

## CPB Document

**No 29**

February 2003

### **Tight Oligopolies**

In Search of Proportionate Remedies

**Marcel Canoy and Sander Onderstal**

CPB Netherlands Bureau for Economic Policy Analysis  
Van Stolkweg 14  
P.O. Box 80510  
2508 GM The Hague, the Netherlands

Telephone +31 70 338 33 80  
Telefax +31 70 338 33 50  
Internet [www.cpb.nl](http://www.cpb.nl)

ISBN 90-5833-122-9

## Contents

Preface	5
Samenvatting (summary in Dutch)	7
I Introduction	11
1.1 The definition of a tight oligopoly	12
1.2 Outline of the report	13
PART I. General Analysis	15
2 Tight oligopolies and welfare: theory	17
2.1 Welfare	18
2.2 Oligopoly models	22
2.3 Structural characteristics of tight oligopolies	27
2.4 Behaviour conducive to a tight oligopoly	34
2.5 Countervailing power	39
2.6 Conclusions	42
3 Tight oligopolies and welfare: empirics	45
3.1 Field studies	45
3.2 Laboratory experiments	48
3.3 Tight oligopolies in practice	52
3.4 Conclusions	54
4 Policy responses to tight oligopolies	55
4.1 Market failure versus government failure	55
4.2 Preventing tight oligopolies	56
4.3 Treatment of the symptoms of a tight oligopoly	62
4.4 Curing tight oligopolies	65
4.5 Conclusions	68
PART II. Cases	71
5 A diagnostic approach	73
5.1 Step 1: The set of connected markets	73
5.2 Step 2: Structure of and behaviour on the set of connected markets	75
5.3 Step 3: Assessment of structure and behaviour	75

5.4	Step 4: Countervailing powers	75
5.5	Step 5: Proportionate remedies	76
6	Prevention	77
6.1	Merger control: the Airtours case	77
6.2	Health care	84
6.3	Conclusions	90
7	Treatment of symptoms	91
7.1	Retail banking	91
7.2	Mobile telecommunications	100
7.3	Conclusions	106
8	Cure	109
8.1	Petrol	109
8.2	Radio frequencies	116
8.3	Conclusions	122
9	Conclusions	125
	Abstract	128
	Literature	129

## **Preface**

A substantial part of European GDP is being produced in markets with only a few firms, so-called ‘oligopolies’. Complaints appear on a regular basis in the media about underperforming oligopolies which ‘systematically charge unfair prices or deliver their products with too low quality’. Are these complaints justified? What could governments do about it? Is it sufficient to rely solely on competition law, or does the government have other instruments at its disposal?

The study was written by Marcel Canoy and Sander Onderstal. They thank Marja Appelman for her contribution to section 6.2. Comments by Eric van Damme, Hendrik Jan Heeres, Emiel Maasland, Max van der Meer, Maarten Pieter Schinkel, Martijn Snoep, Robert Stil, Leonard Thijssen, and several CPB colleagues are highly appreciated. Talks with Hans-Theo Normann, Theo Offerman, and Nick Bardsley have substantially improved the section on laboratory experiments. The authors are especially grateful to Jan-Kees Winters and Vincent Verouden for detailed comments that led to many improvements.

Henk Don, Director of the CPB



## Samenvatting (summary in Dutch)

1. Een flink deel van het Europese Bruto Nationaal Product wordt voortgebracht door sectoren waarin slechts een paar bedrijven actief zijn, zogeheten oligopolies. Het gaat hier om belangrijke bedrijfstakken zoals de benzinemarkt, de energiesector, de bankensector en de markt voor mobiele telecommunicatie. Er wordt vaak geklaagd over het gedrag van deze oligopolisten. Op verzoek van het Ministerie van Economische Zaken heeft het CPB een analyse gemaakt van zogeheten 'tight oligopolies'. Dit zijn oligopolies, waar de randvoorwaarden zodanig zijn dat er een reëel gevaar voor welvaartsverminderend gedrag van bedrijven is. Het CPB heeft ook onderzocht welke beleidsopties voor handen zijn om dergelijk gedrag aan te pakken. De belangrijkste bevindingen zijn:
2. Bedrijven in een 'tight oligopoly' hebben de mogelijkheid en de prikkel om langdurig welvaartsverminderend te opereren. De vraag die centraal staat in dit rapport is welke instrumenten beleidsmakers tot hun beschikking hebben tegen welvaartsverminderend gedrag van oligopolistische bedrijven.
3. Een 'tight oligopoly' wordt gekenmerkt door een gering aantal marktpartijen en hoge toetredingsdrempels. In theorie zijn er dan twee manieren waarop bedrijven welvaartsverminderend gedrag kunnen vertonen. (1) Bedrijven stemmen hun gedrag af. Ze spannen samen als het gaat om prijzen of productiecapaciteit, of verdelen de markt onderling. Er hoeven niet per se expliciete afspraken gemaakt te worden om samenspanning tot stand te brengen, zo lang bedrijven maar de mogelijkheid hebben om afwijkingen van concurrenten te observeren en te bestraffen. (2) Welvaartsverminderend gedrag vindt plaats zonder afstemming. Bij gebrek aan concurrentie loont het bijvoorbeeld om een concurrent van de markt te werken.
4. Bedrijven kunnen een 'tight oligopoly' tot stand brengen of versterken door zelf invloed uit te oefenen op de marktstructuur. Zo kunnen zij door een fusie het aantal partijen in de markt verminderen om zo hogere prijzen te kunnen afdwingen. Andere mogelijkheden zijn (1) het aangaan van verticale banden met bedrijven in de bedrijfskolom, (2) het verhogen van zoek- en overstapkosten voor consumenten, (3) het verhogen van toetredingsbarrières, en (4) het aangaan van een prijsoorlog om een concurrent uit de markt te prijzen.
5. Het rapport besteedt ook aandacht aan de vraag wat uit empirische kennis kan worden afgeleid. De ondersteuning voor de bovenbeschreven theorie is niet overweldigend. Onderzoeken onder het Structure-Conduct-Performance paradigma vinden slechts een zwakke relatie tussen facetten van de marktstructuur (zoals het aantal bedrijven) en de uitkomst van de markt (zoals de prijzen en de winsten). Studies in het modernere Nieuwe Empirische Industriële Organisatie vinden dit verband wel, maar slechts voor een handvol specifieke markten. Het is nog niet mogelijk wetenschappelijk

verantwoorde conclusies te trekken over markten in het algemeen. Wel bevestigen laboratoriumexperimenten een groot gedeelte van de theorie, zoals de negatieve relatie tussen het aantal marktpartijen en de prijs.

6. Omdat per definitie bedrijven in een 'tight oligopoly' langdurig welvaartsverminderend kunnen optreden, kan overheidsingrijpen zinvol zijn. Dat laatste hoeft echter lang niet altijd zo te zijn. Soms zijn de problemen tijdelijk van aard, bijvoorbeeld doordat innoverende bedrijven tot de markt toetreden. In andere gevallen wordt de macht van een 'tight oligopoly' ingeperkt door acties van consumentenorganisaties. Ook kan het zijn dat overheidsingrijpen gepaard gaat met hoge kosten, of met een grote kans op overheidsfalen. Zo kan te zwaar overheidsingrijpen leiden tot ongewenste neveneffecten, zoals het verdwijnen van prikkels voor bedrijven om te investeren of te innoveren.
7. Als de overheid ingrijpt, kan zij dat op drie manieren doen. Ten eerste kan ze soms *voorkomen* dat een 'tight oligopoly' ontstaat, bijvoorbeeld via fusiecontrole van de NMa of de Europese Commissie. Wanneer de overheid een markt liberaliseert, ontstaat een goed moment om te verhinderen dat een 'tight oligopoly' tot stand komt. In de tweede plaats kan de overheid een 'tight oligopoly' *genezen*. Dat kan zij onder meer doen door toetredingsbarrières te verlagen, bijvoorbeeld via het periodiek herverdelen van licenties om in de markt te mogen opereren. De derde optie is om de *ongewenste gevolgen te bestrijden*. Als voorkomen en genezen niet mogelijk is, of gepaard gaan met te hoge maatschappelijke kosten, kan de overheid een 'tight oligopoly' tolereren, en slechts het meest ernstige welvaartsverminderend gedrag aanpakken bijvoorbeeld met de Mededingingswet.
8. Het rapport licht elk van de drie de beleidsopties toe aan de hand van twee cases. Deze cases worden gestructureerd aan de hand van een stappenplan dat is ontwikkeld voor het systematisch analyseren van oligopolies.
9. Onder het kopje 'voorkomen' bestuderen we zorgverzekeraars in Nederland en de fusie tussen touroperators in het Verenigd Koninkrijk. In 2002 kwam het Hof van Eerste Aanleg tot de conclusie dat de Europese Commissie niet overtuigend had aangetoond voldoende reden te hebben om de fusie tussen de Britse touroperators Airtours en First Choice te verbieden. In deze case analyseren we (1) de relatie tussen de economische term 'tight oligopoly' en de juridische notie 'collectieve dominantie', (2) waarom het soms lastig is voor het fusietoezicht om te voorkomen dat een 'tight oligopoly' ontstaat, en (3) welke andere instrumenten de overheid kan inzetten om het fusietoezicht aan te vullen. Bij de case over zorgverzekeraars benadrukken we dat het liberaliseren van een markt een goede gelegenheid vormt om te voorkomen dat een 'tight oligopoly' ontstaat. We geven aan dat het verhogen van transparantie voor consumenten daarbij een mogelijk instrument is.



10. Bij het 'bestrijden van ongewenste gevolgen' besteden we aandacht aan de bankensector in Nederland en de markt voor mobiele telecommunicatie in Finland. De bankensector in Nederland is waarschijnlijk een 'tight oligopoly': de markt wordt gedomineerd door vier grote banken, die ook nog eens zijn verwickeld in verschillende structurele verbindingen. Bovendien is toetreding tot de markt niet eenvoudig. We behandelen ook een juridische casus die in 1999 speelde in Finland. Een klein telecombedrijf kon zijn diensten niet uitbreiden omdat het te hoge prijzen zou moeten betalen voor toegang tot het netwerk van de twee grootste bedrijven in markt. Het kleine bedrijf claimde dat dit in strijd was met de Finse Mededingingswet. Een Finse rechter wees dat echter van de hand. We gaan na of deze afwijzing economisch hout snijdt, en wat de Finse overheid had kunnen doen om meer concurrentie in de markt te garanderen.
  
11. Tot slot beschouwen we twee markten die de Nederlandse overheid in de nabije toekomst hoopt te 'genezen': benzine en commerciële radio. De benzinemarkt is al jaren een 'tight oligopoly': de markt wordt gedomineerd door vier grote partijen en toetredingsbarrières zijn hoog. Het genezingsproces loopt nu via de benzineveiling. Deze veiling kan toetreding stimuleren en daarmee op termijn de 'tight oligopoly' genezen. De laatste case gaat over de radiomarkt. Deze markt is uitzonderlijk omdat (1) consumenten niet (direct) betalen voor het 'goed' en (2) culturele diversiteit een belangrijke maat is voor het succes van de markt. De huidige commerciële radiostations staan echter niet garant voor voldoende culturele diversiteit. De overheid probeert dat vanaf 2003 wel te bereiken door in een vergelijkende toets alle commerciële radiokanalen te herverdelen. Een andere rol van de publieke radio kan daarnaast ook het overwegen waard zijn.
  
12. Een belangrijke conclusie is dat de NMa vaker gebruik zou kunnen maken van de mogelijkheid een hele sector onder de loep te nemen, zonder dat er sprake is van een lopende zaak tegen een van de bedrijven in de sector. Momenteel heeft de mededingingsautoriteit onderzoek op stapel staan voor de financiële sector, de energiesector en de CD-handel. De overheid kan dan met voldoende inzicht in een markt op maat gesneden ingrijpen in een (potentieel) 'tight oligopoly'.



## 1 Introduction

A substantial part of European GDP is being produced in markets with only a few active firms, so-called 'oligopolies'. Manufacturing, financial services, transport and energy, retailing, hospital services, the media, have all been subject to significant concentration tendencies in recent history, typically achieved through merger activity.<sup>1</sup> This may be a concern for policy makers, as the outcome of interaction in oligopolistic markets may not be optimal from a welfare point of view: it may be easier for firms in an oligopoly to sell their products at high prices and/or with low quality than in a market form in which many firms are active. Therefore, oligopolies deserve special attention from competition authorities and policy makers.

A potential for welfare reducing actions does not imply that policymakers have to intervene. A number of apparently less competitive outcomes are the result of smart innovations, business cycle effects, temporary market power, risk premiums for stranded assets or just luck. If one of these phenomena lies at the heart of a non-competitive outcome, policy measures run the risk of being counterproductive. First of all, the suboptimal welfare outcomes are likely to be temporary, so the problem can solve itself, and secondly, policy could seriously hamper incentives to invest or innovate.

Nevertheless, policy measures can be appropriate if oligopolies have certain structural characteristics, such as high entry barriers and a low number of firms, so that the probability of welfare reductions is high. Because of the risks of policy being counterproductive, it is appropriate to analyse under what conditions which policy measure is proportionate to the problem involved.

Counteracting potential welfare reductions by oligopolists is typically the policy area of competition law. Competition law has been designed to prevent serious welfare reducing actions by firms, such as cartel agreements, and to punish such actions when they occur. Competition law can also block mergers if the merging parties threaten to become too powerful. However, competition law has not been designed to counteract all possible welfare reducing actions. First of all, for reasons explained above, not all welfare reducing actions require countermeasures, and secondly, legal solutions are not always the best solutions. Competition law bears similarities to criminal justice. Villains must be punished, but many deviations from optimal behaviour by civilians (such as being rude) is best left untouched or counteracted by other policy measures than legal actions (such as education).

To do justice to the policy trade-off (intruding versus laissez faire), we call optimal policy responses to deviations 'proportionate remedies'. This study provides a methodology to analyse oligopolies, in order to identify these proportionate remedies. More specifically, this report's target is to answer the following questions:

<sup>1</sup> See e.g., Cowling (2002).

1. *Under which circumstances do oligopolistic firms have the possibility to reduce welfare?*
2. *What can policy makers do against possible welfare reducing behaviour by oligopolistic firms?*

In order to answer these questions, we will concentrate on a special class of oligopolies which we call ‘tight oligopolies’. The next section discusses the definition of a tight oligopoly that we will use throughout the report. Section 1.2 provides the set-up of the report.

## 1.1 The definition of a tight oligopoly

We have not found a proper definition of a tight oligopoly in the economic literature. We define it as follows:

*A tight oligopoly is an oligopoly of which the market characteristics facilitate the realisation of supranormal profits for a substantial period of time.*

‘Supranormal profits’ refers to a profit level that exceeds a ‘fair’ rate of return on capital invested. A ‘fair’ rate of return is a profit level that is market conform relative to the firm’s risk profile. In contrast, a ‘normal’ profit level is a fair rate of return on capital invested, and hence does include some degree of profits as they are commonly perceived. The term ‘facilitate’ indicates that firms do not necessarily gain supranormal profits, but that it is easier due to the market characteristics. It is ‘easier’ in the statistical sense, i.e., the probability that one observes welfare reducing actions in a tight oligopoly is higher than on a more competitive market.<sup>2</sup> However, we stress that welfare reducing actions are not intrinsic to all tight oligopolies. A tight oligopoly refers to structural characteristics of the market and therefore only to the *feasibility* of welfare reducing behaviour. In other words, there may exist tight oligopolies in which competition is fierce. Finally, ‘substantial period of time’ is an important addition. We are interested in oligopolies in which the market structure, without government intervention, will be stable for a number of years.

The reason why we are interested in tight oligopolies is a practical one. It is much easier to identify market characteristics than to prove that a firm’s behaviour is anti-competitive. Moreover, one can identify market structure ex-ante, whereas behaviour can only be punished after it occurs. It is not feasible for policy makers to systematically counteract welfare reducing actions without a practical search device. Identifying the characteristics leading to a tight oligopoly provides such a search device.

The term ‘tight oligopoly’ is used in several official documents. For instance, in the Gencor/Lonrho judgement,<sup>3</sup> the Court of First Instance announced that:

<sup>2</sup> It turns out to be difficult to empirically test this hypothesis in a formal way. See however chapter 3 for other empirical tools to back this up.

<sup>3</sup> Case T-102/96 Gencor v. Commission [1999] ECR II 753

‘there is no reason [...] in legal or economic terms to exclude from the notion of economic links the relationship of interdependence existing between the parties to a *tight oligopoly* within which, in a market with the appropriate characteristics, [...] those parties are in a position *to anticipate one another’s behaviour* and are therefore strongly encouraged to *align* their conduct in the market, in particular in such a way as to maximise their joint profits by restricting production with a view to increasing prices.’

(See Judgement para. 276; italics are ours.)

Our definition considers a larger class of oligopolies than the definition given in the Gencor/Lonrho judgement.<sup>4</sup> Why? (1) Our definition not only considers behaviour that leads firms ‘to maximise their joint profits’, but also includes behaviour that leads to supranormal profits which perhaps do not maximise firms’ total profits. (2) Our definition does not presume that firms need ‘to anticipate one another’s behaviour’. We will acknowledge that this is important if firms desire to co-operate one way or the other in order to realise supranormal profits. However, even without co-ordination, firms may obtain profits that are higher than what is considered a fair rate of return. (3) Our definition does not imply that firms need to be strongly encouraged ‘to align their conduct in the market’. In other words, we do not include in our definition how firms realise supranormal profits, but we only say that they have the opportunity to do so.

The reason why we use a different line than the European Commission is that we do not focus on competition law alone. Quite the contrary, solving problems in tight oligopolies is often more effective and less intrusive using other instruments than competition law, such as reducing entry barriers, consumer policy, and (light) regulation.

## 1.2 Outline of the report

This report consists of two parts.

Part I will give general answers to the above mentioned research questions:

1. *Under which circumstances do oligopolistic firms have the possibility to reduce welfare?*

We will explain why in tight oligopolies, the outcome of interaction on the market may be suboptimal from a welfare point of view. Moreover, we will distinguish several structural market characteristics that are typical for tight oligopolies. For instance, a low number of firms and high entry barriers are essential elements of tight oligopolies. We will illustrate these findings by giving a list of sectors in the Netherlands in which there are few firms and high entry barriers. Also, we

<sup>4</sup> The fact that the term ‘tight oligopoly’ occurs in this legal judgement does not imply that one has to attach a lot of (legal) weight to it. It may very well be an innocent translation from a French text without any intention to properly define a tight oligopoly.

will see that the firms themselves may have an influence on the market structure, so that they may be engaged in behaviour that creates conditions for the oligopoly to become or to stay tight. Finally, we will discuss several sources of countervailing power that may mitigate the market power of tight oligopolies.

2. *What can policy makers do against possible welfare reducing behaviour by oligopolistic firms?*

We have already stressed that the existence of tight oligopolies in itself does not imply welfare reductions, and that the government should be cautious when intervening in rapidly changing markets. Yet, economic theory points to many opportunities for firms in a tight oligopoly to reduce welfare. Hence, if there are plausible alternatives, tight oligopolies are better avoided. The government has three possibilities to do so: (1) The government may *prevent* markets from becoming tight oligopolies, for instance by punishing anti-competitive behaviour that is aimed at creating entry barriers. (2) The government may *cure* a market that is a tight oligopoly, for example by directly reducing entry barriers. (3) Sometimes neither policy options are possible. In that case, the government may *treat the symptoms*, for instance by using competition law or by regulating the market.

Part II will illustrate the lessons from Part I in six cases. We will start this part by defining a ‘diagnostic approach’ that can be used by the government to analyse tight oligopolies in a systematic way. The remainder of Part II will stick closely to the three policy types we will define in Part I. Cases related to the Airtours/First Choice merger case and health insurers will illustrate how the government could prevent markets from becoming tight oligopolies. Tight oligopolies in mobile telecommunication and the banking sector will give a detailed description about ‘treatment of symptoms’. Finally, we will discuss the government’s plans to ‘cure’ the petrol market and the radio market. We will point the reader to several lessons for policy against welfare reducing behaviour by tight oligopolies that can be drawn from these cases.

## **PART I. General Analysis**

Part I contains a general theoretical and empirical analysis of tight oligopolies. This part is organised as follows. Chapter 2 will explain why in tight oligopolies, the outcome of interaction on the market may be suboptimal from a welfare point of view. Moreover, we will distinguish several structural market characteristics that are typical for tight oligopolies. Doing so, we will make a distinction between ‘unilateral effects’ (oligopolistic firms realise supra-normal profits without co-ordinating their strategies) and ‘co-ordinated effects’ (oligopolistic firms realise supra-normal profits by co-ordinating their strategies). A low number of firms and high entry barriers turn out to be essential market characteristics for both unilateral effects and co-ordinated effects. Also, we will see that the firms themselves may have an influence on the market structure, so that they may be engaged in behaviour that creates conditions for the oligopoly to become or to stay tight. Finally, we will discuss several sources of countervailing power that may mitigate the market power of tight oligopolies.

Chapter 3 includes a small survey of empirical studies. It will answer a natural question that arises immediately after the analysis in chapter 2: is there sound empirical evidence which confirms the relationship between specific market characteristics and the potential for unilateral and co-ordinated effects? We have indeed found some evidence in field studies and laboratory experiments, but further investigation seems to be needed in order to confirm the entire theory of chapter 2. We will finish chapter 3 by giving a list of sectors in the Netherlands in which there are only a few strong firms and high entry barriers. Only a more detailed investigation of these sectors could reveal whether these sectors are indeed tight oligopolies. Still, the list gives the reader a rough idea about which types of markets may be considered tight oligopolies.

Chapter 4 will discuss policy instruments the government could use to tackle actual or to avoid potential welfare reducing behaviour by tight oligopolies. We will start this chapter by stressing that the government should be cautious when intervening in rapidly changing markets. Still, if there are plausible alternatives, anti-competitive behaviour by tight oligopolies is better avoided. The government has three possibilities to do so: (1) The government may prevent markets from becoming tight oligopolies, for instance by punishing anti-competitive behaviour that is aimed at creating entry barriers. (2) The government may ‘cure’ a market that is a tight oligopoly, for example by directly reducing entry barriers. (3) Sometimes both policy options are not possible. In that case, the government may ‘treat the symptoms’, for instance by using competition law or by regulating the market.





## 2 Tight oligopolies and welfare: theory

According to the definition in Chapter 1, a tight oligopoly has a market structure which facilitates the realisation of supranormal profits for a substantial period of time. As said, this does not necessarily mean that tight oligopolies are a bad thing. In particular, it does not imply that firms in a tight oligopolies violate the competition law. Sometimes there is no legal or technical alternative for a tight oligopoly. Sometimes, competition will be fierce despite the presence of competition softening circumstances. However, when firms in a tight oligopoly do realise supranormal profits for a substantial period of time, there is reason for concern and, possibly, government actions. For these reasons the following questions need to be addressed:

- *Which oligopolies are tight?*
- *Under which conditions are tight oligopolies welfare reducing?*

The first question is related to market structure, the second to the implications of this market structure on welfare. In other words, which market circumstances facilitate the realisation of supranormal profits for a substantial period of time? And, when should we worry about these market circumstances?

In this chapter, we address both questions using results from economic theory. The starting point of our analysis is the relationship between supranormal profits and market prices. Firms can realise supranormal profits for a substantial period of time only if they can sustain high prices (or, equivalently, low quantity or low quality). Therefore, we look at the outcome of theoretical models of oligopolistic interaction in terms of the market price. We concentrate on the following 3 benchmark levels:

$P_{MC}$  Marginal cost price: price equal to marginal costs

$P_C$  Competitive price: price leading to normal profits

$P_M$  Monopoly price: price at which a (hypothetical) monopolistic firm maximises its profit

When we speak about ‘high prices’, we refer to prices above the competitive level, i.e., prices exceeding the competitive price  $P_C$ . By definition, high prices lead to supranormal profits for the firms.

In the remainder of this chapter, we focus on the following questions that are closely related to the above mentioned questions:

1. How is welfare defined? How are above price levels related to welfare?
2. Which prices are predicted under which circumstances by economic theory?
3. Under which market structure do firms have the possibility to sustain high prices for a substantial period of time?
4. How can a firm's conduct have an influence on market structure in such a way that (1) the market becomes a tight oligopoly and (2) the market remains a tight oligopoly?
5. What are sources of countervailing power against welfare reducing behaviour by tight oligopolies?

These questions are the subject of sections 2.1-2.5.

## 2.1 Welfare

Before we can address questions on the relationship between prices and welfare, we have to define welfare. Oligopolistic firms contribute to welfare by generating both consumer surplus and producer surplus. Consumer surplus is realised when products satisfy consumer needs (relative to the price they pay). Producer surplus is equivalent to the profit of the firms. For the sake of simplicity, we assume that total welfare is the sum of consumer surplus and producer surplus.<sup>5</sup>

It is common to discuss welfare in terms of static and dynamic efficiency. Static efficiency is related to total welfare *ignoring investments in product or process innovation*. In other words, for static efficiency we fix the firms in the market, technology, production capacity, and so forth. Static efficiency is optimal in the case of maximal allocative efficiency (production output satisfies demand as much as possible given the current production technology and production capacity) and maximal productive efficiency (production output is produced in the least expensive way given the available set of production technologies). Dynamic efficiency is a measure for improvements in total welfare *generated by better products and improved production techniques*.

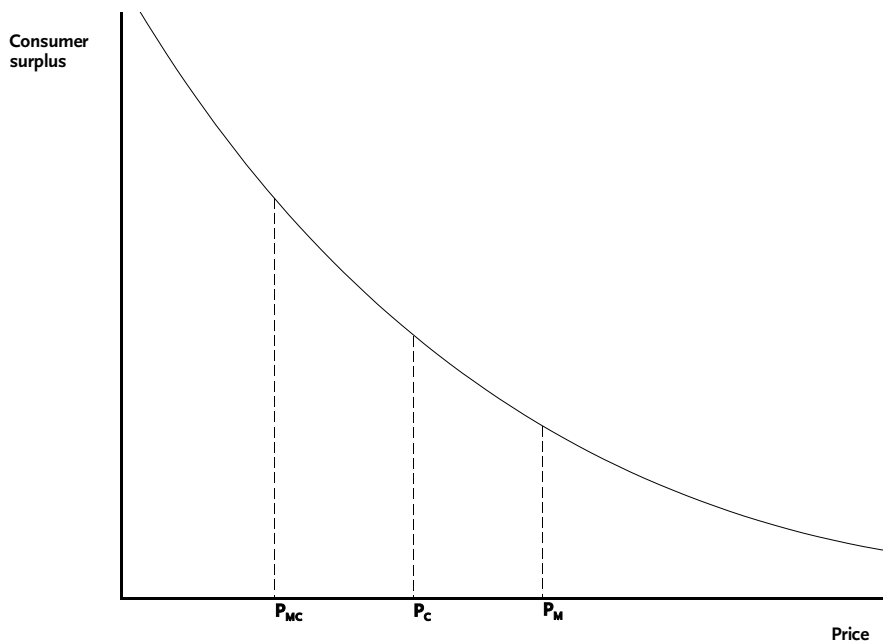
<sup>5</sup> We ignore some important issues here which fall outside the scope of this report. For instance, the distribution between consumer surplus and producer surplus is a political question. To bypass this problem it is sometimes easier to use consumer surplus in the long run as a crude approximation of welfare, since that more or less includes producer surplus, i.e. if producers cannot innovate, consumers will suffer as well. Moreover, we completely ignore externalities. It may be optimal from a welfare point of view if a certain market with high negative externalities (e.g., because of high levels of pollution) is served by a profit maximising monopolist as his price may be exactly equal to the marginal social costs.

### 2.1.1 Static efficiency

How is static efficiency related to prices? Figures 2.1-2.3 give a possible relationship between the above defined price levels the marginal cost price  $P_{MC}$ , the competitive price  $P_C$ , and the monopoly price  $P_M$  on the one hand, and consumer surplus, producer surplus, and total surplus on the other. Note that we have assumed that  $P_{MC} < P_C < P_M$ . Other rankings are possible as well, but for our purposes it is sufficient to illustrate our point using this example.

From figures 2.1-2.3, the following becomes clear. First of all, not surprisingly, the higher the price, the lower is consumer surplus. Secondly, producer surplus increases with the price, until the monopoly price  $P_M$ , and decreases for prices above  $P_M$ . Thirdly, total surplus reaches its maximum at the point where the price is equal to the firms' marginal costs, i.e.,  $P_{MC}$ . Still, we cannot conclude that the marginal cost price  $P_{MC}$  is optimal. Why not? Firms are probably not willing to produce goods if only their marginal costs are covered, as they are not compensated for their fixed costs. They will only produce if they can at least obtain a normal profit, i.e., a profit level that includes a 'fair' rate of return on capital invested.<sup>6</sup> In other words, firms will only produce if the price is at least equal to the competitive price  $P_C$  (as can be seen in figure 2.2). Given that firms should at least obtain normal profits, the competitive price  $P_C$  is optimal.<sup>7</sup>

Figure 2.1 A relationship between prices and consumer surplus



<sup>6</sup> A 'fair' rate of return is a profit level that is market conform relative to the firm's risk profile.

<sup>7</sup> The outcome is second best. In a first best world, firms produce at marginal costs, and are compensated with a lump sum transfer so that they obtain normal profits.

