chapter relate to market sharing, price-fixing, information sharing, and the like as the practices among the members of these organizations.

Chapter 7 includes factual findings concerning the White Cement Committee (WCC). Commission based on the documents found states the fact that ECMEC included actually three export committees; ECEC, EPC, and WCC. It is also established that cooperation between the members of WCC are similar to that of others covering all possible areas.

Part II of the decision contains the legal assessment of the findings in question with reference to Community case law. The legal assessment established the issues below:

- agreements and concerted practices contrary to Article 85

- price-fixing

- market sharing

- information sharing

- boycotts

- effect on trade between Member States

which all mean a complete infringement of Article 85. Then, the duration of the infringement is considered which is, of course, relevant in terms of fines to be imposed. Next, the gravity of the infringement is established and it is stated that

"Collusion was institutionalized in a system of international organizations or bilateral or multilateral meetings or contacts designed to regulate and organize the cement market."[16]

Furthermore, the determination of the amount of the fines to be imposed is described. The final decision of the Commission and annexes to it constitute the very last part of the official document.

Briefly, the decision of the Commission is detailed in its text, and established all the points with documents found at the premises of the undertakings and the associations of the undertakings concerned with an extensive economic assessment. The cement producers appealed to Court of First Instance[17] for the annulment or if it

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[16] p.123

[17] The official schedule of the CFI indicates only some of the cases on appeal by cement producers. The official schedule is as follows:

DIARY OF COURT OF FIRST INSTANCE

Fourth Chamber, Extended Composition   Wednesday 21 October, 1998

09.30: Hearing T-68/95 Holderbank v Commission   **Competition**
Annulment of the Commission decision of 30 November 1994 relating to a proceeding under Article 85 of the EC Treaty (IV/33.126 and 33.322— Cement) or, in the alternative, reduction of the fine imposed on the applicant

11.15: Hearing T-42/95 Heidelberger Zement v Commission   **Competition**

Annulment of the Commission decision of 30 November 1994 relating to a proceeding under Article 85 of the EC Treaty (IV/33.126 and 33.322 — Cement) or, in the alternative, reduction of the fine imposed on the applicant

15.00: Hearing T-34/95 Ciments luxembourgeois v Commission   **Competition**

Annulment of the Commission decision of 30 November 1994 relating to a proceeding under Article 85 of the EC Treaty (IV./33.126 and 33.322--Cement) or, in the alternative, reduction of the fines imposed on the applicant.

(Source: ECJ Press and Information Division)

is not annulled, for decreasing the fines imposed. The hearings are still continuing and most probably the decision will be held, although fines could be reduced. It remains to be seen.

Chapter IV

ANTITRUST EXPERIENCE OF CEMENT INDUSTRY
IN THE UNITED STATES

It is the US antitrust laws and policy which provide the economists, lawyers or any interested party on the topic with the cumulative experience of public policy in the field of competition. The European competition policy also followed the experience of US in its law-making and implementation. Prior to 1890, when Sherman Act was passed in US, there was no such legislated public policy against restraints of trade and monopolization. The Sherman Act was followed by Clayton Act and Federal Trade Commission Act in 1914, and the Robinson-Patman Act in 1936 which actually was an amendment to Section 2 of the Clayton Act and it is sometimes referred as the Magna Carta of small business. Another amendment to Section 7 of Clayton Act was made in 1950 by Celler-Kefauver Act. With subsequent amendments, the US antitrust laws have been shaped up to present day. Moreover, the rich case law provided set of significant examples as to the interpretation of economic, legal, and social issues related to competition. Last but not least, the US antitrust experience provides an invaluable source for all nations, and the EU in their interpretation of competition policy issues. Therefore, it is thought to be necessary to take into account the US antitrust experience related to cement industry which has also been one of the landmarks in the case law of US antitrust.

The case law in US concerning the cement industry highlights the concept of price discrimination, more specifically geographic price discrimination, and the role of trade associations in restraint of trade, and conscious parallelism. The cement industry

cases cover the period between late 1910s and 1940s. They will be presented in detail below, however, it is first thought to be important to present the economic characteristics of the cement industry at the time as analyzed by the Federal Trade Commission.

IV.1 Economic Characteristics of the Cement Industry in the USA

The economic characteristics of cement industry can be summarized with reference to the description made by Federal Trade Commission as below in order to present an overall picture of the antitrust experience in US cement industry.

- There is a high ratio of fixed cost to total cost. In 1940, the Federal Trade Commission analyzed the 86 manufacturing industries and cement had the highest ratio of depreciation and repairs in total sales, and lowest in direct cost.

- Operation below capacity is frequently observed due to demand fluctuations.

- Cement has several varieties however, there are definite specifications for each which makes it a highly standardized product.

- Cement is a heavy product of low value.

- The demand is inelastic.

- Price competition might very easily lead to real capital losses. It is stated that the price wars which occurred between 1908-1912 ended up with take over of 32 mills by creditors (Whitney, 1958:289).

The history of cement industry in US starting from 1900 was marked with a number of attempts to restrain competition. The basing point pricing system was the most important of these. The basing point pricing system is a sub-category under the delivered price systems and it is believed that before presenting the cement cases, there is also need for a brief presentation of pricing systems in industries like cement, alternatively, steel and the like.

IV.2 Delivered Pricing Systems

IV.2.1 General Description

These pricing systems constitute an important link between competition, price discrimination, and the oligopoly problem. Even if, the firms produce identical products, it is not possible to achieve complete homogeneity due to the differences in their locations, and these type of products are called "spatially differentiated products" (Scherer, 1980:325). This has certain practical consequences especially for heavy products of lower value. The problem is that a producer of a spatially differentiated product needs to figure out how to handle the freight costs in defining the prices. On the other hand, an economist is interested in evaluating the impact of the pricing practices on competition.

A delivered price system is defined as

" where price to the buyer is inclusive of transport charges and is stipulated as a function of the buyer's location. In a delivered

price system, two firms quote the identical price to a buyer even if the two firms are located at different distances from the buyer" (Carlton, 1983:51).

Stigler identifies three main forms of price quotations in this sense (1968:148)[1]:

- Fob Mill Pricing

- Freight Equalization

- Basing Point Pricing

A fob (Free on Board) mill price system is the total of price at the mill (fob mill price) and actual freight charges from the mill. Freight equalization refers to a pricing system under which a seller quotes a price to each buyer using the freight from the firm nearest to buyer. Basing point pricing system is used when there are several producers of a homogenous product and these are distributed over a certain geographical area. The basing point pricing is a delivered price which is equal to a base price plus the cost of delivery calculated from a predefined base point which is not necessarily the place where the plant of the seller is (Thisse and Vives, 1992:249).

Carlton (1983) makes a distinction between fob mill pricing, and delivered pricing in general, and he points out that under delivered pricing different firms quote identical prices whereas under fob mill pricing the prices are different. Delivered pricing is generally linked to noncompetitive behaviour because it could make it easy to pursue noncompetitive pricing practices and it could facilitate collusion.

Stigler (1949) provides an analytical analysis of delivered price systems. He

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[1] However, certain authors have different classifications in this sense. See Kaysen (1949), Scherer (1980), Carlton (1983).

based the analysis on industries in which transportation costs form a substantial part of price, market structure is oligopolistic, and there is a potential to collude. The firms in question had to deal with two questions:

1. How should the division of sales among firms at a production centre be made?

2. How should the sellers be divided among production centres in order to maximize the total industry profit ?

Stigler's theory of delivered price system was developed on an empirical test conducted in conjunction with the steel industry and he furnished the facts with reference to US Court decision on cement industry. He comes up with the conclusion that in industries like steel and cement tacit collusion is more likely to occur and the delivered pricing systems, especially the basing point pricing represent a collusive oligopolistic policy which maximizes the oligopolistic profits under particular conditions (Stigler, 1968:148).

Apart from Stigler, many other economists have argued both in favour of and against the basing point system with reference to cement and steel industries, and some of them discuss it comparatively as well.[2] Scherer (1980) and Carlton (1983) made a comparative analysis of the fob mill, and the delivered pricing from view point of both collusion and oligopoly.

IV.2.2 Economic Theory of Delivered Pricing Systems

For heavy products of low value like cement, steel, etc. transport costs constitute an important parameter in terms of defining the final price of the product.

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[2] See Smithies (1942), Fetter (1948), Edwards (1948), Clark (1949), Marengo (1955), Kaysen (1958), Scherer (1980), Haddock (1982), Carlton (1983), Thisse and Vives (1992) .

And depending on the pricing method used, it is possible to conclude whether the market in question is collusive or competitive. Therefore, it is important to understand how these methods which are generally called delivered pricing systems work. Delivered pricing systems can be grouped and explained as follows:

Fob Mill Pricing

The formula for this type of pricing is as follows:

Fob Mill Price = mill price + actual transport costs to the buyers location
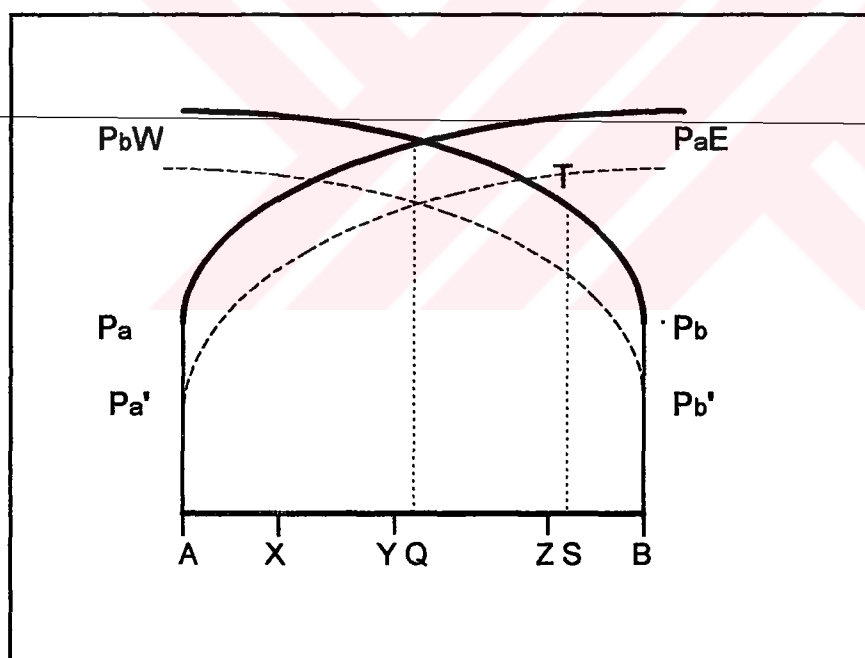

Figure 4.1 Fob mill pricing system

The horizontal axis represents the geographical distance between two points. Suppose that a mill is located at point A and its fob mill sales price is APa. The second mill is

located at point B and its fob mill sales price is BPb.

As the mill A sells its customers towards east, its delivered price increases along the line PaE, and same is true for mill B when it sells towards the west through the line PbW. So the segments AQ and QB are the freight advantage territories for mills A and B, respectively. If they continue the fob mill pricing system they cannot sell in each others territory.

In the mean time, the mill A might wish to expand its territory and try to sell to customers at point Z. If the uniform fob mill pricing is the valid pricing system, the only possibility mill A has is to cut its mill price to APa'. In this way it can extend to the territory of mill B. But mill B can do the same since it might not wish to lose customers to A. Then the new equilibrium point will still be Q as it was before, and the two mills will end up with serving the same market territory.

There is one way of solving this problem on part of A and B. For instance, when A has a good order possibly from Z, it can absorb the freight for that specific order, either by meeting or decreasing the price below the price of B. Same is true for B, if it has an attractive order from area X which is actually A's advantage area. This situation is known as competitive price cutting through freight absorption.

Basing Point Pricing System

If firms wish to minimize the independent pricing initiatives among them, they usually employ the basing point pricing system. It has been used by oligopolists who sell homogenous products which are heavy products of low value, and marginal production cost is low relative to total unit cost. With such characteristics, competitive price cutting through freight absorption is highly probable, and producers have a tendency for a collusive elimination of freight cost problem. The formula for basing point pricing is

Basing point price = a base price + cost of delivery calculated from a predetermined

basing point which is not necessarily the seller's location

In basing point pricing system, suppose mill B is accepted to be the basing point, then the delivered prices are quoted through B price plus freight line PbW, not only by B itself but also by all other mills including A and beyond. In this case if A is selling in its own area, it will quote the price AR, and thus it will be charging its customers a phantom freight of JR which is the surplus of A over the actual freight charges. However, if it sells at the area east of Q, it can receive no phantom freight on the contrary it has to absorb freight. Like this all the mills involved in the system can sell at each other's territory and this practice is known as cross-hauling. (The striped area in Fig.4.2 indicates the phantom freight for mill A).
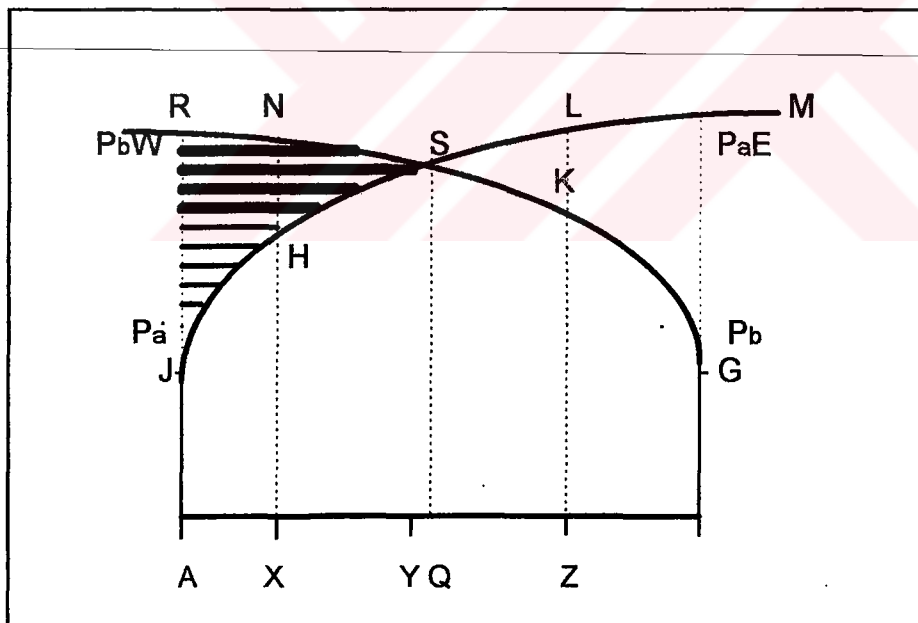

Figure 4.2 Basing point system

The phantom freight which creates discrepancies among the sellers can be

decreased by employing a system of multiple basing point system where more than one mill is defined as the basing point and the delivered price is lowest applicable basing point price plus transport to the destination.

If Figure 4.2 is reexamined, suppose both mills A and B are defined as basing points. If a sale to the customer on point X is to be made then the price will be XH for all sales to that point and it makes no difference whether it is A or B who sells. In this case, mill A will not receive any phantom freight because it is a basing point itself as well. And if it sells to point Z, it has to quote the price ZK and also needs to absorb freight.

Multiple basing point system looks like the fob mill pricing with discriminatory freight absorption but there are differences. First, under uniform fob mill pricing buyers have the chance of paying the mill price and undertake the delivery themselves by their own means. But in basing point system all prices quoted are delivered prices. Second, producers avoid independent initiatives outside the basing point pricing discipline and stick to the system.

The Zone Pricing System and Its Variant Postage Stamp Pricing

The zone pricing system is a uniform delivered price applied through a given territory. Within each such a territory or zone a single delivered price is quoted for all points of delivery. And if there are neighboring zones like this, the prices between the zones are kept rather rigid so the only alternative for the buyer is their own location or nearest zone in the case of a borderline situation where a certain zone and the delivery price going with it prevails.

Under postage stamp pricing system, as the name will suggest, a uniform delivered price is charged to every buyer no matter how far they are from the factory or the mill.

There are other varieties of spatial pricing methods however these are the most common ones. After describing these variants of delivered pricing systems briefly, it is thought to be important to present them from view point of competition policy.