Figure 2.2 A relationship between prices and producer surplus

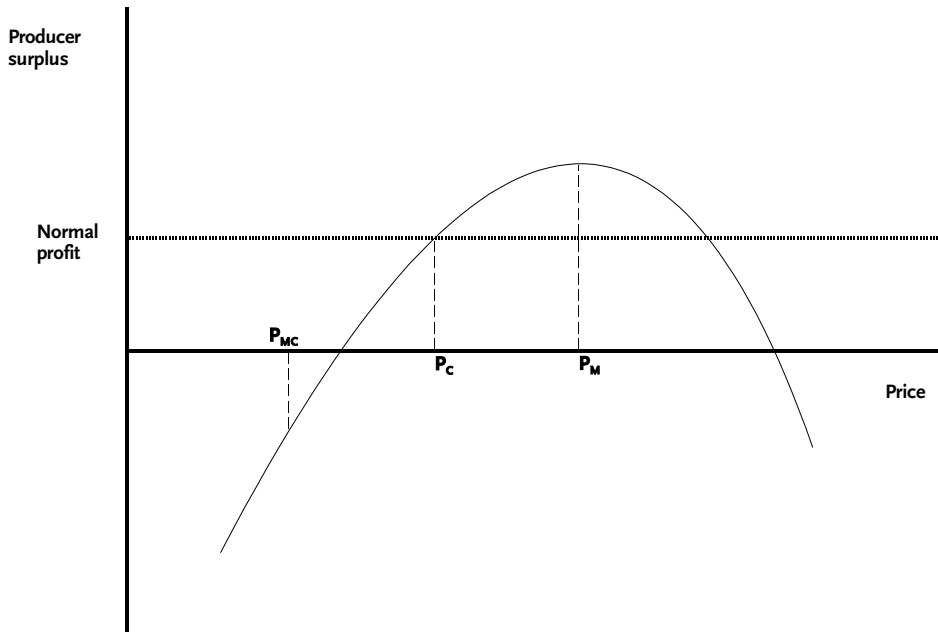
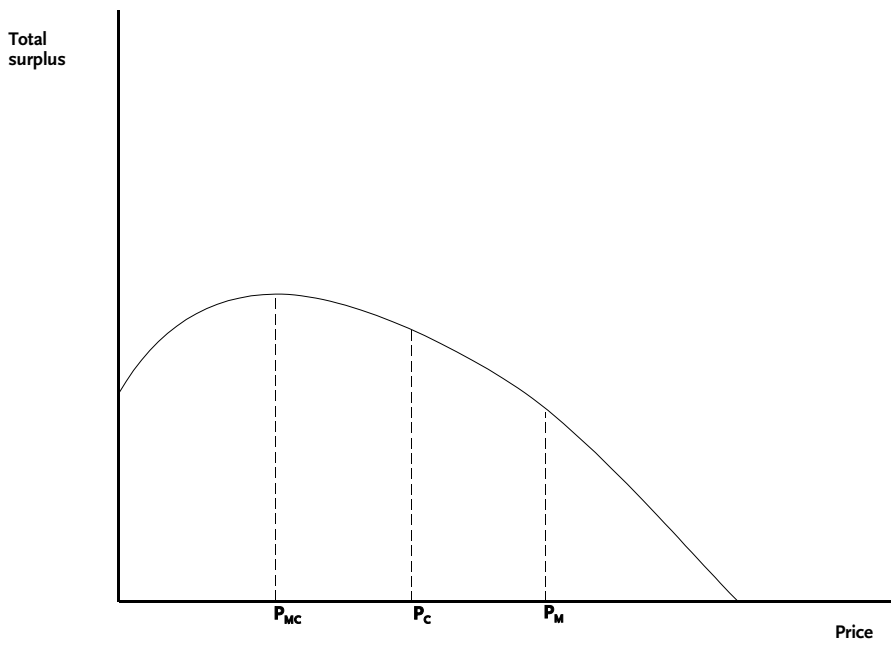


Figure 2.3 A relationship between prices and total surplus



### 2.1.2 Dynamic efficiency

Consumers are not only interested in the products offered today, but also in (1) newly introduced products, and (2) products with better quality. In other words, it makes sense not only to consider static efficiency, but also to take into account dynamic efficiency.

As said, dynamic efficiency is a measure for improvements in total welfare generated by better products and improved production techniques. It is not easy to properly measure dynamic efficiency, since it consists of several elements that are hard to compare or aggregate. However, there are some factors that play a role, including:

- Introduction of new products and services ('product innovation')
- Improvement of production technologies ('process innovation')
- Quality of products and services
- Level of R&D expenditures

Dynamic efficiency is maximised if all these factors are set at an optimal level.

What complicates matters is that high dynamic efficiency does not necessarily mean that static efficiency is high in all periods of time. High static efficiency implies that firms obtain no more than normal profits. In a state of low static efficiency, firms realise supranormal profits. This means that they have more resources available than in a state of high static efficiency. These resources may be used for investment in product innovation, process innovation, or quality improvements of products, resulting in a state of high dynamic efficiency.<sup>8</sup>

In addition, firms have higher incentives to invest, the higher the profits they can realise with their investment. A firm may only be willing to develop a new product if it is granted a patent for a substantial period of time or, more general, if it capitalizes on its investments by high returns. During this period of high returns, static efficiency is lowered. It follows that one has to find a balance between the merits dynamic efficiency (e.g., in terms of the incentives for innovation) and the losses in static efficiency.<sup>9</sup>

<sup>8</sup> This argument relies on the assumption of imperfectly operating capital markets. With a perfect capital market, firms can borrow money in the market if they have a profitable investment opportunity, so that investment levels do not depend on profits realised in the past.

<sup>9</sup> See Cabral (2000) for a more detailed discussion about static and dynamic efficiency. See Bennett et al. (2001) for an application to telecommunication markets.

## 2.2 Oligopoly models

Under which circumstances can oligopolies sustain high prices for a substantial period of time? In this section, we discuss the outcomes of several theoretical models in terms of static efficiency. We will see that (1) low number of firms, (2) high entry barriers, (3) heterogeneous products, and (4) 'Cournot' interaction may cause low static efficiency.

Observe that we ignore factors that have an influence on dynamic efficiency, such as product innovation and process innovation. Several economists claim that there is an inverted-U relationship between market concentration and innovation.<sup>10</sup> This implies that there may be a trade-off between static efficiency and dynamic efficiency, as for static efficiency it could be optimal to have the market serviced by many firms, whereas dynamic efficiency requires just a few. For the sake of simplicity, we will ignore this issue in this chapter. Later in the report, we will argue that innovation can act as a countervailing factor against potentially welfare reducing behaviour by oligopolistic firms.

### 2.2.1 The Bertrand model with homogeneous products

Economic theorists usually model the interaction of oligopolistic firms as a game. In an oligopoly game, the players are the firms, which interact choosing business strategies. The Bertrand game serves as an important benchmark model for oligopolistic interaction. In the model, a firm's business strategy consists of the choice of the price of that good.

In the case of perfectly Homogeneous goods, the Bertrand model predicts that oligopolistic firms make no profit. The reason for this is that consumers only buy the good from the cheapest firm, as the good is Homogeneous. The firms will be involved in 'a race to the bottom' to attract all consumers, resulting in a price that leaves them no profit. This finding is called 'the Bertrand paradox', as even in a seemingly very concentrated industry of only two firms, the firms cannot exploit market power as they do not make any profits.

The following anecdote shows how harmful Bertrand competition might be for firms:<sup>11</sup>

"During a price war between two petrol stations in Winnipeg, Mr Hafy Carnet reduced his gasoline price to from 50 cents to 10 cents a litre, whereupon Mrs Sharon Willard, his neighbour, cut her gasoline to 1.6 cents a litre. Police were called when, having lost three hundred customers, Mr Carnet "who completely forgot the rules of the market", announced through a loud-hailer that he would pay 3 cents to anyone who filled their tank at his pumps."

<sup>10</sup> See e.g., Aghion et al., (2002).

<sup>11</sup> This anecdote was published in the Toronto Star of 30.8.1983. Quote taken from Dixon (1987).

Despite this appealing story, the Bertrand model has not been built as an attempt to be a proper approximation of reality. Rather, the Bertrand outcome serves as a useful benchmark, or a polar case. As the following section shows, when the assumptions underlying the Bertrand outcome are relaxed, less extreme outcomes can be expected.

### 2.2.2 The Cournot model

In contrast to the Bertrand model, a firm's business strategy in the Cournot model is the choice of the quantity (i.e., output) of the product to be put on the market rather than its price level. The market price depends on the quantity choices of all firms in the market. In contrast to the Bertrand model, firms do not have an incentive to be involved in a race to the bottom. It turns out that firms choose their output such that the market price is above marginal costs, but below the monopoly profit.

Cournot interaction leads to prices above marginal cost. The number of firms plays an essential role in this respect: the higher the number of firms, the lower the price. In other words, if the number of firms in the market is limited, the price will be close to (but always below) the monopoly price  $P_M$ , so that static efficiency is low. However, high prices may attract new entrants to the market. If firms can enter freely, i.e., if there are no entry barriers, there will be entry up to the point that firms reach normal profits. The Cournot model is a useful benchmark as it clearly indicates the importance of the number of firms in the market.

In practice, Cournot competition takes place in situations in which firms have to fix production capacity for a substantial period of time, after which they choose the prices of their products. Compte et al. (2002) model the market for mineral water as such a situation to analyse the effect of remedies in the Nestlé-Perrier merger case. Another example is the market for package travels. About one year before the start of a holiday season, firms settle their 'production capacity' in the sense of the number of air seats, the number of hotel rooms, and so forth. We will come back to this issue in section 6.1, in which we will discuss the Airtours/First Choice merger case.

### 2.2.3 The Bertrand model with product differentiation

Another important assumption underlying the Bertrand paradox is that firms produce Homogeneous goods. However, in reality, we rarely observe perfectly Homogeneous products. In fact, in the eyes of consumers, most products are Heterogeneous. Even if the goods are physically the same, a consumer may be willing to buy a brand that is not offered at the most favourable price, as it is available at a closer store, is delivered sooner, or comes with better after-sale services.

Models with product differentiation predict price levels which are higher than the marginal cost price  $P_{MC}$ . The reason for this is that in equilibrium, each firm serves its own 'niche', in which it has some market power. With a low number of firms even higher prices can be sustained, i.e., the outcome of the interaction is a price above the competitive price  $P_C$  (but always below the monopoly

price  $P_M$ ). However, as in the Cournot model, in the case of low entry barriers, firms will freely enter the market up to the point that they make normal profits. In other words, free entry will result in prices close to the competitive price  $P_C$ . Concluding, models with product differentiation emphasize the importance of the number of firms and entry barriers.

The beer market is a good example of a market with Heterogeneous products in which price competition plays an important role. Slade (2002) argues that “the product — beer — is differentiated along several dimensions. For example, brands can be grouped into discrete classes, such as lagers, ales, and stouts, and they can be measured along continuous dimensions, such as alcohol content.” In an econometric study about the beer market in the UK, Slade finds that firms realise moderately high margins (about 30%).

#### 2.2.4 Collusion

As we have seen in the models we have discussed so far, oligopolistic firms can sustain high prices although not as high as the monopoly price. In order to obtain monopoly prices, the firms need to collude one way or the other. The outcome of collusion, assuming that firms do so perfectly, is a price equal to the monopoly price, i.e.,  $P_M$ . As said, this price implies low static efficiency.

We distinguish two types of collusion: explicit collusion (firms make explicit agreements about their pricing policy) and tacit collusion (collusion is established without explicit agreements).<sup>12</sup> In practice, there are at least three ways in which firms operating in an oligopoly can arrange collusion through explicit agreements. First of all, agreements are made in social gatherings. Scherer and Ross (1990) stress the importance of such meetings, and date this point back as far as the work of Adam Smith, who is quoted as follows: “People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices.” Secondly, collusion may take place in a more structural way. For instance, firms may organise themselves in trade associations, or use a central sales agent for selling their products. The most effective way firms can make co-operation possible is to merge into a single firm. Thirdly, collusion can be instituted by the government. For instance, the government may grant a joint patent license to several firms. Several types of restrictions arranged in a patent are imaginable as anti-competitive: output restrictions, the price of the patented product, and a division of the geographic area among the licensees. Another example of collusion instituted by a government agency is the so-called compulsory cartel, in which binding production and marketing restriction are imposed upon firms. The most prominent cartel enforced by governments is without doubt the OPEC cartel.

<sup>12</sup> It is not so clear how important this difference is. Whether an agreement is explicit or implicit, it has to be enforced. Therefore, explicit agreements that cannot be enforced in court could be as hard to sustain as implicit ones.



If firms do not collude explicitly, they may do it tacitly. The notion of 'tacit collusion' was introduced by Chamberlin (1929), who argued that oligopolistic firms are able to realize profits close to the monopoly profit without having to explicitly collude. In other words, firms are able to sustain a price close to the monopoly price  $P_M$  for a long period of time, even without making explicit agreements. How can firms do that? The idea is that each firm charges a high price, anticipating retaliation from the other firms if it deviates to a lower price. Since all firms reason like this, no explicit agreement is needed.<sup>13</sup>

For tacit collusion to be sustainable, two potential problems should be solved by the colluding firms: (1) which price to collude on, and (2) how to maintain the collusion. We discuss how firms can solve these problems the following boxes.<sup>14</sup>

---

### **Tacit collusion: which price to collude on?**

In practice, firms have several instruments available to co-ordinate on a price close to the monopoly price  $P_M$ . One example is price leadership. One of the firms in the industry, which is commonly accepted to be the market leader, chooses a price in the neighbourhood of the monopoly price  $P_M$ , and the other firms automatically follow. The industry's defence in such practices may be that the industry is characterised by what is called 'barometric leadership': the market leader is signalling changing market characteristics through its price adjustment rather than aiming at anti-competitive coordination.

Another coordination device is rule-of-thumb pricing. This involves the practice of the cost-plus pricing principle, in which a 'normal' profit is added to the product's unit cost. Rule-of-thumb-pricing is especially effective when firms are symmetric with respect to cost structure.

Firms can also coordinate using focal points. When trying to coordinate on a good price, firms face a coordination problem, which can be solved using Schelling's (1960) theory of focal points. In the case of prices, focal points could be round numbers (€ 1000), or almost round numbers (€ 9.95). When a firm puts his price at a focal point, it tacitly encourages rival firms to do the same.

---

<sup>13</sup> The Folk Theorem from game theory is the formalisation of Chamberlin's argument, which is stated as follows. When firms play an oligopoly game infinitely many times, a shift in equilibrium outcome is possible from the one-shot Nash equilibrium price to any price between the Nash equilibrium and the monopoly price if the interest rate is small enough (see e.g., Mas-Colell et al., 1995).

<sup>14</sup> These boxes are based on Scherer and Ross (1990), and Etter (2000) respectively.

---

**Tacit collusion: how to maintain collusion?**

The second potential problem related to tacit collusion, i.e., how to maintain collusion, has several solutions. Most solutions rely on the threat of the other firms to behave non-co-operatively for some period of time, which destroys a firm's incentive to deviate from the co-operative agreement. Let us consider several possibilities.

First of all, firms can follow 'grim-trigger strategies', i.e., each firm co-operates as long as the other firms cooperate as well, but when one of the other firms cheats in a certain period, the firm punishes the other firm by choosing a low price for the remaining periods.

Secondly, the firms can establish co-operation using 'tit-for-tat strategies'. In the case of two firms, tit-for-tat means cooperate until the other firm deviates, punish him by playing non-cooperatively in the periods following the deviation, and return to the cooperative strategy as soon as the other firm has returned to the cooperative strategy in the period before.

Thirdly, firms can cooperate using 'stick-and-carrot strategies'. Deviation triggers a finite punishment path, in which firms punish the deviating firm by choosing aggressive strategies (the stick). After that they return to the co-operative outcome (the carrot). A stick-and-carrot strategy leads to dynamics similar to the temporary price wars that are sometimes observed in practice.

---

**2.2.5 Summarising**

In this section, we have discussed several oligopoly models. Table 2.1 contains the outcomes of the models with respect to the price level.

---

**Table 2.1 The relationship between type of interaction and its outcome**

Type of interaction	Outcome	Emphasizes importance of
Homogeneous Bertrand	$P_{MC}$	price competition
Cournot	Between $P_{MC}$ and $P_M$	number of firms
Cournot with few players and high entry barriers	Between $P_C$ and $P_M$	entry barriers and number of firms
Heterogeneous Bertrand	Between $P_{MC}$ and $P_M$	price competition and profit opportunities
Heterogeneous Bertrand with few players and high entry barriers	Between $P_C$ and $P_M$	entry barriers and number of firms
Explicit collusion	Between $P_{MC}$ and $P_M$	cooperative outcomes
Tacit collusion	Between $P_{MC}$ and $P_M$	cooperative outcomes

---

The most important observation is that in a number of theoretical settings, oligopolistic firms can sustain high prices, i.e., prices above the competitive price  $P_C$ , leading to supra-normal profits. These prices lead to a low level of static efficiency. Firms may sustain high prices in the case of both a low number of firms in the market and high entry barriers. Moreover, product heterogeneity and ‘Cournot competition’ are important as well. The next section will focus in more detail on market circumstances under which firms have the possibility to sustain price above the competitive price  $P_C$  for a longer period of time, so that they are considered tight oligopolies.

### 2.3 Structural characteristics of tight oligopolies

By definition, the market structure in a tight oligopoly facilitates the realisation of supranormal profits for a longer period of time. As we have seen in the previous chapter, economic theory predicts that a low number of firms, high entry barriers, ‘Cournot interaction’, and Heterogeneous products are relevant factors for the realisation of supranormal profits. In other words, markets with these characteristics can be considered to be tight oligopolies. This section discusses several other factors that play a role. We use the structure-conduct-performance framework:<sup>15</sup> under which market characteristics (structure) do firms have the possibility to charge high prices (conduct), which lead to supranormal profits and suboptimal welfare (performance)?

We make a distinction between ‘co-ordinated effects’ and ‘unilateral effects’. In the previous section, we have seen that firms can realise supranormal profits by explicit or tacit collusion. This is what we call co-ordinated effects. We also have noted that firms are able to obtain supranormal profits without co-ordinating their behaviour. That is what we refer to as a unilateral effect. This distinction is important as for both effects, other market characteristics may play a role.

We further distinguish between ‘essential’ characteristics, and ‘important’ characteristics. Market characteristic X is ‘essential’ for effect Y if without market characteristic X, firms are not expected to sustain effect Y for a substantial period of time. Market characteristic X is ‘important’ for effect Y if the presence of market characteristic X makes it easier for firms to sustain effect Y for a substantial period of time.

<sup>15</sup> Introduced by Joe S. Bain in the 1950s. See e.g., Scherer and Ross (1990).

### 2.3.1 Co-ordinated effects

Co-ordinated effects refer to both explicit and tacit collusion. Table 2.2 contains market characteristics that are essential or important for both types of collusion to be sustainable.<sup>16,17,18</sup>

**Table 2.2 The relevance of market characteristics for coordinated effects**

Relevance	Market characteristics	
Essential	Few firms:	Competitors are few in number
	High entry barriers:	It is hard for new firms to enter the industry
	Frequent interaction:	Firms interact frequently
Important	Little innovation:	Innovation does not play an important role
	Transparency:	Price cuts are easy to observe
	Symmetry:	Firms have similar characteristics

#### Essential factors

- Few firms

It is unlikely to be possible for firms to sustain co-operation if their number is high.<sup>19</sup> There are at least four reasons why this is the case. First of all, the lower the number of firms in a market, the more attractive is an agreement.<sup>20</sup> Secondly, with few firms it is easier to come to agreement about

<sup>16</sup> The list is not exhaustive. The economic literature identifies other market characteristics which play a role as well. Examples are growing demand and product differentiation.

<sup>17</sup> Some authors mention demand elasticity as a relevant factor as it gives a measure for the willingness of consumers to change brands. However, demand elasticity is endogenous: it depends on the price chosen by the firms. In the case of constant marginal costs, a profit maximising monopolist will always choose its price such that demand elasticity equals -1, whether he realises supra-normal profits or not.

<sup>18</sup> Some economists argue that structural links, such as cross-ownership, are relevant factors as well. However, the effect of structural links is ambiguous. Cross-ownership reduces the gains derived from undercutting the other firm. Moreover, joint venture agreements can enlarge the scope for retaliation as a firm can then for example punish a deviating partner by investing less in the venture. However, in the case of a structural link, total industry profit in the Nash equilibrium is higher, so that the difference between total non-cooperative industry profit and cooperative industry profit is less. Therefore, firms have less incentives to be part of a collusive agreement, so that with structural links, co-ordination may be harder to sustain. The total effect of structural links depends on the context.

<sup>19</sup> Selten (1973) shows in a symmetric Cournot model that the dividing line between 'few' and 'many' lies at 5 firms. In this model, 4 symmetric firms are likely to co-operate, and 6 are likely to behave non-co-operatively. This result is only illustrative and should not be generalized.

<sup>20</sup> In fact, there is a trade-off here. In a Cournot setting, total industry profit in a Nash equilibrium is higher, the lower the number of firms, so that the difference between total non-cooperative industry profit and cooperative industry profit is increasing in the number of firms. However, the revenues from cooperation need to be divided over more firms the higher the number of firms in the industry. It turns out that the latter effect dominates the first (Viscusi et al., 1995).

the conditions of co-operation than with many. Thirdly, the probability that one firm is a maverick competitor increases with the number of firms in the market.<sup>21</sup> Finally, both monitoring (checking if other firms keep the agreement) and punishing are harder, the more firms are active in the market.

- High entry barriers

If there are no entry barriers, co-ordination does not work. High prices realised by co-ordination will attract new entrants to the market, which erodes the profitability of collusion. Moreover, firms have less opportunity for retaliation, as prices will be lower in the future anyway. We give some examples of entry barriers in the following box.<sup>22,23</sup>

- Frequent interaction

Only if firms interact frequently, co-ordination is possible. We have stressed before that firms should be able to ‘punish’ a firm that deviates from an explicit or tacit agreement. Firms cannot co-ordinate if they do not interact in the future. Similarly, if there is a long time distance between moments of interaction, a deviation from an agreement by a firm can only be punished in the far future. Therefore, co-ordination is hard to sustain. We will see in the Airtours/First Choice case (section 6.1) that firms active in the market for travel packages are confronted with a substantial time difference between detecting a deviation and the possibility to punish the deviating firm. In this market, firms arrange busses, air plane seats, and hotel rooms several months before the start of the season. When they find out that a competitor increased its capacity in order to be able to serve more clients and hence to make more profits, it takes until the next season, i.e., one year later, before punishment can be effective.

<sup>21</sup> A maverick competitor is a firm with an independent, aggressive pricing policy. Scherer and Ross (1990) observe that “if market shares are sensitive to price differentials, even one such maverick of appreciable size can make it hard for other firms to hold prices near monopoly levels.”

<sup>22</sup> This box is based on Gilbert (1989) and Viscusi et al. (1995).

<sup>23</sup> Closely related to entry barriers are exit barriers. If incumbents cannot exit the market, it may become infeasible for efficient newcomers to enter.

---

## Examples of entry barriers

An entry barrier is a 'rent from incumbency' (Gilbert, 1989), i.e. incumbent firms obtain some advantage over potential entrants because of the sheer fact that they are an incumbent. There are different forms of entry barriers. For instance, government restrictions may raise entry barriers. They can take the form of patents, licenses, or tariffs. A patent is a prize that should encourage R&D firms to compete, so that technical progress is stimulated, but the patent also closes the market for entry by other firms.

Another example of an entry barrier is brand loyalty. Entry into a market characterised by strong brand loyalty is difficult, as most consumers are to be expected to stick to the old brand. Entering firms may only be able to attract customers if their offer their products at a much lower price than the incumbent. Think for instance about the cola market in which new entrants can only survive if they fix their price far below the price of Coca-Cola and Pepsi Cola. This price may be so low that it is not profitable to enter at all.

Other barriers to entry are scale economies and superior efficiency. Scale economies, for instance in the case of high fixed costs of operation, can make entry into the market unprofitable. Especially in the utility sector, such entry barriers play an important role. Superior efficiency of the firms in the market, for instance due to a much better technology, shows that barriers to entry can be quite natural, i.e. barriers do not necessarily imply 'bad behaviour'. Entry barriers can also be strategic in nature. For instance, incumbent firms can decide to start a price war as soon as another firm enters the market (predatory pricing). Also, upstream firms can make exclusive dealing agreements with downstream firms, so that it is impossible for newcomers to enter the industry.

---

### Important factors

- Little innovation

In an innovation-driven market, it is difficult for firms to collude. There are two reasons for this. The main reason is that firms expect to have only limited possibilities for punishment due to the prospect of an upcoming innovation which will drastically decrease demand for the current product.

- Transparency

A collusive agreement is only stable if each firm can monitor pricing decisions by the other firms. In other words, it is important that the market is transparent for each firm. A market characteristic that is closely related to transparency is market stability. Market stability includes both supply side issues (such as a slowly advancing technology), and demand side issues (a predictably moving demand). In an unstable environment, prices fluctuate naturally, so that it is not immediately clear if or why a competitor has decreased its price. Did he change the price because of changing market conditions, or because of a deviation from an explicit or tacit agreement? In the case of an intransparent market, it may be necessary for firms to launch price wars once in a while in order to sustain collusion.<sup>24</sup>

<sup>24</sup> Green and Porter (1984).

- Symmetry

The more symmetric firms are, the easier it is for them to agree about the conditions of co-ordination, and the easier it is to enforce it. There are several dimensions on which firms may be asymmetric that make co-ordination harder to be established. The following box includes three of these dimensions: (1) available capacity, (2) the number of products, and (3) cost similarity.

One important remark should be made here: strong asymmetry may actually help firms to co-ordinate in some cases. Consider an industry with a clear market leader. This market leader may be able to give signals about the desired policy of the entire industry. If every other firm in the industry simply follows the leader's suggestions, co-ordination has been achieved.

---

### **Asymmetry among firms makes it hard to co-operate**

The following types of asymmetry may make it harder for firms to co-ordinate. The first type is asymmetry in the level of available capacity. Suppose that two firms are active in the market. One firm has a large capacity, and the other a small. When the two firms optimally co-operate choosing a price equal to the monopoly price, the large firm is left with much capacity to fill, whereas the small firm almost produces up to its capacity constraint. The large firm, however, has a great incentive to deviate from the co-operative outcome. If it undercuts the monopoly price, it can raise its supply substantially using its free capacity. In addition, its small competitor is not able to seriously punish the large firm by even setting a lower price, as it will be confronted by its capacity constraint. This problem would not arise in the case of firms with the same capacity. (Compte et al., 2002.)

Also a difference in the number of differentiated products on their product line may make it harder to sustain collusion. The intuition why asymmetric firms in this respect fail to co-operate is completely the opposite from asymmetry in capacity. Imagine again a large firm and a small firm. The large firm offers many products to the market, and the small firm just a few. In this case, it is the small firm that has the largest incentive to deviate. When it cuts its price on one of its products, demand is shifted from the large number of competing products to this product. Moreover, it is difficult for the large firm to punish this deviation, as it has to cut its price on all its products to have an important impact on the small firm's profit. (Kühn and Motta, 2000.)

Finally, similarity in costs increases firms' ability to co-operate. Suppose again that there are two firms active in a market. One firm has low production costs and the other firm has high production costs. In that case, the low cost firm has an incentive to choose a price so that the high cost firm will not be able to produce much, as it would make a loss on extra production. However, in the case that the high cost firm is able to decrease its cost level to the level of the low cost firm, the low cost firm loses its incentive to undercut the monopoly price, as now the other firm can credibly punish the low cost firm by choosing a lower price as well. Note that in this example, an increase in production efficiency (the high cost firm decreases its costs) leads to higher prices. (Boone, 2002.)

---

### 2.3.2 Unilateral effects

Under which circumstances can firms sustain high prices without having to co-ordinate their strategies? We use the standard models and the differentiated products model to answer this question. The key market characteristics are given in table 2.3.

**Table 2.3 The relevance of market characteristics for unilateral effects**

Relevance	Market characteristics	
Essential	Few firms:	competitors are few in number
	High entry barriers:	it is hard for new firms to enter the industry
	No homogeneous Bertrand:	products are heterogeneous or firms compete on other dimensions than price alone
Important	Structural links:	there are links such as cross-ownerships
	Cournot interaction:	firms choose 'quantities' or 'production capacity'
	Product differentiation:	firms' products differ

Before we discuss these factors, let us stress that unilateral effects can lead to remarkably high prices. New econometric methods have made it possible to measure and decompose observed market power to unilateral and co-ordinated effects in the case of heterogeneous products.<sup>25</sup> Using such a method, Nevo (2001) analyses the ready-to-eat cereal market in the US. Studying a panel of quantities and prices for 25 brands of cereal in up to 65 cities in the US over a period of 20 quarters, he observes that price-cost margins were as high as 45%. The data analysis shows that almost the entire margin was due to unilateral effects, probably caused by strong product heterogeneity which is due to consumers' willingness to buy their favourite brand.

#### Essential factors

- Few firms  
We have already observed that if firms are involved in Cournot competition, or produce heterogeneous products, the lower the number of firms, the higher is the price. This observation holds even in the case that firms are not able to explicitly or tacitly collude.
- High entry barriers  
Entry barriers ensure that the number of firms in the market stays small enough to sustain high prices even without explicit or tacit collusion. In the box in the previous subsection, we have elaborated on several types of entry barriers.
- No homogeneous Bertrand competition  
If products are homogeneous and a firm's strategic variable is the price, competition is fierce. At least, this is the result of the Bertrand model. As said, in the case of homogeneous products,

<sup>25</sup> Nevo (2001) and Pinkse et al. (2002).



Bertrand competition leads ‘a race to the bottom’ that results in a price below the competitive price  $P_C$  even with only two firms in the market. Consequently, unilateral effects do not occur if firms compete à la Bertrand.

#### **Important factors**

- **Structural links**  
Another market characteristic that influences industry profitability is the existence of structural links between firms. Examples are cross-ownership, cross-directorship with or without partial cross shareholdings, sharing intellectual property rights (such as patents), R&D joint ventures, production specialization agreements, and standardization agreements. Consider the example of cross-ownerships. Suppose that two firms are active in a market. Without the cross-ownership relation, it may pay to compete heavily. However, in the case of cross-ownership, a firm not only hurts its competitor by fierce competition, but also hurts itself, as it gets less profits on its share in the other firm. Therefore, cross-ownership softens competition, so that higher prices are realised.<sup>26</sup>
- **Cournot-type of interaction**  
Under Cournot competition, firms may be able to realise prices above the competitive price  $P_C$  in equilibrium. If firms compete à la Cournot, a firm’s business strategy is the choice of quantity to be sold in the market. Analogously, firms play the following two-stage game. In the first stage of the game, a firm decides on production capacity. In the second stage, the firm decides on its output level and the price for which the output is sold in the market. The outcome of this two-stage game is the same as the outcome of the Cournot game. Therefore, if the choice of production capacity is crucial for the industry, firms may be able to realise high prices.
- **Product differentiation**  
As noted before, if firms produce differentiated products, prices above the competitive price  $P_C$  may be the outcome of their interaction. The intuition is that each firm serves its own ‘niche’, in which it has some market power. If the number of firms is low, the niches are large, so that each firm has enough market power to sustain a high price.

### **2.3.3 Summarising**

This established which structural factors facilitate the realisation of supranormal profits for a long time period. In other words, we have answered the question which markets can be expected to be tight oligopolies. We made the distinction between co-ordinated effects and unilateral effects, as in some cases, firms are able to sustain high prices through explicit or tacit collusion, and in other cases, they can do so without co-ordinating their strategies. Table 2.4 summarises the findings of this section.

<sup>26</sup> Dietzenbacher et al. (2000).

<b>Table 2.4 Relevant factors for co-ordinated effects and unilateral effects</b>		
Relevance	Co-ordinated effects	Unilateral effects
Essential	High entry barriers	High entry barriers
	Few firms	Few firms
	Frequent interaction	No homogeneous Bertrand
Important	Little innovation	Structural links
	Transparency	Cournot interaction
	Symmetry	Product differentiation

## 2.4 Behaviour conducive to a tight oligopoly

Firms have an incentive to be part of a tight oligopoly since tight oligopolies tend to create higher opportunities to realise supranormal profits. In this section, we stress that firms have several instruments at their disposal which they can use to (1) change a competitive market into a tight oligopoly and (2) preserve the conditions of a tight oligopoly. We consider several of these instruments:

- Horizontal mergers and take-overs
- Vertical restraints
- Predatory pricing and limit pricing
- Imposing entry barriers
- Increasing transparency

In a sense, the focus of the current section is the mirror image of the previous one. The previous section determined essential and important market characteristics (structure), which facilitate high prices (conduct), which lead to suboptimal welfare (performance). The modern version of the S-C-P paradigm acknowledges the reciprocal nature of the relationship between behaviour and structure. The current section reverses the causal relation between conduct and market structure. We argue that certain behaviour by firms (conduct) may change the characteristics of the market (structure). The market structure may be changed in such a way that the market becomes a tight oligopoly. Indirectly, such behaviour can lead to lower welfare.

#### 2.4.1 Horizontal mergers and take-overs

Horizontal mergers and take-overs may be conducive to a tight oligopoly. When competing firms merge, or one firm takes over a competitor, the market structure is changed in several ways.

First of all, the number of firms decreases. As stressed in the previous section, the number of firms in a market is an essential market characteristic for both co-ordinated effects and unilateral effects. A merger usually reduces the number of firms in several markets, so that these markets may become tight oligopolies. Alternatively, if a firm enters a market that is already a tight oligopoly, this firm may be taken over by an established firm so that the oligopoly remains tight.

Secondly, but less importantly, a merger or a take-over may create a more symmetric situation. When two small firms merge, the market situation may become one with several equally sized firms. Also, if the number of firms is not reduced as parts of the merging firms are separated from the old firms and sold to a competitor, a more symmetric situation may emerge. As we have seen in the previous section, symmetry is an important condition for firms to be able to co-ordinate, so that the end result may be a tight oligopoly.

Thirdly, a merger may lead to an increase in transparency. As said, transparency is an important factor for co-ordination, which implies that due to the merger, a competitive market may become a tight oligopoly.

#### 2.4.2 Vertical restraints

Also vertical contracts between firms can be conducive to tight oligopolies. A vertical restraint is an agreement between a supplier in an upstream market (e.g., a jeans wholesaler) and a distributor in a downstream market (e.g., a jeans retailer). This agreement limits the possible actions by either the supplier, the distributor, or both. For instance, the agreement may require the jeans retailer not to sell its jeans below a specific price, and the jeans wholesaler not to sell jeans to other retailers.

The most commonly used types of vertical restraints are:<sup>27</sup>

- Resale price maintenance: the requirement by the supplier that the distributor sells the supplier's goods at a specific price.
- Territorial restraint: an agreement between the supplier and the distributor that the distributor has the exclusive right to sell the supplier's good in a certain area.

<sup>27</sup> Several other vertical restraints are identified in the economic literature as well. *Tying* is the requirement by a supplier to a distributor to sell a specific good only in combination with another good. *Quantity forcing* is an agreement between the supplier and the distributor to sell at least a specified quantity of the products concerned. A *franchise agreement* between the supplier and the distributor gives the distributor the obligation to sell goods under the supplier's trademark. See Verouden (2001).

- Exclusive dealing: an agreement between the supplier and the distributor stating that the distributor buys his entire supply from the supplier, i.e., the distributor cannot sell products from other suppliers.

Firms may use these instruments in order to be able to sustain prices in the downstream market at a level above the competitive price  $P_c$ . In other words, using vertical restraints, firms may be able to realise supranormal profits, so that a tight oligopoly is established. Or: vertical restraints may be implemented so that the market remains a tight oligopoly. How does that work? We consider three possibilities.<sup>28</sup> Firms may use vertical restraints to:

- Impose entry barriers
- Soften competition
- Enforce tacit and explicit collusion

### **Entry barriers**

Entry barriers are essential for markets to be tight oligopolies. As mentioned before, if new firms cannot enter the market, incumbent firms have the possibility to sustain high prices for a substantial period of time. Vertical restraints may be used by firms to impose entry barriers in both the upstream and the downstream market. Economists interchangeably call this motive 'foreclosure', 'exclusionary behaviour', and 'raising rivals' costs'.

For example, an exclusive dealing contract between a supplier and a distributor can raise an entry barrier in the upstream market. If there are substantial economies of scale and scope, then for a new supplier it is more costly to buy sell to its consumers, so that it is hard to enter the upstream market. In a similar way, a territorial restraint can be used as a barrier to entry in the downstream market.

### **Softening competition**

Vertical restraints may also be used to soften competition even without excluding rivals from the market. The economic literature makes a distinction between intrabrand and interbrand competition. Intrabrand competition refers to competition between firms which sell the same brand. Interbrand competition refers to competition between different brands. Interbrand competition is probably the most important of the two as strong interbrand competition is usually sufficient for welfare optimal outcomes, even in the absence of intrabrand competition. However, also intrabrand competition could play a role. Let us give a few examples.

<sup>28</sup> Taken from Verouden (2001).

Territorial restraints may soften competition. To see this, suppose that a jeans wholesaler and a jeans retailer agree upon a territorial restraint. The agreement gives the jeans retailer the exclusive right to sell the wholesaler's jeans in a certain city. If the contract is not established, the retailer will face competition from other retailers in the city which also offer jeans from the jeans wholesaler. In other words, the territorial restraint decreases intrabrand competition in the downstream market, which may lead to high prices for jeans.<sup>29</sup>

Also, exclusive dealing contracts can be used to soften competition between suppliers. One argument is that exclusive dealing contracts increase consumers' search costs relative to the case that distributors carry the products of several suppliers, so that consumers are discouraged from comparison shopping. Another argument is that exclusive dealing may decrease competition because of the absence of in-store interbrand competition.<sup>30</sup>

Finally, resale price maintenance may soften competition as there is no scope for competition due to the fixed price.<sup>31</sup>

#### **Enforcing tacit and explicit collusion**

Resale price maintenance can be used as an instrument to enforce both explicit and tacit collusion. For example, resale price maintenance may completely eliminate all price competition between distributors at the downstream level, as they do not have the possibility to change their price.

Moreover, upstream suppliers can use resale price maintenance to facilitate explicit or tacit cooperation, using it as a monitoring device. Absent resale price maintenance, it may be hard for a supplier to figure out if or why a distributor has decreased the retail price. He may have done so because a competing supplier has cheated on the collusive agreement. Or he may have done so in response to changing market characteristics. In the case of resale price maintenance, the retail price is centrally set by the colluding suppliers so that deviations from the cartel agreement can be more easily monitored.<sup>32</sup>

#### **2.4.3 Predatory pricing and limit pricing**

Firms may decide to choose a low price for a period of time, perhaps even below marginal costs ( $P_{MC}$ ). A strategic reason to do so is to chase away competitors from the market, or to discourage them from entering the market. These practices are called predatory pricing and limit pricing respectively. Both can be used as instruments to create a tight oligopoly, as they limit the number of firms that are active in a market.

<sup>29</sup> For a more detailed analysis see Rey and Stiglitz (1988, 1995), who also consider the effect of territorial restraints on interbrand competition in a model with two suppliers of differentiated products.

<sup>30</sup> Besanko and Perry (1994).

<sup>31</sup> See e.g., Rey and Vergé (2002).

<sup>32</sup> Jullien and Rey (2000).

### **Predatory pricing**

Predatory pricing is defined as follows.<sup>33</sup> “Predatory pricing behaviour involves a reduction of price in the short run so as to drive out competing firms in an effort to gain larger profits via higher prices in the long run that would have been earned if the price reduction had not occurred.” The incentives for predatory pricing follows immediately from its definition: A firm makes short run losses (due to the low prices) in order to obtain future profits (as competitors are driven out of the market). Hence, predatory pricing is an instrument to establish a tight oligopoly.

### **Limit pricing**

Limit pricing is closely related to predatory pricing. The difference is that limit pricing is used as an instrument to maintain a tight oligopoly, rather than to establish it. Limit pricing is the practice of firms to demand low prices (or prices lower than optimal) in order to deter newcomers to enter the market. A firm makes short run opportunity losses (due to suboptimal prices) in order to obtain supranormal profits in the future (as competitors are discouraged to enter).

#### **2.4.4 Imposing entry barriers**

In the previous section, we argued that entry barriers are an essential market characteristic for both co-ordinated effects and unilateral effects. We have already mentioned that the firms themselves have the possibility to raise entry barriers using vertical contracts or applying limit pricing. And there are other instruments as well.

Advertising is such an instrument. Advertising enforces brand loyalty. Entry by new firms into a market characterised by strong brand loyalty is difficult as most consumers may be inclined to stick to the old brand. Therefore, incumbent firms have a strong incentive to use advertising in order to create an entry barrier.

Creating high switching costs is another example. If it is difficult for consumers to change the firm they buy their goods from, they may decide not to buy the products from a new firm in the market. Therefore, a potential entrant may decide not to enter at all. For instance, if consumers cannot carry over their bank account number from one bank to the other, they face costs when they wish to use the services of another bank. This makes it not easy for new banks to enter the market.

#### **2.4.5 Increasing transparency**

An important factor for co-ordinated effects is transparency. Therefore, firms have an incentive to increase transparency in the market so that co-ordination is easier to sustain. There are various ways in which firms are able to increase transparency.<sup>34</sup> First of all, firms can arrange industry

<sup>33</sup> Quoted from Joskow and Klevorick (1979). The quote is found in Tirole (1988).

<sup>34</sup> The examples are taken from OECD (1999).

associations. Such associations can be organized as research and information centres, which increase transparency of the market by gathering and distributing information.

Secondly, firms can provide information either directly to rival firms, or to a sufficient number of third parties, so that it is sure that the information comes indirectly to the other firms. Especially in industries with a market leader, information provision is common practice. Pre-announcing price changes is attractive, as the risks associated with it are very low. When other firms fail to announce similar price changes, the leading firm can simply choose not to implement them.

Thirdly, even regulators can sometimes increase an industry's transparency by requiring firms to publish information related to intended price increases. In an OECD (1999) paper, the following is reported about this issue. "As regards firms whose prices are regulated, such advance notice might be justified as a means of facilitating public discussion of requested rate changes. As for unregulated firms, such a requirement merely gives greater antitrust immunity to a somewhat suspect practice. Worse still, it automatically rules out surprise price cuts, thereby helping to stabilise co-ordinated interaction."

Finally, transparency in a market can be due to structural links among firms. There is a long list of possibilities how firms can create close linkages, such as cross-ownership, cross-directorship with or without partial cross shareholdings, sharing intellectual property rights (such as patents), R&D joint ventures, production specialization agreements, and standardization agreements.

## 2.5 **Countervailing power**

The previous sections have explained that both market structure and firms' conduct may make an oligopoly tight. In this section, we consider several other factors that have an effect on the performance of markets. We call these factors countervailing power, as they mitigate the possibility of anti-competitive market outcomes. Stated differently, countervailing power makes a tight oligopoly less prone to 'welfare problems'. We discuss the following sources of countervailing power:

- Consumers
- Potential entry
- Innovation
- Efficiency
- Fringe players
- The government

### **Consumers<sup>35</sup>**

Bad performance of a tight oligopoly implies that consumer surplus is low. This may trigger consumers to organise themselves to create countervailing power against the tight oligopoly. A good example of such consumer organisations are consumer unions. Consumer unions have several instruments available which can be used to influence anti-competitive behaviour by firms. For instance, they may publish detailed information about products in a magazine or on the Internet to increase consumer awareness, and to decrease the search costs of consumers. Moreover, when firms turn out to under-perform, they may punish this firm using a 'naming and shaming' policy. Finally, a consumer union may act as a lobby which tries to influence governmental decision making so that action is taken against poorly operating tight oligopolies.

### **Potential entry**

Some economists argue that the mere threat of new firms entering the market is enough to discipline incumbent firms in the market. They reason that firms making high profits in the market is a signal to competitors that the market is profitable, so that they will enter. Therefore, incumbent firms may have an incentive to keep price low, even when the new firms are not yet active in the market.

### **Innovation**

If consumers consider newly introduced products as substitutes for the products offered in a tight oligopoly, the market power of firms in the tight oligopoly decreases, as some consumers switch to the new products. Therefore, innovation may mitigate the negative effects on welfare by a tight oligopoly.

### **Efficiency**

Both horizontal mergers and vertical restraints may improve welfare due to gains in efficiency leading to lower prices. For instance, firms may be engaged in a horizontal merger or a vertical contract for the sake of risk sharing. Risks may be for instance caused by demand uncertainty or by uncertainty related to cost shocks. When firms do not co-operate, they may not be willing to invest under such circumstances, which is bad in terms of welfare. Resale price maintenance and territorial restraints can be used as an instrument to share risk between the supplier and the

<sup>35</sup> It is not immediately obvious that consumer's mobility should be considered as countervailing power. The definition of the relevant market could depend on consumers' willingness to change brands or products. If consumers are likely to 'vote with their feet' even in response to a small price change, the relevant market is probably chosen too narrowly. In the actual relevant market there may not be a tight oligopoly at all.



distributors. See the following box for more details about the relationship between efficiency and vertical restraints.<sup>36</sup>

---

### **Vertical restraints may improve efficiency**

Vertical restraints may improve efficiency of the market in the following ways. First of all, vertical restraints may solve the 'double marginalisation problem', which arises from the fact that both firms in a vertical chain add a margin on top of the production costs. In the extreme case of only one upstream supplier, and one downstream distributor, double marginalisation may lead to a retail price that exceeds the monopoly price (PM). Therefore, both the firms and the consumers can be made better off if co-ordination between the firms is possible, for instance through a resale price maintenance contract.

Secondly, vertical restraints may be useful when controlling externalities between distributors. Such an externality arises for instance in the domain of services provisions and promotional effort. A distributor can free ride on other distributors' efforts in service or advertising, so that service and advertising is sub-optimal. A supplier can use both resale price maintenance and territorial restraints to solve the externalities. By setting a high retail price, a supplier can motivate a distributor to increase his level of service or advertising. A territorial restraint may lead to adequate service, for instance in terms of information provision, as customers do not have the opportunity to go to one (expensive) shop to get important product information, and buy the good in another (cheap) shop in the same area that does not provide this information.

A third rationale for using vertical restraints is to avoid externalities between suppliers. For instance, consider the case that a supplier sells his goods using the same distribution channel as competing suppliers. The supplier may decide to train the sellers at the distribution channel in order to be more effective in selling his products. However, other supplier may benefit from such training as well, which causes a free rider problem, leading to under-investment in training from the side of the suppliers. A straightforward solution to this problem is an exclusive dealing contract, so that the supplier is the only one obtaining spin-offs from the training.

Finally, vertical restraints may reduce distribution costs. For instance, the supplier may impose a territorial restraint in order to decrease distribution costs: the supplier needs to transport its goods to only one distributor in the area, and the distributor can realise significant scale economies being able to spread his fixed cost over a large sales volume.

---

### **Fringe players**

Fringe players can offset oligopoly powers by pricing competitively in niche markets. If sufficient of these fringe players act on a sufficient number of niche markets, oligopolists cannot exploit their market power.

### **The government**

The government may countervail tight oligopolies using three possible courses of action: (1) 'Ex ante' policy which should prevent the emergence of market characteristics typical for a tight

<sup>36</sup> This box is based on Verouden (2001).

oligopoly. We call this 'prevention'; (2) 'Ex post' policy, which aims at punishing explicit agreements or anti-competitive behaviour. The government may use competition law or regulation. We call this 'treatment of symptoms', since the government action is not aimed at breaking the tight oligopoly. (3) Breaking through, i.e. making sure that the oligopoly will not be tight anymore. We call this 'cure'. See section 4.4 for more details.

## 2.6 Conclusions

The current chapter has established the relationship between tight oligopolies and welfare. Economic theory has shown which possibilities to reduce welfare are available for firms in a tight oligopoly. Firms in a tight oligopoly may sustain high prices both by co-ordinated effects and unilateral effects. Essential market characteristics for either effect to occur are (1) a low number of firms and (2) high entry barriers. Other market characteristics play a role as well.

Firms have a strong incentive to be part of a tight oligopoly, as firms in a tight oligopoly are prone to have market power which gives them the possibility to realise supranormal profits. Therefore, firms may be engaged in behaviour that creates conditions for the oligopoly to become or to stay tight. Examples are (1) horizontal mergers and take-overs, (2) vertical restraints, (3) predatory pricing, (4) imposing entry barriers, (5) fringe players, and (6) increasing transparency.

Several sources of countervailing power may mitigate the market power of tight oligopolies. We have considered (1) consumer unions, (2) pressure of potential entrants, (3) innovation, (4) increased efficiency, and (5) the government.

Let us stress once more that the existence of tight oligopolies in itself does not imply welfare reductions. Yet, economic theory provides many possibilities for firms in tight oligopoly to reduce welfare. Hence, if there are plausible alternatives, tight oligopolies are better avoided.

In order to illustrate the findings of this chapter, we have developed a hypothetical case of a tight oligopoly. The case is based on 'A Clockwork Orange', a book by Anthony Burgess, which formed the basis of Stanley Kubrick's movie with the same title. See the box below.

---

## The milk plus oligopoly

Milk plus vellocet and synthemesc and drenchrom, or 'milk plus' for short, is a very popular drink in the bars of Kubrick country. Especially during the weekends, people love to drink milk plus since it sharpens their minds. As far as people remember, milk plus has been supplied by only three firms, being known as 'Orange', 'Clockwork', and 'A'. However, since the old coin had been replaced by a new one, the Kubrickians got the impression that these firms raised the price for milk plus, by cunningly increasing the old-coin prices to round numbers in the new coin. The Kubrickian competition authority (KCA) started an investigation.

The KCA concluded that the market characteristics fitted very well the conditions for co-ordinated effects. The market had been dominated by only three firms most of the time. Moreover, for about 15 years, the firms shared a patent for the production of milk plus, so that entry by new firms was virtually impossible. Also, there was frequent interaction, as litres of milk plus were sold in the bars all over Kubrick country every weekend. In addition, the competition authority derived that the market was transparent, firms were symmetric, and that there had been hardly any innovation. Finally, the introduction of the new coin seemed to have generated a new focal point for the firms to co-ordinate their price on.

Further investigation revealed that Orange, Clockwork, and A undertook several actions to strengthen their market power after their patent had expired. As soon as the firm 'Burgess' tried to enter the market with the new milk plus brand 'Chapter 21', the three incumbents started a price war, that immediately ended when Burgess withdrew its product from the market. Moreover, each firm signed exclusive dealing contracts with upstream firms supplying vellocet, synthemesc, and drenchrom, which are essential ingredients for milk plus. Doing so, they made it very hard for new firms to enter the market. The worrying conclusion in the KCA's report was that the milk plus market is a tight oligopoly.

The KCA provided the government with the suggestion to do something about the conditions of the market, as the usual sources of countervailing power did not seem to work. In fact, the consumer union in Kubrick country lobbied for the government to install an independent milk plus regulator. However, the government did not take any action so far. Also, 'Milk Minus', a new invention, did not change the situation, as people were not willing to buy the product, simply because of the lack of vellocet, synthemesc, and drenchrom, which are exactly the ingredients the Kubrickian people are so fond of. Indeed, unless the government would intervene, things were not expected to change in the market for milk plus.

---



### 3 Tight oligopolies and welfare: empirics

The previous chapter discussed tight oligopolies from a theoretical point of view. The current chapter focuses on the following empirical questions:

1. *Do field studies confirm the results from the theory?*
2. *Do laboratory experiments confirm the results from the theory?*
3. *Which real-life markets can be expected to be tight oligopolies on the basis of the analysis in the previous chapter?*

These questions will be answered in sections 3.1 - 3.3.

#### 3.1 Field studies

The previous chapter has distinguished market characteristics that are important for co-ordinated and unilateral effects. A natural question that arises is whether empirical studies give support for the relationship between these market characteristics and these effects. This is the central question of this section.

##### 3.1.1 The link between structure, conduct, and performance

The (modern version of the) Structure-Conduct-Performance paradigm (S-C-P) is an important tool to answer this question. Empirical researchers attempted to find out if any relationship could be found between structural characteristics of markets and firms' conduct and the market's performance. While it is acknowledged that logically there is a two-way causality, statistically it may well be the case that some structural characteristics lead more often to supranormal profits than others. It is this statistical relationship that we are interested in, since we have defined a tight oligopoly as a market structure which facilitates the realisation of supranormal profits for a substantial period of time.

Schmalensee (1989) surveys the main findings of empirical research in S-C-P. He claims that some economists strongly believe in the usefulness of inter-industry studies to entangle causal relationship between structure, conduct, and performance, and that others find that such attempts are doomed to be fruitless. Schmalensee himself takes an intermediate position by constructing a set of stylized facts found in the data.

In chapter 2, we claimed that there is a negative relationship between the number of firms in a market and the level of the price. The more firms are active in the market, the less likely are unilateral and co-ordinated effects to be sustainable by the firms. Schmalensee observes this finding in the data as well:

“In cross-section comparisons involving markets in the same industry, seller concentration is positively related to the level of price.”

Moreover, there is a theoretical relationship between market stability and price. Chapter 2 has identified transparency as an ‘important’ market characteristic for co-ordinated effects. Transparency is closely related to stability of the market. This is confirmed by the data according to Schmalensee’s survey:

“Over time, US manufacturing industries that experience large increases or decreases in concentration tend to show above-average increases in productivity and below-average increases in price.”

However, some of Schmalensee’s stylized facts seem to partly reject S-C-P. Especially the relationship between market characteristics and profitability seems to be weak. Consider the following:

“At the firm or business unit level in the United States, industry characteristics account for only 10-25 percent of the cross-section variation in accounting rates of return”.

And:

“The relation, if any, between seller concentration and profitability is weak statistically, and the estimated concentration effect is usually small. The estimated relation is unstable over time and space, and vanishes in many multivariate studies.”

A tight oligopoly being a market which structure facilitates the realisation of supranormal profits, profitability is a key variable in the investigation of such markets. However, as the empirical analyses did not reveal a strong relationship between the characteristics of the market and profitability, policy makers may be in doubt on which market they should focus their competition policy. A more refined approach was called for.

### **3.1.2 New Empirical Industrial Organisation**

A more refined approach has been provided by another branch of economic research: New Empirical Industrial Organisation (NEIO). Economists, disappointed by the inter-industry studies in the S-C-P paradigm, felt the need to do more detailed, industry specific studies. This paved the way for NEIO. NEIO studies typically focus on single industries. The following box and a box at the end of section 4.4 provide two examples of such studies about airfares and car prices respectively.

The first investigation refers to a link between a structural characteristic (multimarket contact) and welfare (prices). The second links firms' behaviour (vertical restraints) to welfare (total surplus).

---

### Multimarket Contact between US Airlines

In Chapter 2, we identified several necessary and important market characteristics for co-ordinated effects to occur. Some economists claim that 'multimarket contact' should be added to this list. Indeed, Evans and Kessides (1994) empirically investigate multimarket contact between airlines in the US. Cabral (2000) reports the following about this study:

"In air travel, a market might be defined as the flight connection between two different cities. In this sense, airlines compete in several markets, and competing airlines overlap in the markets they cover. Consider, for example, the top 1000 routes in the United States. Define average contact in each market as the average number of other markets in which the competing airlines face each other. For example, consider a particular route, which in 1988, was serviced by American, Delta, and Northwest. During that year, American and Delta appeared jointly in 527 of the top 1000 routes; American and Northwest were present in 357 routes, and Delta and Northwest were present in 323 routes. Average route contact would then be  $(527+357+323)/3=402.3$ .

Econometric evidence shows that this variable, when controlled for a host of other factors, has a significant positive impact on airfares. This in turn suggests that airlines use competition in other routes as a means to collude in a given route. Price cutting in a particular route might lead to a profit increase in the short run. However, not only would this lead to a price war in that route, it would also lead to more severe price competition in other routes."

---

Bresnahan (1989) gives a survey on the research done in NEIO. He comes to the following three main conclusions:

#### "Conclusion A

There is a great deal of market power, in the sense of price-cost margins, in some concentrated industries."

In section 4.3, in a box, we will discuss studies by Rees and Slade, which appeared a few years after Bresnahan's article had been published. These studies confirm conclusion A.

#### "Conclusion B

One significant cause of high price-cost margins is anti-competitive conduct."

Conclusion B seems to confirm what we have stressed in chapter 2, namely that certain behaviour by firms may change the characteristics of the market in such a way it becomes a tight oligopoly.

#### “Conclusion C

Only a very little has been learned from the new methods about the relationship between market power and industrial structure.”

Conclusion C is based on at least two important drawbacks related to NEIO studies. The first is that on the basis of the cases, one cannot conclude that all, or most, oligopolies manage to sustain prices that are higher than the one-shot Nash outcome. Not only would this conclusion be based on very few observations, also the industries are probably not chosen at random. At least in the white salt study of Rees, the case is investigated as it had drawn the attention of the MMC. The MMC probably had a good reason to conjecture that firms “severely restrained price competition”. In other words, the sample of cases may be biased towards industries that are expected to be collusive.

The second drawback is that the number of cases is too small to entangle which are the market characteristics that facilitate anti-competitive practices in an industry. Observe that in Conclusion A, Bresnahan adds “some industries”, as this conclusion is based on no more than about a dozen studies of specific industries. This number is too low to entangle which market characteristics explain market power.

### **3.1.3 Summarising**

Both the Structure-Conduct-Performance studies and the field of New Empirical Industrial Organisation provide some support for the theory discussed in Chapter 2. However, there is by far not enough evidence to confirm each single relationship between market structure and firms’ conduct on the one side, and market performance on the other. More empirical work seems to be necessary.

## **3.2 Laboratory experiments**

As said, more empirical studies are needed to get a better idea about the usefulness of the theory discussed in chapter 2 despite the fact that they proved to be useful to get insight in specific (tight) oligopolies. Some economists claim that laboratory experiments may fill that gap.<sup>37</sup>

<sup>37</sup> The latest Nobel prize has been awarded to Vernon Smith, who is one of the founding fathers of experimental economics. This is a signal that laboratory experiments are considered an important tool in economics nowadays.



The two main questions of this section are:

1. Do laboratory experiments confirm results from the theory?
2. Are laboratory experiments valuable for our understanding of tight oligopolies?

### **3.2.1 Laboratory experiments as a test of the theory**

One of the reasons that empirical studies have not yet generated strong detailed conclusions about the functioning of markets is that they need to measure a wealth of variables. Some of these variables, such as firms' cost structure and demand conditions, may be hard to measure. Moreover, economists have hardly any control over the relevant variables.

An environment in which the researcher is not confronted with these problems is the research laboratory. In the laboratory, subjects are confronted with oligopoly games of which the researcher knows exactly the characteristics. Even better: the researcher has full control over these characteristics. Therefore, laboratory experiments help us to gain insights in the functioning of oligopolies.

Experimental studies confirm several predictions by the theory that we have discussed in Chapter 2. For instance, it turns out that a low number of firms leads to high prices, whereas in the case of many firms, prices are low. Other factors that turn out to decrease competition are pre-play communication (which is important for explicit collusion), announcements (which plays a role in price leadership), repeated interaction and symmetry (which we have identified in Chapter 2 as respectively a necessary and important market characteristic for co-ordinated effects).<sup>38</sup> The box below discusses the relation between the number of firms and the possibility for co-ordination in more detail.

<sup>38</sup> Huck et al. (2002).

---

### Co-ordination is only possible with few firms

Economic experiments confirm that co-ordinated effects are less likely to occur the more firms there are in the market. A good paper in this respect is by Huck et al. (2001), who investigate how the competitiveness of Cournot markets varies with the number of firms. Two approaches are taken in order to answer this question. The first approach is a review of 19 experimental studies conducted by several researchers. All experiments have more or less the same set-up, with the most prominent difference the number of firms. The second approach is their own experiment in which two, three, four, respectively five firms are confronted with an otherwise unified environment. The studied environment in both approaches shared the following features. The (1) same (2) symmetric firms (3) interacted several periods (4) in markets with homogeneous products (5) without the ability to communicate (6) being completely informed about their own payoff and (7) receiving feedback only about the aggregate quantities produced by the other firms in the previous period. One exception was made for an experiment in which firms faced asymmetric costs.

The pattern observed in both approaches is very similar. When the Cournot game is played by two firms, collusion sometimes occurs. In the case of three or more firms, the outcome reasonably good predicted by the one-shot Nash outcome, although several observations are found close to the competitive outcome. On the basis of the data generated in their own experiment, the authors calculated the ratio  $R$  of observed total output and total output predicted by the one-shot Nash equilibrium. When subjects play according to the one-shot Nash prediction,  $R$  is equal to 1. In the case outputs are chosen in the neighbourhood of the collusive outcome,  $R$  is smaller than 1. On the other hand, if subjects play more competitively than the one-shot Nash prediction,  $R$  exceeds 1. The authors found a significant positive correlation between the number of firms, and  $R$ . More specifically, they found  $R=0,9$  for the case of 2 firms,  $R=1,0$  for the case of 3 and 4 firms, and  $R=1,1$  for the case of 5 firms. In other words, firms only manage to collude in the case of two firms.

---

However, not all theoretical results have been confirmed by experimental research. For instance, there is mixed support that transparency increases the possibility of co-ordinated effects. Offerman et al. (2001) examine the effect of transparency in a Cournot game with three firms. They consider three different treatments, in which roughly the following patterns are observed. In treatment 1, subjects only observe aggregate output of their competitors in the previous round. In this treatment, total produced quantity equals the one-shot Nash output, so that there may be unilateral effects, but no co-ordinated effects. In treatment 2, subjects observe the output of each of their rivals individually. Here, most observations are either at the one-shot Nash prediction, or at the collusive outcome. In other words, both unilateral effects and co-ordinated effects may occur. In treatment 3, subjects observe, next to individually specific output, the profit level of each rival. Now, the experimenters find two peaks: one around the collusive outcome, so that co-ordinated effects occur, and one at the competitive outcome, with neither of the two effects. From treatment 1 to treatment 2, transparency of the market is increased, and, as said in Chapter 2, indeed firms turn out to be more successful in reaching collusive outcomes. However, comparing treatment 2 and treatment 3, the authors conclude that more transparency does not necessarily lead to more collusive

behaviour. In contrast, the extra information about profit levels seems to make the competitive outcome attractive.

### **3.2.2 Are laboratory experiments valuable for our understanding of tight oligopolies?**

The answer to the question in the title of this subsection may be yes or no, depending on what one means by 'valuable'.

*Yes:*

- Experiments are useful in evaluating the use of economic theory in competition policy. An interesting example is the use of experiments to test a simulation model the Department of Justice in the US uses to assess mergers. See the box in section 4.2 for more details.
- Experiments may lead to the development of a new and better theory, so that the functioning of (tight) oligopolies is better understood.
- Experiments may give insights in the sustainability of co-ordinated effects. They may reveal under which circumstances inexperienced subjects are able to sustain tacit and explicit agreements.
- When there is no theory, or the theory is not useful as it only considers simple situations, experiments may be used in the design of complicated markets. For instance, laboratory experiments were used to design auctions for mobile telecommunication and the electricity market.<sup>39</sup> We will discuss these examples in a box section 4.4.

*No:*

- A laboratory experiment takes place in an artificial environment, with different actors than in real life. Therefore, experimental results should be interpreted with some caution. Perhaps more weight should be attached to theoretical predictions. Although the theory is artificial as well, it makes at least clear what the underlying forces of the results are. These are usually not revealed in an experiment.