IV.2.3 Delivered Pricing Systems and Competition

Among the above mentioned three systems the basing point pricing system is the one which has been the main focus point of competition policy. There are a number of reasons for it. The system requires an agreement between producers on:

- calculation of transport costs,

- how to fix or change ex-works prices, i.e. average production costs or usually recognizing a price leader,

- defining which factory or mill will be the basing point

In this system if the producer knows the distance between the basing point and the buyer, and the ex-works price, the final price is known to every producer. This in return brings a stability to the cartel agreement be it explicit or tacit because cheating is nearly impossible. In this way, everyone sticks to the pricing system established and competitive price cutting is avoided. Therefore, it is accepted as a collusive device. In US, the basing point pricing system was outlawed, since it was accepted as a restraint of competition in 1940s, and the cement and steel cases constituted the main stepstones for it.

The zone pricing system on the other hand, requires an explicit or tacit market sharing agreement among the producers. Since the price applied is everywhere the same within a particular zone, and the price differences between the zones should not be over the cost of transport as balanced by producers, the buyers have no incentive to shift to the neighboring zone. However, in order to sustain such market sharing the producers need to control the shipments in order to prevent cheating from the agreement reached among themselves. In order to sustain the agreement the sellers prohibit the buyers from using their own transportation means.

The fob mil pricing system by its very nature creates a natural market for each mill or factory. There are two types of fob mill pricing. The uniform fob mill pricing is believed to suggest the existence of collusion since the factory or the mill prices are the same for all producers although the freight costs differ. However, in the second variety of fob mill pricing, each factory or mill has its own price and its natural market. This introduces competition to the process. Suppose that a producer has achieved a certain degree of scale economies or reduce its costs due to technological improvement in the output, this producer can enlarge his market beyond his natural market.

In brief, delivered pricing systems could be used as a device facilitating collusion. The competitive or collusive nature of such pricing systems have long been a subject of debate among the economists[3] but the conclusion is that whether a pricing system is collusive or not depends on the characteristics of the industry in question. Especially, under industries which have demand fluctuations and which have room for deviating from collusive agreement, these type of systems do not have infinite chance to continue.

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[3] Smithies (1942), Fetter (1948), Edwards (1948), Clark (1949), Kaysen (1949), Morengo (1955), Greenhut and Ohta (1972), Haddock (1982), Carlton (1983), Benson (1984), Cremer and Thisse (1991), Gilligan (1992).The articles of the first six authors have detailed discussion with specific reference to cement, steel, plywood cases of the time in the USA.

IV.3 Trade Associations

The role of the trade associations in terms of sustaining collusion was mentioned before, and in the cement cases of US this was clear as well. The strengthening of the basing point system was realized by the Association of American Portland Cement Manufacturers which was founded in 1902. However, the depression of 1908 made it impossible for the Association to stabilize the price level through its resolutions to the members of the industry. In 1907, another trade association was founded, Association of Licensed Cement Manufacturers, the efforts of which in creating a "stable" pricing system was not to be successful either. However, it is known that by 1916 basing point pricing was widely used in the cement industry (Stocking and Watkins, 1951:199).

In 1916, the Association of American Portland Cement Manufacturers changed its name to Portland Cement Association and was cleared by the Federal Trade Commission under antitrust laws since it was mainly working on research and advertising. At the very period there existed five other regional organizations to conduct other functions than that of Portland Cement Association. For instance, the Cement Manufacturers Protective Association which represented the Leigh Valley mills was instrumental in processing four types of information:

"1. monthly production and inventory statistics

2. customer credit reports

3. freight rates from each basing point to all markets which it was likely to make shipments

4. facts on specific job contracts" (Whitney, 1958, 292).

In 1916, the cement industry started to experience the weight of antitrust laws for the first time .Nine producers were indicted for market sharing and price fixing. Seven of these accepted the indictment and the other two were found guilty by the jury and they were fined.

The next case was in 1919, the nineteen members of the Cement Manufacturers Protective Association were indicted with conspiring to use the Association as to restrict output, sell at uniform delivered quotations, and fix prices.[4]

In 1921 this proceeding was replaced by others:

- a criminal suit against nearly all of the industry,

- a civil suit against the association and its 19 members.

In 1923, the Association was ruled to be in violation of Section 1 of Sherman Act since with statistical reports they were keeping the supply below demand and they were fixing the prices. As a result the association has been dissolved, however, in 1925 the Supreme Court reversed the decision.[5]

The Association was not reestablished. In 1929, a new trade association, the Cement Institute, was established with the aim of providing a code of ethics for the industry and under the National Recovery Administration[6] in 1934, it functioned as the representative of the industry.

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[4] US v. Atlas Portland Cement Co.: Eq. 2274 (SD NY 1919).

[5] Cement Manufacturers Protective Ass'n v. US, 268 US 588 (1925).

[6] National Recovery Administration is also known as "NRA", its abbreviated form and in cement cases it was cited as such. During this period competition policy was relatively lax due to crisis situation.

On the other hand the Federal Trade Commission began to tackle the issue of multiple basing point system after its success of abolishing single basing point system via the ruling in the steel case of 1924.

In 1932 and 1933, the Federal Trade Commission published two reports upon request from the Senate; the *Price Bases Inquiry*, and *Cement Industry* respectively. The two reports had a common argument. They both underlined the restrictive effect of the basing point system on competitive pricing.

In 1936, the Robinson-Patman Act was passed, after which the Federal Trade Commission filed a complaint against the Cement Institute and majority of its members and targeted the basing point system practiced by the industry. The two main charges on which the case was based were as follows:

- Unfair competition under Section 5 of Federal Trade Commission Act

- Price discrimination under Section 2 of Clayton Act which was amended by the Robinson-Patman Act

The Federal Trade Commission had underlined the following collusive practices as to the facts of the case:

- distribution of freight rate books to the members of the industry which enabled them to quote prices even when shipment is by truck

- identical sealed bids to government institutions as an automatic result of meeting the base mill price

- punishment of mills which cut prices by establishing punitive bases

- attempts to limit the trucking of cement by way of special charges

- uniform terms and conditions of sale

- use of statistical data to control output

- attempts to classify customers according to dealer or factory basis

Following these facts the Federal Trade Commission ordered the parties involved to stop the below mentioned practices:

- sell cement under basing point system

- refuse to sell fob mill

- refuse to allow buyers their own transportation

- base prices on transportation from any other mill than their own

- absorb freight or charge phantom freight on systematic basis

- distribute freight rate information as a factor of charging prices

- control the disposition of cement price sold

- classify customers

- maintain espionage systems to prevent the use of imported cement

- agree on terms of sale

- charge customers differing mill-net prices (Whitney, 1951:296 -97).

The order of Commission was taken to 7th Circuit Court of Appeals and it was overruled. In April 1948, however, Supreme Court reversed the Circuit Court decision. The case involved 74 companies that were members of the Cement Institute engaged in manufacturing, selling and distributing cement, and 21 individuals who were associated with the Cement Institute itself. The charges brought by the Federal Trade Commission before the Supreme Court contained the following:

> "1. ...that respondents had engaged in an unfair method of competition in violation of Section 5 of the Federal Trade Commission Act by acting in concert to restrain competition in the sale and distribution of cement through use of a multiple basing point delivered price system, which resulted in their quoting and maintaining identical prices and terms of sale for cement at any given destination; and

> 2. that this system of sales resulted in price discriminations violative of Section 2 of Clayton Act, as amended by the Robinson-Patman Act...."[7]

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[7] Trade Comm'n v Cement Institute, 333 US 683, 157 F.2D 533 reversed.

The Supreme Court decision emphasized many concerted anticompetitive practices including boycotts, discharging uncooperative employees, opposition to build new plants, etc. which were also cited by the order of Federal Trade Commission. Basing its decisions on these facts, the Court ruled that the Cement Institute violated the Federal Trade Commission Act, which was in tune with the hard stand taken against conscious parallelism in the 1940s. (Waldman, 1986:179).

Justice Black's opinion, as to the second point of complaint of Federal Trade Commission, made all basing point systems per se illegal as violation of Robinson-Patman Act, and basing point pricing was banned in US industry. This decision of the Supreme Court was followed by the fact that Federal Trade Commission made "conscious parallel action" as illegal as the implicit collusion.

A comment written concerning the analysis of the cement case ten years later indicates that

"The effects of the decision on geographic pricing are hard to separate from effects of high cement demand and high freight rates of postwar period.

...Trucking of cement has increased from 16 percent of total shipments to almost twice that figure since the abolition of the basing point system.

...The competitive situation in cement, once kept in check by the basing point system, is now controlled only by the self restraint of individual companies." (Whitney, 1958:320-21).

Following Whitney's remarks on the cement industry, fifty years later Koller and Weiss (1989) have published an econometric study concerning the US cement industry where they examined the years 1948, 1953, 1959, 1961, 1965, 1973, and 1980, respectively in 25 regional markets through a set of regressions evaluating concentration and price. They stated the fact that following the 1948 decision of the Supreme Court, tacit collusion via delivered pricing system came to an end. By 1959, the collusive pricing was broken in many of the regional markets. By 1973, the situation was much more improved, and by 1980 the prices were not dominated by few large groups or factories anymore. In their final comment concerning the industry they state that

"...the evidence is overwhelming that it (cement industry) has become much more competitive in the recent decades. The Cement Institute decision did indeed change the industry, though not overnight" (Koller and Weiss, 1989:37).

Chapter V

TURKISH CEMENT INDUSTRY

V.1 Introduction

This chapter aims to present the Turkish Cement Industry in detail from its very foundations until now, including the privatization process. First, the history of the industry will be summarized. Second, the economic characteristics of the industry will be highlighted Third, the privatization process will be presented. Fourth, the period between 1986-1997 will be analyzed depending on the available data. This includes production, sales, prices, demand, costs, and the changing ownership structure of the industry. Fifth, an econometrical model will be introduced in order to answer certain questions related to the industry. Sixth, the results of the analysis will be discussed.

V.2 A Brief Historical Outlook of Turkish Cement Industry

The first cement factory was established in 1911 in Darıca with a production capacity of 20.000 tons/year by the private sector. This was followed by an other plant in Eskihisar (VII. Five Year Development Plan Cement Industry, Special Committee Report, 1993:4). In 1912, the total production was 32.000 tons/year (Çelenk, 1997:33). The capacity of Darıca plant was later increased to 40.000 tons/year.

The period following the World War I and the Independence War, was not economically suitable for further investments in the industry in general and cement industry was not an exception to this. After 1925, however, cement plants were

established in Ankara, Istanbul, and Sivas, a total of four factories. And in the year 1940, the cement production reached 288.000 tons/year (Çelenk, 1997:33).

The period between World War II and the year 1950 when elections took place in Turkey, marked a recession in the construction sector. However, after the 1950 elections, the new government launched new investments and as a result more and more new plants were established both by private sector and the state. In 1953, the state established Turkish Cement Industries as a state-owned enterprise, and under this new establishment, Adana, Afyon, Çorum, Pınarhisar, Balıkesir and Elazığ plants were founded. However, these plants were not enough to meet the domestic demand in Turkey, therefore, imports continued.

In 1958, the government issued Decree No.1164 which enabled the government to define the cement prices all over Turkey, and also established a cement fund which amounted to a certain percentage of the sales price to be pooled in this fund. The fund was managed by Turkish Cement Manufacturers Association. And the control of the management of the fund was done by Ministry of Industry and Commerce. The importation and distribution of cement was also undertaken by the state.

Between 1960-1963, another recession took place, and like all the industrial sectors, cement industry was also affected by this recession. Although in the year 1960, Turkey was able to export cement, in the subsequent years between 1963-1970, the imports had to restart.

It was after 1970 that Turkey started to export cement again, and new plants were established after 1972. The excess production which emerged between the years 1978 and 1983, due to global and domestic recession faced by the construction sector during those years, lead the producers to exports (VII. Five Year Development Plan, Cement Industry Special Committee Report, 1993:4).

In 1984, the domestic cement consumption in Turkey increased. And the increase in domestic cement consumption between 1980-1990 was an average annual increase of approximately 7.2% on a yearly basis (Çelenk, 1997:35).

In 1985, a remarkable development occurred. The cement producers were freed in defining their own prices and the government control on pricing ended.

In 1987, privatization process of state cement factories was started and the main date of privatization turned out to be 1989. The privatization of the state cement factories continued until the second half of 1997. Since it is a very important process within the overall privatization process in Turkey, and within the industry itself, this topic will be dealt in detail in the next section.

In 1994, due to the economical crisis which was effective during the second half of the year, the domestic demand in cement decreased and this lead the producers to exports which resulted with a record export figure of 5.3 million tons in the year 1995.

The year 1995 was important in another aspect, the cement fund which was created by the state in 1958, and managed by Turkish Cement Manufacturers Association was abolished in 15.07.1995. The fund was used for cement and clinker transport costs among factories, environmental protection, and financing certain relevant investments like mixed and ready-made concrete, etc.(Özbay, 1996:11).

In 1997, there were 51 cement plants, 11 of which were cement grinding plants, exclusively. However, one of the grinding plants STFA in Marmara region stopped its facilities, therefore by the second half of 1998, there are 50 plants in total.[1]

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[1] This information was expressed by TCMA.

The table presented below indicates the development of cement industry in Turkey between the years 1913 and 1998 (April). The production, import and export figures are descriptive in themselves concerning the development of the industry.

Table 5.2.1 Historical Development of Turkish Cement Industry 1913-1998

Year	Production (1000 Ton)	Imports (1000 Ton)*	Exports (1000 Ton)*
1913	45	87	0
1920	5	5	0
1921	5	5	0
1922	5	5	0
1923	5	5	0
1924	5	8	0
1925	7	29	0
1926	39	55	0
1927	41	56	0
1928	49	53	0
1929	65	73	0
1930	82	60	0
1931	108	31	0
1932	118	2	0
1933	139	2	0
1934	192	1	0
1935	176	1	0
1936	195	6	0
1937	215	51	0
1938	268	44	0
1947	350	3	0
1948	345	97	0
1949	376	26	0
1950	396	135	0
1951	396	243	0
1952	459	389	0
1953	531	537	0
1954	703	629	0
1955	819	811	0
1956	971	293	0

Year			
1957	1261	299	0
1958	1517	20	0
1959	1734	2	18
1960	2038	4	69
1961	2036	3	1
1962	2323	2	0
	I. Five Year Development Plan Period		
1963	2698	91	3
1964	2940	92	0
1965	3244	50	0
1966	3865	162	0
1967	4249	211	0
	II. Five Year Development Plan Period		
1968	4731	442	1
1969	5795	282	2
1970	6374	0	326
1971	7553	0	1131
1972	8425	0	1446
	III. Five Year Development Plan Period		
1973	8946	0	966
1974	8931	0	408
1975	10850	0	922
1976	12392	68	910
1977	13832	0	941
1978	15343	0	1241
1979	13812	0	1178
1980	12875	0	755
1981	15043	0	3381
1982	15778	0	4183
1983	13595	0	2371
1984	15738	0	2175
	V. Five Year Development Plan Period		
1985	17581	0	1853
1986	20004	61	1250
1987	21980	2037	343
1988	22675	1616	257
1989	23801	507	1098
	VI. Five Year Development Plan Period		
1990	24416	1220	2681
1991	26261	596	3573
1992	28607	267	4417
1993	31366	71***	3203
1994	29515	50***	5209
1995	33140	331***	4628
	VII. Five Year Development Plan Period		

1996	35233		38***	3698
1997	36007		238***	4620
1998		8886**		1321**
	*Clinker included		**by the end of April 1998	***clinker only

Source: VI. Five Year Development Plan, Cement Industry Special Committee Report & Turkish Cement Manufacturers' Association.

V.3 Economic Characteristics of the Industry

The economic characteristics of the industry can be briefly summarized as follows:

- Heavy product of low value

Cement is a heavy product of low value and by its very nature the transport costs constitute a large percentage, i.e. about 10% of the sales price and it is mainly transported by trucks.

- Demand is cyclical

Due to seasonal weather conditions, the construction activities in Turkey do not continue all through the year in every region and demand in cement is defined by the construction activities as everywhere in the world. So demand is seasonal and cyclical, being also closely attached to economical developments and investments.

- Oligopolistic in market structure

Since cement is a heavy product of low value the transportation costs define the relevant market area, and relevant market can be said to be the regions or what the producers call the "sales hinterland". Therefore, the number of factories in each region are deterministic of the market structure, which, in the case of Turkey, is oligopolistic.