### **3.2.3 Summarising**

In short, laboratory experiments may be a useful tool to get a better understanding of tight oligopolies. Several, but not all, theoretical predictions have been confirmed by experiments. Moreover, experiments may serve as a device to test the theory used for competition policy such as merger control. Also, they may complement the theory in the design of complex markets. Some caution should be taken when interpreting results from laboratory experiments, as these are artificial environments.

<sup>39</sup> Roth (2002).

### 3.3 Tight oligopolies in practice

Which real-life markets can be expected to be tight oligopolies on the basis of the analysis in chapter 2? We found that a low number of firms and high entry barriers are essential market characteristics for both unilateral effects and co-ordinated effects to be sustainable for a substantial time period. Although more empirical work is needed to confirm this result from the theory, we take it as a starting point to say something about real-life markets.

Table 3.1 contains several sectors in the Netherlands which are characterised by both a low number of firms and high entry barriers. We distinguish the following types of entry barriers:

- **Protected monopoly:** Entry by new firms may not be feasible as the current monopolist has the exclusive right to use an essential facility.
- **Reputation:** Consumers may not be willing to switch brand when competing firm has not established yet a good reputation.
- **Network effects:** Network effects create a barrier to entry, as the product offered by a new firm is only valuable for a consumer if sufficiently many other consumers start using it as well. Network effects occur in many IT markets, such as the market for word processors. It is difficult for a firm to introduce a new word processor to the market and get a high market share, as consumers may want to exchange files of the new word processor with other consumers. This may only be possible if other consumers use the new word processor as well.
- **License needed:** In some sectors, such as telecommunication and radio, firms need a licence. These licences form legal entry barriers.
- **Brand loyalty:** Advertising by established firms may create brand loyalty. The consequence is that consumers are not willing to switch to products offered by new firms. In the market for fixed telecom, it turns out that most people keep using the services by the old monopolist KPN, despite the fact that new firms have entered the market. Most services offered by the new firms are sold at the lower rate than KPN's. Moreover, switching to the new firms occurs at relatively low costs.
- **Scale economies:** Scale economies may make it hard for new firms to enter the market. For instance, in the market for exhibitions, it might not be feasible to open a new exhibition hall as it may be empty for a considerable time of the year.
- **Vertical links:** Vertical links may create entry barriers. For instance, if upstream firms make exclusive dealing agreements with downstream firms, it may be impossible for newcomers to enter the industry.

#	Sector	Entry barrier	Dominant firm(s)	
Large firms	2	Word processors	Network effects	Microsoft, Corel
	Telecom, wireless	License needed	KPN Mobile, Vodafone	
	TV	Brand loyalty	Public TV, RTL	
	Soft drinks	Brand loyalty	Coca-cola, Pepsi	
	Exhibitions	Scale economies	RAI, Jaarbeurs Utrecht	
	Sugar	Scale economies	SuikerUnie, CSM	
	Dairy products	Vertical links	Campina, Coberco	
	3	Electricity	Protected local monopolies	Essent, Nuon, Eneco
Gas	Protected local monopolies	Essent, Nuon, Eneco		
Life insurance	Reputation	ING, Aegon, Achmea		
Washing-powder	Brand loyalty	Henkel, Unilever, P&G		
Newspapers	Brand loyalty	PCM, Telegraaf, Wegener		
Packaged foods	Brand loyalty	Unilever, Nestlé, P&G		
Bikes	Vertical links	Gazelle, Accel, Giant		
4	Retail biking	Reputation	Rabobank, ING, ABN-AMRO, Fortis	
Accounting	Reputation	Deloitte Touche Tohmatsu, Ernst & Young, PriceWaterhouseCoopers, KPMG		
Search engines	Network effects	Ilse, Vinden.nl, Alta Vista, Google		
Temporary employment	Network effects	Randstad, Start, Vedioir, Adecco		
Petrol stations	License needed	Shell, BP, Texaco, Esso		
Radio	License needed	Public Radio, Sky radio, Radio 538, Radio 10 FM		
Beer	Brand loyalty	Heineken, Grolsch, Bavaria, Interbrew		

The sectors in table 3.1 are not necessarily tight oligopolies and the other way around, sectors which are not listed could be tight oligopolies. The purpose of this table is to give the reader a rough idea about the sectors we are discussing. There are several reason for why this is only a rough sketch.

First, table 3.1 contains sectors. A sector need not be the relevant aggregation level. What is relevant for tight oligopolies is the level at which entry is possible. For instance, the supermarket sector probably consists of a large range of product markets, such as markets for food, the market for TV magazines, and the market for tooth brushes. Moreover, this sector may consist of many geographic markets, as each town may be considered a separate market. However, it is not economically profitable to enter on a single product and/or geographical market.

Second, a sector may also be smaller than a relevant market. The table only considers sectors in the Netherlands, but the geographic market can be much larger than that. A large multinational firm not only considers loans offered by Dutch firms, but also offers by banks from other countries. Therefore, the sector for loans in the Netherlands may be part of a much larger geographic market.

Moreover, the sector for news papers may be part of the product market for 'news provision', which also includes news provided by radio, TV, and the Internet.

Finally, even if on a relevant market the number of firms is low and there are high entry barriers, the market is not necessarily a tight oligopoly. As we have noted in Chapter 2, other factors play a role as well. If the market is characterised by intransparency, a high innovation rate, infrequent interaction, or Bertrand competition, it may still be hard for firms to realise supranormal profits. Further investigation is needed before it becomes clear whether the sectors in table 3.1 (or the relevant market related to these sectors) are tight oligopolies. We reiterate that the purpose of this study is to provide policy makers with a practical search device to identify tight oligopolies and not to open a wild and unfounded chase on oligopolistic firms. In chapter 5, we will elaborate on the steps to be taken in such an investigation. In chapters 6 to 8, we will investigate markets for short-haul travel, health insurance, wireless telecommunication, financial services, petrol, and radio in more detail.

### **3.4 Conclusions**

This chapter has discussed several empirical questions. We have found that several field studies give some support to the theory that we have discussed in chapter 2, although this support is rather weak in most cases. In contrast, laboratory experiments have confirmed several theoretical results, but it is questionable how valuable these findings are, as experiments take place in an artificial environment. Therefore, a case-by-case approach seems to be necessary, for which we will provide a practical search device in chapter 5.

## 4 Policy responses to tight oligopolies

What can policy makers do against possible welfare reducing behaviour by oligopolistic firms? Chapter 2 has established that a low number of firms and high entry barriers are essential ingredients for a tight oligopoly. Chapter 3 has indicated that several sectors in the Dutch economy have these market characteristics. Although it is not clear that these markets are indeed tight oligopolies, it is good to know what the government can do against welfare reductions.

The government has various tools to work with. In order to sketch a picture of these tools, let us compare tight oligopolies with a person who has an increased risk of getting ill. The government has three types of policy responses available to treat the patient:

- **Prevention:** The government can prevent markets from becoming tight oligopolies. It can do so by blocking mergers and take-overs or by using some ex-ante policy instrument, e.g., by lowering entry barriers. This is the subject of section 4.2.
- **Treatment of symptoms:** The government can accept tight oligopolies after they have been established. It can then punish behaviour, whenever the behaviour is indeed welfare reducing or regulate the market. This is the subject of section 4.3.
- **Cure:** The government can try to undo the tight oligopoly, e.g., by issuing new licenses or by decreasing entry barriers. This is the subject of section 4.4.

### 4.1 Market failure versus government failure

Before discussing various government tools, a word of caution is called for. Oligopoly firms are often big firms that heavily invest in infrastructure, assets or innovation. A government that decides to intervene in this type of market should be aware of the potential consequences of intervention, in particular the consequences of making mistakes. As Fisher (1991) has put it in the context of monopolies:<sup>40</sup>

“Economists and others ought to approach the public policy problems involved in these areas with a certain humility. Real industries tend to be very complicated. One ought not to tinker with a well-performing industry on the basis of simplistic judgements. The diagnosis of the monopoly disease is sufficiently difficult that one ought not to proceed to surgery without

<sup>40</sup> Quote taken from Schinkel and Tuinstra (2002).

thorough examination of the patient and a thorough understanding of the medical principles involved.”

A mistake in a market with a lot of dynamics and big stakes is not only more consequential, also the probability that a mistake is made is larger than in other markets. A lot of dynamics implies more uncertainty, therefore a higher probability of mistakes.<sup>41</sup> Also, the need for intervention reduces when markets tomorrow will look different from markets today. As a consequence of this, government intervention is optimally somewhat biased in favour of lightweight intervention. Chapter 5 will give a systematic approach to tight oligopolies in order to be able to only ‘proceed to surgery’ after a ‘thorough examination of the patient’.

## **4.2 Preventing tight oligopolies**

Suppose that firms are in a situation in which oligopolies are not yet tight but threaten to become tight. This might happen because of exogenous factors, such as a bankruptcy, but also as a result of behaviour conducive to a tight oligopoly, such as mergers and actions that increase consumer switching costs. The government can respond in various ways. First of all, the government can avoid that certain types of policy create a tight oligopoly (§4.2.1). Secondly, merger control is a straightforward and effective way to prevent tight oligopolies from coming into existence (§4.2.2). Finally, the government may also use competition law, policy aimed at lowering entry barriers, and several other policy tools (§4.2.3).

### **4.2.1 Government policy may create tight oligopolies**

Policy makers should be aware that several types of government policy may create a tight oligopoly. A good example is the allocation of licenses to operate a petrol station as it used to take place in the Netherlands. The Dutch government used to assign the licenses such that large petrol companies remained large, small companies stayed small, and new companies could hardly enter the market. Effectively, the government may have created a tight oligopoly. In the case of section 8.1, we will come back to this issue.

### **4.2.2 Merger control**

A merger may directly change the market structure in such a way that the market becomes a tight oligopoly. Horizontal mergers decrease the number of firms in the market so that firms improve the conditions for both co-ordinated effects and unilateral effects. Vertical mergers may have the same effects as vertical restraints, which may strengthen the conditions for a tight oligopoly. If the

<sup>41</sup> See also Schinkel and Tuinstra (2002).



merger turns out to have a negative impact on the market outcome, a merger control office may decide to block the merger.

Merger control is a good example of the power of prevention. In principle one could leave market forces alone, let firms merge if they want to and only punish behaviour if the merged firm gives rise to it. However, there are two reasons why this laissez faire approach is not serving the public interest. Firstly, the costs of regulating a dominant firm can be quite high. Secondly, it is not clear how effective ex post behavioural control is. The advantage of merger control is that something can be done relatively cheaply and without intruding too much into the business of the firms. Good merger control therefore strikes a neat balance between market failure and government failure.<sup>42</sup>

The Merger Task Force is the merger control office of the European Commission (the Commission). If a merger is expected to create or strengthen a dominant position, the Commission may decide to block the merger or to suggest remedies. A dominant position may be either single firm dominance or collective dominance. In the case of oligopolies, the focus is usually on collective dominance, as there is not a firm with a single dominant position.

What is the exact link between merger control and tight oligopolies? Merger control is not explicitly introduced to prevent tight oligopolies as, in the case of oligopolies, it focuses on the creation or strengthening of a collective dominant position. In the *Airtours/First Choice* merger case,<sup>43</sup> the European Court of First Instance (the Court) gave the following interpretation of collective dominance:

“The Court states that three conditions must be met if there is to be a finding of collective dominance. First, given the characteristics of the relevant market, each member of the oligopoly must know how the other members are behaving in order to be able to adopt the same policy. Second, members of the oligopoly must be deterred over time from departing from the policy thus adopted. Third, that policy must be able to withstand challenge by other competitors (“small tour operators”), potential competitors (tour operators with a presence on other markets) or customers.”

It seems likely that the Court has interpreted collective dominance as something similar to what we called ‘co-ordinated effects’ in chapter 2. The first and the second condition seem to refer to conditions for co-ordination: firms have to be able to monitor other firms’ behaviour, and if another firm deviated from an explicit or tacit agreement, firms have to be able to punish the deviator. The third condition is probably about the existence of entry barriers and the absence of countervailing buyer power.

<sup>42</sup> See e.g. *Canoy en Knibbeler* (2002).

<sup>43</sup> See section 6.1 for more details on this case.

Suppose that indeed the correct interpretation of 'collective dominance' is 'the possibility to realise co-ordinated effects'. Then firms have a collective dominant position in a tight oligopoly of which the market structure facilitates co-ordinated effects. Note that a tight oligopoly falls outside this interpretation of collective dominance if it satisfies the conditions for unilateral effects but lacks the right conditions for co-ordinated effects. However, in the its new proposals for merger guidelines, the Merger Task Force suggests to expand the definition of collective dominance to include unilateral effects as well. (See the following box.)

---

### **New plans for concentration**

(Brussels, 11.12.2002, COM(2002), COMMISSION NOTICE 'on the appraisal of horizontal mergers under the Council Regulation on the control of concentrations between undertakings')

The (for our purposes) most important change concerns a new definition of dominance. The Commission gives three main ways in which horizontal mergers may significantly impede effective competition as a result of the creation or the strengthening of a dominant position (text #11):

- (a) A merger may create or strengthen a paramount market position. A firm in such a position will often be able to increase prices without being constrained by actions of its customers and its actual or potential competitors.
- (b) A merger may diminish the degree of competition in an oligopolistic market by eliminating important competitive constraints on one or more sellers, who consequently would be able to increase their prices.
- (c) A merger may change the nature of competition in an oligopolistic market so sellers, who previously were not co-ordinating their behaviour, now are able to co-ordinate and therefore raise prices. A merger may also make co-ordinating easier for sellers who were co-ordinating prior to the merger.

Parts (a)-(c) together make dominance virtually the same as Substantial Lessening of Competition.

Part (b) is new and appears to be closely related to what we have called 'unilateral effects'. Later in its notice, the Commission discusses what types of oligopolies are at stake: (text #25)

Many oligopolistic markets exhibit a healthy degree of competition. Nonetheless, under certain circumstances, some mergers may diminish the degree of competition by removing important competitive constraints on one or more sellers, who consequently find it profitable to increase prices or reduce output post merger. The most direct effect will be the elimination of the competitive constraints that the merging firms exerted on each other. Before the merger, the merging parties may have exercised a competitive constraint on each other. If one of the merging firms had raised its price or reduced output, then it would have lost customers to the other merging firm, making it unprofitable. The merger would thus eliminate this particular constraint. In addition, non-merging firms can also benefit from the reduction of competitive pressure that results from the merger since the merging firms. price increase or output reduction may switch some demand to the rival firms, which, in turn, may find it optimal to increase prices. The elimination of these competitive constraints could lead to a significant price increase or output reduction in the relevant market.

---

Observe that in the *Airtours* case, the Court did not state that collective dominance implies that co-ordination will actually occur after the merger. This is also the case for tight oligopolies as we have stressed in chapter 1. Rey (2002) reports the following about this issue:

“Whether collusion takes effectively place, and “how much” collusion takes place, depend among other things on subjective aspects that are difficult to quantify [...] [T]he merger control office might be in a position to assess the future feasibility or sustainability of collusion rather than its “likelihood””

Rey continues by arguing that the Commission could start the analysis of the effect of a merger with an investigation of the interaction of several factors that are essential or important for co-ordination to be feasible:

“A merger often affects many of the factors that are relevant for the sustainability of collusion and it can affect them in ways that tend to off-set each other. The impact of the merger on collusion can thus again involve conflicting effects. Ideally, the assessment could be done by building a “meta-model” encompassing all relevant characteristics, but as mentioned such a “global model” would probably be intractable and thus quite useless. [...] Rather than a pure “check-list” of relevant factors, it seems indeed more appropriate to develop a clear understanding of why each dimension is relevant, as well as of how it affects collusion – and is affected by a merger. This helps prioritising the relevant factors, by singling out the necessary ingredients (high entry barriers, frequent interactions and little role for innovation) and on the most important factors (number of market participants, their degree of symmetry, and so forth). The structural analysis makes it also easier to build an overall assessment when several factors have a role and push in different directions.”

To clarify his case, Rey gives the following example:

“For example, a merger reduces the number of competitors, which tends to facilitate collusion, but it can make the remaining competitors more asymmetric, which tends to hinder collusion. Economic modelling of these two aspects provides an analytical framework for assessing how they affect the effectiveness of retaliation conducts, and thus how these retaliation possibilities are modified by a merger. This, in turn, helps assessing the net impact of the merger on the sustainability of collusion.”

In the following boxes, we indicate how economists can assist the merger control office with the analysis of merger cases using laboratory experiments and economic theory.

---

### **Laboratory experiments for horizontal merger analysis**

The following quote from Davis and Wilson shows how laboratory experiments may contribute to the proper use of Horizontal Merger Guidelines by the Department of Justice (DOJ) in the US.

“DOJ staff currently use a merger simulation device called the antitrust logit model (ALM) to help assess the potential consequences of horizontal mergers [...]. The ALM generates predictions with an extreme economy of information, information of the type that antitrust authorities either have, or can easily obtain even in the tight time frames in which decisions regarding proposed consolidations must be made. [...] To generate a predicted price effect, only current prices, market shares and single measures of the elasticity of “inside” goods, and the substitutability between products are needed.

The ALM is an intriguing policy tool, and it may ultimately prove to be a useful way to assess the likely effects of horizontal mergers. Importantly, however, the model’s predictions rest on a number of strong assumptions. Not only are the incentives driving comparative static predictions relatively subtle, but demand is presumed to be logit, markets are presumed to be in equilibrium pre-merger, and if products are differentiated, sellers are assumed to be strictly Bertrand competitors.

Experimental methods represent an ideal vehicle for exploring the importance the above assumptions to the value of the ALM as a policy tool. Only in the laboratory can the analyst observe directly critical underlying variables, including demand, the nature of strategic interactions, and costs. Further, in natural contexts assessing the consequences of mergers becomes extremely problematic, due to the many events extraneous to a consolidation that may affect performance.

Although the laboratory observation of theoretical predictions would say little about the relevance of the theory to any particular natural situation, failure of the theory in the laboratory should raise serious questions about the policy relevance of the theory. If the theory cannot organize behaviour in a streamlined “best shot” context, proponents of the theory bear an obligation to explain how the theory can drive behaviour in the much richer, naturally-occurring world.”

---

---

## Economic theory developed for merger control

Compte et al. (2002) develop new economic theory to get a better understanding of the effect of symmetry on the possibility for firms to co-ordinate. This work was inspired by the Nestlé-Perrier merger case:

“The objective of this paper is two-fold: to contribute to the analysis of tacit collusion in Bertrand supergames with (asymmetric) capacity constraints and, from a more applied perspective, to bring a new light on merger analysis and provide useful guidelines for competition policy, taking into account dynamic aspects of competition. It is well-known that capacity constraints affect tacit collusion, as they limit both incentives to deviate (e.g., to undercut rivals) and retaliation possibilities. However, most studies have so far focussed on symmetric situations, where all firms have the same capacity, which leads to ambiguous and counterintuitive results but also considerably limits the scope of application. Studying asymmetric situations makes it possible to analyse the impact of changes in the distribution of these capacities (expansions, but also mergers, split-offs, transfers, ...) and to provide guidelines for competition policy and particularly for merger policy. These guidelines, which differ substantially from those inspired by more static analyses, such as the Herfindahl or other standard concentration tests, are applied to a famous merger that took place in the French bottled water market, the Nestlé-Perrier merger case.”

---

### 4.2.3 Other policy tools

The government has several other policy tools available to prevent properly functioning markets from becoming tight oligopolies. Also in cases where collective dominance is used as an argument to block a merger, there are often complementary policy instruments to help preventing tight oligopolies. It is this link between merger control and other policy instruments that strikes us as important and neglected. Let us consider some policy tools.

- Taking away the threat  
The government might decide to take away the threat, e.g., by lowering entry barriers, reducing switching costs, or breaking up structural links between firms. These are preemptive moves against possible tight oligopolies. The action can often be considered light weight in the sense of not directly interfering with the ongoing business of the firms. However, there must be a considerable indication of a ‘threat’ to justify these preemptive moves.
- Competition law  
If behaviour is explicitly aimed at reducing competition, competition authorities can step in and thereby prevent a tight oligopoly. For instance, the European Commission may declare vertical restraints illegal using Articles 81 and 82 of the Treaty of Rome if these create an entry barrier. Because this policy is more heavily weighted than the previous one, the burden of proof is set rather high, and justifiably so.
- Making behaviour ineffective

Suppose that the behaviour is likely anti-competitive and possibly creating a tight oligopoly, but an Article 82 case seems nevertheless unlikely. The government can then try to make the behaviour ineffective. For instance, the government may issue regulation that prevents the specific behaviour. Also, it may offset the consequences of this behaviour, e.g., by publishing information in consumer magazines that reduces switching costs.

### 4.3 Treatment of the symptoms of a tight oligopoly

Suppose now that a tight oligopoly has been established and that it is not possible or opportune to change that in the short term. There are three strategies possible.

- Competition law: The government decides to rely on competition law (§4.3.1).
- Consumer policy: The government applies consumer policy (§4.3.2). This option can be used in addition to either the first or the second one.
- Regulation: The probability of welfare reducing behaviour is perceived so high that regulation is called for (§4.3.3).

#### 4.3.1 Competition law

This type of government intervention can be seen as non-interventionist, since competition law is always in place, whatever the status of an oligopoly or other market form. However, the Competition Authorities can use more possibilities than direct punishment using articles similar to Article 82 of the Treaty of Rome.

Similar to what the Office of Fair Trading does in the UK,<sup>44</sup> competition authorities could thoroughly analyse a sector and come up with recommendations to the sector and the responsible Ministry. In particular in the case of a tight oligopoly, such an instrument is quite attractive. The Netherlands' Competition Authority NMa does not use this possibility to its full potential.

The following box shows how econometric analysis may indicate co-ordinated effects in a certain market, which may be important in cases related to the abuse of a collective dominant position.

<sup>44</sup> See <http://www.of.t.gov.uk/Market+investigations/default.htm>

---

## Do firms co-ordinate?

In Chapter 2, we made the distinction between co-ordinated effects and unilateral effects. An interesting empirical question is whether this distinction is meaningful. In other words, do firms co-ordinate in practice?

This question was the subject of a study by the hand of Rees (1993). Rees investigates the white salt market in the UK, which is dominated by only two firms. This market had been examined by the UK Monopolies and Merger Commission (MMC), which found that the firms had “severely restrained price competition” (quote taken from Rees). According to Rees, the MMC had based this finding on evidence such as communication between the firms, the observation of virtually identical prices of both firms, and price changes that occurred more or less simultaneously. On the basis of his own analysis, Rees argues that the MMC’s conclusion was correct. However, the focus of his analysis was essentially different from the focus of the MMC. He starts with the null hypothesis that the two firms play one-shot Nash, i.e., that there are only unilateral effects. He rejects this hypothesis, as he finds that the firms’ prices are significantly above the one-shot Nash price of several oligopoly models. The firms seemed to have co-ordinated their behaviour, so that indeed co-ordinated effects were imminent.

Another empirical study that aimed at finding out whether firms co-operate can be found in a paper by Slade (1995). She performs a meta-analysis of 12 industry studies, testing whether firms in an oligopoly play one-shot Nash equilibria. In other words, she tests the hypothesis if there are no co-ordinated effects. Using 12 case studies of several industries, she finds the opposite: in the majority of cases, 9 to be precise, the prices are higher than the one-shot Nash outcome. Therefore, also the study by Slade indicates that, at least in some cases, firms co-ordinate.

---

### 4.3.2 Consumer policy

The government may also take measures on the demand side. These measures are aimed at increasing consumers’ willingness to change the provider of their goods and can be complementary to either regulation or actions by the Competition Authorities. Examples of these measures are increasing transparency (on the demand side) and reducing switching costs. The government (or consumer organisations) can increase transparency by publishing information about the existence of goods, the quality of goods, and price comparisons between goods. An example of reduced switching costs is the obligation of number portability in the context of telephony.

### 4.3.3 Regulation

Regulation is arguably the most heavy handed form of intervention. Therefore, it should only be applied in the case that both competition law and consumer policy are not powerful enough to treat the symptoms of tight oligopolies. Regulation of oligopolies can take place on several dimensions, such as price regulation, quantity regulation, and quality regulation. Although ideally, regulation leads to an improvement of the performance of the market, there is a long list of problems related to it. We discuss a few in the following box, and give a suggestion how to partly solve them.

Given the preference for lightweight instruments, regulation is only in place if other remedies fail. The New Regulatory Framework of the EU for telecommunications<sup>45</sup> acknowledges this and comes up with the following criteria for regulation:

(1) Static criteria

- Existence of high and non transitory entry barriers and of natural monopolies.

(2) Dynamic criteria

- Impossibility to overcome entry barrier within relevant time.
- Lack of important innovations.

(3) Insufficiency of competition law remedies

- Are Competition law remedies not sufficient to redress market failures over a foreseeable time?
- Are interventions needed to redress market failure extensive because assessment of detailed cost?
- Are frequent interventions needed?

Practical examples of regulated industries are gas, water, electricity, telecommunications, post, airlines, and railways. Notice that all these industries satisfy the criteria of the New Regulatory Framework.

Observe that these criteria imply that even if an industry has elements of a tight oligopoly, not all relevant markets in the industry should be regulated. To clarify this statement, we argued in chapter 2 that high entry barriers and lack of innovation may both be a market characteristic of a tight oligopoly. It follows from the dynamic criteria that regulation is only needed if these market characteristics are expected not to change. An entry barrier may be temporary and the innovation rate may increase in the near future so that there is no reason for regulatory intervention.

<sup>45</sup> See <http://europa.eu.int/comm/competition/antitrust/others/telecom/conference.html>



---

### Why is regulation a heavy handed form of intervention?

Regulation of markets is a heavy handed form of intervention, as it may distort the economy in several ways.

The first and most obvious distortion of regulation is the cost of the regulatory agency. The government needs to hire well-qualified people, needs to invest in data sources, and needs to create an enforcement mechanism through which the regulatory interventions are implemented.

The second problem is incomplete information. When deciding on the optimal way to intervene in the market, the regulatory agency should be informed about all relevant variables, such as demand characteristics, and the cost structure of the regulated firms. Usually this information is not available, or only available at a very high cost.

Thirdly, regulation may lead to perverse incentives from the side of the firms. For instance, in the case of unregulated prices, firms are willing to invest in new technologies, that either improve the current technology, or create new products. This incentive may be blocked in the case of price regulation. Another type of perverse incentive due to regulation is known in the economic literature as the Averch-Johnson effect, which is defined as follows. When regulation is based on a rate-of-return on capital, firms have an incentive to overinvest in capital relative to other inputs such as labour.

Then there is the problem of price discrimination. It may be well possible that, in order to come to optimal regulation, different consumers should pay different prices for the same good. In some cases, this may be politically undesirable, or practically infeasible.

Another problem is regulatory capture. When being regulated, firms in an industry may find it profitable to lobby politicians in order to make the regulation as interesting for them as possible. Viscusi et al. (1995) report about regulation in the U.S. that “[a]t least up to the 1960s, one empirical regularity is that regulation is pro-producer in that it tends to raise industry profit. In potentially competitive industries like trucking and taxicabs, regulation supported prices above cost and prevented entry from dissipating rents. In naturally monopolistic industries like electric utilities, there was some evidence that showed that regulation had little effect on price, so that above-normal profit was allowed to be earned. The empirical evidence seemed to support the claim that regulation was inherently pro-producer”.

Finally, high fluctuating demand may be a problem. For instance, the demand for electricity is much higher during the day than during the night. It is necessary to make very a very detailed pricing scheme with different prices during different periods during the day, different days during the week, and different periods during the year. This may result in a lot of work for the regulatory agency.

An interesting way to partly solve the above problems is yardstick competition. Under yardstick competition, firms are awarded according to their performance relative to each other. For instance, their efficiency is compared to that of other firms that offer similar products or services, and their revenues are made dependent on this. This reward mechanism induces a process of competition between firms. For a more detailed discussion of yardstick competition, see CPB (2000).

---

## 4.4 Curing tight oligopolies

Suppose now that oligopolies are tight but the government is willing to intervene and change the market structure. It can use several tools to establish that. As a low number of firms and high entry

barriers are both crucial elements for unilateral effects and co-ordinated effects, the most important tools are related to:

- Increasing the number of firms.
- Reducing entry barriers.

Before we discuss these tools, we stress that in some cases, the government needs to rely on a detailed investigation of the market. In the past ten years, several governments invited economists and game theorists to think about the organisation of markets at a very detailed level. Examples of designed markets in which these scientists played a role are the electricity market, the labour market, and auctions. This led to the development of the new field of 'market design' in economic science. For some details see the box below.

---

### Market design

"The 1990's were a formative decade for design economics because economists were presented with opportunities to take responsibility for the design of detailed rules for complex markets, and their suggestions were quickly implemented in large, operating markets. This in turn produced an opportunity to evaluate the new designs. Two notable design efforts were:

- the design of the labour clearinghouses such as the one through which American doctors get their first jobs; and
- the design of auctions through which the US Federal Communications Commission sells the rights to transmit on different parts of the radio spectrum.

The importance of good design is nowhere better illustrated than in a third set of markets in which economists have played a role, but in which politicians and regulators also continue to be deeply involved, namely markets for electric power. (See Wilson (2002) for an account of the most detailed design work.) Economists participated in the design of only parts of these markets, while other parts remained subject to regulation. An unworkable hybrid resulted in California, where utility companies were brought to the verge of bankruptcy by the rising prices in the unregulated wholesale market, which far exceeded the regulated prices at which electricity should be sold to consumers."

These words come from the introduction of an article by Al Roth (2002), published in the leading scientific journal *Econometrica*. In the remainder of this paper, Roth reports that in the design of these markets, economic theory turned out to be too stylised to fill in all the important details. Economists then discovered laboratory experiments and computer experiments to be a natural complement to the theory.

The labour market for young doctors and the auctions for mobile telecommunication turned out to work very well. The first years of operation of the labour clearing house were more successful than earlier designs. Most auctions by the Federal Communications Commission resulted in an efficient allocation of the licenses. As a bonus, the US government raised tens of billions of US dollars. According to Roth, economists and game theorists have contributed substantially to the success of these markets.

---

#### 4.4.1 Increasing the number of firms

In some cases, the government can increase the number of firms in a market by allocating licenses to operate in the market to entrants. In the Netherlands, the government intends to allocate new licenses for petrol stations and for commercial radio stations. The government may use an auction, a multi-attribute auction, or a beauty contest to allocate the licenses.<sup>46</sup>

As an alternative, the government may decide to split up large firms. This happened for instance in the railway sector in the UK. In 1994, the UK government split up British Rail. In an auction, about 100 railway tracks were reallocated to a large number of new firms. Splitting up British Rail increased competition both for the rails and (a little bit) on the rails. Competition for the rails took place in the auction, which selected the firms which needed the lowest amount of subsidy. Competition on the rails takes place between two companies that offer services between two cities over different rail tracks.<sup>47,48</sup>

#### 4.4.2 Reducing entry barriers

As stressed before, sometimes government policy may create entry barriers. For instance, the obligation to have a license to operate in a market may block the entry of newcomers.<sup>49</sup> Moreover, the government may use too permissive block exemptions related to competition law, i.e., certain violation of the competition law are ignored for a certain sector. There may be good reasons outside competition law to do so, but a block exemption could make it easier for incumbent firms to be involved in anti-competitive conduct. The following box includes a discussion on a block exemption on certain types of vertical restraints in the European car market.

There are several ways in which the government can reduce entry barriers. The most obvious one is liberalisation. The Dutch government has liberalised or is about to liberalise a large range of markets, such as the taxi market, the energy market, and the telecommunication market. The aim is to open up the market for other (foreign) firms to be active in the market, thereby possibly curing an existing tight oligopolies.

<sup>46</sup> See MDW (2002) for more details .

<sup>47</sup> Of course, splitting up firms rarely happens in practice for a good reason, as government failure is highly probable in the process.

<sup>48</sup> We use the example as an illustration of how the government could cure tight oligopolies. At the moment, it is far from obvious that the British railway market is working optimally.

<sup>49</sup> Incidentally, this can be perfectly justifiable, e.g. when frequencies are scarce.

---

## Vertical restraints on the European car market

Brenkers and Verboven (2002) investigate the effect of removing vertical restraints in the European car market. The European Commission has long used a block exemption for selective and exclusive distribution systems for the sales of cars. Selectivity means that each manufacturer chooses its dealers, and prohibits these to sell cars to independent car resellers. Exclusivity refers to a territorial restraint, i.e., an agreement between the manufacturer and the dealer that the dealer has the exclusive right to sell the manufacturer's cars in a certain area.

The combination of selectivity and exclusivity may lead to high consumer prices due to low intrabrand competition, both at a national level and an international level. Intrabrand competition is the competition between dealers who offer the same brand. International intrabrand competition is limited due to the combination of the two types of vertical restraints. Selectivity prevents systematic arbitrage, while exclusivity prevents dealers to set up branches in other countries. The result is that manufacturers may be engaged in substantial international price differentiation. Indeed, parallel imports seem to be a very small fraction of total sales (about 1%), despite large price differences between countries. In addition, national intrabrand competition is limited as a consumer's choice in a certain area is limited to one dealer.

In September 2002, the block exemption expired. The European Commission has been considering a system that generates more flexibility. This system allows manufacturers to impose either selectivity or exclusivity, but no longer the combination of the two. Brenkers and Verboven examined the possible effects of this new policy, using data on the European car industry, and assuming a model with product differentiation. They consider the following two scenarios.

- The previous system guaranteed sufficient intrabrand competition at the national level, i.e., the new system is only expected to increase intrabrand competition internationally. Total welfare is estimated to increase in the range of 0-2 billion euros per year.
- The old system limits national intrabrand competition as well. In this case the welfare gains are expected to be somewhere between 6-8 billion euros per year. However, there could be some countervailing power in this situation due to efficiency gains.

If the above results are accurate, it seems likely that removing the block exemption will improve welfare.

---

## 4.5 Conclusions

When the government is concerned about tight oligopolies it can follow three types of strategies.

- Prevention: The government can prevent oligopolies from becoming tight oligopolies. It can do so by blocking mergers and take-overs or by using some ex-ante policy instrument, e.g., by lowering entry barriers.
- Treatment of symptoms: The government can accept tight oligopolies after they have been established. It can then punish behaviour, whenever the behaviour is

indeed welfare reducing (which is not necessarily the case in tight oligopolies) or regulate the market.

- Cure: The government can try to undo the tight oligopoly, e.g., by issuing new licenses or by decreasing entry barriers.

Which of these three types is appropriate depends inter alia on (1) whether the market being a tight oligopoly has serious consequences for welfare, (2) the existence of countervailing power, (3) signs that the problem is temporary, (4) the costs associated with the policy instruments, and (5) the likelihood of government failure.

In the conclusion of this report, we will sketch what is the best of the three policy types drawing lessons from our cases in chapters 6-8. To be more specific, in the case that the market is not a tight oligopoly at the moment, but threatens to become one without further intervention, the government has a choice between 'preventing' the tight oligopoly from coming into existence or 'treatment of symptoms' if the tight oligopoly is created and if firms behave anti-competitively. In the case that the market is already a tight oligopoly, the government may decide to 'cure' the market or to rely on 'treatment of symptoms'. After the type of response has been decided, there are still many different ways in which the government can act. In chapter 5, we will develop a diagnostic approach which could help policy makers to make the best decision.



## **PART II. Cases**

In Part II, we will illustrate the lessons from Part I in six cases. The set-up of this part is as follows. Chapter 5 defines a 'diagnostic approach' that governments can use to analyse tight oligopolies in a systematic way. This case-by-case approach is needed, as chapters 2 and 3 have revealed that each case requires separate analysis. The diagnostic approach consists of the following five steps: (1) Identify the relevant market and 'connected' markets, which together shape the set of connected markets; (2) study market structure, and assess how firms behave on the set of connected markets; (3) assess whether the market is a tight oligopoly, or may become one without intervention; (4) analyse countervailing powers; and (5) apply proportionate remedies.

In chapters 6-8, we will use this diagnostic approach in order to investigate the six cases. In these chapters, we will stick closely to the three policy types we distinguished in Part I. Chapter 6 is about 'prevention'. The Airtours/First Choice merger case and health insurers will illustrate how the government could prevent markets from becoming tight oligopolies. In chapter 7, studies of tight oligopolies in mobile telecommunications and the banking sector will give a detailed description about 'treatment of symptoms'. Finally, in chapter 8, we will discuss the government's plans to 'cure' the petrol market and the radio market. In each of the three chapters, we will point the reader to several lessons for policy against welfare reducing behaviour by tight oligopolies that can be learned from the cases.

One word of modesty is appropriate here. Almost all the chosen cases are complex problems that each deserve an entire study. We go through these cases in a rather swift and at times superficial way. Our main purpose is to demonstrate the diagnostic approach, and not necessarily to gain many new insights about health care, radio frequencies etc.





## 5 A diagnostic approach

Chapter 2 has shown that in theory, several market characteristics play a role in a firms' possibility to realise supranormal profits. There is some empirical support for the theory, but not enough to apply general rules to all markets. Therefore, there is need for a more detailed analysis.

In this chapter, we describe a diagnostic approach which should lead to a better understanding of markets, and to possible policies related to anti-competitive behaviour by firms in a tight oligopoly. This diagnostic approach has been developed by Canoy and Weigand (2002) with the aim to provide competition authorities, regulators, and other public bodies a useful tool in fighting tight oligopolies. While a number of elements in the diagnostic approach are common practice in market studies and antitrust research, there are also a few new elements.

### 5.1 Step 1: The set of connected markets

Step 1 of the diagnostic approach identifies the 'set of connected markets' which consists of the relevant market together with some 'connected markets'. In the current practice of the European competition law, the European Commission often starts a merger case or a case related to the abuse of a dominant position by delineating the relevant market. Policy makers also need to delineate 'relevant markets' but for another purpose. When considering policy measures, it is important to analyse the market, e.g. by identifying who is active on the market, what the entry barriers are, etc. To be able to do that one needs to know what 'the market' is.

However, the analysis should not stop after delineating the relevant market. When assessing market performance on a certain relevant market, all markets that (strongly) influence behaviour on the relevant market have to be taken into consideration. The set of connected markets is the set of markets that includes all markets that affect behaviour on the relevant market.

One important reason to analyse the set of connected markets (instead of the relevant antitrust market) is to identify the relevant scale of entry. Tight oligopolies are characterized by high entry barriers. It is therefore a must that the aggregation level at which to study a market, is the one relevant for entry. In exceptional cases the relevant scale of entry coincides with the relevant market. In most cases, one needs to analyse more than one (relevant) market.

Sometimes conduct by firms in closely related markets has a strong influence on the functioning of the relevant market. It is therefore insightful to identify these markets as well. We call such markets 'connected' markets.<sup>50</sup> Behaviour on these markets influence the behaviour on the relevant market. A connected market is a market that is horizontally or vertically related to the relevant market. We will say that markets are connected if the following two conditions are satisfied:

<sup>50</sup> This notion has been introduced by Canoy en de Bijl (2000).

(1) A relationship of any of the following types exists between the markets:

- supply-side relationships, for instance:
  - shared use of resources by the firm, economies of scale and scope;
  - information about the operating costs in one market is helpful to enter another market;
- demand-side relationships, for instance:
  - a firm sells complementary goods, such as hardware and software (“horizontally related” markets);
  - a firm sells substitutes (“horizontally related” markets);
- mixed relationships are links that imply both the supply side and the demand side, for instance:
  - a firm builds a customer base in one market and sells information about these customers as a product in another market;
  - a firm builds a reputation or brand name in one market, which alleviates problems of asymmetric information for consumers in another market (the brand name is a shared resource);
  - a firm sells unrelated goods to a single customer base (the customer base is a shared resource);
- vertical relationships, i.e., markets that are related within the supply chain (e.g. a single firm is active in upstream and downstream markets). Vertical relationships between markets can have many shapes as we have explained in chapter 2. A vertically related market is connected to the relevant market when a firm’s conduct in this market has influence on the performance of the relevant market. Examples are contracts between upstream and downstream firms related to resale price maintenance, territorial restraints, and exclusive dealing. These may be used to impose entry barriers, to soften competition, or to facilitate cartel enforcement.

(2) The link is “inherently real” from the viewpoint of the firm’s business definition, that is, the link is rooted in the firm’s business operations or in the market’s demand side.

Without the second condition almost all markets are connected, so that it would not be possible to define the market in a sensible way.

## **5.2 Step 2: Structure of and behaviour on the set of connected markets**

The second step is to observe the market characteristics of, and the behaviour by firms on the set of connected markets. This step is mainly factual and descriptive: who are the main players, what is their market share, which entry barriers exist, what other factors are of importance etc. More specifically linked to Chapter 2, the following questions are interesting: do we observe essential and important market characteristics for co-ordinated or unilateral effects? Have firms entered or left the set of connected markets? How do firms announce price changes? Do firms follow the pricing policy of a price leader? Do firms use cross-subsidies? Are firms engaged in establishing horizontal or vertical links? The description of structure and behaviour forms the basis of the next step, the assessment.

## **5.3 Step 3: Assessment of structure and behaviour**

Step 3 establishes whether the market structure is such that the market is a tight oligopoly, or whether firms' behaviour is likely to change an oligopoly into a tight oligopoly. In this step, the focus of the researcher is mainly on the question: does or will the market structure and firms' behaviour make unilateral effects or co-ordinated effects sustainable for a long period of time? This step involves elements of judgement and is therefore less factual than step 2. In other words, do we have enough confidence in assessing that this market is (not) a tight oligopoly?

## **5.4 Step 4: Countervailing powers**

Suppose that step 3 results in the assessment that a market is a tight oligopoly. More is needed before one can take a look at proportionate remedies. The fourth step looks at countervailing powers. Chapter 2 has stressed that potential welfare reducing behaviour by firms in a tight oligopoly may be inhibited by sources of countervailing power. Candidates are consumers unions, the threat of new firms entering the market, innovation, fringe players, buyer power, and efficiency.

Countervailing powers are important to do justice the potential trade-offs between market failure and government failure, i.e., it is not necessary to engage in costly interventions in the market if less costly countervailing powers can achieve the same goal.

## 5.5 Step 5: Proportionate remedies

Steps 1-4 lead to an assessment of tight oligopolies and forces that can countervail possible welfare reducing actions by firms. If these countervailing powers are weak, policy responses are conceivable. The policy responses should be proportional to the seriousness of the problem. In chapter 4 we argued that oligopolies are prone to welfare reducing actions but also to (possibly serious) government failure. Therefore policy should not overshoot. Step 5 aims at finding proportionate remedies. The remedies may be found in prevention, treatment of symptoms, or cure as we have explained in chapter 4.

## 6 Prevention

In the previous chapters, we have stressed that tight oligopolies are potentially undesirable. Sometimes it is feasible for governments to prevent a market from becoming a tight oligopoly. Prevention is welfare enhancing if (1) the probability of welfare reducing behaviour (after the emergence of a tight oligopoly) is high, (2) prevention is possible at a low price, (3) it is possible with a low risk on government failure, and (4) treatment of symptoms is costly. An important remark is that a government that prevents all mergers that may lead to a tight oligopoly is intervening too heavily in market forces, thereby missing efficiency opportunities. However, in other situations it may be welfare enhancing to block mergers. In our first case, we will consider merger control by the European Commission, focussing on the famous Airtours/First Choice case.

The second case is about a 'natural' moment of reflection that may occur if a market is redesigned, for instance by the allocation of new licences or by a liberalisation process. Such a natural moment gives the government an opportunity to design the market and prevent the creation of a tight oligopoly without intruding too much. We will illustrate this point in a study of the market for health care in the Netherlands. We will conclude this chapter with several general lessons for governments when they intend to prevent the creation of tight oligopolies.

Before we discuss the cases, let us repeat that both involve complex problems that deserve far more extensive studies. We have gone through these cases in a rather swift and at times perhaps superficial way. We introduce the cases to illustrate our diagnostic steps as well as the merits of preventing of tight oligopolies vis-a-vis other policy responses. In both cases, more extensive studies are available.<sup>51</sup>

### 6.1 Merger control: the Airtours case

The case under consideration is the much debated Airtours/First Choice case. The case has many interesting clues and asides but is discussed here with three purposes: (1) to analyse the relationship between tight oligopolies and the legal notion of collective dominance; (2) to show that merger control in Europe has not always been successful in preventing tight oligopolies; and (3) to show which policy instruments can complement merger control.

#### 6.1.1 Case description

In 1999, the European Commission (henceforth 'the Commission') disapproved a proposal by travel company Airtours plc (Airtours) to acquire its competitor First Choice plc (First Choice). The Commission made this decision arguing that the take-over would have created a collective dominant

<sup>51</sup> European Commission (1999) and CPB (2003).

position in the relevant market by the new firm and two of its main competitors. Airtours brought an action before the Court of First Instance (the Court) for annulment of the Commission's decision. In 2002, the Court indeed reversed the Commission's decision, claiming that it did not convincingly prove that the concentration would have created a collective dominant position.

Both Airtours and First Choice are UK travel companies. Airtours is active in tour operating, travel agencies, charter airlines, hotels, and cruise ships, in several countries in Europe and North America.<sup>52</sup> First Choice is active in tour operating, travel agencies, charter airlines, seat broking, and car rental broking, with operations mainly in the UK and Ireland.

In 1999, Airtours proposed to acquire the whole of First Choice by way of a public bid. The Commission received a notification of the proposed take-over, and rejected it on the basis of the Merger Regulation. The argument of the Commission is the following. The take-over will create a collective dominant position in the UK by the new firm, and two other leading tour operators, Thomson Travel group plc (Thomson) and Thomas Cook Group Limited (Thomas Cook). In 2002, the Court annulled the Commission's decision.

The Court interpreted 'collective dominance' as follows.<sup>53</sup>

"In the Court's view, the Commission has not proved that the concentration would have created a collective dominant position capable of restricting competition in the United Kingdom short-haul package holiday market. The Court states that three conditions must be met if there is to be a finding of collective dominance.

First, given the characteristics of the relevant market, each member of the oligopoly must know how the other members are behaving in order to be able to adopt the same policy.

Second, members of the oligopoly must be deterred over time from departing from the policy thus adopted, i.e. there must be retaliation possibilities.

Third, that policy must be able to withstand challenge by other competitors ("small tour operators"), potential competitors (tour operators with a presence on other markets) or customers.', i.e. countervailing powers should be weak."

Seemingly, the Court views 'collective dominance' as the ability of firms to tacitly co-ordinate their business. It refers to observing and deterring deviations from "the same policy", by which it supposedly means tacit co-ordination. In other words, the Court seems to refer to the conditions for co-ordinated effects. It is indeed not clear whether the Commission has a strong case in this respect. However, assuming that otherwise the Commission's analysis of the market is correct,<sup>54</sup>

<sup>52</sup> Airtours is now named MyTravel.

<sup>53</sup> See the Court's press release published after its decision to annul the Commission's decision.

<sup>54</sup> Which is possibly an heroic assumption in the light of the challenges by the Court of First Instance.

we argue that the Commission did have a sound economic argument to forbid the take-over, namely that the take-over would have improved the conditions for unilateral effects.

### 6.1.2 Diagnostic approach

The five steps of our diagnostic approach are largely based on the case description provided by the Commission.<sup>55</sup>

#### Step 1: Set of connected markets

The Commission is very specific about the relevant market and markets that are closely related to it.<sup>56</sup> With respect to the relevant market, it distinguishes between the relevant geographic markets (which are the UK and Ireland) and the relevant product market (which is short-haul foreign package holidays). Moreover, connected markets are travel agency services and supply of air seats, in which both parties are vertically integrated. As there are no other connected markets which play a vital role, the relevant market and these two connected markets together form the set of connected markets.

Let us elaborate a bit more on this finding. The Commission argues that the market for travels is to be divided on the basis of two dimensions. Firstly, a distinction should be made between ‘package’ holidays (which combine a return trip to the destination, accommodation, and other services on the location of the holiday) and holidays in which consumers buy the various elements separately. Secondly, the distance between the home location and the holiday destination are of crucial importance. The Commission identifies three separate segments: (1) domestic holidays, i.e., holidays within the home country of the customer, (2) short-haul foreign holidays, i.e., holidays abroad within a distance of about three travel hours, and (3) long-haul holidays, i.e., holidays that involve a flight time substantially above three hours. This distinction is natural, as each category needs a different form of transportation to the destination, and serves consumers with a different taste. The Commission decides that the relevant product market in this case is short-haul foreign package holidays, as this is the segment in which both companies are mainly active.

With respect to the relevant geographic markets, both firms’ activities in the short-haul foreign package holidays market overlap mainly in the UK and Ireland. The Commission argues that this market is essentially national in character, so that both the UK and Ireland are separate relevant markets. The Court did not reject the definition of the relevant market by the Commission.

The markets for travel agency services and airline seats are connected to the relevant market. Both Airtours and First Choice are vertically integrated into these markets. For travel companies, it is important to be active in the travel agency market. In 1999, the large majority of package tour

<sup>55</sup> See [http://europa.eu.int/comm/competition/mergers/cases/decisions/m1524\\_en.pdf](http://europa.eu.int/comm/competition/mergers/cases/decisions/m1524_en.pdf).

<sup>56</sup> European Commission (1999, paragraphs 4-50).

sales took place via travel agents, despite the existence of alternatives, such as a direct transaction with the tour operator, or over the Internet. Therefore, being in control over travel agents probably helped the travel companies to market its products more effectively. Moreover, firms were able to create an entry barrier to newcomers in the relevant market, as it is unlikely to be profitable for a small firm to open its own travel agency.

Vertical integration in the airline seats market is also important for travel companies. Airline seats are an essential facility for their package tours. Indeed, both Airtours and First Choice operate their own (charter) airlines. This is another possibility for the companies to impose an entry barrier as newcomers cannot be expected to be large enough to operate their own charter services. Moreover, scheduled flights are often more expensive and do not always fly to airports close by the most popular destinations.

Several other markets are connected to the relevant market, such as the market for long-haul travel, the market for accommodation, the domestic market, the market for other types of holidays, the markets for other types of leisure, and the advertisements market. However, the analysis of the Commission indicates that none of these markets play a vital role in the assessment of the merger, so that they are not part of the set of connected markets.

#### **Step 2: Structure of and behaviour on the set of connected markets**

The Commission distinguishes several important structural characteristics of the set of connected markets. The relevant market in the UK has the following characteristics:

- A low number of firms: The UK market of short-haul foreign package holidays is dominated by only four firms. According to the Commission's report, Airtours has 19% market share, First Choice 15%, Thomson 31%, and Thomas Cook 20% in the summer of 1998. The shares of other firms are negligible. The four major firms together have a market share of 85%.<sup>57</sup>
- High entry barriers: The main barriers to entry are related to the availability of (1) travel agency services and (2) air seats. A newcomer is dependent on travel agencies to sell its products. The largest four operators on the market for short-haul foreign package holidays have their own travel agencies, which are not likely to offer distribution services at favourable terms. Moreover, for a newcomer, it is unlikely to be viable to vertically integrate into airline operation. Not only will they generate insufficient demand to make it interesting to own their own aircraft fleet, but they

<sup>57</sup> European Commission (1999, paragraphs 72-74).



will also have less easy access to good quality airline slots needed to operate it. The Court is quite sceptical about the level of entry barriers but does not provide convincing arguments for this scepticism.<sup>58,59</sup>

- Cournot competition: Firms compete à la Cournot. Before the start of each season they make crucial decisions regarding their production capacity, i.e., the number of air seats, the number of hotel rooms, and so forth. During the season, firms choose the prices for their products. Effectively, this implies that firms are involved in Cournot competition.<sup>60</sup>
- Symmetry: The firms are symmetric due to product homogeneity, and similar cost structures.<sup>61</sup>
- Transparency: The market is transparent as firms can predict the other firms' capacity choices before the start of the season pretty well on the basis of past experience, and firms can observe the prices offered during the season.<sup>62</sup>

The most important behavioural aspect is that Airtours and First Choice intended to merge.

### **Step 3: Assessment of structure and behaviour**

The proposed take-over of First Choice by Airtours may create a tight oligopoly on the relevant market. This is due to the fact that the conditions for unilateral effects are improved. The market characteristics are not likely to change in such a way that co-ordinated effects are more likely to occur than before the take-over.

<sup>58</sup> European Commission (1999, paragraphs 114-123).

<sup>59</sup> The Court does not agree with the Commission on this point. In its press release it writes: "[T]he Court notes that the Commission erred in its assessment of the reaction of small tour operators, potential competitors and United Kingdom consumers. It underestimated their ability to compensate for the establishment of a collective dominant position. Competitors can increase supply in order to take advantage of the opportunities inevitably afforded by any attempted restriction of capacity. Furthermore, in such a situation, tour operators active in other geographical markets or in the United Kingdom long-haul package holiday market would have an incentive to enter the relevant market quickly."

<sup>60</sup> European Commission (1999, paragraphs 59-66).

<sup>61</sup> European Commission (1999, paragraphs 88-91 and 99-101).

<sup>62</sup> European Commission (1999, paragraphs 102-110).

Let us start with co-ordinated effects. This is what ‘collective dominance’ seems to be about according to the Court.<sup>63</sup> Chapter 2 has established that a low number of firms, high entry barriers, and frequent interaction are essential factors for co-ordinated effects. According to the Commission’s analysis, the first two characteristics hold true for the market after the merger. Tacit collusion seems to be difficult, though, as there is no frequent interaction. There is a substantial lag between the time that a firm deviates from possible agreements, and the opportunity of firms to punish such behaviour. The firms mainly compete on the basis of capacity, which the firms only set once a year, between 12 and 18 months in advance of a travel season. They may co-ordinate by choosing low capacity, so that they can demand high prices during the season. Once capacities are chosen, firms have little opportunity to punish other firms by choosing low prices, as they do not have enough capacity to attract extra customers. So, if a firm does deviate from (tacit) agreements by choosing a large capacity, other firms can only punish this behaviour two and a half years later, which seems to be a serious time lag.

In contrast, unilateral effects seem to be more likely to occur. A low number of firms, high entry barriers, and Cournot competition are essential elements for unilateral effects. All three are satisfied and the first condition is improved after the take-over as the number of major firms decreases from four to three.

Concluding, the case for coordinating effects is weak. Since the Court of First Instance seems to equate coordinated effects with collective dominance there is indeed no case for collective dominance. In the new proposals for merger guidelines, the Merger Task Force is suggesting to expand the definition of dominance to include unilateral effects.<sup>64</sup> Since the case for unilateral effects is much stronger in the Airtours case, there is more chance to block the merger using the new definition. Whether or not there is a case here depends inter alia on the level of entry barriers. Here the Commission and the Court have diverging ideas, but neither of the two provides convincing arguments for their point of view.

#### **Step 4: Countervailing power**

Potential countervailing power may come from three sources: efficiency, fringe players, and consumers. However, these sources are weak according to the Commission’s analysis.

<sup>63</sup> The Commission seems to have interpreted ‘collective dominance’ less narrowly than the Court. In paragraph 150 of its case description it writes: ‘What matters for collective dominance in the present case is whether the degree of interdependence between the oligopolists is such that it is rational for the oligopolists to restrict output, and in this sense reduce competition in such a way that a collective dominant position is created.’ (The emphasis is ours.) The Commission does not mention here that firms should co-ordinate their restriction in output, solely that they have an incentive to do so. It seems that what we have called ‘unilateral effects’ is also included in the Commission’s interpretation of collective dominance, whereas it is not included in the Court’s interpretation.

<sup>64</sup> See the box in section 4.2.

Let us start by efficiency. When Airtours takes over First Choice, there may be substantial efficiency gains as economies of scale and scope may arise, so that the equilibrium price may decrease rather than increase. However, “the relative importance of scale reduces above a certain level. In particular as far as charter airline operations are concerned, Professor Neven, the economic expert of Airtours, in his submission estimates that the scale economies related to fleet size are exhausted at the level of 15-20 aircraft. According to Professor Neven this is a relatively small fleet size. This may be so compared to the large US airlines or the large European flag carriers. However, in the present market it should be borne in mind that 15-20 aircraft would be a very substantial fleet. According to their annual reports in 1998 Airtours had a total fleet of 36 aircraft, Thomson 41 aircraft, and First Choice 25 aircraft.”<sup>65</sup>

There are several fringe players in the market, which may be powerful enough to discipline the major firms to seriously compete with each other. However, according to the Commission’s analysis, fringe players are not capable to effectively compete with the major firms. The majority of these players operate in ‘niche’ markets, such as skiing, sailing and group travel. Moreover, most small firms in the market lack vertical integration, as they do not have their own airline seats and travel agents. Especially upstream vertical integration in the air seats markets results in a cost advantage to the large firms, as small firms have to buy capacity on the market, which is more costly and risky. Even worse, the market may not offer appropriate charter seats, so that a fringe player may be simply unable to serve potential demand for package holidays.<sup>66</sup> The merger would even weaken the power of fringe players: “Consequently, the removal of First Choice would further marginalise the smaller independent and non-integrated tour operators.”<sup>67</sup> Also in this case the Court takes a different view claiming that the power of fringe players is quite strong. Again it is not possible for us to weigh the strength of the arguments here since crucial information is lacking for that.

Finally, buyer power may off-set potential anti-competitive behaviour by the major firms. For instance, consumers may have buyer power as there may be close substitutes. However, according to the Commission, “it is [...] clear that people are [...] willing to pay a certain amount more for their holidays if prices rise generally”.<sup>68</sup> This implies that substitutes are not close enough to discipline firms to sell their holidays at a competitive price.

#### **Step 5: Proportionate remedies**

According to the definition of collective dominance in the interpretation by the Court, the merger would have created nor strengthened a dominant position on the relevant market. Therefore, the

<sup>65</sup> European Commission (1999, paragraph 99).

<sup>66</sup> European Commission (1999, paragraphs 75-85).

<sup>67</sup> European Commission (1999, paragraph 141).

<sup>68</sup> European Commission (1999, paragraph 98).

merger should not have been disallowed. However, the merger may have created or strengthened a tight oligopoly due to unilateral effects. Using a new definition of 'dominance' which includes unilateral effects there could have been sufficient reasons to block the merger. However, this is not so clear and hinges on the level of entry barriers and the power of fringe players.

Other policy instruments could be useful as well to prevent a tight oligopoly from coming into existence on the relevant market. It may be possible to reduce entry barriers associated with vertical links. For instance, policy makers may intervene in the way air seats are allocated to tour operators so that newcomers and small firms have easier and cheaper access to them. Also, policy makers may encourage customers to buy their tours not at travel agencies, but through other sources such as the Internet. If consumers use the Internet, vertical links downstream get less important, which decreases barriers to entry.

## 6.2 Health care

The two former Dutch Cabinets aimed to reform the health care sector, and it is expected that the next Cabinet will pursue the reform after the election of January 2003. Until now, prices and the volume of health care have been highly regulated. The objective of the reform is that prices and volumes will become the outcome of regulated competition, with a key role for health insurers. This liberalisation process involves the development of new regulation concerning the market structure and the conduct of market players. Much can be said about the cost and benefits of regulated competition in the health care sector.<sup>69</sup> This section focusses on a single aspect: the potential that health care markets become tight oligopolies.

When the government decides to liberalise a market, it is a natural moment to check whether the market might become a tight oligopoly. In such a case prevention can be better than cure. If the government does not take action to prevent the market from becoming a tight oligopoly, it may have to cure the market at a later moment, which may be very costly and may involve serious government failure. Prevention can also be better than the treatment of symptoms. This is the case when the market is not a 'natural tight oligopoly'<sup>70</sup>, if the negative welfare consequences of the tight oligopoly are considerable<sup>71</sup> and if prevention is possible at little expense (government failure in the process

<sup>69</sup> See CPB (2003).

<sup>70</sup> An example of a natural tight oligopoly is the market for mobile telecommunication. Due to the scarcity of radio spectrum, there is only space for five mobile operators. Prevention is impossible by definition. Another example is a merger. A merger may create a tight oligopoly on the one hand, but lead to a substantial gain in production efficiency on the other. If the first (negative) effect on welfare is smaller than the second (positive) effect, the government may decide to allow the creation of a tight oligopoly.

<sup>71</sup> This may not be the case if the market supplies a marginal part of GDP, or if there are strong countervailing powers.

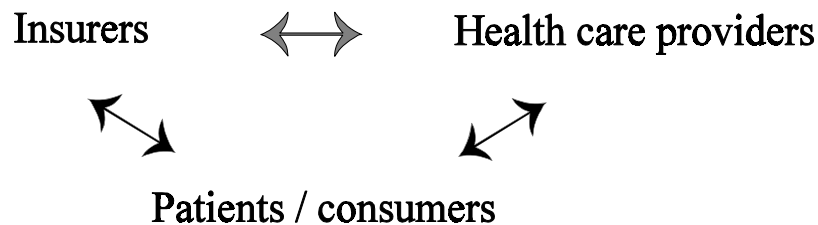
is unlikely). When the government chooses to accept the creation of a tight oligopoly, she may need to prevent anti-competitive behaviour by means of competition law or (light forms of) regulation. Treatment of the symptoms of a tight oligopoly is often more difficult than prevention.

Using the five step diagnostic approach, we examine whether the government needs to prevent a tight oligopoly, and, if so, how.

### 6.2.1 Case description

Health care could be described as a triangular market. Consumers buy health care products at hospitals, dentists, general practitioners etc. They do not pay for this in a direct way, but via insurance. Consumers buy insurance products from the insurers. The insurers bargain with health care providers on the price and quality for services.

Figure 6.1 The market for health care



At this moment health insurers hardly compete on the markets for the purchase of health care provision. A majority of the insurers (that is: the not-for-profit insurers)<sup>72</sup> is obliged to contract health care providers in its region. The remaining insurers (that is: the for-profit insurers) do not have this obligation and most of the time do not contract health providers, but retribute the health costs of their consumers instead. In both cases insurers are not in the position to negotiate. But this does not really matter, since prices of almost all health care are set by the government. The contracts between not-for-profit insurers and health care providers are only about volumes.