- The costs in Turkish cement industry

The industrial cost structure of one ton of cement in Turkey is as follows:

Table 5.3.1 Cost Structure of Turkish Cement Industry

COSTS	PERCENTAGE
Raw material	12,35
Other rolling-stock	3,81
Paper sack	9,51
Fuel	18,72
Electric	18,36
Labor cost	19,35
Depreciation	6,25
Others	11,65
Total	**100**

Source: Turkish Cement Manufacturers' Association

- Sales

The sales are realized in two ways: sales from factory, and sales via retailers. In the case of Turkish cement industry sales through retailers is more dominant compared to direct sales from the factory. According to personal interviews made with the retailers during the preparation of this work, it has been clearly understood that the retailers can act as the retailer of a specific company and they are not allowed to sell the cement of other rival factories. However, contrary to sales practice, they are occasionally having seminars together regardless of which factory they represent,

especially after the partial investigation started in the Aegean by the Competition Board.

- Prices

The prices in the Turkish cement industry are well below European and world prices in dollar terms and this creates a competitive advantage in exports. The Turkish cement industry has been subject to two antidumping investigations by the EU Commission in the last two years, but it was dropped because, there was no material evidence concerning antidumping. Moreover, the Commission decided that there is no material damage to EU trade. However, within the country, the producers are criticized for increasing the prices frequently.

- There are significant economies of scale in cement industry

By its very nature, cement industry is one the producers can achieve significant economies of scale, which enables cheap production of cement. In Turkey, the unit production costs vary considerably among the factories and regions, i.e Konya, Çimsa factories are known to have achieved economies of scale.

- Energy is an important component of production process and the cost structure as indicated above, depending on the production system used in the cement industry.

The main cement production processes are twofold: wet and dry. The wet process is known to be more costly so factories working with dry process can be said to be cost-effectively working compared to others since their energy requirements are lower, and parallel with that their expenses are lower. The number of factories using wet kilns are not exhaustive in number, and especially after the end of 1970s there has been a move towards dry processing in Turkish cement industry. A schema explaining the both processes has been presented below.
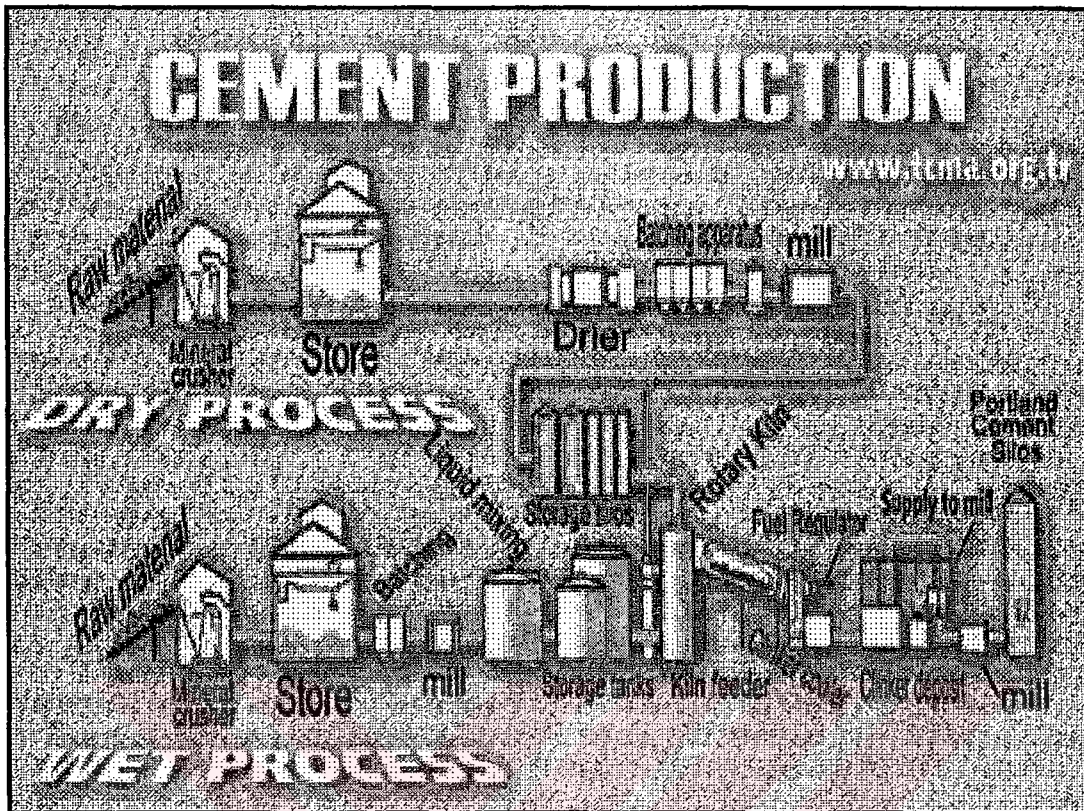
Figure 5.3 A schema of the cement production process as depicted in the official website of the Turkish Cement Manufacturers' Association, http://www.tcma.org.tr

- Cement cannot be stored for a long time

Neither the basic input of cement, the clinker, nor cement itself can be stored for a long time so the excess-capacity should be sold as soon as possible. It might also pave the way for price wars during recession times as well as booms.

- The effects of inflationary economy

The effects of inflationary economy are the main discourse of the cement producers concerning highly priced inputs, and frequently adjusted prices. This topic will be questioned in the coming sections.

- Vertical integration in the market

Ready Mixed Concrete production is another activity of cement producers where a considerable number of vertical integrations are observed.

- Industry trade association and industry employers' union

The cement producers have an industry trade association which disseminates information and acts as the spokesman of the industry, Turkish Cement Producers Association, which is also a member of CEMBRUEAU (European Cement Manufacturers' Association). Apart from this, there also exists an industry employers union, Cement Manufacturers Employers' Union. Most of the producers are members of both organizations.

- Turkish cement industry in the world and in Europe

Turkish cement industry by its constantly increasing production is among the first ten countries in the world. According to the 1995 figures, it has a production share of 2.4% in overall world production (The Global Cement Report, 1996). Again, according to 1996 figures, the industry is the eighth cement producer in the world (Güzel, 1997:9). In Europe, on the other hand, Turkey is the third biggest producer according to 1995 figures cited in Global Cement Report.

- Turkish cement industry: exports

According to the Global Cement Report figures, Turkey is the eight cement exporter in the world with 4.2 million tones of cement exported, with reference to the 1995 figures.

V.4 Privatization of the Cement Industry

The privatization of the cement industry is not only one of the most important parts of the privatization portfolio in Turkey, but also it changed the overall structure of the cement industry. Moreover, it is a process which has been completed in stages of a period of 10 years between 1987 and 1997, which also covers the data to be further discussed and analyzed concerning the industry.

In 1987, five cement factories which were owned by ÇİTOSAN (a SOE) and five other companies which are its participation were taken into privatization portfolio. This was followed by Niğde cement factory in 1989, and eleven other factories belonging to ÇİTOSAN in 1991. Finally in 1995, ÇITOSAN itself and its seven last factories were taken into privatization portfolio.

In 1989, 100% public share in Ankara, Balıkesir, Pınarhisar and Söke factories and 51% of Afyon cement factory were sold to Societe Ciments Français (SCF) for USD 105 million as block sales. The 49% share of Afyon cement factory was sold later both as public offering and in Istanbul Stock Exchange.

The other five cement factories which were taken into privatization portfolio in 1987, Adana, Bolu, Konya, Mardin and Ünye, were privatized between the years 1990-1994 through public offerings and sales in Istanbul Stock Exchange.

In 1992, 87.12% of 99.84% public share in Niğde cement factory was sold as block sales. The rest was sold later as public offering or in Istanbul Stock Exchange like Afyon cement factory.

As regards the eleven cement factories which were taken into privatization portfolio in 1991, all were privatized with block sales method in different years. Çorum, Denizli, Gaziantep, İskenderun, Sivas and Trabzon cement factories were

privatized in 1992. Aşkale, Bartın, Ladik, Şanlıurfa factories were privatized in 1993. Adıyaman factory was privatized in 1995.

The Privatization High Council Decision of 14.06.1995 concerning taking ÇİTOSAN into privatization portfolio lead to a change in the status of the seven cement companies owned by ÇİTOSAN, and all the factories were turned into individual joint-stock companies. From this group of companies, Elazığ, Gümüşhane, Kars, Lalapaşa, and Van cement factories were privatized in 1996, and Ergani factory was privatized in 1995 via block sales. Kurtalan factory was privatized in January 1998 after discussions which were centered around the issue of competition policy.

The outlook of the number factories, their clinker capacity, and their production shares in percentage prior to the privatization was as follows:

Table 5.4.1 Cement Industry in 1989, prior to privatization

Ownership	#of Factories	Clinker Capacity (1000 ton)	% Share
Public Sector	22	7945	33,4
Mixed (OYAK)	5	3405	14,3
Private Sector	14	12425	52,3
TOTAL	41	23775	100

Source: Turkish Cement Manufacturers' Association (İğnebekçili, 1995).

During the privatization of cement industry, three main methods were employed. These are block sales, public offering, and sales of shares in Istanbul Stock Exchange (ISE), respectively. In some cases, a mixture of block sales and public offering were also used.

The tables which are presented below indicate the method, date, ownership, and cash proceeds concerning the privatization of cement industry in Turkey. According to these figures, by the end of the privatization process, twenty-two factories were sold through block sales, the total cash proceeds being USD 871.268.242. This table also points out to the changing ownership structure in the industry which will be discussed further. There were five factories which were sold through public offering with a total cash proceeds of USD 63.979.262. As a compromise between the two methods, two factories were privatized using both methods. This has been followed by the extension of public offering into the stock exchange, and the privatization of seven factories were finalized through sales of the company shares in Istanbul Stock Exchange.

Table 5.4.2 Factories Privatized by Block sales Method

Factory	State Share %	Privatization Date	Ownership	Share %	Cash Proceeds (USD)
Adıyaman	100	16.08.1995	TEKSKO Giyim Sanayi	100	52.500.000
Ankara	99.30	08.09.1989	SCF	99.30	33.000.000
Aşkale	100	17.06.1993	ERÇİMSAN	100	31.158.000
Balıkesir	98.30	08.09.1989	SCF	98.30	23.000.000
Bartın	99.78	06.05.1993	RUMELİ HOLDİNG	99.78	20.568.669
Çorum	100	25.12.1992	YİBİTAŞ HOLDİNG	100	35.000.000
Denizli	100	04.12.1992	MODERN ÇİMENTO	100	70.100.000
Elazığ	99.89	12.06.1996	OYAK/GAMA AŞ	99.89	27.850.000
Ergani	100	04.04.1997	RUMELİ HOLDİNG	100	46.700.000
Gaziantep	99.73	03.12.1992	RUMELİ HOLDİNG	99.73	52.695.898
Gümüşhane	95.46	05.07.1996	PREKON İNŞAAT	95.46	3.500.000
İskenderun	100	02.12.1992	OYAK/SABANCI	100	61.500.000
Kars	100	18.06.1996	ÇİMENTAŞ	100	22.250.000
Kurtalan	100	09.01.1998	CANLAR Otomotiv	100	28.100.000
Ladik	100	21.04.1993	RUMELİ HOLDİNG	100	57.598.687
Lalapaşa	100	14.06.1996	RUMELİ HOLDİNG	100	125.890.000
Pınarhisar	99.90	08.09.1989	SCF	99.90	25.000.000
Sivas	100	25.12.1992	YİBİTAŞ HOLDİNG	100	29.400.000
Söke	99.60	08.09.1989	SCF	99.60	11.000.000
Şanlıurfa	100	21.04.1993	RUMELİ HOLDİNG	100	57.405.988
Trabzon	100	03.12.1992	RUMELİ HOLDİNG	100	32.551.000
Van	100	12.06.1996	RUMELİ HOLDİNG	100	24.500.000
TOTAL					**871.268.242**

Source: Privatization Administration, July 1998.

Table 5.4.3 Factories Privatized by Public Offering

Factory	State Share %	Privatization Date	Sold Shares %	Cash Proceeds (USD)
Adana (A)	23,86	18-20.02.1991	17,16	25.162.623
Adana (C)	23,42	18-20.02.1992	17,16	2.795.847
Bolu	34,50	30/4-1/05.1990	10,38	8.268.150
Konya	39,87	24-25.10.1990	31,13	17.663.979
Mardin	46,23	22-23.11.1990	25,46	9.161.501
Ünye	49,21	1-2.11.1990	2,86	927.162
TOTAL				63.979.262

Source: Privatization Administration, July 1998.

Table 5.4.4 Companies Privatized by both Block Sales and Public Offering

Factory	State Share %	Privatization Date	Ownership	Share %	Cash Proceeds (USD)
Afyon	99,60	08.09.1989	SCF	51	13.000.000
Afyon	48,60	21-26.03.1991		39,87	8.422.698
Niğde	87.12	23.03.1992	OYAK/SABANCI	87.10	22.500.000
Niğde	99,84	13-14.05.1991		12,72	2.647.286
TOTAL					46.569.984

Source: Privatization Administration, July 1998

Table 5.4.5 Factories privatized through sales in Istanbul Stock Exchange

Factory	Sold Share %	Offer Date	Cash Proceeds (USD)
Adana	12,96	1991-1993	17.132.358
Afyon	8,73	1991-1994	3.163.265
Bolu	25,03	1990-1994	33.571.309
Konya	8,74	1991-1993	9.518.226
Mardin	20,77	1991-1993	10.371.413
Niğde	0,02	1993	3.262
Ünye	46,36	1991-1993	21.257.366
TOTAL			95.017.199

Source: Privatization Administration, July 1998.

There are fourteen factories the shares of which are currently traded in Istanbul Stock Exchange after the privatization process and the total industry-wide market shares of these companies, as it will be seen from the below table, amounts to 56.5%.

Table 5.4.6 Cement companies traded in ISE by the end of 1997 and their market shares

FACTORY	GROUP	REGION	INDUSTRY MARKET SHARE %*
Adana	OYAK	Mediterranean	5,3
Afyon	SET	Middle Anatolia	1,2
Akçansa	SABANCI	Marmara	12,9
Aslan	LAFARGE	Marmara	3,2
Batıçim	BATIÇİM	Aegean	4,6
Bolu	OYAK	Black Sea	4,3
Bursa	PRIVATE	Marmara	3,9
Çimentaş	ÇİMENTAŞ	Aegean	4,9
Çimsa	SABANCI	Mediterranean	4,5
Göltaş	GÖLTAŞ	Mediterranean	3,7
Konya	VICAT	Middle Anatolia	2,4
Mardin	OYAK	South East A.	1,6
Niğde	OYSA	Middle Anatolia	1,3
Ünye	OYAK	Black Sea	2,7
TOTAL			56,5

Source: Figures of ISE and Cement Manufacturers' Association

As it is seen from the above table, AKÇANSA has the biggest market share. AKÇANSA came into existence with the merger of AKÇİMENTO and ÇANAKKALE Çimento, which was bought by the foreign CBR Group, in 1.10.1996.

Sabancı and CBR groups have the 79.4% of AKÇANSA shares equally, and 20.6% of its shares are traded in ISE[2]. AKÇANSA is currently the leading producer in Turkey.

At this point, the entry of the big foreign firms into the market should be highlighted. Three big groups, Societe Ciment Français (SCF), Lafarge, and Vicat have bought factories in 1989, 1990, and 1991 respectively, and entered the market. These were followed by the above mentioned CBR Group.

SCF has bought the first privatized five cement factories by block sales in 1989. These factories were Ankara, Balıkesir, Pınarhisar, Söke, and 51% of Afyon. The SCF company also bought the Anadolu Çimento (Kartal) factory. However, Söke factory has been sold to BATIÇİM later. The decision behind this is probably the fact that SCF wanted to focus its operations to a specific regional profile which could as well be cost effective. Certain shares of SCF were later acquired by ITALCEMENTI Group. Today, the company operates in Turkey as the SET Group.

Lafarge entered the Turkish market by buying the privately owned Aslan Çimento in Darıca, the oldest cement plant in Turkey, in 1990. It has also established partnerships with cement grinding plants in Ereğli and Ankara. Next step of Lafarge was to become partner with YİBİTAŞ Group which had Yozgat, Çorum, Sivas cement factories and Nevşehir grinding plant.