After the reform, the separation between the two forms of insurers will disappear and competition will be introduced on the health purchase markets. Insurers will have to offer a fixed package of health care, but the obligation to contract every provider will be dropped. Health insurers will start

<sup>72</sup> There are two types of health insurers in the Netherlands: for-profit and not-for-profit. They operate on separate markets, since there is no consumer choice between the two (but dependent on income).

to negotiate with providers on the prices, volumes and quality of health care. The government will only set minimum standards for the quality of health care and regulate prices in markets where competition is not possible (for instance top clinical care and acute care). Although the broad lines of the reform are clear, there are a lot of aspects that still need to be worked out.

This case focuses on the possible prevention of a tight oligopolies in the various vertices of the health triangle.

### **6.2.2 Diagnostic approach**

The descriptions in the diagnostic approach are based on the expected circumstances in the new health care system, as described in 'Concurrentie in de zorg' by CPB (2003).

#### **Step 1: Set of connected markets**

The Netherlands' Competition Authority NMa (2002) has described the current relevant markets for health care, which give clues for the definition of the set of connected markets after the reform. The triangular market structure emphasizes the importance of analysing connected markets. We are primarily interested in the market for health insurance as the relevant market. This makes sense because this market is the most 'normal' market, i.e. consumers pay for a product and are interested in low prices and high quality. Obvious candidates for connected markets are the markets for health care provision and health purchase.

The insurance market has already been partially liberalised since 1992. After the coming reform, the legal separation between public and private insurance will disappear and insurers will offer a compulsory fixed insurance package for all insurance. Therefore, the basic assumption is that there will be one health insurance market. The relevant market may become divided in multiple markets when insurers introduce product differentiation.<sup>73</sup> The definition of the relevant geographical market depends on consumer behaviour. Until the liberalisation in 1992, consumers were tied to a regional monopolist insurer. However, in 2001, 71% of the publicly insured is still insured with the former monopolist insurer in the region. Estimations by Schut (2001) show very low own-price elasticities of demand. It remains unsure whether the historical ties will loosen after the reform to a new health care system.

Insurance companies will purchase their health care in many different relevant markets, as separate professions (such as general practitioners, physiotherapists, and dentists) are no substitutes for each other. In line with this, hospital care will need to be divided in several different relevant markets. However, these different markets are connected with each other: an insurer is legally obliged to

<sup>73</sup> For instance, the US Department of Justice distinguishes the market for Preferred Provider Organisations (flexible contracts with health providers) from the market for Health Maintenance Organisations (fixed contracts with health providers).

supply a fixed health care package. An insurer cannot, for instance, completely leave out contracts with physiotherapists. The geographical markets for health purchase will depend on the distance consumers are willing to travel. This depends on the urgency of the care needed, the frequency of contact with the care provider and of the degree of specialism. As a result, the geographical market will differ per profession, for instance a local market for general practitioners and a national market for a special cancer treatments. The geographical markets are not connected. An insurer can focus on one region and neglect all others, as many insurers do at this moment.

In the market for health care provision, patients 'consume' health care. This market is connected to the insurers market in a natural way, since insurers negotiate with health care providers on the price, quantity and quality of health care. At the same time, consumers assess the quality of their insurers in part on the outcomes on the market for health care provision.

Concluding, the set of connected markets contains the whole triangle. It does not make sense to analyse any of the vertices of the triangle in isolation.

### **Step 2: Structure and behaviour on the set of connected markets**

The current insurance market already has elements of a tight oligopoly. Reputation and lack of information make entry difficult, and in most relevant markets there are only a few players. Other factors add to this: the same players compete with each other for a long time period, consumer switching is scarce, products are complex, firms have rather symmetric cost structures, transparency is low and innovation is low.

At this moment, a low number of insurance companies is active in most regions. When the distinction between private and public insurance disappears after the reform (all else equal), the biggest players in a region may have a market share of almost 50% on average.<sup>74</sup> Moreover, the insurance market has experienced a concentration trend.<sup>75</sup> There are no signs that this trend will stop after the introduction of the health care system. On the contrary: insurers may want to merge in order to increase their market power on the health purchase market.

Insurance companies are likely to face several entry barriers. On the health purchase market a barrier to entry will be private information of insurance companies on the quality of health care providers. This barrier is new with the introduction of competition on the health purchase market. Other barriers to entry relate to the insurance market and are already valid at this moment. This includes an insurance companies' reputation on the insurance market, because the quality of the

<sup>74</sup> Figures are only available for the private and public market separately (35% and 65% of all consumers respectively). The market share of the biggest private insurer in a region is between 13% and 39% in 1998 (IOO, 2000). The market share of the biggest public insurer in a region is on average 71% in 2001 (Van den Brink, 2001). When the distinction between private and public insurance disappears (all else equal), the public insurers will be the main players with a market share of 46% on average in a region.

<sup>75</sup> The total number of insurers in the Netherlands decreased from 135 in 1985 to 82 in 2000.

insurance is only noticeable after consumption (experience good). There are no objective measurements available for consumers to compare the quality of insurers and health care ex ante. Finally, a barrier to entry on the insurance market is private information of insurance companies on the claim history of their consumers.

The situation is aggravated by the fact there is market power in the supply of many health care services and information uncertainties with respect to quality. This has two consequences. First insurance companies can have insufficient bargaining power (in particular vis-a-vis hospitals) to offer consumers an appropriate health care package. There can be scarcity of general practitioners or lack of hospitals. Secondly, even if insurers do their very best to offer a good price-quality mix, it is not clear that consumers will pick this up. Maybe they will think that low prices are signals for low quality.

### **Step 3: Assessment of structure and behaviour**

Summarizing the outcomes from step 2, we see that, even before the reform, the insurance market is a market with high entry barriers, a low number of firms and no price competition. Structure and behaviour on connected markets aggravate the problem. Because of the fact that the market is heavily regulated, the government can keep possible welfare reducing behaviour in check. Since heavy regulation is probably not tenable in the long run (CPB (2003)) reform is needed. After the reform, welfare reducing actions are threatening and the proposed measures of reform provide an good opportunity to prevent tight oligopolies.

### **Step 4: Countervailing power**

Countervailing power turns out to be weak:

- Patient and consumer organisations have not been able yet to publish detailed information about the quality of the health providers contracted by insurers, due to a lack of objective measurable indicators.
- Entry barriers are high, as pointed out in step 2.
- Denial to enter the market does not increase efficiency, since economies of scale do not seem important.

Nevertheless, a potential source of countervailing power will be innovation, which may be triggered by the reform to a new health care system. The introduction of competition in the health purchase market may stimulate static and dynamic efficiency. Insurers have an incentive to increase static efficiency, because when they have purchased health care for a lower price, they are able to lower their price for their insurance package on offer. In a similar way, insurers have an incentive to increase dynamic efficiency. In the US, competition has led to the introduction of new insurance



concepts like Preferred Provider Organisations and Health Maintenance Organisations. These concepts are new in the type of contracts insurers have with health care providers (sometimes even vertical integration) and in the restricted health care they provide to patients (for instance, only certain providers). However, the extent to which insurers in the Netherlands will innovate after the reform, and its impact on the market, remains uncertain.

#### **Step 5: Proportionate remedies**

An attractive feature of this health care case is that the market has yet to be designed. The government has got time to take measures that help to prevent a tight oligopoly. What are the possibilities to do so?

Lots of mergers are taking place, both between health care providers (such as hospitals) and between insurers. A number of these mergers may be motivated by the lenient approach that the NMa follows up to this moment, in particular with hospitals. The argument that hospitals do not compete at this moment and that therefore no merger can be blocked is flawed. Hospitals do compete, albeit not fiercely, and mergers do not make them compete more heavily. Mergers between hospitals are not easy to undo either. So more care is needed when assessing mergers between hospitals. Is a 'merger freeze' possible, i.e. a temporary freeze of hospital mergers until the reform has materialized? More fundamentally, is it a good idea to change the burden of proof in liberalization or transition stages, as suggested by Klein (1998)? Merger control only verifies if there is a substantial loss of competition. In transition stages one would like to improve competition. In some cases, merges may indeed improve competition, but in most cases it does not. Changing merger control for transition stages seems an interesting possibility.

It is still open for discussion whether the health care reform will include an obligation for insurers to work on a national level. In that case the set of connected markets will have a national scale. As a result, the number of players in the market will increase substantially. The drawback may be that it creates high barriers to entry, when insurers will need to negotiate with numerous health providers all over the country. A solution might be to be lenient to regional insurers in a transition stage.

It may be fruitful to facilitate consumer mobility by lowering switching costs. Since information asymmetries are responsible for most switching costs, the answer lies in an increase of transparency. The government can increase transparency on quality by initiating the development of quality indicators. The government needs to involve all market players (insurers, health care providers and consumer organisation), to assure their acceptance. Because the quality indicators will make quality objectively measurable, insurers will have an incentive to use them to distinct themselves from competitors. Quality indicators can facilitate consumer organisations to act as a countervailing power: it helps them to compare the quality of insurers and their health care providers.

Increased transparency is also an important policy option to lower entry barriers for insurers. Transparency limits the importance of reputation of incumbent insurers and reduces the information asymmetry on the quality of health providers.

### 6.3 Conclusions

The two cases have taught us several lessons for 'curing' tight oligopolies:

- The Airtours/First Choice case has taught us that the current definition of collective dominance is so strong and the burden of proof required so high that it does not seem a useful instrument to prevent tight oligopolies. This point has now been (implicitly) acknowledged by the Commission.<sup>76</sup> The new definition is likely to do better in that department, but we have to wait and see.
- Complementary policy instruments seem vital for the welfare assessment of mergers and subsequently for the prevention of tight oligopolies. Combining merger control with complementary policy can be seen as combining the best of both worlds and thereby striking an appropriate balance between market failure and government failure.
- The health care case shows that the government has got the opportunity to prevent a tight oligopoly before it liberalises a market. In this case, this is likely to be better than treatment of symptoms or cure. Cure may be very costly and may involve serious government failure. Treatment is often more difficult than prevention and is often only a logical option if (1) the market is a 'natural tight oligopoly', (2) prevention is very expensive, or (3) the negative welfare consequences of a tight oligopoly are likely to be small. The government has got the option to prevent the creation of a tight oligopoly in the market for the purchase of health care by taking a position in hospital mergers, increasing transparency in order to stimulate consumers to switch brands and to lower entry barriers for insurers.

<sup>76</sup> See the box in section 4.2.

## 7 Treatment of symptoms

There are two reasons why the government would wish to rely on ‘treatment of symptoms’: when it is not sensible to ‘prevent’ a tight oligopoly from coming into existence, and when a ‘cure’ is not reasonably feasible. More specifically, the choice for treatment of symptoms can be motivated by (1) uncertainty about the emergence of a tight oligopoly, (2) high expense or a high probability on government failure when trying to prevent a tight oligopoly, (3) unfeasibility of cure, (4) the relatively low costs associated with treatment, (5) the temporary nature of the problems or (6) relatively modest welfare consequences.

This chapter discusses two cases that illustrate policy options when ‘treating symptoms’. The two examples are retail banking in the Netherlands and mobile telecommunications in Finland. Let us stress once more that both cases involve complex problems that deserve far more attention than the few pages that we have devoted to them. We introduce them to illustrate our diagnostic steps and the merits of treatment vis-vis other policy responses. In both cases, more extensive sector studies are available.<sup>77</sup>

### 7.1 Retail banking

The retail banking sector in the Netherlands illustrates three main points:

(i) The retail banking sector is a good example of an accepted tight oligopoly.

There are five main players in this market, ABN-AMRO, Rabo, ING, SNS and Fortis, with an estimated combined market share of 93% for payment services, and also high percentages for other market segments. Reputation is the most important entry barrier. No real attempts are made to liberalize the market so that more players gain market share. It is also not so easy to do so, given that reputation is the main entry barrier.

(ii) The retail banking sector is a good example of the importance of connected markets.

Separating payment services from other consumer services does not lead to useful insights, since it is not economically feasible to enter in the current account market alone. For similar reason, one analyse separate geographical markets in isolation. All connected markets need to be analysed in combination.

(iii) The retail banking sector shows what policy can do outside the Competition Law and regulation. Since it is not so easy to break up the tight oligopoly, nor is it clear that Competition Law can do much, in absence of cartel agreements, the retail banking sector illustrates what policy can do to reduce possible welfare reducing actions by the firms.

<sup>77</sup> See, e.g., Bennett et al. (2001) and Canoy et al. (2001).

The analysis draws heavily on Chapter 5 of Canoy et al (2001), but is reinterpreted in terms of the tight oligopoly discussion.<sup>78</sup>

### 7.1.1 Case description

Consumers can buy the following main banking products:

- mortgage
- current and savings accounts
- credits
- investment products
- credit cards

There are five main players in this market, ABN-AMRO, Rabo, ING, Fortis and SNS, with an estimated combined market share of 93% for payment services, and also high percentages for other market segments. Is there a reason for concern on this market and possibly for government policy?

### 7.1.2 Diagnostic Steps

#### Step 1: The set of connected markets

Let us assume we start with payment services (current accounts) in a certain region as the relevant market. Connected markets are: payments services in other regions and other consumer services (such a mortgage, consumer credits, SME credit, savings account, investment funds). To understand why these markets belong to the set of connected markets, it is important to analyse the entry barriers on the relevant market. Clearly it is very hard, scalewise, to enter the market for payment services in only one or a couple of regions. True, one can specialize in certain regions (the fifth player SNS being reasonably big in the south, but much smaller elsewhere), but one has to offer ones product nationwide to enter effectively. Equally so, it is hard to enter the market for payment services alone, i.e. without entering the other markets as well. The reason is that the markets for payment services is simple and huge (everyone has at least one current account), so that visibility on this market creates mass. This mass can be used to offer customers other products, products for which there is a smaller market, and products that are more complex (e.g. consumer credits). This implies that the market for payment services alone is unlikely to be a very profitable market, but connected markets are. Access to these connected markets without the mass of the

<sup>78</sup> Canoy et al (2001) analysed the possible tradeoffs between competition and stability. We will not discuss stability issues in this study.

current account customers is also hard but feasible in specific submarkets such as mortgage and investment banking.<sup>79</sup>

### **Step 2: Structure of and behaviour on the set of connected markets**

As concluded in step 1, current account services are more profitable in combination with other financial services. As a consequence, any firm on this market will have to offer a broad range of products and will hence have to enter at a large scale. Such integrated entry is of course much more complicated than entering only a single market, and therefore constitutes an important entry barrier for the market for payment services. The possible profit margins in other markets are kept in check to a certain extent by niche players.

Another entry barrier is the high switching cost for account holders. Currently, switching suppliers necessarily implies a new account number. Obviously, this results in a lot of paperwork, as all the client's financial relations will have to be informed. It is therefore very hard for new banks to attract customers from the existing client base of incumbent banks. Naturally, these high switching costs also hinder competition between incumbent banks. This entry barrier is reinforced by the fact that there are not as many new customers as in a growing market.

The lack of reputation and a well-known brand name, perceived indicators of quality, provide additional problems for new entrants. This holds for any market, of course. In a sector that thanks its very existence on confidence, reputation is the single crucial asset of a bank. Building up a brand name requires substantial expenditures in advertisements and public relations that cannot be recovered in case of exiting the market. These sunk costs hence constitute another entry barrier in the market for payment services. Partly, the necessity of having a good reputation may stem from unfamiliarity with deposit guarantees. If consumers are unaware that, up to a certain limit, their deposits are warranted, they will be reluctant to transfer money to new and unknown banks.

The market for payment services further suffers from a lack of transparency. In the current situation, consumers can hardly know the true costs of their current account services. For instance, how much time is there between the moment that a bank receives a certain payment to a client and the moment this money enters the client's account? This lack of transparency hinders competition as well, since households cannot easily compare payment services of different suppliers.

Apart from entry barriers, structural links between banks (ownership structures, board representation, location of control rights) are of particular interest. A concern of the corporate governance debate is that public companies with widely dispersed shareholdings and short-term oriented (myopic) owners may be prone to sub-optimal monitoring by shareholders. A free-rider problem makes it unattractive for small shareholders to exercise and enforce voting rights.

<sup>79</sup> Mortgage is an exception because consumers are prepared to shop. Since they have to spend a lot of money, shopping becomes worthwhile.

Managers may then enjoy substantial residual control rights and pursue their own interests undisturbed by shareholders. Effective corporate governance through shareholder initiative can only be expected if the free-rider problem is solved. Concentrated ownership, i.e. the presence of large shareholders, has been suggested in the corporate governance debate to remedy the free-rider problem and restrict managerial discretion and managerial entrenchment. Having more at stake, a large shareholder has a stronger incentive to monitor management and push managers to maximise the return on her investment than any minority shareholder. As a large shareholder commands cumulative voting power, she can hardly be ignored by the management. Empirical evidence suggests that even the largest commercial banks, which are typically listed and traded on stock exchanges and have thousands of shareholders holding negligibly small stakes, are controlled by small groups of relatively large shareholders, often through cross-shareholdings.

Especially in network-oriented financial systems, we find more complex ownership arrangements, such as cross-shareholdings (two or more firms have direct mutual equity participations) and owner cascades ("pyramids", two or more firms are indirectly connected through equity participations in third firms), which may solve free-rider and hold-up problems without having to hold a large direct equity stake. In Europe, cross-shareholdings and pyramidal structures are very frequent. In the Netherlands they are even allowed among competing (financial) firms and between financial and non-financial firms.

---

#### **Bed fellows in the Dutch financial sector**

In 2000, the bank and insurance giant ING had cross-shareholdings with AEGON and Fortis. Moreover, ING held a significant direct voting stake in ABN AMRO. Also AEGON, Fortis and Rabo held direct stakes in ABN AMRO. Together these financial institutes controlled about 29% of ABN AMRO's voting capital. Since very recently, ownership structures have started to change, first at the national level, and now increasingly across borders. Figure 6.3 also shows two "cross-border" shareholdings. ABN Amro bought the US investment division of Barings from ING in 2000. ING holds is the largest shareholder of ADD (Allgemeine Deutsche Direktbank), a German direct bank. As reported in the press lately, ING is intending to expand its share in ADD.

Recent research by Goldman Sachs (2000, p. 21) reveals that leading European banks are linking up among each other and with insurance companies. The big European insurance companies, Allianz, AXA, Fortis and Generali, have established direct or indirect financial interests in major banks across the EU. As previous studies imply, such cross-border ownership arrangements were not very common in the 1980's and early 1990's. This relatively recent phenomenon seems to have been triggered by the substantial changes in the market environment, including deregulation, technological and financial developments. There are some candidate explanations for the observed ownership structures of European banks and insurance companies. First, and most importantly, banks and insurance companies need to invest the funds they attract and diversify their portfolios so equity participations in other financial and non-financial are necessary and natural ways to diversify risks. However, until the opposite can be proven to hold, it is not clear that it needs the current degree of "bed-fellowship" for stability reasons.

---

Ownership arrangements to overcome agency problems may not always be beneficial. As pointed out by Shleifer and Vishny (1997), controlling shareholders can extract surplus for themselves to the detriment of minority shareholders and stakeholders. The costs of such wealth expropriation and redistribution can be large, including the intangible costs of reducing the motivation of managers. Managers do need discretion to be able to use their superior skills profitably but they face a hold-up problem. They commit their specific skills to the firm but cannot appropriate the value enhancing effect of their actions if they do not share in the firm's profit. Rather a dissatisfied or impatient large shareholder can have them dismissed. Dismissal reduces career prospects on the market for managers. Dominant owners who keep managers on a short leash by excessive supervision and a constant threat of intervention stifle managerial initiative and entrepreneurial risk-taking.<sup>80</sup> Therefore, the corporate governance literature has been discussing the design of "incentive compatible" remuneration schemes, such as bonuses, profit sharing or stock options as alternative or complementary mechanisms to resolve principal-agent conflicts.<sup>81</sup>

Apart from ownership arrangements, there are also other structural links between banks. The combined commercial banks own Interpay, the organization of national settlements, banks have various other shared facilities and make arrangements to use each others cash machines. It is not to say that these things are 'bad', but it does create structural links.

So far for the assessment of the market structure. There are also indicators for behaviour. Appropriate industry data is notoriously lacking in this market, but the box below provide some insights, indicating at weak competition in some submarkets and reiterating the importance of links between various markets. The box provides no conclusive evidence of weak competition, but some concerns seem justified. For sake of clarity, the aim of this exercise is not to demonstrate that competition in the banking market is weak and that banks should be punished for that. The CPB is not the Competition Authority. Rather, the goal is to show what can be done when the intensity of competition varies between submarkets and strong intervention is not appropriate. The banking market provides sufficient evidence for such an exercise.

<sup>80</sup> Burkhart et al. (1997).

<sup>81</sup> See e.g. Milgrom and Roberts (1992, Part V) and Prendergast (1999) for introductions and surveys. See also Tirole (1999).

---

## Evidence on levels of competition in Dutch retail banking

Apart from circumstantial evidence provided by market structure and product characteristics, is there any empirical evidence on the level of competition in the Dutch retail banking? We have found six sources. Some of these sources are broader than just the retail market (but include the retail market):

1. Punt and Van Rooij (1999): Among a set of eight major European countries, the Netherlands show the highest market concentration in commercial banking. The Herfindahl index equals 0.16 for the Dutch banks, compared to an average of 0.04. The collective market share of the five largest Dutch banks is equal to 79 percent, more than twice as high as the 36 percent average value. (Data source: BankScope Period: 1992-1997).
2. Bikker (1999): Using the sum of input price-elasticities as an indicator of competition, Bikker (1999) shows that the Netherlands exhibit the lowest level of competition within the European Union and the highest level of market concentration (again C5, which equals 84 percent in 1995). Data source: Fitch-IBC A Period: 1992-1996.
3. Sander and Kleimeier (2001) argue that: "...concentration is especially high in smaller countries such as Finland, the Netherlands, or Belgium where the two largest groups account for more than half of the market."
4. Dietzenbacher et al. (2000) find evidence for the hypothesis that cross-shareholding adversely affects competition in the Dutch financial sector. Compared to no-shareholding, cross-shareholding increases price cost margins by 2 to 8 percent.
5. Cruickshank (2000): In an extensive review of the UK banking sector, the Cruickshank report concluded that in all submarkets considered (money transmission, services to personal customers and services to SMEs), competition is not effective. Given the resemblance of the UK and Dutch banking sector, competition problems may well be present in Dutch retail banking as well.
6. Expert opinions / estimates in Boot et al. (2000). Market share largest four in (for NL):

Payment services households	93 %
Consumer credits	90 %
Mortgage finance	79 %
Payment services and credit/mortgages loans SMEs	97 %

A few translated quotes from Boot et al:

"Big Dutch Banks are fully aware of multimarket contacts. Interviews generated quotes such as 'If our bank steals away one percentage point of market share in one market, we expect an instant retaliation in another segment.' This awareness weakens competition." p64

"A recent study on the quality of information yielded clear-cut results: the information quality differed wildly, was usually incomprehensible, and customer awareness of their rights, the rules, laws and supervision was very low." p58

"There has not been any recent entry in this 'untouchable' market for three reasons: reputation, high switching costs and loss-leading strategies. High switching costs make clients vulnerable for any-competitive actions." p74

---



### **Step 3: Assessment of structure and behaviour**

How do we assess the structure and behaviour on the retail banking market? Summarizing the outcomes from step 2: high sunk costs, low transparency, low number of players, complex ownership structures with cross-shareholdings and other structural links, and high switching and transaction costs currently characterise the Dutch market for payment services. Given the high entry barriers, it is not surprising to see that the Dutch market for payment services is highly concentrated (see also box) . ABN Amro, Rabobank, and ING together already capture more than 80 percent of the market, and besides Fortis and SNS, no other banks are active in the Dutch market for payment services.

The combination of high entry barriers, frequent and multi-market contacts with the same competitors over a substantial time period, and ample profit opportunities in a number of complex submarkets, implies that the retail banking sector is a tight oligopoly that should warrant the attention of policy makers and regulators. The analysis on behaviour in step 2 illustrates that competition is likely to be weak in various submarkets, while being fiercer in other markets.

Concluding, the market structure of the Dutch retail banking market points at a tight oligopoly. The behaviour on a number of submarkets are likely to lead to prices above the competitive level, thereby lowering static efficiency. Indicators for dynamic efficiency show bad news too: financial innovations are scarce, large scale entry is absent, consumer service is unspectacular and account numbers are hardly differentiated.

These outcomes in itself do not imply that the competition law is violated or that regulators have to intervene in a strong way. Trends point at increasing competition and niche competition keeps profit margins in check. Besides, strong intervention should be based on solid evidence, which is not present. Finally, strong intervention can jeopardize financial stability.<sup>82</sup> Policy responses are discussed in step 5, but before that, we take a closer look at possible countervailing powers.

### **Step 4: countervailing powers**

Countervailing powers can come from three sources, consumer power, dynamics and entry. Let us discuss each of these three possibilities.

- Consumer power  
Consumer power is not that strong, despite efforts by the consumer lobby organisation “De Consumentenbond”. Consumers treat ‘money’ as a commodity different from, say, peanut butter.

<sup>82</sup> Canoy et al (2001).

Since the relationship between consumers and banks is based on trust, consumers are less likely to be aggressive in their behaviour towards banks. The lack of account number portability and transparency does not help consumers either.

- Dynamics

How do dynamics influence competition? A number of technological and institutional changes are likely to improve the competitive conditions in the near future. Firstly, sunk costs may decrease through the emergence of online banking, as banks will no longer need an extensive branch network to offer their payment services. The emergence of remote banking will also make it easier to open an account at another bank. Secondly, the European Central Bank has recently undertaken action aimed at removing the obstacles that are held responsible for the inefficiency of cross-border retail payments. Finally, new payment facilities can increase the number of substitutes for ordinary retail payments.

- Entry

There are three possible entrants that can emerge. First there are Turkish banks<sup>83</sup> that offer much higher interest rates than the Dutch ones. Second there are Internet banks that can gain market share because of their low costs. Third, reputable foreign banks can penetrate the Dutch market. The first two options are possible (and already exist) but it is widely doubted whether these banks can overcome the reputation barriers and increase substantial market share. Even if they do, welfare is not necessarily improved because there are stability issues.<sup>84</sup> For reputable foreign banks it is somewhat easier to overcome reputation barriers. To extent to which substantial penetration by a foreign bank on this segment is likely, and what incentives and barriers are still there, is not that clear.

Concluding, the most clear-cut countervailing power is dynamics: institutional and technical trends can change the banking landscape. This is important for the next step, since policy should look ahead and not be solely based on the current state of affairs.

### **Step 5: proportionate remedies**

Proportionate remedies imply a balancing act between market and government failure. Serious anti-competitive problems and absence of countervailing powers would point at strong regulation, giving the alleviation of market failure the strongest priority.

<sup>83</sup> The 'Turkish' bank, being the most active currently, is used as an example here.

<sup>84</sup> See Canoy et al. (2001).

From the previous steps, it follows that there are very likely some anti-competitive outcomes, but the evidence is not overwhelming, and there are some countervailing powers. This implies that strong regulation is not a proportionate remedy here, since that would lead to unnecessary government failure, possibly financial instability and unjustified interference with regular market activities. Attempts to change some structural and demand side aspects of the banking sector are therefore much more likely to be successful, since these attempts do interfere much less directly with the bank's internal affairs (as opposed to e.g. regulating prices). Policy can aim at four targets:

- Improving transparency and reducing switching costs

Consumers hardly know the costs of their current account services. For instance, how much time is there between the moment that a bank receives a certain payment to a client and the moment this money enters the client's account? Banks could be forced to be much more open about these and other matters. A recent promising transparency policy measure by the Dutch Council of Financial Supervisors, that must still prove its use, is the mandatory leaflet that should accompany all complex financial products A ('Financiële Bijsluiter'). This could be extended to payment services, where the information could, e.g. consist of the execution time that banks need to complete a transaction.

To reduce switching costs, the Dutch Ministry of Economic Affairs is investigating the effects of account number portability. Introducing portability will greatly reduce switching costs and thus improve competition in the market for payment services. The feasibility of this option is illustrated by recent attempts by ECBS (European Committee for Banking Standards) and IPI (International Payment Instruction). The ECBS has published a standard on a harmonised European account number structure called IBAN (International Bank Account Number). The aim is to have IBAN in general use in Europe by the beginning of 2002. Similarly for IPI that will be attached to the invoices that companies involved in internationale trade will receive in the near future.

- Scrutinizing structural links

Structural links, such as certain ownerships arrangements, can serve useful corporate governance goals, but should be treated with suspicion. Cross-ownership by directly competing firms unnecessarily hinders competition.<sup>85</sup> Furthermore, it seems appropriate to investigate (in fact the NMa is doing that already) the ownership structure and performance of Interpay, the national monopolist for settlement services.

- Encouraging entry by foreign banks

A final policy measure aims at reducing existing barriers for foreign banks to enter the Dutch market.

<sup>85</sup> See Dietzenbach et al. (2001).

- In a more general sense, one may wonder if there is a role for the Competition Authorities next to their main task to act upon violations of the competition law. In particular in sectors (such as the banking sector) that are non-curable tight oligopolies but where violations for the competitions law are not obvious, the Office of Fair Trading in the UK shows what can be done: commission a comprehensive sector study, which can yield a variety of conclusions, of which possible violations of the competition law is just one.<sup>86</sup> Other (arguably more important) possible conclusions are advises to policy makers, warnings to the sector, advises to consumer organisations etc. These sector studies are so useful precisely because they are not primarily aimed at violations of the competition law. It thereby implicitly acknowledges that there is more at the door than just competition law, in particular when dealing with tight oligopolies. There is nothing legally that prevents the Dutch Competition Authorities to commission these sector studies, but somehow they did not give this a high priority. If one wants to be effective against tight oligopolies, such a sector study should be on the top of the priority list, since - in terms of welfare - it is likely to produce much more than fruitless investigations on possible joint dominance. The banking sector forms a perfect example: problems can not be studied in isolation and direct regulation or competition law are not likely to be that effective.

## 7.2 Mobile telecommunications

The second case illustrates what policy can do when there are legal entry barriers in a dynamic market such as the telecommunications market, that make it hard (if not impossible) to cure tight oligopolies. An important question is what aspects to regulate and what aspects to solve otherwise. From chapter 4 we know that in dynamic markets the damage of over-regulation is potentially high, implying inter alia that a close scrutiny to the countervailing powers is needed. The case considered is the second generation mobile telecommunication (the 2G market). The 2G market fulfills some of the characteristics of a tight oligopoly. Most importantly, in 2G markets in Europe, the number of firms is small and there are high entry barriers. Both are explained by the fact that the number of licenses to operate in the 2G market has been fixed by the governments due to the scarcity of available radio spectrum.

In this section, we ignore many interesting competition issues that play or played a role in the 2G market, which do deserve attention in their own right. We focus on national roaming, because the roaming example is a good illustration of the tensions between static and dynamic efficiency.

We consider a case in Finland that was brought before the Finnish Competition Authority (FCA) by Telia.<sup>87</sup> Telia is an operator in the 2G market, with only a network in the three largest cities of

<sup>86</sup> <http://www.of.t.gov.uk/Market+investigations/default.htm>

<sup>87</sup> This case is mainly based on Ovum (2000) and Wilmer, Cutler & Pickering (2000).

Finland. Its main competitors, Radiolinja and Sonera, had nation-wide coverage. Telia tried to make a national roaming agreement with Radiolinja and Sonera, so that it could make use of their network in order to serve its customers in areas in Finland which were not covered by its own network. Both firms offered Telia national roaming services. Telia refused, claiming that both firms demanded unfair rates for the services, and decided to complain to the FCA that Radiolinja and Sonera violated the Finnish Act on Competition Restrictions by asking too high a price for national roaming. The FCA turned Telia's case down.<sup>88</sup>

### 7.2.1 Case description

Finland is one of the most developed countries with respect to mobile telecommunication. Finland was the first country in Europe with a GSM operator, and was also the first in assigning UMTS licenses. Moreover, its subscriber penetration rate is among the highest in the world. An important practical issue is that Finnish people like to have access to their mobile phones when they go to their weekend houses. These houses are scattered over thinly populated areas.

Roaming occurs when the customer of one firm is offered mobile telecommunication using the network of a competing firm. Two types of roaming can be distinguished. In the case of national roaming, a customer of one firm makes use of another firm's network when she is in her home country. International roaming means that the customer uses the network of the other firm when she is abroad. International roaming agreements are very common, in contrast to national roaming agreements.

For several reasons, national roaming agreements are economically valuable. (1) When firms share their networks, they can substantially reduce costs. A network consists of base stations which connect subscribers over radio channels which are characterized by a specific frequency. As frequencies are scarce, and the reach of base stations is limited, the distance between base stations is about 10 kilometres. Therefore, the roll-out of a network is costly, especially in scarcely populated areas, so that firms can gain substantially by sharing their network. (2) When firms do not come to terms about a national roaming agreement, they may decide to only cover the most densely populated areas in a country, or not be active in the 2G market at all. Economically this is bad, as it implies a lack of competition, so that prices in the 2G market may be unnecessarily high. (3) When firms not only share base stations, but also radio channels, more efficient use of these channels is possible, as each customer can be served by a larger set of channels. (4) Base stations are environmentally detrimental due to horizon pollution and due to the fact that they require energy to operate. The environmental consequences of mobile telecommunication are mitigated if

<sup>88</sup> At the moment, Telia and Sonera are about to merge, so that the analysis is legally not relevant anymore. Still, several interesting lessons can be learned from this case.

firms share their base stations. All these issues play an extra important role in scarcely populated countries such as Finland.

Firms with a network have an incentive to deny roaming to competitors. A network of base stations is a necessary facility to be active in the 2G market and the build-up costs are high. Therefore, new firms may find it unprofitable to build their own network, in particular in Finland where large areas are thinly populated. They may decide not to enter (part of) the market if they are not engaged in a national roaming agreement with another firm. Therefore, a firm with a network may successfully levy an entry barrier by refusing national roaming to other firms.

This is what seemed to have happened in Finland. During 1997 and 1998, the third largest mobile operator in Finland, Telia, negotiated with the two largest operators, Sonera and Radiolinja, to come to a national roaming agreement. In 1997, Telia had a mobile network that covered the three largest cities in Finland: Helsinki, Tampere, and Turku. As many Finnish people spend some time in their weekend houses in areas not covered by Telia's network, Telia was not able to offer optimal services to its clients. In order to improve its services, Telia aimed at building a nation-wide network. However, calculations showed that building a network was too expensive. Because Sonera and Radiolinja did have nation-wide coverage, Telia initiated negotiations with both firms in order to establish a national roaming agreement with one of them.

Both Radiolinja and Sonera offered national roaming to Telia, however at rates that Telia considered not interesting at all. Telia decided to complain to the FCA under the Finnish Act on Competition Restrictions. This complaint was based on Article 7 of this Act, which states that "an abuse of a dominant position by a business undertaking or an association of business undertakings shall be prohibited." According to Article 3 of the Act, a dominant position is held by a firm, or an association of firms, if the firms "control the price level or terms of delivery of [a] product" or "influence the competitive conditions on a given level of product or distribution."

In September 1999, the FCA announced its decision. It found that the relevant market in this case was the mobile access market, i.e., the market for the facilities that are necessary for the provision of mobile services. The FCA decided that there was not sufficient evidence for Sonera and Radiolinja holding a dominant position in this market, neither individually nor jointly. However, the competition authority did acknowledge that both companies offered Telia such high prices for the access to their networks, that it prevented Telia from providing nation-wide mobile services. The FCA concluded that it had to investigate the case in more detail, announcing that in the future, it may change its view on the competitiveness in the relevant market.

Interestingly, just after the FCA announced its decision, Telia managed to come to a service operator agreement with Radiolinja, which gave Telia a nation-wide mobile network. Telia withdrew its complaint against Radiolinja, but appealed against the decision related to Sonera in front of the Finnish Competition Council, a higher legal body. In December 2001, the Competition Council

announced that Sonera did not have a dominant market position in the national mobile network access market, neither alone nor with any other mobile network operator.

## **7.2.2 Diagnostic approach**

### **Step 1: The set of connected markets**

The relevant market in this case is the upstream market for mobile access, as the proposed transaction is supposed to take place in this market. This market is closely connected to the downstream market for mobile telecommunication, as the denial of trade on the upstream market implies an entry barrier in the downstream market. In fact, the only reason to offer access against unfavourable terms is to protect profit margins in the downstream market. Therefore, the set of connected markets consists of both the upstream and the downstream market. Entry can take place at the level of the downstream market. There are more subtle details to be told here, but for sake of our purposes (which is not to redo the work of Competition Authorities) this analysis suffices.

### **Step 2: Structure of and behaviour on the set of connected markets**

As indicated in the introduction to this case, there are just a few firms active in the 2G market and the entry barriers are high as potential operators need a license from the government to be active in the market. Theoretically, this is only true for the upstream market of mobile access, as it is imaginable that an operator in the downstream market of mobile telecommunication provides all its services over the network of another firm. However, this rarely occurs in practice.

There are several other interesting market features, related to frequency of interaction, symmetry and transparency.

In the downstream market for mobile telecommunication, firms interact frequently, as they meet each other every day in the market. Firms interact rarely in the upstream market for mobile access. Negotiations for mobile access to third parties may occur maybe once or twice in the entire license period.

Firms in the 2G market are symmetric with respect to cost structure. All firms offer virtually the same product, which is mobile communication, and the technology through which this service is provided is the same: users are connected to a mobile network through radio channels. The downstream market is transparent. Suppliers can easily monitor each others' pricing policy. Moreover, industry conditions in the downstream market of mobile telecommunication are reasonably stable as the 2G market is almost mature and there are high entry barriers. The upstream market is not transparent. National roaming agreements can be hardly monitored because the price is not publicly announced. Moreover, firms do not frequently interact on the upstream market as demand takes places maybe once or twice during the entire license period.

We observe the following type of behaviour: by offering access at uninterestingly high rates, the incumbents Sonera and Radiolinja (at first) effectively deny Telia access to their mobile networks. In a later stage Radiolinja and Telia managed to come to an agreement.

### **Step 3: Assessment of structure and behaviour**

Both the upstream market and the downstream market are tight oligopolies. In both markets, entry barriers are high, and the number of firms low. In the downstream market, several other essential and necessary conditions for co-ordinated effects hold true. This market is characterised by symmetry and transparency, and firms interact frequently. Moreover, in the upstream market, unilateral effects may occur as firms have only a limited number of channels. Co-ordinated effects are unlikely in this market, as there is not frequent interaction.

The observed behaviour can be anti-competitive if the incumbents successfully impose an entry barrier to the 2G market by denying the potential newcomer access to their mobile networks.

### **Step 4: Countervailing powers**

The 'usual' countervailing powers are too weak to countervail the anti-competitive effect caused by the fact that the incumbent cannot enter the market for mobile telecommunication. (1) Consumer unions can hardly do anything against the anti-competitive behaviour. (2) Entry is not possible in the market for mobile access due to the limited number of licenses, so that the source of potential entry has no effect. (3) Efficiency is not increased due to the denial to enter the market. On the contrary: a new entrant increases the efficient use of the radio spectrum.

Innovation seems to be the most promising countervailing power, but also this one is weak. In the near future, the 3G market in Finland may be open. The 3G market is operated using the UMTS technology, offering services that need much quicker information transmission than the services offered in the 2G market. Examples include Internet access, video applications, and advanced geographical systems. However, it is not clear yet to which extent Finnish customers will substitute 2G services for 3G services. Moreover, firms are only able to enter the 3G market with a license. The Finnish government issued only four UMTS licenses, of which two came in the hands of Radiolinja and Sonera. Therefore, we suspect this type of countervailing power to be weak as well.

### **Step 5: Proportionate remedies**

In practice the problems were solved by itself. The real interesting problems emerge when firms do not come to an agreement or takeover one another. What can be done? By not coming to terms about mobile access, Radiolinja and Sonera could have successfully created an entry barrier to the market for mobile communication. There are four ways to treat the symptoms of this tight oligopoly: (1) using competition law, (2) mandating national roaming, (3) eligibility and (4) vertical separation.



The anti-competitive behaviour by the incumbents may be illegal according to the European Competition law, although the Finnish Competition Authority came to a different conclusion. Still, denying a national roaming agreement is only sustainable if there are few players active in the mobile access market. In the case of many players, a firm would be foolish to deny a national roaming agreement, as any other firm has a large incentive to provide this service instead.

Suppose that the Courts had found that the two firms held a collective dominant position in the mobile access market. Denying mobile access may then be interpreted as the abuse of a collective dominant position, which is forbidden under Article 82 of the European Competition law. However, the problem with this type of remedy, even if it works properly, is that it may take years before the Courts come with a final decision. In this time period, the incumbents have the opportunity to strengthen their position in the 2G market by creating brand loyalty and thus building an entry barrier. It is hard to measure the revenue loss of the newcomer when it is much less able to create brand loyalty by consumers when not entering the market. Therefore, the Competition Authority may fine the other two firms modestly, so that the incentives to behave anti-competitively may not fully disappear.

Moreover, the interpretation of 'collective dominance' plays a crucial role. Suppose that the Courts decide that the market relevant market is that market for mobile access. In this market, there seems to be little scope for co-ordinated effects as firms interact very infrequent. If collective dominance is only about co-ordinated effects (which is the interpretation the Court of First Instance gave in the *Airtours/First Choice* case, see Chapter 6), then the European Commission has a weak case when it decides to punish the anti-competitive behaviour by the incumbent firms.

Mandating national roaming is another way to intervene. If firms do not come to a national roaming agreement, the government simply forces an incumbent firm to supply national roaming to the newcomer on the basis of a 'fair' rate, which is determined by an independent sector specific regulator. At the outset this seems to be an attractive option. By mandating national roaming, (1) competition can be increased in the market for mobile communication, (2) a reduction in the infrastructure can be established, which decreases firms' costs, and is good for the environment, and (3) the efficient use of spectrum can be increased, because of less problems with coverage planning.

Although seemingly appealing, mandating national roaming may not be such a good idea after all. It is not easy to determine a 'fair' price if firms do not come to terms. More importantly, mandating national roaming implies that a major free rider problem comes into existence: Why would a firm not wait until a competitor has build its network, and then demand national roaming at a fair price? This free rider problem may cause serious slow-down in the roll-out of the network, which is of course very bad from the consumers' point of view. Mandatory national roaming in Finland is a good example of over-regulation in a situation where dynamic efficiency is vital.

A way out to the free rider problem is to make roaming contingent on the level of investments by the entrant. If an entrant invests in networks in all densely populated areas it can leave the roaming agreements for very scarcely populated areas. Mandatory roaming can be enforced only for entrants with networks, possibly with access prices depending on the level of investment. This could be a reasonable half way house between enhancing static efficiency through roaming without causing investment incentive problems.

A final option is to vertically separate the mobile firms in the scarcely populated areas of Finland. It does not make much sense to have three full networks operating next to each other in areas where hardly anybody lives. The government may decide to reallocate the licenses of the current operators for these areas to a third party. This third party is obliged to have the mobile operators offer access to the network at a 'fair' rate without discriminating among them. The 'fair' rate may be determined in an auction which allocates the licenses to the company that offers the lowest price. The problem with this option is that the firm which gets the monopoly in the access market has not much incentive to invest in the network. So although this option is theoretically sound, it is highly unpractical. A costly and possibly legally problematical reallocation of networks has to take place, one firm ends up with stranded assets (the second network), and operational problems exist as well.

### 7.3 Conclusions

There are several interesting lessons to be learned if it comes to 'treatment of symptoms' in a tight oligopoly in general.

- As we stressed in the introduction of this report, policy should not always want to correct all deviations from competitive outcomes. More specifically, competition law is not designed to reduce all possible welfare reducing actions by oligopolists. Many of the non-competitive outcomes are the result temporary market power. Policy measures then run the risk of being counterproductive. First of all, the problem often solves itself, and secondly, policy could seriously hamper incentives to invest or innovate. This last problem is prevalent in telecommunications, but not so much in banking. It follows that a first step in any welfare analysis should be to try to distinguish between temporary and structural effects. In telecommunications, a strong focus on dynamic efficiency seems fruitful: enhancing static efficiency by mandatory access is naive since it distorts incentives to innovate and invest. In banking a stronger focus on static efficiency makes sense, since innovation is not a key driver to the banking market.
- The Competition Authorities cannot do much to alleviate potential pains from tight oligopolies, in the sense of enforcing competition law. What they can do is to follow the example of the Office of Fair Trading by commissioning sector studies (or 'market investigations'). These studies have a

much broader scope and aim than just enforcing competition law, and equally importantly, they do not have to be finished under the same tight time schedule as a law case. As a result, these studies are typically, economically speaking, more rigorous than case law and may result in all sorts of recommendations, to the sector, Ministries and other organisations. The Dutch Competition Authority does not use this option as much as they might do. The banking sector seems a good target.

- Both cases show the importance of connected markets. In the retail banking sector, separating payment services from other consumer services does not lead to useful insights, since it is not economically feasible to enter in the current account market alone. For similar reason, one analyse separate geographical markets in isolation. All connected markets need to be analysed in combination.
- The retail banking sector illustrates what policy can do outside competition law and regulation. Since it is not so easy to break up the tight oligopoly, nor is it clear that Competition law can do much, in absence of cartel agreements, the retail banking sector illustrates what policy can do to reduce possible welfare reducing actions by the firms.
- The telecom case indicates the dangers from over-regulation in markets dominated by dynamic considerations. Enforcing mandatory national roaming in Finland would have solved the static efficiency problems but would have created huge free rider problems and thereby seriously impede investment incentives. Creative halfway houses between static and dynamic efficiency are possible. By making roaming depending on entrants investment levels, both static and dynamic efficiency can be enhanced.
- Finally, good market design is important. If the Finnish government had realised that national roaming would have played such a crucial role in the market, it may have issued more licences with sharing agreements. This shows that prevention can be better than cure.



## 8 Cure

The government has a good reason to cure a tight oligopoly if (1) the tight oligopoly has serious consequences for welfare, (2) countervailing power is weak, (3) there are no signs that the problem is temporary, (4) cure is possible at relatively little expense, and (5) government failure is unlikely. As chapter 4 has stressed, the government may use several instruments to cure tight oligopolies. These include increasing the number of players and reducing entry barriers. Sometimes, both can be implemented using a single instrument, namely the regular re-allocation of licenses that allow players to be active in the market. This is what the following two cases are about. We will consider the re-allocation of licenses for petrol stations and for radio stations in the Netherlands. We will argue that all five of the above mentioned conditions apply for these markets. In addition, the government faces a natural moment to cure the radio market, as more radio channels have come available and the licenses of commercial radio channels have ended. Although we will not investigate the petrol market nor the market for commercial radio in much detail, in the conclusion of this chapter we will be able to draw several general lessons for governments when they intend to cure tight oligopolies.

### 8.1 Petrol

#### 8.1.1 Background

In the Netherlands, the retail market for petrol is probably a good example of a tight oligopoly. A petrol firm needs a license for each service station it operates. In the past, the government issued these licenses (1) mainly to firms that already had a strong position in the market (2) for an unlimited time period. As a consequence, it was almost impossible for small firms to grow larger, or for new firms to enter the market. The resulting market structure of today is such that four firms dominate the market: Shell, Esso, BP/Mobil, and Texaco. Shell has a significantly larger market share than the others so that there could be scope for price-leadership. This facilitates the realisation of co-ordination on pricing behaviour. It is not clear whether firms do co-ordinate their prices, but at least their margins are higher than in several surrounding countries.

We will argue that the government could take several steps to 'cure' the tight oligopoly in the petrol market. First of all, the government may ban vertical links in the petrol market which work anti-competitively. Secondly, the government could decrease consumers' search costs by showing car drivers the fuel prices at (let's say) the next four service stations along the highway. Further investigation could indicate that competition will increase if the government decides to do so. Finally, and most importantly, the Dutch government intends to organise auctions to re-allocate the licenses of all service stations along the Dutch highways, aiming to increase the number of players in the market.

### 8.1.2 Diagnostic approach

Is the petrol market a tight oligopoly? Are there serious consequences for welfare? Is countervailing power weak? Is cure possible at little expense and is government failure unlikely? Let us try to answer these questions using our diagnostic approach.

#### Step 1: Set of connected markets

The set of connected markets consists of several relevant markets and connected markets. Relevant product markets are separate markets for fuel types such as diesel, petrol, and gas. Perhaps a further distinction has to be made between fuel sold at the highways and fuel sold in cities and villages. Relevant geographic markets are areas with a diameter of let's say 40 kilometres. As firms need to reach their minimum efficient scale, they are only able to enter one of these relevant markets if they enter in sufficiently many others. Therefore, the set of connected markets contains a substantial number of geographic markets.

There are several other connected markets. In France and the UK, some supermarkets sell petrol at a cheap price in order to attract customers. Therefore, supermarkets belong to the set of connected markets. Analogously, restaurants, furniture shops, and home improvement centres may consider opening their own service station, so that these are part of the set of connected markets as well. Moreover, three vertically related markets may be distinguished, namely oil production, oil refinery, and fuel distribution. The most important of these for this case is fuel distribution.

#### Step 2: Structure of and behaviour on the set of connected markets

The retail petrol market in the Netherlands has the following structural characteristics.

- Homogeneous products: All petrol firms sell virtually the same diesel, petrol, and gas.
- Few firms: Four firms (Shell, Esso, BP/Mobil, and Texaco) are responsible for the sale of 74% of all car fuel in the Netherlands. The largest of these, Shell, has a market share of 31%.<sup>89</sup> As table 8.1 shows, these numbers are higher than in several surrounding countries. Along the highways, concentration is even higher. Shell has a total market share of about 55%, and Shell, Esso, BP/Mobil, and Texaco together serve 93% of the market, leaving only 7% for other firms.<sup>90</sup>
- High entry barriers: It used to be very difficult for new firms to enter the petrol market along the highways. The main reason for this is that the government has rarely issued new licenses to operate a service station to firms that

<sup>89</sup> MDW (1999).

<sup>90</sup> Goeree et al. (2001).

were not yet active in the market. The government hopes that entry barriers will get substantially lower now licenses will be regularly reallocated in auctions.

- **Frequent interaction** Firms interact every day and are able to adjust their prices as frequently as they desire.
- **Economies of scale** For two reasons, there are substantial economies of scale. Firstly, a firm with many outlets faces less costs per outlet than a firm with few outlets. A more efficient distribution of petrol makes this possible. Secondly, there is a network effect in this market: a firm with many outlets attracts more customers per outlet than a firm with few outlets. The probable reason for this is that car users can save for air miles, presents, or discounts if they buy their petrol regularly at stations with the same trademark. Therefore, they prefer trademarks with many outlets.<sup>91</sup>
- **Transparency** For petrol firms, the market is very transparent as it is easy for them to monitor the pricing policy of their competitors.

In terms of behaviour, we observe the following.

- **Price announcements** Some firms publish relevant prices on the Internet. Shell puts a recommended retail price on the Internet, that is followed by about 50% of the service stations that carry its trademark. Price fighter Tango makes the prices of all its service stations publicly available on the Internet.
- **Price leadership** There is scope for price leadership in this market, for instance by Shell. As Shell publishes its prices on the Internet, it is easy for service stations of competing trademarks to closely follow Shell's pattern of price adjustments.
- **Relatively high margins** Table 8.1 shows that the firms' pricing policy leads to higher profit margins than in several surrounding countries. It is not so clear how robust this high margin result is. The surrounding countries often have supermarkets who behave as price-fighters in order to attract more supermarket customers.

<sup>91</sup> Van Damme et al. (1998) show empirically that strong network effects are present in the petrol market along the highways. According to their results, Shell sells (*ceteris paribus*) about twice as much fuel than a firm with only one service station along the Dutch highways.

- Vertical restraints      There are at least three types of vertical links between the retail market (service stations) and the wholesale market (fuel distribution). (1) There is a group exemption from the European Commission to petrol firms that allow them to be engaged in exclusive dealing contracts with the owners of the service stations.<sup>92</sup> (2) Retail price maintenance is forbidden, and probably does not take place in a formal way. In practice, however, recommended retail prices can have the same effect as a retail price maintenance agreement. (3) Petrol firms financially support owners of service stations if they have to compete with a price fighter in their neighbourhood.<sup>93</sup>

**Table 8.1      Concentration and profit margins on the retail petrol market**

	CR1	CR4	Margin petrol (eurocents per liter)	Margin diesel (eurocents per liter)
The Netherlands	31	74	14	11
Belgium	18	55	12	12
Germany	20	53	10	12
France	14	38	8	9
United Kingdom	15	56	7	7

Source: MDW (1999). CR1 is the market share of the largest firm. CR4 is the total market share of the largest four firms.

### Step 3: Assessment of structure and behaviour

At the moment, the petrol market in the Netherlands can be called a tight oligopoly. It is not so difficult for firms to sustain co-ordination on their pricing behaviour. The market is characterised by (1) a few players, (2) high entry barriers, and (3) frequent interaction, which are all crucial factors for co-ordinated effects. In addition, the market is transparent, which is an important factor. Finally, there is scope for price leadership.

Unilateral effects are perhaps possible as well, i.e., firms may be able to realise supranormal profits without having to co-ordinate their behaviour. This seems to contradict the fact that diesel, petrol, and gas are homogeneous products. However, the network effect in the petrol market indicates that petrol firms are able to ‘tie’ consumers to their brands, so that they may be able to sell petrol above the competitive price without co-ordination.

<sup>92</sup> Goeree et al. (2001).

<sup>93</sup> See for instance Shell's Internet page [www.shell.nl](http://www.shell.nl).



The various types of vertical links seem to be anti-competitive. Especially price support for service stations gives price fighters too few possibilities to successfully enter the market.

The market indeed seems to perform poorly in terms of welfare. The profit margins in table 8.1 indicate that prices for petrol and diesel are higher in the Netherlands than in Germany, France, and the United Kingdom. Admittedly, we base this conclusion on figures dating back as far as 1998, but the differences in prices seem to be still imminent in 2001, as confirmed by figures Shell presents on its Dutch web site ([www.shell.nl](http://www.shell.nl)).

However, it is not that clear whether the Dutch firms have excessively high margins. Shell is convinced that the prices in the Netherlands are not too high, arguing that petrol firms in England and France face competition from supermarkets which sell fuel below market prices in order to attract consumers to their shops.

We do not have sufficiently detailed data to assess whether or not profit margins are excessive as a consequence of market power. Perhaps they are, perhaps they are not. What is clear however, is that the market is a tight oligopoly and that there is enough scope for welfare reducing behaviour. In other words, the remedies discussed below are not a response to (potentially non-existing) anti-competitive behaviour. Rather, remedies are aimed at changing the market conditions that makes such behaviour possible.

#### **Step 4: Countervailing power**

Countervailing power has turned out to be weak. That is, if there had been strong sources of countervailing power, then we wouldn't have observed large differences between the prices in the Netherlands on the one hand, and the price in Germany, France, and the United Kingdom on the other.

Still, we have some reason to believe that this situation has changed in the past few years. Recently, price fighter Tango has entered several local markets, offering petrol at unmanned service stations at a rate a few cents below the price offered by its competitors. Moreover, the ANWB, an organisation that serves the interest of car owners, intends to enter the market as well, offering petrol at a favourable price.

In addition, Shell claims that there is countervailing power in the sense that higher prices are a signal of high quality.<sup>94</sup> The company argues that it is able to provide better service when there is not too much competitive pressure. Better service is for instance given in terms of safety, the availability of toilets, and the supply of water and air. Moreover, Shell claims that the number of service stations will significantly decrease when firms are under strong competitive pressure. This also leads to lower quality for the consumers as they have to travel a larger distance to the closest service station. When price-fighters could not successfully enter the market, more stations would

<sup>94</sup> See [www.shell.nl](http://www.shell.nl).

survive and these stations would be able to provide better service to its customers. Therefore, price support in the case of a price-war against price-fighters improves welfare according to Shell. The firm empirically supports its claim by referring to the situation in the UK, France, and Germany, where in the past decade thousands of service stations have been closed. Indeed, table 8.2 indicates that the number in habitants per service stations is higher for countries with high prices (the Netherlands and Belgium) than for countries with low prices (the UK, France, and Germany). For three reasons, it is not clear whether these arguments are valid. First of all, higher prices may be caused by network effects and need not be a signal of high quality. Secondly, just as in the UK, France, and Germany, the number of service stations in the Netherlands has decreased substantially since 1990.<sup>95</sup> Therefore, as the profit margins in the Netherlands are higher than in the UK, France, and Germany, it is not clear whether low prices are the main reason for firms closing down service stations. Thirdly, if customers indeed decide to buy fuel at service stations with low prices and low quality, they indicate that they prefer this type of stations over stations that sell fuel for higher prices and higher quality.

It is also questionable whether cut-throat competition will take place if competition is increased . At the moment, the margins seem to be rather high. And even if cut-throat competition does occur, it will lead to inefficient firms closing down, which is economically a sound development. Finally, an increase in competition does not imply a decrease in the service level. If consumers are willing to pay for extra service, firms have good reasons to provide them, even under fierce competition.

**Table 8.2 Concentration and profit margins on the rail petrol market, January 2000**

	# service stations	# inhabitants per service stations
The Netherlands	3 900	4 050
Belgium	4 787	2 125
Germany	16 400	5 000
France	16 700	3 550
United Kingdom	12 900	4 550

#### **Step 5: Proportionate remedies**

The Dutch government may take several steps to ‘cure’ the petrol market in the Netherlands. Cure is important in this market, since all the tight oligopoly signs are on red and curing seems feasible.

First of all, the government may have a closer look at the vertical links between petrol firms and service stations. Exclusive dealing contracts are probably anti-competitive. Also, recommended retail

<sup>95</sup> MDW (1999).

prices may have the same effect as retail price maintenance, so that they are effectively anti-competitive as well. In addition, the government may consider a ban on price support for service stations to survive when a price-fighter enters the market. However, the NMa has pointed to several difficulties when trying to tackle certain types of vertical restraints using competition law.

Secondly, the Dutch government may decide to increase transparency by showing car drivers the prices of (let's say) the next four service stations along the highway, which is common practice in France. However, at the moment it is not clear whether this has yielded consumer benefits. There is a trade-off between the following two opposing effects. More transparency could decrease consumers' search costs, so that they are more aware which is the cheapest service station in the neighbourhood. This gives service stations an incentive to decrease the price. However, more transparency may make co-ordination better sustainable. If a firm decides to deviate from a tacit agreement by jumping to a lower price, its competitors will be able to more effectively punish this firm by choosing an even lower price. It is not clear under which circumstances which of the two effects is the strongest.

Thirdly, the government has decided to regularly re-allocate all licenses of service stations along the highway using auctions. This is a good way to break up the tight oligopoly, provided that the auctions do not allocate all or most licenses in the hands of just a few firms. As we have stressed in Chapter 4, when curing a tight oligopoly, it is important to pay close attention to details of the new market. The Dutch government has indeed hired several external experts in auction design to think about the details of the auctions.<sup>96</sup> Moreover, some of the results of the negotiations between the Dutch government and the petrol firms are clearly pro-competitive, such as the abolishment of the strict separation between the sale of petrol and other economic activities. See the following box for more details about the results of these negotiations.

Is cure possible at little expense and is government failure unlikely? It seems to be. First of all, it is virtually 'no regret' to implement a ban on the various vertical restraints. Secondly, it is not so expensive to build notice boards before service stations that show car drivers the prices of (let's say) the next four service stations. Still, a critical evaluation is needed to get a clearer picture of the effect of the increased transparency on the market prices. Finally, government failure is unlikely as the Dutch government only lightly regulates the market, for instance by implementing the rule that firms cannot operate two service stations with the same trademark within a distance of 25 kilometres in the same direction along the same highway. For the rest, firms are free to choose their pricing strategy, which fuels they sell, whether they have restaurants or supermarkets at the site of their service station, and so forth. Of course, the details of the re-allocation of the licenses matter a lot and must be right in order to actually cure the market.

<sup>96</sup> Advice has been provided by Van Damme et al. (1998, 2000) and Goeree et al. (2001).

---

## Results from the negotiations between the Dutch government and incumbent petrol firms

In order to be able to re-allocate licenses along the highways, the Dutch government had to negotiate with the current owners of the service stations who held licenses which were valid for an unlimited time period. It goes without saying that this yielded the owners a strong bargaining position. The results from the negotiations were the following:

- New licenses will be valid for 15 years and will be sold sequentially in 'first-price sealed-bid' auctions. When the licenses are auctioned for the first time, if the current owner wins, he will pay the difference between his bid and the second highest bid, with a maximum equal to 15% of his own bid. If the winner of an auction is not current owner of the license, he will pay his bid to the owner. In each later round, the winner pays his bid to the government.
- The first round of auctions of the new licenses will be uniformly spread over a period of 21 years. In each year, about 10 licenses of the current about 250 will be auctioned. The first auctions take place on December 11, 2002.
- The government will not allocate licenses for new locations, except for a few pre-specified locations.
- The four largest petrol companies (Shell, Esso, BP/Mobil, and Texaco) decrease the number of service stations that operate under their name with 50 before January 1, 2005.
- The government abolishes the strict separation between the sale of petrol and other economic activities such as supermarkets and restaurants.
- It is not possible to operate two service stations with the same trademark within a distance of 25 kilometres in the same direction along the same highway.

At the moment, it is not clear what will be the effect of these six results on the competitiveness of the market. As far as we can see there is some danger that one firms or several firms will obtain or strengthen a strong position in the market for petrol as there is no rule that explicitly forbids this.

---

## 8.2 Radio frequencies

### 8.2.1 Background

In the introduction of this report, we wrote the following:

“[T]he outcome of interaction in oligopolistic markets may not be optimal from a welfare point of view: it may be easier for firms in an oligopoly to sell their products at high prices and/or with low quality than in a market form in which many firms are active.”