Vicat, on the other hand, bought the shares of Konya cement factory which was privatized by public offering in 1990. Apart from that Vicat bought 36% shares of the BAŞTAŞ cement factory in Ankara.

Thus, the involvement of the foreign cement firms as a result of the privatization process in the Turkish cement industry has a considerable effect on both

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[2] For further information see http://www.cmis.org.tr/uyeler.html official web site of Cement Manufacturers Employers' Union, also see http://www.tcma.org.tr.

regional and industry wide level which will be indicated in the subsequent sections of this chapter.

Undoubtedly, the changes in structure and performance in the Turkish cement industry which occurred during the privatization process are of big importance. If the performance of the cement industry is to be compared prior to and after privatization process, the figures are quite interesting and speaking for themselves. According to these figures, the total production capacity of the cement industry increased by 26%, the total cement production increased by 18%, total cement sales increased by 18%. However, total capacity utilization decreased by 6%. As a well-known outcome of the privatization process, the number of workers were decreased by 46%, which turns out to be quite high but the production per worker increased to 119% which shows that certain efficiency gains are there due to privatization.

Table 5.4.7 Comparison of pre- and post-privatization performance in Turkish Cement Industry

PERFORMANCE	PRE-PRIVATIZATION	POST PRIVATIZATION	% CHANGE
Total cement production capacity (1000 tons)	10860	13639	26
Total cement production (1000 tons)	8374	9845	18
Total capacity utilization (%)	77	72	-6
Total number of workers (person)	6445	3456	-46
Production per worker (tons)	1299	2849	119
Total cement sales (tons)	8386	9855	18

Source: Based on figures from the report of Privatization Administration, July 1998.

V.4.1 Investments

The investments which have been made after the privatization process of the state cement factories are also significant. There has been a total investment of USD 520,010,000 by the new owners. The 73.1% of the total investments have been made by SET Group-BATIÇİM, which is followed by SABANCI-OYAK-GAMA with 7.4%. YİBİTAŞ Group has invested 5.4% and RUMELİ has invested 1.8%. The rest of the new owners have invested 12.3%.[3]

V.5. Turkish Cement Industry Between 1986-1997

V.5.1 Introduction

The focus of this and the coming sections will be the analysis of the period between 1986-1997. First, the regions and groups will be discussed in detail as part of the oligopolistic structure of the industry. Second, the period between 1986-1997 will be brought into perspective in terms of production, sales, stocks, prices, market shares, and the HHI index, which is the most widely accepted index all around the world as a benchmark of market concentration. Next, an econometric model concerning the industry will be introduced. Last but not least, the results of the introduced model will be discussed.

V.5.2 The Rationale

During the preparation process of the present thesis, collection of data and the overall research activity continued despite all the well-known difficulties in terms of reaching real data. The research was aimed for the period covering 1986-1997 and it has been rather complicated compared to industries which do not have such a long

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[3] Privatization Administration, July 1998.

privatization process or no privatization process at all. The continuous change in ownership and regional structural balance going with it brought its problems of analysis. However, despite all the difficulties, data for these years has been found on a large scale in detail and analyzed carefully. Moreover, personal interviews have been made with the people who are experts, retailers in the industry.

The analysis has been made both on regional and Turkey wide level throughout these years, as well as on factory basis. Though there are sixteen different types of cement produced in Turkey, cement has been taken as a homogenous product, the relevant market of which is the regions in general, and what is called the "sales hinterland" in particular.

V.5.3 Structure and Players

V.5.3.a Regions

Regions are important due to the very nature of cement as heavy product of low value. According to the classification made by Turkish Cement Manufacturers Association, the factories are divided into regions according to standard geographical system in Turkey. However, it is known due to the interviews made during the preparation of the present thesis with the cement retailers that factories sell their clinker or cement in the neighboring geographical regions as well, or beyond their what is called "sales hinterland".

The table below indicates the factories within their individual geographical regions, the ownership structure, and market shares in the year 1986, prior to the year the privatization process began.

Table 5.5.3.1 The outlook in 1986 prior to the start of privatization process

REGION	COMPANY	FACTORY	REGIONALM.SHARE	INDUSTRY M.SHARE
			%	%
MAR	AKÇİMENTO	B.ÇEKMECE	24,0	7,3
MAR	PRIVATE	ÇANAKKALE	8,7	2,7
MAR	STATE	PINARHİSAR	8,0	2,4
MAR	ANADOLU	KARTAL	8,1	2,5
MAR	STATE	BALIKESİR	6,7	2,1
MAR	ASLAN	DARICA	18,1	5,5
MAR	PRIVATE	BURSA	9,9	3,0
MAR	NUH	HEREKE	16,6	5,1
MAR	REGIONAL TOTAL		100,0	30,6
AEG	BATIÇİM	İZMİR	46,0	5,4
AEG	STATE	SÖKE	10,3	1,2
AEG	ÇİMENTAŞ	İZMİR	43,7	5,1
AEG	REGIONAL TOTAL		100,0	11,8
MDLA	STATE	ANKARA	18,7	3,3
MDLA	STATE	AFYON	11,5	2,0
MDLA	PRIVATE	BAŞTAŞ	15,1	2,7
MDLA	MIXED	KONYA	11,7	2,1
MDLA	STATE	NİĞDE	9,5	1,7
MDLA	YİBİTAŞ	YOZGAT	15,0	2,6
MDLA	STATE	SİVAS	8,0	1,4
MDLA	PRIVATE	ESKİŞEHİR	10,5	1,9
MDLA	REGIONAL TOTAL		100,0	17,6
MED	MIXED	ADANA	37,5	6,3
MED	ÇİMSA	MERSİN	32,3	5,4
MED	GÖLTAŞ	ISPARTA	20,8	3,5
MED	STATE	İSKENDERUN*	9,4	1,6
MED	REGIONAL TOTAL		100,0	16,7

EA	STATE	VAN	19,5	0,8
EA	STATE	AŞKALE	33,1	1,4
EA	STATE	ELAZIĞ	35,2	1,5
EA	STATE	KARS	12,2	0,5
EA	REGIONAL TOTAL		100,0	4,1
SEA	STATE	ŞANLIURFA	3,5	0,3
SEA	STATE	GAZİANTEP	35,4	2,6
SEA	STATE	ERGANİ	11,6	0,8
SEA	MIXED	MARDİN	20,7	1,5
SEA	STATE	KURTALAN	7,3	0,5
SEA	STATE	ADIYAMAN	21,5	1,6
SEA	REGIONAL TOTAL		100,0	7,3
BS	STATE	BARTIN	11,6	1,4
BS	STATE	LADİK	15,2	1,8
BS	STATE	TRABZON	14,8	1,7
BS	MIXED	BOLU	21,4	2,5
BS	MIXED	ÜNYE	19,9	2,3
BS	STATE	ÇORUM	17,0	2,0
BS	REGIONAL TOTAL		100,0	11,8
	TOTAL			100,0

Source: Based on the figures of Turkish Cement Manufacturers' Association.

The table below, on the other hand, reflects the changes by the end of 1997, after the privatization process finished, and is presented in order to enable comparison.

Table 5.5.3.2 The outlook by the end of 1997 after the privatization process

REGION	COMPANY	FACTORY	REGIONAL MARKET SHARES %	INDUSTRY MARKET SHARES %
MAR	AKÇANSA	BCKMC-CNKL	39,9	12,9
MAR	SET	TRKY-ANDL-BLKSR	12,9	4,2
MAR	LAFARGE	DARICA	9,9	3,2
MAR	RUMELİ	LALAPAŞA	4,3	1,4
MAR	PRIVATE	BURSA	11,9	3,9
MAR	NUH	HEREKE	18,4	6,0
MAR	IKON*		0,9	0,3
MAR	MARMARA*		1,8	0,6
MAR	REGIONAL TOTAL		100,0	32,4
AEG	BATIÇİM	İZMİR	32,3	4,6
AEG	BATIÇİM	SÖKE	13,2	1,9
AEG	ÇİMENTAŞ	İZMİR	34,3	4,9
AEG	MODERN	DENİZLİ	18,9	2,7
AEG	ÖZTÜRE KİREÇ	İZMİR	1,2	0,2
AEG	REGIONAL TOTAL		100,0	14,2
MDLA	SET	ANKARA	12,0	1,9
MDLA	SET	AFYON	7,7	1,2
MDLA	VICAT	BAŞTAŞ	12,5	2,0
MDLA	VICAT	KONYA	15,1	2,4
MDLA	OYSA	NİĞDE	8,4	1,3
MDLA	ÇİMSA	KAYSERİ*	8,4	1,3
MDLA	YİBİTAŞ	YOZGAT	5,5	0,9
MDLA	YBTS-LFRG	SİVAS	6,9	1,1
MDLA	YBTS-LFRG	NEVŞEHİR	5,4	0,8
MDLA	YBTS-LFRG	HASANOĞLAN*	6,1	1,0
MDLA	PRIVATE	ESKİŞEHİR	12,0	1,9
MDLA	REGIONAL TOTAL		100,0	15,7

MED	OYAK	ADANA	34,4	5,3
MED	ÇİMSA	MERSİN	29,1	4,5
MED	GÖLTAŞ	ISPARTA	23,9	3,7
MED	OYSA	İSKENDERUN*	9,5	1,5
MED	ADO MDNCLK*	ANTALYA	2,2	0,3
MED	ÖZGÜR BTN*	ANTALYA	0,9	0,1
MED	**REGIONAL TOTAL**		**100,0**	**15,5**
EA	RUMELİ	VAN	13,3	0,5
EA	ERCIMTAS	AŞKALE	35,4	1,2
EA	OYAK-GAMA	ELAZIĞ	31,8	1,1
EA	CIMENTAS	KARS	19,4	0,7
EA	**REGIONAL TOTAL**		**100,0**	**3,5**
SEA	RUMELİ	ŞANLIURFA	9,0	0,6
SEA	RUMELİ	GAZİANTEP	18,3	1,3
SEA	RUMELİ	ERGANİ	7,9	0,6
SEA	OYAK	MARDİN	23,7	1,6
SEA	PRIVATE	KURTALAN	11,2	0,8
SEA	PRIVATE	ADIYAMAN	29,9	2,1
SEA	**REGIONAL TOTAL**		**100,0**	**7,0**
BS	RUMELİ	BARTIN	4,0	0,5
BS	RUMELİ	LADİK	9,1	1,1
BS	RUMELİ	TRABZON	7,4	0,9
BS	OYAK	BOLU	36,4	4,3
BS	OYAK	ÜNYE	22,7	2,7
BS	YBTS-LFRG	ÇORUM	9,5	1,1
BS	YBTS-LFRG	SAMSUN*	5,2	0,6
BS	LAFARGE	EREĞLİ*	5,5	0,6
BS	PREKON	GMŞHANE*	0,1	0,0
BS	**REGIONAL TOTAL**		**100,0**	**11,7**
	TOTAL			**100,0**

Source: Based on the figures of Turkish Cement Manufacturers' Association

As it can be seen from the two tables above, both the structure and the number of companies had a considerable transformation. The column indicating the regional market shares is also descriptive of the changes before and after the privatization process.

V.5.3.b Groups

Apart from the regions, the groups which operate in the industry are of significance since they define the conduct in the industry. Although there are 50 cement factories and cement grinding plants by the end of 1997, the number of groups is far from being exhaustive in number. These groups also establish joint ventures which are effective in the industry, i.e. Sabancı-Oyak joint venture is OYSA in Mediterranean and Middle Anatolia regions. The groups in the industry and their production shares are as follows for the year 1986 prior to privatization, and the year 1997 after privatization.

Table 5.5.3.3 Regional and Industry Production Shares in 1986

REGION	COMPANY	FACTORY	R. PROD. %	IND. PROD.%
MAR	AKÇİMENTO	B.ÇEKMECE	24,20	7,35
MAR	PRIVATE	ÇANAKKALE	8,45	2,57
MAR	STATE	PINARHİSAR	7,16	2,17
MAR	ANADOLU	KARTAL	8,22	2,50
MAR	STATE	BALIKESİR	6,83	2,07
MAR	ASLAN	DARICA	18,28	5,55
MAR	PRIVATE	BURSA	10,01	3,04
MAR	NUH	HEREKE	16,85	5,12
MAR	REGIONAL TOTAL		100,00	30,38

AEG	BATIÇİM	İZMİR	46,00	5,42
AEG	STATE	SÖKE	10,32	1,22
AEG	ÇİMENTAŞ	İZMİR	43,67	5,15
AEG	REGIONAL TOTAL		100,00	11,79
MDLA	STATE	ANKARA	18,68	3,29
MDLA	STATE	AFYON	11,48	2,02
MDLA	PRIVATE	BAŞTAŞ	15,10	2,66
MDLA	MIXED	KONYA	11,54	2,03
MDLA	STATE	NİĞDE	9,44	1,66
MDLA	YBTS	YOZGAT	15,27	2,69
MDLA	STATE	SİVAS	7,90	1,39
MDLA	PRIVATE	ESKİŞEHİR	10,60	1,87
MDLA	REGIONAL TOTAL		100,00	17,63
MED	MIXED	ADANA	37,75	6,34
MED	ÇİMSA	MERSİN	32,06	5,39
MED	GÖLTAŞ	ISPARTA	20,66	3,47
MED	STATE	İSKENDERUN*	9,52	1,60
MED	REGIONAL TOTAL		100,00	16,81
EA	STATE	VAN	19,52	0,81
EA	STATE	AŞKALE	33,11	1,37
EA	STATE	ELAZIĞ	34,83	1,44
EA	STATE	KARS	12,55	0,52
EA	REGIONAL TOTAL		100,00	4,14
SEA	STATE	ŞANLIURFA	3,93	0,29
SEA	STATE	GAZİANTEP	35,54	2,63
SEA	STATE	ERGANİ	11,31	0,84
SEA	MIXED	MARDİN	20,48	1,51
SEA	STATE	KURTALAN	7,22	0,53
SEA	STATE	ADIYAMAN	21,53	1,59
SEA	REGIONAL TOTAL		100,00	7,39

BS	STATE	BARTIN	11,53	1,37
BS	STATE	LADİK	15,04	1,78
BS	STATE	TRABZON	15,08	1,79
BS	MIXED	BOLU	21,52	2,55
BS	MIXED	ÜNYE	19,84	2,35
BS	STATE	ÇORUM	16,98	2,02
BS	REGIONAL TOTAL		100,00	11,87
TOTAL			100,00	

Source: Based on the figures of Turkish Cement Manufacturers' Association

As it can be deduced from the above table, the production share of the state owned companies is 32,4%. The production share of the state-private sector mixed companies is 14.78%. The remaining 52.82% constitutes the production share of the private sector companies. Among these, Sabancı group has a production share of 12.74%, Aslan Çimento has 5.55%, Batıçim has 5.42%, Çimentaş has 5.15%, Nuh Çimento has 5.12%, Göltaş has 3.47%, and Yibitaş has 2.69% production share, respectively. These groups are especially mentioned in order to enable comparison with table of the year 1997 presented below.

Table 5.5.3.4 Regional and industry production shares by the end of 1997 after privatization

REGION	COMPANY	FACTORY	R. PROD. %	IND.PROD.%
MAR	AKÇANSA	BCKMC-CNKL	39,52	12,83
MAR	SET	TRKY-ANDL-BLKSR	12,87	4,18
MAR	LAFARGE	DARICA	10,46	3,40
MAR	RUMELİ	LALAPAŞA	4,29	1,39

MAR	PRIVATE	BURSA	11,83	3,84
MAR	NUH	HEREKE	18,35	5,96
MAR	IKON*		0,86	0,28
MAR	MARMARA*		1,81	0,59
MAR	**REGIONAL TOTAL**		**100,00**	**32,45**
AEG	BATIÇİM	İZMİR	32,48	4,62
AEG	BATIÇİM	SÖKE	13,22	1,88
AEG	ÇİMENTAŞ	İZMİR	34,21	4,87
AEG	MODERN	DENİZLİ	18,85	2,68
AEG	ÖZTÜRE KİREÇ	İZMİR	1,24	0,18
AEG	**REGIONAL TOTAL**		**100,00**	**14,24**
MDLA	SET	ANKARA	11,94	1,88
MDLA	SET	AFYON	7,72	1,22
MDLA	VICAT	BAŞTAŞ	12,50	1,97
MDLA	VICAT	KONYA	15,11	2,38
MDLA	OYSA	NİĞDE	8,41	1,33
MDLA	ÇİMSA	KAYSERİ*	8,50	1,34
MDLA	YİBİTAŞ	YOZGAT	5,49	0,86
MDLA	YBTS-LFRG	SİVAS	6,87	1,08
MDLA	YBTS-LFRG	NEVŞEHİR	5,38	0,85
MDLA	YBTS-LFRG	HASANOĞLAN*	6,06	0,95
MDLA	PRIVATE	ESKİŞEHİR	12,02	1,89
MDLA	**REGIONAL TOTAL**		**100,00**	**15,76**
MED	OYAK	ADANA	34,18	5,29
MED	ÇİMSA	MERSİN	29,22	4,52
MED	GÖLTAŞ	ISPARTA	24,05	3,72
MED	OYSA	İSKENDERUN*	9,46	1,46
MED	ADO MDNCLK*	ANTALYA	2,17	0,34
MED	ÖZGÜR BTN*	ANTALYA	0,92	0,14
MED	**REGIONAL TOTAL**		**100,00**	**15,47**
EA	RUMELİ	VAN	13,35	0,47

EA	ERCIMTAS	AŞKALE	35,39	1,26
EA	OYAK-GAMA	ELAZIĞ	31,92	1,13
EA	CIMENTAS	KARS	19,34	0,69
EA	**REGIONAL TOTAL**		**100,00**	**3,55**
SEA	RUMELİ	ŞANLIURFA	8,83	0,62
SEA	RUMELİ	GAZİANTEP	18,50	1,29
SEA	RUMELİ	ERGANİ	7,99	0,56
SEA	OYAK	MARDİN	23,69	1,65
SEA	PRIVATE	KURTALAN	11,26	0,79
SEA	PRIVATE	ADIYAMAN	29,72	2,07
SEA	**REGIONAL TOTAL**		**100,00**	**6,97**
BS	RUMELİ	BARTIN	4,02	0,46
BS	RUMELİ	LADİK	9,21	1,06
BS	RUMELİ	TRABZON	7,39	0,85
BS	OYAK	BOLU	37,01	4,28
BS	OYAK	ÜNYE	23,07	2,67
BS	YBTS-LFRG	ÇORUM	9,66	1,12
BS	YBTS-LFRG	SAMSUN*	5,35	0,62
BS	LAFARGE	EREĞLİ*	4,17	0,48
BS	PREKON	GMŞHANE*	0,12	0,01
BS	**REGIONAL TOTAL**		**100,00**	**11,56**
	TOTAL			**100,00**

Source: Based on the figures of Turkish Cement Manufacturers' Association

As it is seen from the table above, there is considerable change after the privatization process in the outlook of the industry. There are new factories and cement grinding plants followed by a big merger in 1996, joint ventures, and partnerships together with the previously mentioned involvement of foreign capital.

The production shares of the main groups on industry basis by the end of 1997 are as follows:

Table 5.5.3.5 Groups and their production shares (%)

GROUPS	PRODUCTION SHARES %
SABANCI	18,69
OYAK	15,02
OYSA (Sabancı+OYAK)	2,79
SET (ITALCEMENTI)	7,28
YİBİTAŞ-LAFARGE	5,48
LAFARGE	3,88
RUMELİ	6,70
BATIÇİM	6,50
NUH	5,96
ÇİMENTAŞ	5,56
VICAT	4,35
OTHERS	17.79
TOTAL	100

The groups operating in the cement industry are also another indication of the oligopolistic structure of the industry and suggestive of coordination[4] due to their presence in a number of different regions as well. While evaluating the industry conduct, the joint ventures and partnerships should be taken into account all together

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[4] The theory of oligopolistic coordination is introduced in the previous chapters so it is not renewed here once again.

because the strategy of the groups in the industry cannot be independent of these. This points leaves one with nine groups of big and medium size, which is not an exhaustive number. Moreover, these groups have multimarket contact.

V.6 Competitive Structure of Turkish Cement Industry

According to SCP paradigm, high level of concentration in an industry reflects the possibility of existence of collusive behaviour in that industry. In this sense, the analysis of the concentration in cement industry is important in order to have a better understanding of behaviour of the firms in the industry. Therefore, the concentration levels both in the regions and in the over all industry together with their change throughout the years between 1986-1997 have been analyzed as shown below.

The Hirschman-Herfindahl Index (HHI) is used as a measure of concentration[5] in the analysis of the cement industry between 1986-1997 both on regional and on industry level. The HHI has been chosen deliberately due to a number of reasons. First, other concentration indexes like CR4, etc. have not been indicative of the changes which occurred throughout the privatization process in the case of Turkish cement industry. Second, apart from its systematic reliability, HHI is currently used as the benchmark in US and in Europe by the academics, experts, and the competition authorities as the most dependable index of concentration so far. In the case of Turkish cement industry, it has served its purpose enabling the systematic, consistent analysis despite the privatization process both on regional and on national level.

As it is known, HHI is calculated by summing the squares of market shares of individual firms in an industry. Despite all the criticisms, it is used by all experienced competition authorities in mergers or in other types of antitrust analysis extensively.

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[5] For comparison of concentration indices see Martin (1993), Donsimoni et al (1984).

One of the significant facts about the HHI is that it has its foundations in the theory of oligopoly.[6] HHI is indicative of the competitive level of a particular industry by means of both market concentration and price-cost margins Theoretically, the maximum level of HHI is between 0 and 1. But for practical reasons, the maximum value of HHI is defined as 10.000 where it depicts one single seller and it goes down as the number of firms in the industry increases. Competition authorities have established critical levels for HHI. The US Justice Department, for instance, takes the concentration above 1000 as critical. In 1992 Merger Guidelines, the HHI is used as the benchmark. According to these guidelines, HHI between 1000 or less than 1000 is defined as unconcentrated, HHI between 1000 and 1800 is defined moderately concentrated, HHI above 1800 is highly concentrated.

The graphs below show the change in concentration between the years 1986-1997 on both regional and national level measured by HHI. And the data on which HHI is based is of Turkish Cement Manufacturers' Association.

The first graph indicates the changes in concentration level in Turkey between the years 1986 and 1997. According to the accepted critical values in US[7], HHI above 1800 relates to collusive behaviour. As it will be seen from the graph that the overall situation in the cement industry indicates that concentration is above the critical level of 1800 between these years and that the general trend is of increase despite fluctuations in certain years. The concentration levels in these years are above 1800 all the time and it changes between 1850 and 2050. The concentration level starts to increase in 1987 which marks also the beginning of privatization process, and in general it has an increasing trend through the years. Starting from 1992, the concentration level increases significantly to the levels above 2000. The up trend in

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[6] It is possible to show that a firm's market share is negatively related to its marginal cost depending on Cournot solution. It follows that HHI is directly related to a weighted average of firms' price-cost margins. The higher is HHI, the higher the industry price-cost margin (Viscusi et al, 1995:151).

[7] Since 1982, the HHI are published for the industries in USA.

concentration starts to go down between 1996 and 1997 and points to 1950 level by 1997 which is still also above the accepted critical norm of HHI.

This general outlook of the industry can be examined better through concentration levels of individual regions throughout these years due to the characteristics of the cement industry. If the regions are to looked upon individually, the concentration levels show a variety, still with certain turning points and trends. In some regions, there are common turning points in the level of concentration.

Graph 5.6.1 HHI in Turkish Cement Industry between 1986-1997

Graph 5.6.2 Regional HHI in Aegean between 1986-1997
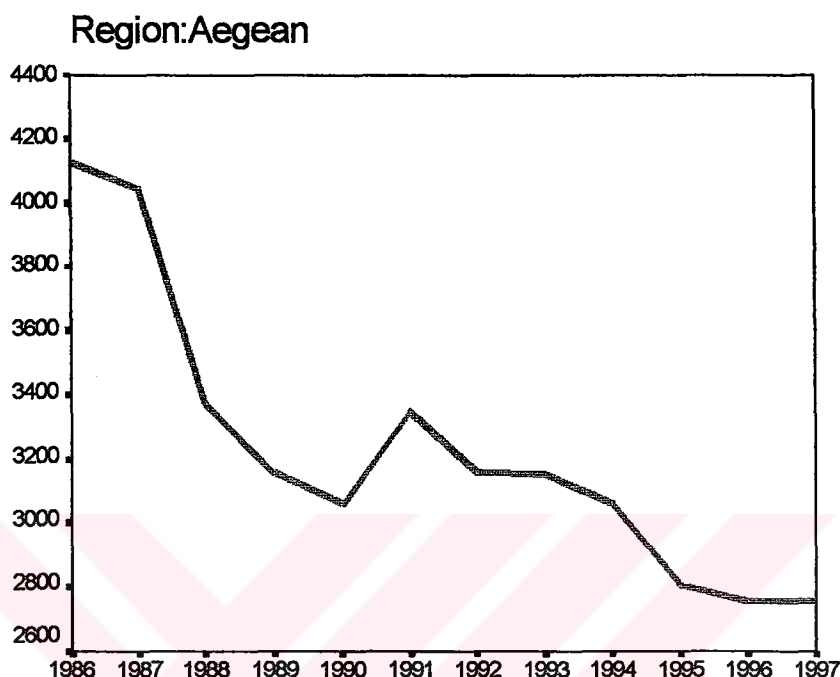
Region:Aegean

In the Aegean region as seen above, the general trend is of decrease in the HHI which starts in 1987. In 1987, Denizli cement factory enters the market and in 1989, Söke factory was sold to Sociéte Ciment Français within the framework of the privatization programme. Between the years 1990-1994 a brief trend of increase in concentration level is observed but it continues to drop with the year 1995. However, it should be noted that the downward trend starting from the 4100 level is far above the critical level and the HHI of 2750 by the end of 1997 is still above the established critical level.

In the Marmara region, the concentration level is below the critical levels between 1986 and 1994. However, it starts to increase after 1994 from 1500 level to

2400 level following the general economic crisis in 1994, although the number of factories and grinding plants increase in the region. In 1991 Lalapaşa cement factory started to operate and it was privatized in 1995. In the year 1996, two big factories of the region and in Turkey merged, Akçimento and Çanakkale cement factories formed AkçanSA

Graph 5.6.3 Regional HHI in Marmara Region between 1986-1997

Region: Marmara
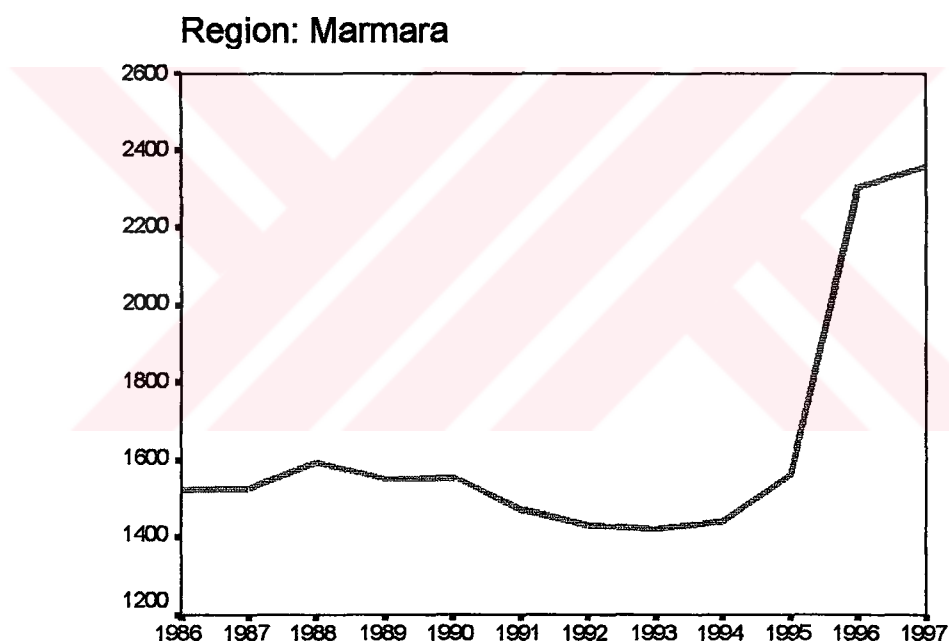
In Black Sea Region, the HHI is below the critical level between the years 1986 and 1988. Between 1988-1989 an increase above critical level is observed. The years between 1989 and 1992 have a fluctuation trend. However, starting from 1992 and seriously accelerating upwards with the year 1994, the HHI reaches 2150 level by the end of 1997. In Black Sea region, the number of factories increases from six to

nine in 1991. In 1992, OYAK, Lafarge and Rumeli groups are operating in the region and by the year 1996 there are no state factories left in the region.

Graph 5.6.4 Regional HHI in Black Sea between 1986-1997

Region: Black Sea
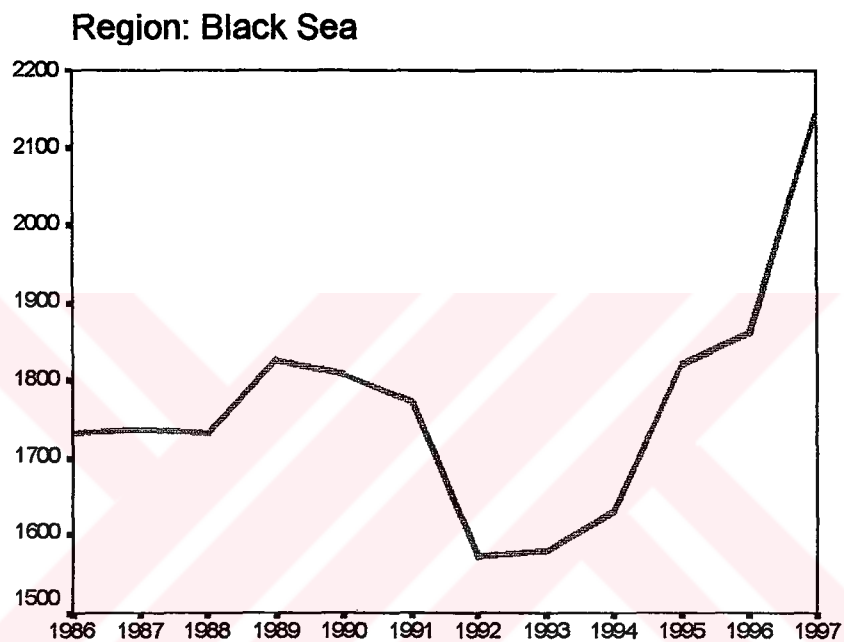
In Middle Anatolia region, the concentration level is below the critical levels in general, and it points to a decreasing trend. Between 1986-1991 the concentration level could roughly be said to be constant around 1300-1400 level. Between 1991 and 1995 the level decreases from 1350 to 1000. In 1995, however, an increasing trend shows itself again. In this region, the privatization process started in 1989 and finished in 1992. Moreover, the number of factories and/or grinding plants increased as well. Although the HHI is below the critical level, the question is why the concentration level has the increasing trend despite the increasing number of factories.