So far, we have mainly focussed on how oligopolies may reduce welfare due to too high prices. The current case is about a market in which firms typically compete in terms of quality: the market for radio broadcasting. The outcome of the interaction on the oligopolistic radio market is not optimal from a welfare point of view if the average quality of the programs is low and if there is little

diversity in terms of programming (which may be considered a qualitative dimension as well). For a radio channel, quality has many dimensions: time devoted to news, the number and length of commercial breaks, and the quality of the presenter. Also cultural diversity plays an important role in this market. Consumers have a preference for a diverse market, so that they can choose between several different radio formats. At the moment, they can choose among channels that offers news, popular music, classical music, entertainment, and so forth. Moreover, Dutch listeners can receive both regional and nation-wide channels, and also some channels from the UK, Belgium, and Germany.

The radio market is an exceptional market for another reason. Radio channels cater to two disjoint consumer groups: content is offered for free to listeners and advertising space is sold to advertisers. As customers do not have to pay for the radio programs they listen to, firms compete for consumers solely on the basis of quality and the type of programs. Firms compete on the advertising market for money, as advertising is the main source of income for commercial radio channels.

Most listeners receive radio programs through the air, over so-called frequencies. Recently, the Dutch government has decided that it faced a good moment to re-allocate all commercial radio channels. The licenses of all commercial channels ended in 2001 and rearrangement of the radio frequencies created space for two or three extra nation-wide channels, and for several regional ones. Compare the allocation as it used to be with the arrangement of cars over a parking lot. If drivers park their cars randomly over the parking lot, it will be full even if there are relatively few cars parked. If all these cars were neatly rearranged, new space would come available in which other drivers can park their cars as well.

### **8.2.2 Diagnostic approach**

Several questions arise from the above description of the radio market. Is the radio market, despite the relatively high numbers of channels, a tight oligopoly? If not, is there still scope for welfare reducing behaviour? Are there countervailing powers against potentially welfare reducing behaviour? If the market were suboptimal in terms of welfare, would cure be possible at little expense and would government failure be unlikely? Let us use our diagnostic approach to answer these questions for nation-wide commercial radio stations.

#### **Step 1: Set of connected markets**

Consumers mainly care about the quality and format of the programs offered by radio channels. They can receive both nation-wide and regional channels so that it is not a priori clear what is the relevant market. However, let us assume that nation-wide broadcasting in a relevant market, as nation-wide channels are bound to broadcast the same program over the entire nation. Even if the

relevant geographic market may be limited to a specific region, the set of connected markets includes geographic markets all over the country.

A connected market is the market in which radio channels compete for advertisement money. Both public and commercial radio stations offer broadcasting time for commercials. Investigation of the Netherlands' Competition Authority NMa revealed that the relevant market on which nation-wide channels compete includes both the supply of nation-wide public channels and the supply of regional public and commercial channels. The set of connected markets does not include advertisement space in other media.<sup>97</sup>

### **Step 2: Structure of and behaviour on the set of connected markets**

The set of connected markets has the following structural characteristics.

- **Many firms:** Table 8.3 shows that there are many players active in the radio market, and that four parties have a rather strong position. The public radio has 5 nation-wide channels, Radio 1-5. Total market share of public nation-wide radio is about 30%. Three commercial radio stations, Sky Radio, Radio 538, and Radio 10 FM, have a market share of about 10% each.
- **High entry barriers:** Entry barriers are high as broadcasters need a license to operate a channel.<sup>98</sup>
- **Frequent interaction:** Firms interact frequently as they have broadcasts every day. Moreover, they can adjust their advertisement prices as often as they desire.
- **Non-price competition:** Firms do not compete for listeners in terms of price, but in terms of several types of quality and on format.

Table 8.3 also gives an indication of firms' behaviour. The five commercial radio stations with the highest market share broadcast 'middle of the road' popular music. In other words, there is little diversity, as commercial stations only serve a few niches. The reason for this is that firms compete in the connected market for advertising money. Therefore, they are mainly focussed on maximising the total number of listeners, as that is what most advertisers are interested in.

<sup>97</sup> See NMa (2000) Kamerstukken II, 1999-2000, 24 095, nr. 43.

<sup>98</sup> Theoretically, firms can enter the market without a radio frequency if they broadcast over the cable or over the Internet. However, firms that do not have a radio frequency have remained very small.

**Table 8.3 Market shares of radio channels, August and September 2002.**

	Channel	Market share
Public nation-wide	Radio 1	8%
	Radio 2	10%
	Radio 3	10%
	Radio 4	2%
	Radio 5	1%
Commercial nation-wide	Sky Radio	13%
	Radio 538	10%
	Radio 10 FM	7%
	Noordzee FM	4%
	Yorin FM	3%
	Classic FM	3%
	Arrow Classic Rock	2%
	Radio Nationaal	2%
Other	Regional public channels	16%
	Regional commercial channels	3%
	Other channels	6%

### Step 3: Assessment of structure and behaviour

Is the market a tight oligopoly? At first sight perhaps not. The commercial channel with the largest market share only serves only 13% of the market and it has many competitors. Hence, we may expect high quality programs as these are the best way for radio channels to attract advertisement money. Suppose, in contrast, that all channels are owned by just one firm. Then this firm has a strong bargaining position vis-à-vis the advertising companies. Therefore, it may offer radio programs at a relatively low quality level and still obtain a large amount of advertising revenue. In reality, however, there are many commercial firms in the market and they probably have to compete heavily for every advertisement penny. In other words, they are forced to make programs at a high quality level.

In addition, co-ordinated effects are probably hardly feasible in this market. This holds despite the fact that there are high entry barriers and frequent interaction, which are both crucial elements for co-ordinated effects. Still, co-ordination is not easy, as firms compete on a large range of quality dimensions rather than on price. Therefore, it is almost impossible to come to terms about co-ordination. Moreover, it is not easy to monitor other firms on all relevant dimensions as quality is not always well defined. Finally, if radio stations were able to co-ordinate one way or the other, they would be most likely to do so on their strategies in the advertisement market. This implies that they may increase their revenues, which they may partly use to improve the quality of their radio programs.

Still, the outcome of the firms' interaction on the radio market may not be optimal from a welfare point of view. Table 8.3 suggests that commercial channels mainly broadcast 'middle of the road' radio programs, so that is scope for more diversity. Why? Suppose for simplicity that there are only 2 channels in the air and that these channels are owned by two different firms. Suppose also that 80% of the listeners wishes to hear popular music, and 20% wants to listen to classical music. In the market, both channels can be expected to broadcast popular music, as each channel attracts 40% of the market instead of 20%. The end result is that only 80% of the population is satisfied, so that higher welfare can be realised.<sup>99</sup>

Two remarks are appropriate here. Firstly, in reality, diversity may be guaranteed by the market. The market for newspapers is a good example. In this market, there seems to be enough variety in the types of newspapers that are offered. However, the differences with the radio market are that (1) it is relatively easy to enter into the newspaper market as entry barriers are low and (2) newspapers only offer news, whereas radio channels potentially broadcast many other formats.

Secondly, if the market does not guarantee diversity, it may be guaranteed by public companies. For instance, public radio channels may broadcast jazz music if commercial radio channels turn out not to do so. In practice, however, it is not clear whether public radio channels actually offer as much diversity as they could. Radio 3, for instance, focuses mainly on 'middle of the road' popular music, just as the five largest commercial radio stations, and Radio 4 broadcasts mainly classical music just as its commercial competitor Classic FM.

#### **Step 4: Countervailing power**

There are several sources of countervailing power against potentially welfare reducing behaviour in the radio market.

- **Public channels:** If public radio channels broadcast high quality programs, commercial firms have to do so as well in order to attract listeners and advertisement money. Moreover, public channels may serve 'niches' that are not covered by commercial radio channels.
- **Advertising companies:** Commercial radio channels can sell advertisement time at a higher rate if they attract more listeners. Advertising companies may indirectly force them to offer higher quality programs to attract more listeners.

<sup>99</sup> Interestingly, if both channels were in the hands of a monopolist, it would have an incentive to use only one channel for popular music and the other for classical music. 100% of the population would be satisfied. However, it is not clear if the outcome is better, as the monopolist has less incentive to provide programs with a high quality, whereas duopolistic firms have, as they have to compete for advertisement money.



- Internet radio: In the past few years, new competitors have entered the market offering radio broadcasts over the Internet. Nowadays, these channels attract only a small fraction of the listeners. However, the introduction of UMTS services may increase the scope for radio offered over the Internet. It is not unthinkable that in the near future, car drivers will start making use of UMTS services in their cars to listen to radio channels.

#### **Step 5: Proportionate remedies**

It is not clear whether the sources of countervailing power are powerful enough against sub-optimal welfare caused by too little diversity. Therefore, the government could decide to 'cure' the market. The most obvious way to do so is by making sure that diversity is guaranteed in a new channel configuration. The government intends to sell all commercial radio channels in a beauty contest in June 2003. Limitation of the licence time is important, as market conditions may change from time to time. However, the period of validity should not be too short, as otherwise radio channels do not have the possibility to invest in reputation.

As stated in an official document by the Ministry of Education, Culture, and Science, the aim of the beauty contest is related to (1) competition in the radio market and (2) diversity in the channel formats. The first goal will be automatically reached if sufficiently many independent companies receive a channel. The second target may be addressed in both a beauty contest as well as an auction: the outcome of a 'free' auction may be very well that only 'middle of the road' radio stations obtain a license. Why? Let us consider again the example in which there are only 2 channels available. 80% of the listeners wishes to listen to popular music, and 20% wants to hear classical music. In an auction, both license will probably end up in the hands of a popular music channel, as each channel attracts 40% of the market instead of 20%. A well designed beauty contest may result in one popular channel and one classic channel. The result of the 'free' auction is that 80% of the population is satisfied whereas the beauty contest satisfies everybody.

As an alternative to a beauty contest, the government could use a 'coloured' auction to allocate the licenses. In a coloured auction, the format of some of the radio channels is predetermined; for instance, one channel should be used to broadcast news, another channel to broadcast classical music, and so forth. There is no further difference with 'usual' auctions: the radio station which submits the highest bid obtains the channel. By predetermining the radio channels' format, the government ex ante guarantees a sufficient level of diversity.

What about government failure and the costs needed to cure the radio market? The government possibly faces high costs when monitoring and enforcing the promises made by the radio channels in the beauty contest. An extra difficulty in this respect is that not all quality dimensions are definable. In addition, there is scope for government failure in the re-allocation of the radio channels: the design of the beauty contest is crucial and should indeed improve the situation on the

radio market. The Dutch government has recognised this and has hired experts in market design from the University of Amsterdam, Erasmus University Rotterdam, and Tilburg University to give advice about the allocation of the radio channels.

Alternatively, the government could decide to change the role of public channels. For instance, she could use these channels to serve niches that are left open by commercial broadcasters. Indeed, it may be questionable what is the added value of Radio 3 broadcasting the same type of format as the largest five commercial stations. Perhaps this radio station would serve the market better if it only broadcasted jazz. A more radical solution in this respect is to put all currently commercial channels in the hands of the public radio. Doing so, the government will be able to directly influence the type of programs that are broadcast so that it will guarantee high quality and cultural diversity. However, this option probably implies an increased risk of government failure and an increase in monitoring costs.

### 8.3 Conclusions

From these two cases, we can learn four important points related to the cure of tight oligopolies.

- The government may cure a tight oligopoly by regularly re-allocating licenses. It will do so successfully if it organises the re-allocation in such a way that the number of firms in a tight oligopolistic market increases and entry barriers decrease or disappear.
- Certain types of policy may have a detrimental effect as they create entry barriers in certain markets. This lesson can be learned from the study of the petrol market: in the past, the government has issued licenses (1) mainly to parties that already had a strong position in the market (2) for an unlimited time period. It was almost impossible for small firms to grow larger, or for new firms to enter the market. Also the strict separation between the sales of petrol and other economic activities has prevented supermarkets and restaurants to enter the petrol market. Possibly as a result of this, profit margins in the Netherlands have been higher than in several surrounding countries.
- The third point is the importance of good market design. The failure of the electricity market in California has shown us that the design of the market is crucial. Also the Dutch government has learnt this lesson in the UMTS auction in the summer of 2000, perhaps at a very high price.<sup>100</sup> Apparently, it has learned its lesson well, as the government has hired several Dutch and foreign experts in market design for the detailed design of both the auctions for service stations and the beauty contest for radio channels.

<sup>100</sup> Van Damme (2002).

- Finally, the case on radio stations has shown that the government may also consider curing a market which perhaps is not a tight oligopoly at first sight: specific public goals might not be automatically guaranteed by the market even if there are many firms active on the market. Without intervention, the radio market may not guarantee cultural diversity. The government has therefore decided to re-allocate licenses in the hope that the performance of the radio market will improve.



Tight oligopolies are market structures which are prone to welfare reductions. There are only a few firms and high entry barriers, and other characteristics do not help either. There are often complaints about oligopolies, e.g. from members of Parliament, consumer organizations or academic economists. Are these complaints justified? We cannot assess the merits of specific complaints, since this requires detailed empirical information that is often not publicly available. What we did instead is to provide an analytical toolbox for policy makers that are confronted with oligopolies. To our knowledge this has not been done so far.

Before ringing alarm bells and giving policy makers the advice to regulate these markets, caution is required. A number of the non-competitive outcomes are the result of smart innovations, business cycle effects, temporary market power, risk premiums for stranded assets or luck. When any of these phenomena lies at the heart of a non-competitive outcome, policy measures run the risk of being counterproductive. Nevertheless, policy measures can be appropriate under other circumstances. This study analyses these circumstances and suggests proportionate remedies.

Proportionate remedies can be divided into three groups. Policy can prevent oligopolies from becoming tight. Think of merger control, but also of 'market design'. Policy can also accept tight oligopolies and - when needed - treat the symptoms, e.g. by regulation or lighter forms of intervention. When tight oligopolies exist, but are considered problematic, policy can also cure tight oligopolies by liberalizing markets or allocating new licences.

For each of the three groups we have studied two cases. Before providing the reader with the main conclusions from all cases, let us stress once more that each case involves complex problems that deserve far more extensive studies. We have gone through these cases in a rather swift and at times relatively superficial way. The cases were introduced to stress the importance of the diagnostic approach and illustrate to which proportionate remedies the diagnosis leads. For that purpose the cases were quite useful. What are the main findings?

### **Prevention**

Preventing tight oligopolies using European Merger Control, often entails proving that firms will become collectively dominant. This notion has become a paper tiger. The Airtours case, studied in Chapter 6, shows the point: the way collective dominance is defined, implies that the burden of proof required is simply too high. The proposed changes of the Merger Control are hopeful, since so-called 'unilateral effects' have entered the definition of dominance, thereby widening the scope of this notion.

The Airtours case also showed that merger examinations should ideally be complemented by other policy measures. The merger could have been allowed if at the same time entry barriers had been lowered and vertical links had been discouraged.

Besides merger control it is also possible to prevent oligopolies from becoming tight. Natural moments to (re)design the market are good opportunities to prevent tight oligopolies. The health care case showed that a pro-active approach is needed since firms try to anticipate liberalization or market redesign by merging. A lenient approach by the Competition Authorities may have caused unnecessary hospital mergers that cannot be easily reversed.

### **Treatment of symptoms**

In markets characterized by high fixed costs and large investments, extra caution is needed. Not all supra-normal profits are necessarily bad for welfare in the long run. 'Repairing' allocative efficiency by enforcing mandatory access to networks in the Finnish telecommunications case is a good example. Mandatory access would be welfare enhancing in the short run, but nobody would invest in networks anymore. Policy can often find a balance between short and long run goals, by making access rules contingent on investment levels. In markets where investment levels and innovation are relatively less important, such as the bank market, more weight can be put on static goals.

Competition law and other policy instruments form natural partners. The Office of Fair Trading in the UK shows what can be done: commission a comprehensive sector study, which can yield a variety of conclusions, of which possible violations of competition law is just one. Other (arguably more important) possible conclusions are recommendations to policy makers, warnings to the sector, advises to consumer organisations, etc. These sector studies are so useful precisely because they are not primarily aimed at violations of the competition law. The Netherlands' Competition Authority somehow did not give this a high priority.

### **Cure**

'Curing' tight oligopolies can be a gradual process. If in the course of events entry takes place and consumers become more sensitive to prices, a tight oligopoly can cease to exist. However, in some cases a quicker cure is possible. There are 'natural moments' for a quick cure. When a market is liberalized or redesigned, and in particular if licences are reallocated, the government can use the opportunity to cure tight oligopolies. Both the petrol market and the market for radio frequencies have shown this neatly.

The petrol market has also shown a downside of policy making. The biggest obstacle in the cure were past agreements between the government and the sector, giving the sector a very strong bargaining power, thereby considerably slowing down the curing process. Something similar happened in the market for radio frequencies where the Parliament succumbed to lobbying, thereby delaying the curing process for a couple of years.

Finally, both cases have underlined the importance of good market design. The analysis from our study can be used to pinpoint potential weaknesses in the market design in the light of curing tight oligopolies.

### **When to prevent, treat or cure?**

We see four critical choices:

- ‘Grab the opportunity when it comes’  
Natural moments to redesign the market provide possibilities to either prevent a tight oligopoly (when it is not there) or cure it. In transition stages one often wants to improve competition. Merger control is not so effective in that case. Merger control is tailored to preventing a dominant position, not to improve competition. Changing the burden of proof in transition stages seems an attractive possibility. Opportunities on ‘natural moments’ should be grabbed whenever possible, since they are often associated with less government failure than other types of prevention or cure.
- ‘What can't be cured must be endured’.  
In some cases there is hardly any choice. When a tight oligopoly exists and cannot reasonably be cured, there is no other way than treating symptoms. In other cases choices are possible.
- ‘The cure can be worse than the disease’  
If there is no natural moment for market redesign, radical cures can be dangerous. A hefty liberalization of the banking market can easily lead to financial instability. Strong interventions in telecommunications or (not studied in this report) energy, can unsettle important markets.
- ‘Prevention is not always better than treating symptoms’  
Sometimes it is better to let the disease run its course than to take precautionary medicines all the time. Maybe the illness turns out not to be that bad after all. Although there are many instances in which tight oligopolies are better prevented, this study did not find support for strong ex-ante interventions in tight oligopolies in general. True, merger control can be more effective using a better definition of dominance. True, policy makers have to be pro-active in market redesign stages, as mentioned above. But outside these cases, market forces are best left untouched, in the sense that governments can often not judge ex-ante what the welfare consequences of various market activities are. Preventing lots of activities because there is some probability that a tight oligopoly will emerge, is clearly pushing policy too far.

## **Abstract**

Tight oligopolies are oligopolies of which the market characteristics facilitate the realisation of supranormal profits for a substantial period of time. We entangle the link between market structure and the possibility of welfare reducing behaviour by firms. A useful distinction can be made between ‘unilateral effects’ (oligopolistic firms realise supra-normal profits without co-ordinating their strategies) and ‘co-ordinated effects’ (oligopolistic firms realise supra-normal profits by co-ordinating their strategies). The study develops a ‘diagnostic approach’, a tool that helps policy makers finding proportionate remedies to tight oligopolies: (1) ‘prevent’ a market from becoming a tight oligopolies; (2) ‘cure’ a currently tight oligopoly by changing the market structure; and (3) treat the symptoms of an established tight oligopoly. We apply this diagnostic approach to six cases of (potentially) tight oligopolies.



## Literature

Aghion, P., N. Bloom, R. Blundell, R. Griffith and P. Howitt, 2002, Competition and Innovation: an Inverted U Relationship, working paper, Harvard University.

Belgische Petroleum Federatie, 2001, De Activiteit van de Petroleumsector in België, Jaarverslag 2000 (The Activities of the Petrol Branche in Belgium, Annual Report 2000, in Dutch), Belgische Petroleum Federatie, Brussel.

Bennett, M., P. De Bijl and M. Canoy, 2001, Future Policy in Telecommunications: An Analytical Framework, *CPB Document* 5, CPB Netherlands Bureau for Economic Policy Analysis.

Besanko, D. and M. Perry, 1994, Exclusive Dealing in a Spatial Model of Retail Competition, *International Journal of Industrial Organization* 12, 297-329.

Bikker, J., 1999, Beperkte concurrentie in het bankwezen, ESB, 5 februari 1999, 84-87.

Boone, J., 2002, 'Be Nice, Unless it Pays to Fight': A New Theory of Price Determination with Implications for Competition Policy, *CEPR working paper* 3342.

Boot, A., P. Goyal, A. Janszen, R. van Nes, G. Steurs and D. van Wensveen, 2000, *Fusies en Overnames in het Nederlandse Bankwezen: Een instrument voor NMa (Mergers and Take-overs in the Dutch banking Sector: An Instrument for the Netherlands' Competition Authority*, in Dutch), NEI, Rotterdam.

Brenkers, R. and F. Verboven, 2002, Liberalizing a Distribution System: the European Car Market, mimeo, Catholic University Leuven.

Bresnahan, T.F., 1989, Empirical Studies of Industries with Market Power, in Schmalensee, R. and R.D. Willig (eds.), *Handbooks in Economics* 10, *Handbook of Industrial Organization Volume 1*, North-Holland, Amsterdam.

Burkhart, M., D. Gromb and F. Panunzi, 1997, Large Shareholders, Monitoring, and the Value of the Firm, *Quarterly Journal of Economics* 112, 693-728.

Cabral, L., 2000, *Introduction to Industrial Organization*, MIT Press, London.

Canoy, M. and P. De Bijl, 2000, Publishers Caught in the Web? *CPB Working Paper 119*, CPB Netherlands Bureau for Economic Policy Analysis, Den Haag.

Canoy, M. and Knibbeler, W., 2002, Europees Fusietoezicht Moet met Hardere Bewijzen Komen (European Merger Control Has to Come with Hard Evidence, in Dutch). *Financieel Dagblad*, 26 November 2002.

Canoy, M. and J. Weigand, 2002, Big Fishes in Murky Waters, mimeo, CPB Netherlands Bureau for Economic Policy Analysis, Den Haag.

Canoy, M., M. Van Dijk, J. Lemmen, R. de Mooij and J. Weigand, 2001, Competition and Stability in Banking, *CPB Document 15*, CPB Netherlands Bureau for Economic Policy Analysis, Den Haag.

Chamberlain, E., 1929. Duopoly: Value Where Sellers Are Few, *Quarterly Journal of Economics* 43, 63-100.

Compte, O., F. Jenny and P. Rey, 2002, Capacity Constraints, Mergers and Collusion, *European Economic Review* 46, 1-29.

CPB, 2000, Yardstick Competition: Theory, Design, and Practice, *CPB Working Paper 133*, CPB Netherlands Bureau for Economic Policy Analysis, Den Haag.

CPB, 2003, Zorg voor concurrentie: Een analyse van het nieuwe zorgstelsel (Competition in the Health Care Market: An Analysis of the New System of Health Case Insurance, in Dutch), *CPB Document 28*, CPB Netherlands Bureau for Economic Policy Analysis, Den Haag.

Cruickshank, D., 2000, Competition in UK Banking. A report to the Chancellor of the Exchequer. HM Stationary Office.

Davis D.D. and B.J. Wilson, 2002, Horizontal Merger Analysis and Laboratory Experiments, <http://www.antitrust.org>.

Dietzenbacher, E., B. Smid and B. Volkerink, 2000, Horizontal Integration in the Dutch Financial Sector, *International Journal of Industrial Organization* 18, 1223-1243.

Dixon, H., 1987, Approximate Bertrand Equilibria in a Replicated Industry, *Review of Economic Studies* 54, 47-62.

Etter, B., 2000, The Assessment of Mergers in the EC under the Concept of Collective Dominance: An Analysis of the Recent Decisions and Judgements - By an Economic Approach. *World Competition* 23, 103-139.

European Commission, 1999, Case No IV/M.1524 - Airtours/First Choice.

Evans, W.N. and I.N. Kessides, 1994, Living by the 'Golden Rule': Multimarket Contact in the U.S. Airline Industry, *Quarterly Journal of Economics* 109, 341-366.

Fisher, F.M., 1991, Diagnosing Monopoly, in Monz, J., (ed.), *Industrial Organization, Economics, and the Law*. MIT Press Cambridge.

Gilbert, R.J., 1989, Mobility Barriers and the Value of Incumbency, in Schmalensee, R. and R.D. Willig (eds.), *Handbooks in Economics* 10, *Handbook of Industrial Organization Volume 2*. North-Holland, Amsterdam.

Goeree, J., M. Minkman and B. Moldovanu, 2001, Een Beoordeling van het Ontwerp van de Veiling van MBVP's langs Rijkswegen (A Judgement of the Design of the Auction of Petrol Stations along the Highways, in Dutch), consultancy report, University of Virginia.

Goldman Sachs, 2000, Banks. Europe, April.

Green, E. and R. Porter, 1984, Noncooperative Collusion under Imperfect Price Information, *Econometrica* 52, 87-100.

Huck, S., H.-T. Normann and J. Oechssler, 2002, Two are Few and Four are Many: Number Effects in Experimental Oligopolies, mimeo, University College London.

IOO, 2000, *Concurrentie tussen Particuliere Zorgverzekeraars (Competition between Private Health Care Insurers, in Dutch)*, IOO bv, Den Haag.

Joskow, P. and A. Klevorick, 1979, A Framework for Analyzing Predatory Pricing Policy, *Yale Law Journal* 89, 213-70.

Jullien, B. and P. Rey, 2000, Resale Price Maintenance and Collusion, working paper, Université des Sciences Sociales Toulouse.

Klein, J.I., 1998, Making the Transition from Regulation to Competition: Thinking about Merger Policy during the Process of Electric Power Restructuring, US Department of Justice, speech d.d. 21 januari 1998, Washington.

Kühn, K.-U. and M. Motta, 2000, The Economics of Joint Dominance and the Coordinated Effects of Mergers, mimeo, University of Michigan.

Mas-Colell, A., M.D. Whinston and J.R. Green, 1995, *Microeconomic Theory*, Oxford University Press.

MDW, 1999, *Een Concurrerende Benzinemarkt dicht bij Huis (A Competitive Petrol Market Closeby*, in Dutch), Dutch Ministry of Economic Affairs.

MDW, 2002, *MDW-veilen en Andere Allocatiemechanismen (Auctions and Other Allocation Mechanisms*, in Dutch), Dutch Ministry of Economic Affairs and Dutch Ministry of Finance.

Nevo, A., 2001, Measuring Market Power in the Ready-to-Eat Cereal Industry, *Econometrica* 69, 307-342.

NMa, 2002, Richtsnoeren voor de Zorgsector (Directives of the Health Care Sector), Netherlands' Competition Authority, Den Haag.

OECD, 1999, Oligopoly. *OECD Journal of Competition Law and Policy*.

Offerman, T., J. Potters and J. Sonnemans, 2002, Imitation and belief learning in an oligopoly experiment, *Review of Economic Studies* 69, 973-997.

Ovum, 2000, National Roaming, Ovum Ltd., London.

Pinkse, J., M. Slade and C. Brett, 2002, Spatial Price Competition: A Semiparametric Approach, *Econometrica* 70, 1111-1155.

Punt, L. and M. van Rooij, 1999, The profit-structure relationship, efficiency and mergers in the European banking industry: an empirical assessment, Research Memorandum WO&E no. 604, De Nederlandsche Bank.

Rees, R., 1993, Collusive Equilibrium in the Great Salt Duopoly, *The Economic Journal* 103, 833-848.

- Rey, P., 2002, Collective Dominance and the Telecommunication Industry, mimeo, University of Toulouse.
- Rey, P. and J. Stiglitz, 1988, Vertical Restraints and Producers' Competition, *European Economic Review* 32, 561-568.
- Rey, P. and J. Stiglitz, 1995, The Role of Exclusive Territories in Producers' Competition, *RAND Journal of Economics* 26, 431-451.
- Rey, P. and T. Vergé, 2002, Resale Price Maintenance and Horizontal Cartel, CMPO working paper 02/47.
- Roth, A., 2002, The Economist as Engineer: Game Theory, Experimentation, and Computation as Tools for Design Economics, *Econometrica* 70, 1341- 1378.
- Sander, H. and S. Kleimeier, 2002, Towards a Single Retail Banking Market? New Evidence from Euroland, forthcoming in *Australasian Journal of European Intergration*.
- Schelling T., 1960, *The Strategy of Conflict*, Harvard University Press, Cambridge, Mass.
- Scherer, F.M. and D. Ross, 1990, *Industrial Market Structure and Economic Performance*. Houghton Mifflin Company, Boston.
- Schinkel, M. and J. Tuinstra, 2002, Imperfect Anti-trust Enforcement, mimeo, University of Maastricht.
- Schmalensee, R., 1989, Inter-industry Studies of Structure and Performance, in Schmalensee, R. and R.D. Willig (eds.), *Handbooks in Economics* 10, *Handbook of Industrial Organization Volume 1*, North-Holland, Amsterdam.
- Schut, 2001, Prijconcurrentie ziekenfondsen nog niet effectief (Price Competition among Public Health Care Insurance Companies not yet Effective, in Dutch), *ESB* 23, 172-176.
- Selten, R., 1973, A Simple Model of Imperfect Competition, Where 4 are Few and 6 are Many, *International Journal of Game Theory* 2, 141-201.

- Shleifer, A. and R. Vishny, 1997, A Survey of Corporate Governance, *Journal of Finance* 52, 737-783.
- Slade, M., 1995, Empirical Games: The Oligopoly Case, *Canadian Journal of Economics* 28, 368-402.
- Slade, M., 2002, Market Power and Joint Dominance in UK Brewing, working paper, University of British Columbia.
- Tirole, J., 1988, *The Theory of Industrial Organisation*, MIT Press, London, England.
- Van Damme, E., 2002, The Dutch UMTS Auction, working paper, Tilburg University.
- Van Damme, E., Maasland, E. and Onderstal, S., 1998, Kwantificering van het Netwerkeffect in de Nederlandse Brandstoffenmarkt, (Quantification of the Network Effect in the Dutch Fuel Market, in Dutch), consultancy document, Tilburg University.
- Van Damme, E., Maasland, E. and Onderstal, S., 2000, Veiling MBVP's langs Rijkswegen (Auctions of Petrol Stations along the Highways, in Dutch), consultancy document, Dutch Ministry of Finance.
- Van den Brink, R.J., 2001, Een efficiënte ziekenfondsmarkt? (An Efficient Market for Health Care Insurance? in Dutch), *ESB* 86, 220-226.
- Van Meerbeeck, W., 2002, Competition and the Impact of Local Market Conditions on the Belgian Retail Gasoline Market, mimeo, Catholic University Leuven.
- Verouden, V., 2001, *Essays in Antitrust Economics*, Ph.D. Thesis, Tilburg University.
- Viscusi, W.K., J.M. Vernon and J.E. Harrington, Jr., 1995, *Economics of Regulation and Antitrust*, MIT Press.
- Wilmer, Cutler & Pickering, 2000, *Case IV/37.485 - Telia Finland vs. Sonera: SUPPLEMENTARY SUBMISSION OF TELIA FINLAND*, consultancy report, Wilmer, Cutler & Pickering, Brussels.
- Wilson, R., 2002, Architecture of Power Markets, *Econometrica* 70, 1299- 1340.