Graph 5.6.5 Regional HHI in Middle Anatolia between 1986-1997

Region: Middle Anatolia
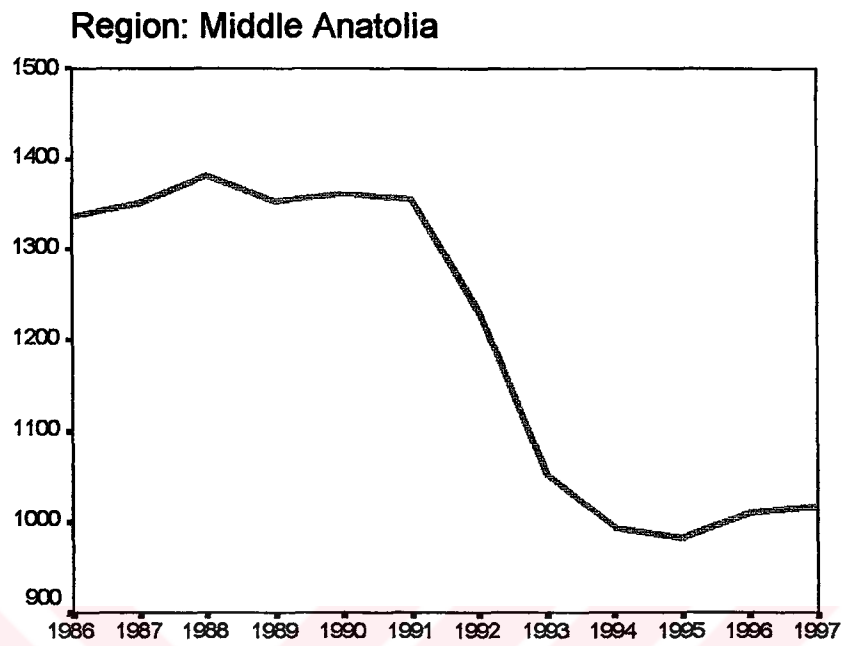
Graph 5.6.6 Regional HHI in Mediterranean between 1986-1997

Region:Mediterranean
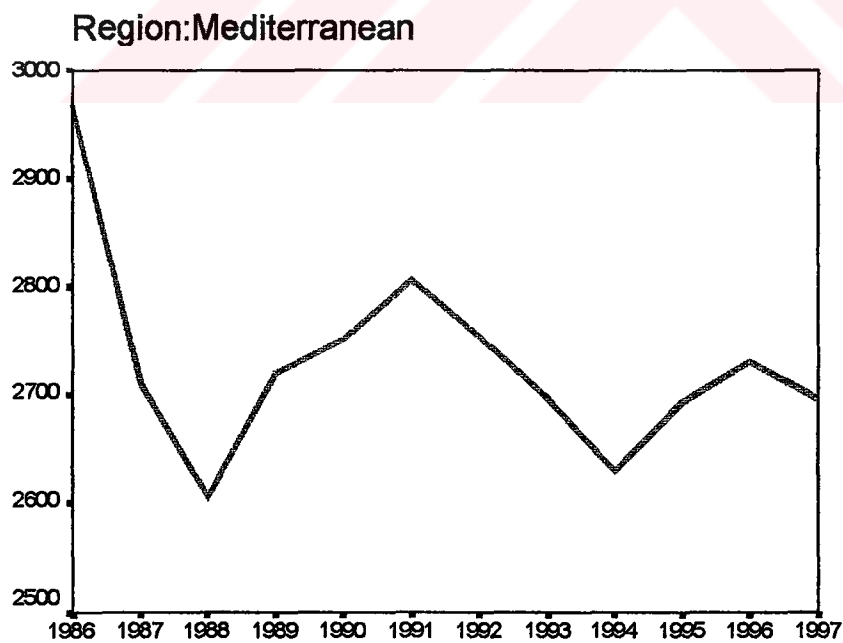
In the Mediterranean Region, the concentration level is above the critical level in general between the levels of 2960 and 2600 despite the trend of decrease, especially between the years 1986 and 1988. The increasing trend is observed between 1988-1991. The years between 1991 and 1994 again point to a decrease. In 1992, OYSA bought the İskenderun factory. Starting from 1994, the up trend of concentration level continues well above the critical levels. It is also important to note that the factories in the region are in the hands of two main groups. The number of factories remains unchanged apart from a grinding plant coming into the market in 1996.

Graph 5.6.7 Regional HHI in South East Anatolia between 1986-1997

Region: South East Anatolia
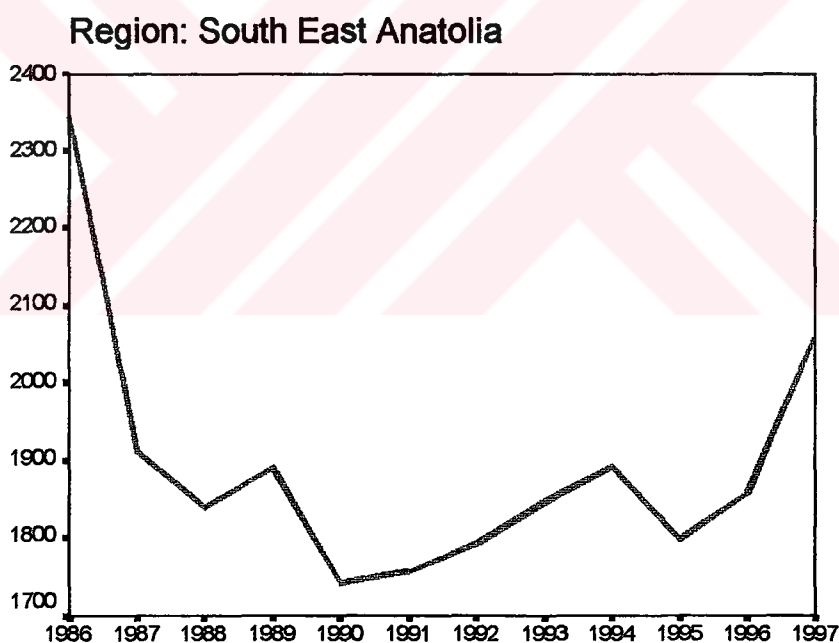
The concentration level in the South East Anatolia region shows critical level again despite the decreasing trend. Between 1986-1988, the level decreases from 2350 to 1850. In 1988, an increase is observed for about a year. In 1990, the level is below

1800. However, starting from 1991 the up trend shows itself and by the end of 1997 it is above 2000 level. In this region, it is possible to say that despite the unchanged number of factories the concentration level starts to increase together with the privatization process.

In Eastern Anatolia region, the concentration level, which is well beyond the critical level, is in downward trend between 1986 and 1992. In 1992, the privatization process starts and in 1993, the Aşkale factory was sold to Erçimtaş. Despite the constant number of factories in the region the concentration level is rising to the level during the year 1986 and HHI points to 2700 by the end of 1997.

Graph 5.6.8 Regional HHI in Eastern Anatolia between 1986-1997

Region: Eastern Anatolia
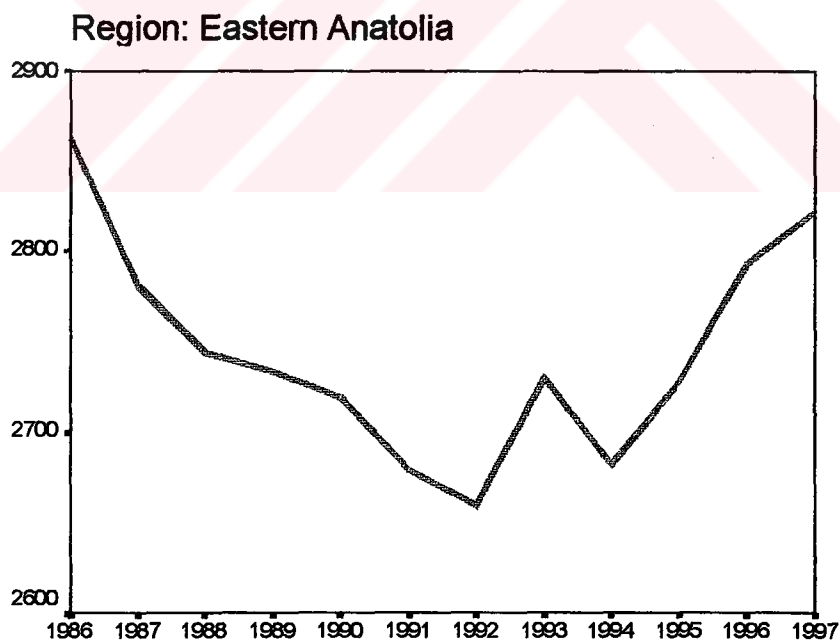
As it is seen from the graphs presented, the concentration levels in Turkish cement industry point to a possible collusive behaviour. In order to be able to test whether there is collusion or not in Turkish cement industry an econometrical modeling and the analysis going with it has been made in the next section.

V.7 Empirical Analysis of Turkish Cement Industry between 1986-1997

V.7.1 Overview of Previous Empirical Research on Cement Industry

Cement industry, due to its characteristics, has been the focus of empirical research in the recent years from a number of different perspectives. Most of these studies focused on the price changes in the cement industry with the aim of explaining the reasons behind it. For instance, Rotemberg and Saloner (1986) analyzed price wars during booms in portland cement industry by using a supergame theoretic model. They examined the theoretical grounds of oligopolistic industry responses to demand fluctuations by taking into account both the price and output as the strategic variables. They regressed the real price index for cement between 1947-1971 in US against the rate of growth of GNP. They found that the price of cement has a tendency to move countercyclically in oligopolistic markets.[8] In other words, the price of cement increases in the times of recession whereas it decreases during boom years.

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[8] "One percent increase in the rate of growth of GNP leads to a 0.5-1.0 percent fall in the price of cement.... More casually, the price of cement relative to the index of construction prices rose in the recession year 1954, while it fell in the boom year 1955. Similarly, it rose during the recession year 1958 and fell in 1959." Rotemberg and Saloner (1986:399).

Their regression results are as follows:

$$\frac{\text{Change in Pcement}}{\text{Pcement}} = 0,0037 - 0.876 \frac{\text{Change in GNP}}{\text{GNP}}$$
$$\quad\quad\quad (4.635) \quad (5.879)$$

The results of Rotemberg and Saloner (1986) were further tested by Rosenbaum (1986) by analyzing the cement prices again, but this time by taking into account two additional characteristics of the industry. The first characteristic is the capacity limitations, and the second is the regional nature of the industry.[9] Rosenbaum's finding affirms the findings of Rotemberg and Saloner with an additional fact that prices move countercyclically and price wars during booms are more likely to occur when the boom starts in excess capacity (Martin, 1993:126).

Another research was conducted by Ross (1987) where firm profitability was compared by stage of processing, and focused on raw-materials based manufacturing such as cement, ready-mixed concrete, etc. as a subsample. He stated that there is a positive relationship between concentration and prices in these type of industries. Iwand and Rosenbaum (1991) found that demand changes have little impact on pricing but changes in wages affect prices in US cement industry. Jans and Rosenbaum (1996) developed a simultaneous equation model of price and quantity formation in

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[9] "Following Rotemberg and Saloner's theory, changes in real cement prices should be negatively related to the changes in construction activity. This relationship is motivated by the assumption that any potential deviating firm can increase its sales by cheating on the collusive market equilibrium." Rosenbaum (1986:5).

Rosenbaum pools a cross-section time series data covering 25 regional markets in US between the years 1972-1977. His regression results are as follows:

$$\frac{\text{Change in Pcement}}{\text{Pcement}} = \underset{(3.48)}{1.81} - \underset{(3.90)}{0.078} \frac{\text{Change in CA}}{\text{CA}} + \underset{(1.65)}{0.86} \, \text{CU} \, \frac{\text{Change in CA}}{\text{CA}}$$

$$+ \underset{(3.0)}{0.21} \frac{\text{Change in Herf}}{\text{Herf}}$$

where CA is an index of construction activity, CU is an index of capacity utilization measured from 0 to 1, and Herf is Herfindahl index of market concentration. The results pointed out that a one percent increase in *Change in CA/CA* is to lower by *Change in P/ P* by 0.78. The second term on the right indicates that the total effect on *Change in P/ P* of an increase in *Change in CA/CA* depends on the extent of the capacity utilization, CU. If the capacity utilization rate is low, the net effect of an increase in the rate of growth of construction activity on the rate of change of prices will be negative.

cement industry in US. Their results indicate that multimarket contact has an increasing effect on price.

More parallel with the present work, Koller and Weiss (1989) tested the hypothesis that concentration has a positive impact on price levels in cement industry. They regressed the price of cement with transport costs, economies of scale, wage costs, capacity utilization and seller concentration for 24 regional markets in US during the years 1948, 1953, 1959, 1961, 1965, 1973, 1980. They concluded that "cement offers clearer evidence on the effects of concentration on price than most industries because of its many geographic markets and standardized product." (1989:36)

Taking all the available research and their findings into account an empirical analysis for Turkish cement industry has been conducted as presented below.

V.7.2 The Aim and Scope of the Empirical Research on Turkish Cement Industry

The model, on which the econometrical analysis of the Turkish Cement Industry has been based is designed to find an answer to a number of questions concerning the prices and the competitive situation in the market.[10] The theoretical ground behind the analysis has been discussed in the previous chapters so it will not be repeated here once again, and the empirical studies relevant to cement industry has been put forth in the previous section.

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[10] It is argued that the prices of cement are adjusted rather frequently in Turkey. The argument of the cement manufacturers is that they have to increase the prices in accordance with their costs, and the economy is inflationary. The argument of the cement manufacturers seems viable since it is true that the inflationary economy leads the prices upwards. However, the question arises that who will, then, be the first to increase the prices? This is a valid question for all firms in an oligopolistic market since all of them need to protect their market share and this might lead to conscious parallelism on part of the firms in the market. See the following for these arguments; Cement Manufacturers' Employers Union (1998), Yeni Yüzyıl (26.08.1998), Katırcıoğlu (1998).

Nevertheless, if the industrial characteristics of the cement industry is recalled, it will be more clear to express the reasoning behind the empirical research conducted. Cement is a homogenous producer good with high fixed costs, and low the rate of technological change. The demand is fairly inelastic and so is its supply. It is regional and the market structure is oligopolistic in nature.

Accordingly, the aim of the present empirical research is to answer the question whether the prices in the Turkish cement industry are increasing due to the price increase in inputs like wages, electricity, fuel which are constituting 56.43% of the costs (according to the cost structure figures of Turkish Cement Manufacturers' Association) or whether the cement producers are implicitly colluding to increase the prices above the competitive level.

The scope of the research is to explain the price of cement between the years 1986-1996 by pooling cross-sectional and time series data for Turkish cement industry. In other words, the price of cement being the dependent variable, it is an attempt to explain the effect of cost, demand, and concentration parameters on price throughout these years.

V.7.3 The Hypothesis and the Model

The basic economic intuition regarding the industry and its characteristics, together with the previous empirical results indicate that seller concentration has a positive impact on price levels in Turkish cement industry. This statement constitutes the main hypothesis of the modeling made.

The price levels in cement can be explained by the function

Price = f (Cost, Demand, Concentration)

The main cost parameters in the cement industry are wages, fuel, and electricity according to the cost structure figures provided by Turkish Cement Manufacturers' Association. The demand parameter can be indicated by building permits, since cement is one of the basic inputs in construction activities, and the parameter of seller concentration is Hirschman-Herfindahl Index (HHI).

A multiple linear regression model has been used in order to define the relationship between the dependent variable price and the independent variables which are cost, concentration, and demand parameters because a linear relationship is expected between these variables. The model involved pooling the cross section data and time series data for the years 1986-1996. The basic model for a multiple linear regression is as follows:

$$y = f(x1, x2, x3, x4, ...)$$

where

$$P = f(RHHI, BP, W, F, E)$$

where P= price of cement; RHHI= regional Hirschman-Herfindahl Index; BP= building permits; W= wages; F= fuel; E= electricity.

It follows that the multiple regression model is

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + e$$

and the multiple regression equation is

$$E(y) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

Accordingly, estimated multiple regression equation for the model is

$$P = ß_0 + ß_1RHHI + ß_2BP + ß_3W + ß_4F + ß_5E + e$$

where e = error term.

The expected signs of the independent variables RHHI, W, F, E are positive. The RHHI has been expected to have a significant positive coefficient and a t-value in the results, depending on the initial intuition concerning the structure and behavioral pattern of the cement industry. Whereas the expected sign of the demand remained uncertain.

The basic model has been modified in a number of ways in order to be able have the optimum results such as logarithmic and semi-logarithmic as indicated below:

I. A logarithmic version of the same model has been employed due to the nature of the data used

$$logP_{real} = ß_0 + ß_1logRHHI + ß_2logBP + ß_3logW_{real} + ß_4logF_{real} + ß_5logE_{real}$$

II. A semi-logarithmic model version of the main model where only the logarithm of the dependent variable has been used

$$log\ P_{real} = ß_0 + ß_1RHHI + ß_2BP + ß_3W_{real} + ß_4F_{real} + ß_5E_{real}$$

V.7.4 Data

The data used in this analysis are the data gathered from Turkish Cement Manufacturers' Association, State Statistical Institute, and Istanbul Chamber of Industry. In processing the data a number of software packages have been employed to run the model and check it. The software which is used is as follows: Excel 7.0, SPSS 7.50.

According to the regional classification of the Cement Manufacturers' Association between the years 1986-1997, there are seven regional markets. Each market consists of both cement factories and grinding plants belonging to certain groups and individual companies.[11] The period between 1986-1997 was chosen due to the availability of data and this period is also marked with continuous privatization process which was basically realized through block sales of factories to certain groups also of foreign origin.

The individual explanations of the data as regards the dependent and independent variables involved in the present study are as follows:

The dependent variable:

Price - it is obtained by a series of calculations based on the data received from Cement Manufacturers' Association, Istanbul Chamber of Industry 500 Big Firm statistics and the following 250 Big Firm statistics. The price data is of three types: on firm level, on regional level, and on national level for the years 1986-1996 and partially for 1997. Therefore, the price data for 1997 is left out of the analysis. Therefore, the period of analysis was reduced to the period between 1986-1996. Simple average was

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[11] This classification was made clear in the previous sections on the tables provided based on the figures of Turkish Cement Manufacturers' Association.

taken during the calculation of regional data. The price data has been also deflated by PPI[12] in order to obtain real price.

The independent variables:

These variables are as follows: regional Hirschman-Herfindahl Index has been used as the parameter of concentration; regional building permits are taken as the parameter of demand; the regionally weighted wages, fuel, electricity have been taken as parameters of cost.

Regional HHI or RHHI- Hirschman-Herfindahl Index (HHI) is calculated both on regional and industry basis. The database for HHI is the total sales data of Turkish Cement Manufacturers Association between the years 1986-1997 on factory basis. The data used for the analysis is the regional one indicated as RHHI.

Wages - as a parameter of cost, the figures for wages are received from the State Statistical Institute between the years 1986-1996. The wage figures have been deflated by PPI as the price has been done in order to have the real wages and they were also regionally weighted and same is true for the following cost parameters.

Fuel - as a parameter of cost, the figures for fuel are also received from the State Statistical Institute for the years 1989-1996. The figures are deflated by PPI in order to obtain the real fuel prices and further regionally weighted.

Electricity - as a parameter of cost, the figures for electricity are also received from the State Statistical Institute for the years 1989-1996. The figures are deflated by PPI like the others in order to have the real electricity prices, and regionally weighted as in the case of other cost parameters.

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[12] The PPI is based on the State Statistical Institute calculations where 1987=100.

Building Permits - as a proxy variable for demand they are also derived from the data provided by the State Statistical Institute on basis of provinces which are later turned into regional figures depending on the initial classification of Turkish Cement Manufacturers Association.

During the regression analysis, there has been a serious multicollinearity problem regarding the independent variable electricity. Therefore, the data for electricity is left out.[13] It is also observed that a slight multicollinearity problem shows itself for the fuel data as well but it remained inconclusive.[14] So the model is run both by wages and fuel as cost parameters and only wages as cost parameter. The changes in the overall significance, and the regression coefficients remains almost unchanged in these two cases. Therefore, the results with the two cost parameters are used for final analysis.

V.7.5 Theoretical Expectations

When this empirical research was conducted and the tests were run there were certain theoretical expectations as regards the results, the signs of the coefficients and their values. These expectations can be summarized as below.

The seller concentration, RHHI, or rather its effect on price levels constituted the core of this study. The expectation has been that the price levels are positively linked to the level of concentration.[15] The reason is that when concentration is high,

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[13] The electricity data has been tested using Durbin-Watson statistics, and by also taking into account the F-test and the adjusted r square. The results showed multicollinearity in the case of electricity data. Therefore, it is left out of the analysis.

[14] The multicolinearity test made for fuel remained inconclusive according to Durbin-Warson statistics. The F-test and adjusted r square did not show significant results in the coefficients when it is left out. Therefore, it remained.

[15] In the theory of industrial organization, an increase in concentration points to a decrease in the number of firms in the industry or the number of firms being unchanged it points to a

the number of firms are few implying "interdependence" among the firms. This also means high probability of collusive behaviour among them.

There was a clear expectation concerning the cost parameters, wages, fuel and electricity that they would have positive impact on price levels.[16] It should be clear that upward price adjustment due to increase in input prices is normal, especially in an economy with high level of inflation like Turkey. These type of price increases are not denied by the cement companies as well. Therefore, wages, fuel, and electricity would be expected to have their consequent positive relation to the price level and the sign of their regression coefficients are to be positive.

On the other hand, there was no clear expectation concerning the demand parameter, building permits as regards its effect on price. The previous empirical research suggests both positive and negative effect on price levels. If Rotemberg and Saloner (1986) and Rosenbaum (1986) are recalled in the time of booms the possible collusive equilibrium in an oligopolistic industries like cement is likely to break and the prices could well be decreasing and even leading to price wars. Whereas Scherer suggests that the reverse could be true and that in the time of recessions the collusive equilibrium could be broken in oligopolistic industries. Since the Turkish cement industry is oligopolistic in nature, naturally the notion of "oligopolistic interdependence" and the possible collusive equilibrium would be taken into consideration as well. Accordingly, during time of booms where excess capacity exists the effect of demand would be negative on price levels in oligopolistic industries as the empirical research points out. On the other hand, it would be expected to observe positive relation between an increase in price and an increase in demand in general sense.

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collusive behaviour where firms behave under a certain pattern in order to maximize their profits. This would imply an increase in price levels.

[16] According to the already mentioned cost structure of cement, wage costs constitute the 19.35 %, fuel costs constitute 18.72% and electricity costs constitute the 18.35% of the total industrial cost of one ton of cement.

As a result, the null and alternative hypotheses for the regression coefficients are presented as below. The null hypothesis is that the ß values of the independent variables will be negative except building permits which remains unclear.

$$H_o:\ ß_1,\ ß_3,\ ß_4,\ ß_5 < 0 \qquad ß_2\ ?$$

The alternative hypothesis is that the ß values of the independent variables except the building permits will be positive and in the case of building permits it remains unclear.

$$H_a:\ ß_1\ ß_3,\ ß_4,\ ß_5 > 0 \qquad ß_2\ ?$$

V.7.6 The Results[17]

A set of regressions were run in order to obtain the present results. The basic models employed have already been mentioned within the model section, therefore, they are not repeated here. The data which were run was regional in character between the years 1986-1996. According to the regression results the null hypotheses are rejected and the alternative hypotheses are accepted. The results of some the equations employed in this research are as below:[18]

As it is clear from the results laid on the table below the independent variable RHHI, reflecting the seller concentration shows a very significant relation with price in both equations within 95% confidence interval confirming the main hypothesis of this

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[17] The full computer output of the regression is presented at the end of the chapter.

[18] The values in brackets are t-values.

Table: 5.7.1 Regression Results[19]

	1	2
	Eq.1	Eq.2
Constant	-3,108a	3,407 a
	(-5,270)	(20,202)
Concentration	0,230	0,201
(RHHI)	(5,177)a	(1,991)b
Demand	-0,394	-0,213
(BUILPER)	(-7,966)a	(-1,916)b
Cost	0,833	0,046
(FUEL)	(4,714)a	(0,108)
Cost	0,279	0,780
(WAGES)	(1,541)c	(1,729)b
R sqr	0,907	0,551
Adj.R sqr.	0,900	0,516
df	55	55

The dependent variable is Pcement.

a .within 0.01 significance level, b. within 0.05 significance level, c. within 0.1 significance level.

research. Accordingly, a one percent increase in RHHI creates a 0.23 percent increase in prices. In other words, concentration in Turkish cement industry is directly related to the price levels and the initial hypothesis is affirmed. This result is parallel with the results of Rotemberg and Saloner (1986), Rosenbaum (1986), and Koller and Weiss (1989) and indicates an economic environment which facilitates collusive behaviour as it has been expected.

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[19] Equations 1, 2 relate to the classification made in the introduction of modeling in the previous section.

In the case of cost parameters, wages and fuel, the initial expectation has been correct and that they are positively related to the price levels. But in equation 1, the coefficient of fuel is statistically significant at the 99% confidence interval, it turns out to be insignificant in equation 2. In the case of the wages, the significance level of the coefficient is low in equation 1 and slightly higher in equation 2. But in any case it can be said that both are in the acceptable statistical significance range. According to the present results, one percent increase in fuel costs creates a 0.83 percent increase in prices. However, a one percent increase in wages creates a 0.27 increase in prices. These results indicate that increases both in fuel and wage costs can be reflected in cement prices as expected.

In the case of the demand parameter the present results indicate that there is negative linear relationship between the demand increase and the price increase, and for one percent increase in demand there is a 0.39 percent decrease in prices. This result, although it seems against the general theoretical understanding as regards demand and price relationship, is very much parallel with the empirical findings regarding the cement industry.[20] Finally, since the data at hand is limited, it proved impossible to test further the countercyclical relationship as regards demand and price. However, the price wars which are faced within the sector time to time suggests that the model tested by Rotemberg and Saloner (1986) can also be viable for the Turkish cement industry.

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[20] For instance, Iwand and Rosenbaum (1991) used a capacity constrained pricing model in order to examine the pricing strategies of the firms in US cement industry. They used the total construction activity as a proxy for demand for cement. They found that prices do not respond to the demand changes, therefore, they have little impact on prices. Again, the empirical studies realized by Rotemberg and Saloner (1986), Rosenbaum (1986), Koller and Weiss (1989) point to a negative relationship between demand and price levels. There might be a number of reasons for this. It might be due to the reason that the possible 'oligopolistic interdependence' and the collusive equilibrium going with it is likely to break when there is high demand and the prices are likely to be cut, and this could even lead to price wars.

To conclude, the present empirical study affirms that seller concentration affects the price levels in Turkish cement industry by facilitating collusive behaviour among the cement companies. The cement companies operating in this collusive environment are able to elevate output prices as well as input prices easily.

Chapter V Appendix: Regression Results

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	LOGREALW, LOGREGHH, LOGBUILP, LOGREALF[a]	,	Enter

a. All requested variables entered.

b. Dependent Variable: LOGREALP

Model Summary[b]

				Statistics					
					Change Statistics				
Model	R	R Square	Adjusted R Square	R Square Change	F Change	df1	df2	Sig. F Change	Durbin-Watson
1	,952[a]	,907	,900	,907	124,403	4	51	,000	1,166

a. Predictors: (Constant), LOGREALW, LOGREGHH, LOGBUILP, LOGREALF

b. Dependent Variable: LOGREALP

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	10,711	4	2,678	124,403	,000[a]
	Residual	1,098	51	2,152E-02		
	Total	11,809	55			

a. Predictors: (Constant), LOGREALW, LOGREGHH, LOGBUILP,

b. Dependent Variable: LOGREALP

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95% Confidence Interval for B		Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	-3,108	,590		-5,270	,000	-4,292	-1,924					
	LOGREGHH	,715	,138	,230	5,177	,000	,438	,992	,006	,587	,221	,925	1,081
	LOGBUILP	-,443	,056	-,394	-7,966	,000	-,555	-,331	,103	-,745	-,340	,743	1,345
	LOGREALF	,726	,154	,833	4,714	,000	,417	1,035	,860	,551	,201	,058	17,12
	LOGREALW	,257	,167	,279	1,541	,129	-,078	,591	,827	,211	,066	,056	17,96

a. Dependent Variable: LOGREALP

Coefficient Correlations[a]

Model		LOGREALW	LOGREGHH	LOGBUILP	LOGREALF
1	Correlations	LOGREALW	1,000	,105	-,205	-,960
		LOGREGHH	,105	1,000	,018	-,044
		LOGBUILP	-,205	,018	1,000	,073
		LOGREALF	-,960	-,044	,073	1,000
	Covariances	LOGREALW	2,777E-02	2,423E-03	-1,904E-03	-2,463E-02
		LOGREGHH	2,423E-03	1,908E-02	1,371E-04	-9,368E-04
		LOGBUILP	-1,904E-03	1,371E-04	3,093E-03	6,258E-04
		LOGREALF	-2,463E-02	-9,368E-04	6,258E-04	2,370E-02

a. Dependent Variable: LOGREALP

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CONCLUSION

As it is known competition policy is an integral part of industrial policy, and it is a field where economics and law cannot be thought separate of each other. This, among other reasons, is due to the economic reality of the markets which brought the need for competition laws. A well-known example of this is the US Sherman Act of 1890 that came into existence as a reaction to the railroad cartels of the time. In the European Community, on the other hand, it was needed to foster optimal market integration and Articles 85 and 86 of the Rome Treaty were the landmarks in this sense.

During the course of cumulative experience in the field, both competition law and the economic counterpart of it, industrial organization have been through consequent developments towards possible optimal policy outcomes. Moreover, the present state of affairs point to an international competition policy the draft work for which has been prepared years before, and the process continues. The world competition policy is interesting from a number of perspectives and one of them is whether the ever continuing cycle between protectionism and free market system will come to a halt or not. It remains to be observed.

On the eve of these developments, Turkey introduced a competition law starting from 1994. The policy implementations are still to be seen and it is believed that there is a need to focus on the cumulative experience of the world antitrust authorities and the specific industry cases of antitrust in this sense, if the launched policy is to be successful.

With all these ideas in mind, the present thesis aimed to focus on a specific part of competition policy, that is, collusion with a comparative approach of specific case study: the cement industry in EU, US, and Turkey.

The cement industry is not a random choice. It was chosen because with its regional markets, relatively homogenous product, and rather slow technical change it provided an optimal medium in comparison of antitrust implementations. Moreover, there was no study of the Turkish cement industry from view point of competition policy.

The first chapter indicates the legal rules in EU and Turkey concerning collusion where the parallelism between the two are highlighted and European experience is presented. Article 85 of Rome Treaty not only outlaws explicit collusion such as cartels, price-fixing, and market sharing agreements and the like but also tacit collusion. Article 85 calls tacit collusion as "concerted practices", that is, "collusive outcomes based on a 'concordance of wills' in the absence of explicit agreements" (Philips, 1995:2).

The second chapter has introduced the economic theory behind the introduced legal rules, more specifically the theory of collusion including both explicit and tacit collusion together with its game theoretic dimension. The theory of collusion does not provide only one solution but many. This is a topic which proves to be both problematic and advantageous for an antitrust lawyer and an industrial economist alike due to its many possible explanations. The key to collusion detection still lies with the economic analysis of the specific industry in question and the parameters of analysis to be established from view point of antitrust. This is clear from the cumulative antitrust experience in the US, and partially in EU. Therefore, two subsequent chapters are allocated to the antitrust experience of cement industry in EU and US in order provide an overview of the antitrust approach towards the cement industry.

In the third chapter the antitrust implementations towards the European cement industry are highlighted starting from the late 1960s until now, including the Cement Cartel decision of 1994 and the developments after that. The fourth chapter has been aiming to present the US antitrust implementations towards the cement industry. The US cement cases are significant in many ways, especially in bringing into focus the role of delivered pricing systems, and the role of industry trade organizations in sustaining collusion and cartels.

This comparative approach as regards taking into account the cumulative experience of EU and US is important from view point of analyzing the Turkish cement industry. The current analysis is made not only by taking into account the cumulative antitrust experience towards the industry and the economic arguments going with it, but also by taking into account industry specific data and structure of the Turkish cement industry. This has been challenging in many ways. Although the main industrial characteristics are the same anywhere in the world, the structure and players of the industry are naturally different. There is another challenging aspect. That is the privatization process of the industry which has been covered within the period of econometric analysis. The common and well-known problem of finding the data in econometric analysis has been a further challenge. However, a panel data between 1986-1997 have been found and computed despite the difficulties, and the econometrical modeling has been made.

The empirical analysis of the Turkish cement industry has been done in stages. First, the economic characteristics of the industry are taken into consideration. Second, the privatization process has been examined Third, the competitive structure of the industry through the medium of HHI is observed. Fourth, in order to further test the findings as regards the competitive structure, an econometrical modeling is made. The final results, which are also very much parallel with the previous empirical research regarding the cement industry indicate that approximately 25 percent of the increases in the price of cement is defined by seller concentration. This result also

makes it clear that the cement companies are able to reflect the cost increases to their prices more easily.

APPENDIX A

THEORY OF OLIGOPOLISTIC INTERDEPENDENCE AND CONTRIBUTIONS OF GAME THEORY : CERTAIN BASICS

In this part, theory of oligopolistic interdependence, and some basic concepts of game theory will be concisely presented as a supplement to the second chapter on the theory of collusion.

A.1 Oligopolistic Interdependence

An oligopoly is a market structure made up of small number of firms which is between the two extremes of monopoly and perfect competition. Theory of industrial organization / economics does not prescribe any single model of oligopoly, unlike perfect competition, monopolistic competition and monopoly models, but many. The structural and behavioral aspects of the real world markets have lead the economists to develop various oligopoly models each dealing with a certain subset of industries where conduct and performance are not so clear or evident all the time. However, there is one common concept which is applicable to these various oligopoly models, that is, the oligopolistic interdependence which stems from the consciousness of oligopolistic firms about the reactions of their rivals. This interdependence or rather the degree of it rests mainly on the number and size of the oligopolists in a particular market which implies that they will react to changes in each other's output, price, etc., accordingly.

The behavioural aspect of oligopoly brought about game theoretic analysis into industrial organization literature. The use of game theory enabled the economists to explain the strategic interaction between the firms in oligopolistic markets from a variety of perspectives as opposed to the what is called the reaction curve models or static models of oligopoly. The static models of oligopoly are well-known Cournot, Bertrand, and Edgeworth models. These models have been followed by kinked-demand curve and conjectural variations models during the course of attempts to incorporate dynamism to the traditional static models.

A.2 An Overview of Traditional Oligopoly Models

A.2.1 Cournot Model: A Basic Model in Theory of Oligopoly

Cournot model is accepted to be one of the few landmarks in the development of oligopoly theory and as the first attempt to deal with the oligopoly problem. In his famous work which was published in 1838, Cournot explained his views on a duopoly model through which he specified the rules of behaviour for two rivals. The Cournot model rests on the assumption that firms choose their outputs independently and their rivals will not respond to their choices which after a certain sequence of output choices leads to market equilibrium (Rees, 1996:23).

The Cournot equilibrium can be summarized as follows:

- each firm is aware of the fact that it has market power,

- the Cournot equilibrium is somewhere between competitive equilibrium and monopoly,

- the market elasticity of demand is directly proportional to markups at each firm, which in return is directly proportional to that firm's

market share and in parallel with efficiencies of the firms in question (Shapiro, 1989:336).

Cournot model has been subject to many criticisms and praise at the same time.[1] There are three issues to be mentioned at this stage among all these. First, it makes concrete predictions concerning output, profit and prices. Next, Cournot is believed to ask the right question in his modeling of oligopolistic behaviour. Third, Cournot equilibrium enables the economists to construct direct relationship between market structure and performance. An example of this type of efforts is the theory of industry performance gradient indexes developed by Dansby and Willig (1979). It is argued that the models which follow the Cournot tradition emphasize market concentration and market share of firms as a determinant of performance (Martin, 1993:132).

One of the first issues concerning the static models like Cournot, Bertrand,[2] and Edgeworth[3] is whether there can be strategic reactions in a static model (Shapiro, 1989:352). It is believed that the term reaction curve in the study of Cournot model is a confusing terminology for correct interpretation of Cournot equilibrium (Dixit,

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[1] See Stead et al (1996), Martin (1993), Scherer (1980), Shapiro (1989) and Daugherty (1988) for further comments on Cournot.

[2] His model rests on the same principle as that of Cournot, however, instead of output or quantity, the firms set prices. Bertrand criticized Cournot on the grounds that the process of price formation in Cournot's theory is unsatisfactory. He emphasizes the prices as strategic variables. When the firms produce homogenous products, have equal marginal costs, and the two are equally efficient, the equilibrium price is the marginal cost for each firm. Alternatively, when the constant marginal costs are identical, the assumption of constant returns to scale is employed. In such a case, the equilibrium price does not exist unless there is product differentiation. Therefore, the argument follows that in models where Bertrand tradition is pursued product differentiation is a determinant of market performance.

[3] This model follows Bertrand model in terms of identical constant marginal costs and prices being the strategic variable, however, the output capacities of the firms are fixed. This leads to a range of possibilities. The main one is the price cycles or in other words Edgeworth cycles (Rees, 1996).

1986:110). Shapiro states that "The correct interpretation is that the Cournot equilibrium point, ... is a self-enforcing or self-confirming set of actions, from which no firm would want to deviate unilaterally" (1989:352-353). Second, some economists have the tendency to introduce responses into Cournot model in order to analyze dynamic oligopoly. Since rival responses are crucial to the theory of oligopoly, this could be thought as plausible, however, it is believed that dynamic oligopoly is far too complicated as to be analyzed under Cournot reaction curves. Third is a line of research which aimed to retain the static structure of Cournot model but generalizing it by including reactions. The most obvious example of this type of attempt was aimed towards explanation of the concept of conscious parallelism. Fourth is the well-known theory of kinked demand curve,[4] and fifth is the theory of conjectural variations[5].

A.3 Continuous Strategic Interaction in Oligopoly

Stigler's influential paper "A Theory of Oligopoly" was very important in order to highlight the limitations of static oligopoly theory. He emphasized a number of factors which were significant and were not really dealt by the static models.

The gateway to the dynamic oligopoly theory is believed to involve strategic conduct of firms or, in other words, strategic interactions among the firms. The below examples of the strategic interactions will further clarify the point. However, it is important to note that the essence of these type of strategic interaction is twofold.

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[4] The model is an attempt to explain why oligopolistic firms try to avoid price cutting. The model asserts the fact that each firm assumes that an increase in its output or a reduction in price will be matched by its rivals whereas the reverse will not be. Each firm's demand curve has a kink at the initial price and the demand is more elastic to price increases than to decreases leading to certain rigidity.

[5] The model is an attempt to study strategic reactions in static homogenous product model. A single oligopolistic firm faces the problem of not having a given demand curve unlike the monopolist or a competitive firm. It needs to make decision under uncertainty concerning the reactions of its rivals. For instance, there are firms A and B in the market which are to decide about their output. A conjectural variation of zero means that there is no change in B's output as opposed to a change in A's output. If, on the other hand, the two firms collude the conjectural variation will be one and in an opposite case it will be minus one.

First, a firm makes a strategic commitment, and then, the commitment should be communicated to the rival in a credible way.

A.3.1 Stackelberg Leadership

The Stackelberg leadership constitutes the first example of what is meant by strategic interaction, and it is also known as leader-follower model. Stackelberg, by using the principle of reaction functions, tried to develop a model of oligopoly where oligopolists are not identical. If, for instance, there are two firms A and B in the market, when firm A selects its output and / or makes its pricing decision, the other firm follows with its own profit maximizing decisions on output and / or price. The leader in return is better off by taking into account the response of its rival. The Stackelberg model underlined the leader's strategic advantage, or in other words, first mover advantage.

Second example in this respect is the concept of strategic investment which has been developed mainly as the result of models that meant to study entry deterrence.

The rest of the examples can be named as follows: learning by doing; advertising; information exchange; mergers; product selection; financial structure; managerial incentive schemes; long-term contracts with customers; most favoured customer clauses; strategic manipulation of information; multi-market oligopoly; international oligopoly.

A.4 Dynamic Models of Oligopoly

Dynamic models of oligopoly constitute the greatest research activity in advanced understanding of oligopoly theory and largely depends on the contributions of game theoretic analysis, and advanced econometrics. Before giving an account of these, it is thought to be appropriate to define what is meant by the term dynamic and

the essential factors in this sense. The dynamic models of oligopoly refer to models with many periods through which the economic environment changes. Briefly, they take into account the time factor and changing conditions. One should try to understand why the oligopolistic market conditions change over time before constructing a theory about it. These are, in general, endogenous and exogenous factors which determine the changes in an oligopolistic market. Exogenous factors may include technological progress in an industry, declining demand overtime, cyclical changes and so on (Shapiro, 1989:357). Endogenous changes include the strategic conduct by oligopolists themselves like signaling, etc.

The concept of dynamic oligopoly model aims to solve the intricacies behind the strategic aspects of commitment throughout infinite time horizon. This immediately brings about choosing the main variables for that special case or industry in question. These variables, or in game theoretic terminology state variables, should measure the economic conditions at any point in time. The variables like the prices and quantities of the previously mentioned static models continue to be important in dynamic modeling as well. The reason is obvious. Pricing or output decisions of the previous periods definitely influence future settings in dynamic models.

Another important point in this respect is the strategic investment decisions especially when physical capital stocks are taken as state variables. A brief focus on industrial economics literature suggests that dynamic investment models lead particularly to the understanding of entry deterrence. Last but not least, when markets with a considerable degree of uncertainty is under question, the role of strategic information manipulation or signaling is undeniable. Then, the variables to be used in dynamic modeling will be the subsequent cost or demand parameters.

A.5. Game Theory[6] and Its Contribution to Oligopoly Theory

Starting from 1980s the usage of game theory has turned out to be very important for attempts to explain the economic phenomena in general, oligopoly and the concept of collusion in particular. Therefore, it is thought to be appropriate to introduce the game theoretic approach here. It should be noted, however, that the application of game theory into economics has a rather wide scope and an overall treatment of the subject is beyond the scope of this section.

The New Industrial Organization theory follows a conduct oriented analytical approach in explaining different economic conditions and game theory has added to it. It is commented that it is the lens of the game theory which helped a lot to understand the 'strategic competition among the few'. Game theoretical analysis is believed to provide a framework for situations in which there exists an interdependence among the firms such that the behaviour of one firm has an appreciable effect upon other firms (Vickers, 1996:4-5).

Before it is continued further, it is important to highlight what strategic means after all.

"A strategic move is one that influences the other person's choice in a manner favorable to one's self, by affecting the other person's expectations of how one's self will behave" (Schelling, 1960:150).

The theory of games was developed by von Neuman and Morgenstern. Game theory has been refined further and has taken the stage for analyzing further complications in oligopoly theory.

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[6] For a detailed research on the subject: Osborne and Rubinstein (1994), Tirole (1988), Kreps (1990), Shy (1996), Jenkinson (1996), Shapiro (1989), Fudenberg and Tirole (1989), Martin (1993) and the references therein.

A.5.1 Some of the Basic Concepts of Game Theory

Game theory is divided into two branches as cooperative game theory and noncooperative game theory, respectively.

In noncooperative game theory, the main focus is on the individual participant in the game (in this case the firm) who is trying the best possible outcome for himself (itself) given the defined rules and possibilities. On the other hand, cooperative game theory focuses on the group, or in standard terminology, the coalition. For the purposes of this section the main direction will be the noncooperative game theory which employs two distinct forms of models:

a) *Strategic form or normal form games* which are again made up of three components:

- participants or players

- for every player a possible array of strategies

- for these strategies, the possible outcomes or payoffs.

b) *Extensive form games*: where the focus is on the possible timing of actions of the players, and the information they have when taking these actions. Extensive form of games make use of nodes and vectors in analyzing a situation.

The noncooperative game theory employs two solution techniques:

a) dominance which shows what will not happen when analyzing a specific game and has two kinds:

- simple dominance

- successive dominance

b) equilibrium analysis

A key concept in game theoretical analysis is the concept of Nash equilibrium. The concept is named after the economist John Nash who remarkably contributed to the advancement of game theory in the 1950s. The origin of the concept goes back to 1830, to Cournot, who defined the equilibrium as a position in which each firm is producing its optimal output level, given the level chosen by other firm (Vickers, 1996:6).

"A Nash equilibrium is an array of strategies, one for each player, such that no player has an incentive (in terms of improving his pay-off) to deviate from his part of strategy array. ... the criterion of Nash equilibrium is that each player is maximizing on his own pay-off given the supposed actions of others" (Kreps, 1990:28).

It continues that in the analysis of economic institutions the analyst who works out a game theoretic model will very often identify a Nash equilibrium as the 'solution'. Many of the controversial arguments are centered around the multiple Nash equilibria, and whether it is a feasible analysis or not. Kreps further argues that "when economists invoke the notion of a Nash equilibrium, they are asserting at least

implicitly that the situation in question has (or will have) a self-evident way to play"
(1990:32). A common justification for the Nash equilibrium analysis holds that such
analysis is useful for making predictions in cases where the players can gather
beforehand for pre-play negotiation. In other words, the set of Nash equilibria contains
the set of credibly self-enforcing agreements that could be made. In a more game
theoretic statement; every finite game[7] has a mixed strategy equilibrium (Fudenberg
and Tirole, 1989:270).

Vickers comments that the concept of Nash equilibrium corresponds to the
idea of self-fulfilled expectations (1996:5-6). It also corresponds to the idea of tacit,
self-supporting agreement which is relevant to the discussion of problem of collusion
because if the players somehow agree to have a Nash equilibrium, that means they will
lack the incentive to deviate from the agreement. However, any other solution than a
Nash equilibrium brings forth the necessity of adhering to the agreement.

The advancement of game theory and its usage in industrial organization has
also contributed to the equilibrium concepts or static models of oligopoly. It is argued
that game theory requires a precision concerning the three sets of assumptions on
which a model is based upon (Rees, 1996:23).

The first assumption is the possibility of binding commitments. This brings us
to the formerly introduced division of the game theory. If it is possible for firms to
make legally enforceable contracts for a definite set of action among themselves, this
leads to a cooperative game. On the other hand, if such contracts are not possible, the
game is a noncooperative one. Within the theory of collusion, the former one also
corresponds to explicit collusion such as cartels, joint ventures, mergers. The latter
one then corresponds to analysis of tacit collusion which has a problematic stance of
proof from view point of antitrust laws.

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[7] Finite games are games with a finite number of normal form strategies per player and a
finite number of players.

The second assumption is the frequency of market interaction which is believed to have an ambiguous stand with static models. The static models are mainly formulated as 'one-shot games' and they explain a point in time. However, the markets are more complex to be described in a one-shot game, and if Chamberlin's idea is pursued the firms are not so myopic concerning their rivals. The discussions concerning Cournot and Bertrand models are believed to require the time factor to be involved in order to reach equilibrium. Same is true for Edgeworth cycles.

The third assumption is the way firms form their expectations of their rivals' choices. In game theory, the choices made by players should be mutually consistent within the assumption that each player is rational and try to achieve the best for himself given the choices made by other players. Here the already introduced Nash equilibrium has importance. The Nash equilibrium choices bring forth the fact that if each player knows that the other players will make their own Nash equilibrium choices, there is no reason why he should deviate from his own Nash equilibrium choice. Briefly, the static oligopoly models are thought as one-shot, noncooperative games where the Nash equilibrium is applied to reach a solution.

Finally, this section aimed at underlining certain basic theoretical grounds of collusion theory which has been presented before. The idea is to introduce the reader with basic theoretical discourse of oligopolistic interdependence and the game theory thus provide certain references on the topic for further elaboration which proved to be unfeasible within the second chapter due to its concise nature.

APPENDIX B

TABLE OF COURT CASES

Judgments of the European Court of Justice and the Court of First Instance,

US Court Decisisons

(organized by year)

US Cases

APPENDIX C

TABLE OF EU COMMISSION DECISIONS

(organized by year)

1982

1984

1985

<u>1994</u>

APPENDIX D

TABLE OF COMMISSION REGULATIONS AND NOTICES

Regulations (in chronological order)

Commission Notices

APPENDIX E

Cement Factories in Turkey

EGE DENİZİ

AK DENİZ

KARA DENİZ

Rumeli Li-tapaşa

Set Trakya

Akçansa (Çanakkale)

[Büyükçekmece] Akçansa

Çimentaş

Batıçim

Öztüre

Batı Söke

Set Balıkesir

Bursa Set Anadolu

Marmara Çimento

Lafarge Aslan

İkon Ltd

Nuh

STFA

Modern Denizli

Eskişehir

Set Afyon

Adoçimento

Göltaş

Özgür Beton

Oyak Bolu

Lafarge Ereğli

Rumeli Bartın

Rumeli Bartın

Yıbıtaş Lafarge Hasanoğlan

Yıbıtaş-Lafarge Çorum

Yıbıtaş-Lafarge Samsun

Konya Vicat

Rumeli Ladik

Oyak Ünye

Set Ankara

Baştaş Vicat

Yıbıtaş Yozgat

Çimsa

Oysa Niğde

Yıbıtaş-Lafarge Nevşehir

Oysa İskenderun

Oyak Adana

Çim Kayseri

Yıbıtaş-Lafarge Sivas

Rumeli Gaziantep

Adıyaman

OYAK-OAMA Elazığ

Preton Gümüşhane

Rumeli Trabzon

Rumeli Şanlıurfa

Oyak Mardin

Rumeli Ergani

Çarı Çimento Kurtalan

Aşkale Erçimas

Çimentaş Kars

Rumeli Van

N

| | Cement Factories | ● |
| | Cement Grinding Plants | ○ |

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