

# The Outcome Effect of European Competition Policy for the Netherlands

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**Abstract**

In this paper I describe the results of my research on the effects of European competition policy for the consumers in the Netherlands in terms of outcome. This paper discusses the various ways DG Competition, DoJ, FTC, NMa and OFT calculate outcome effects. I use the method of the NMa to calculate the effect of European cartel enforcement, merger control and antitrust policy for the cases which had an impact on the welfare of Dutch consumers. To estimate this effect I have used the cases of DG Competition between 2000 and 2009. My research shows that European competition enforcement resulted in a total outcome effect of almost € 900 mln for the Dutch consumer (with the calculation method of the NMa<sup>1</sup>). Using methods of other competition authorities the outcome effect is in the range of more than 1,4 billion euro to almost 4 billion euro. The combined average total outcome effect of competition policy in the Netherlands between 2000 and 2009 is more than 5,1 billion (outcome effect from cases of DG Competition and the NMa together, calculated with the methodology of the NMa).

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<sup>1</sup> The NMa uses three years moving averages to present the outcome effect. I have used the yearly estimates to calculate the outcome effect over the period 2000 – 2009.

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Although it sometimes has been hard for me to work well on my thesis, I am proud to say it is finished. I am glad that I can say that I am satisfied with the result. It will also be a great relief to me, to finish my study at the Erasmus University. I started in 2005 and had a great time inside class and also outside class. After seven years I can say: it now is time to move on.

Any opinions expressed in this paper are those of the author and do not necessarily represent those of the Erasmus University Rotterdam or the Netherlands Competition Authority (NMa). All errors are my own.

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## 1. Introduction

In the last decade several competition authorities have started to quantify the effect of their enforcement actions. These authorities are the Office of Fair Trading (OFT) from the UK, the Department of Justice (DoJ) from the United States, The Federal Trade Commission (FTC) from the United States, the Netherlands Competition Authority (NMa) and DG Competition (DG Comp), the European competition authority. The competition authorities use different methods to estimate the outcome effect of their work<sup>2</sup>.

The NMa and DG Comp both handle cases which have an effect on the welfare of the Dutch consumer. In this thesis I have estimated the effect of the work of DG Comp for the Netherlands. In this thesis the main focus is on the method of the NMa. I have used the methodology of the NMa to estimate the outcome effect for the Dutch consumer. I compare this methodology with the methodology of other competition authorities. In the methodology section I specify the differences in the methodologies and in the results section I show the outcome effect of European competition enforcement as calculated with the methodologies of other competition authorities.

The structure of my paper is as follows. In the literature section I give an overview of the history of competition policy in the United States, Europe and the Netherlands. The literature review continues with the literature about the economic effects of competition policy. In chapter 3 I describe the methodology of the NMa with respect to outcome measurement and the methodologies of other competition authorities (OFT, DoJ, FTC and DG Comp). This section ends with an assessment of outcome calculation and of the different methodologies of the competition authorities. I describe the data used and the methodology to collect the relevant data in chapter 4. I continue in chapter 5 with the results of my research. In this section I show the outcome effect of European competition policy per policy area (cartels, mergers and antitrust) and the total outcome effect of European competition policy for the Dutch consumer. This section continues with the total outcome effect of competition policy in the Netherlands, that is to say the outcome effect of the enforcement of the NMa and DG Comp. The last section in chapter 5 compares the outcome effect of European competition policy for the Dutch consumer, as calculated with the methodology of the NMa, with the outcome effect as calculated with the different methodologies of the OFT, the DoJ, the FTC and DG Comp. This thesis finishes with conclusions and suggestions for further research.

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<sup>2</sup> Some competition authorities use other terms to describe for the outcome effect. The outcome effect is also called consumer benefits, consumer savings or customer benefits. In this thesis I mix these terms.



## 2. Literature Review

In the literature review I will focus mainly on the economic effects of competition policy and the measurement of the outcome effect of competition policy. First, I discuss competition policy in a broader sense. I start with the history of competition policy in the United States, because that is where competition policy began. I continue with a description of competition policy in the European Union and finish the introduction on the history of competition policy with an overview of competition policy in the Netherlands. The second part of the literature review deals with the economic effects of competition policy. The last section in this chapter is about the measurement of the outcome effect.

### 2.1 The history of competition policy

#### ➤ Competition policy in the United States

The history of competition policy starts with the Sherman Act in 1890 in the United States. This act was rather general of scope and gave room for federal judges and economist to develop competition policy. This is exactly what happened. However, over the last 120 years there have been several shifts in competition policy. Kovacic and Shapiro (2000) describe five periods with different characteristics per period with respect to competition policy. In their review they select the most influential cases. In this part about the history of competition policy in the United States I use the structure of their paper. To illustrate the major developments in competition policy per period I elaborate upon some cases.

- *The first period (1890 – 1914)*

The first period is from 1890 until 1914. During this time the courts had to define what conduct is forbidden and what was allowed under the Sherman Act. Kovacic and Shapiro (2000) say about this development: “*the courts began shaping the law’s vague terms*”. The largest obstacle the courts had to cope with was that monopolies did not seem to fall under the Sherman Act. It was the job of the courts to define where monopoly power stops and where the abuse of monopoly power and illegal monopolization begins. As a consequence lawsuits were not about market share but just about market behaviour. An example is the *Sugar Trust case* in which Sugar Trust could obtain 98 percent of the market after a series of mergers and still, according to the Court, it was not a breach of the Sherman Act. As a reaction to this gap in the legislation a merger wave took place. It took until 1904 before the courts showed that a merger to monopoly could be prevented with the Sherman Act. Only

after the *Standard Oil case*<sup>3</sup> in 1911 it became common practice to use high market shares as a proxy for monopoly power. The Congress was afraid that the Court and conservative judges would limit the impact of the Sherman Act to block only the clearest violations. To prevent this development, the Congress approved the Clayton Act in 1914. The Clayton Act gave less space to judges to mark the boundaries. Kovacic and Shapiro distinguish the following prohibitions: “*certain tying arrangements, exclusive dealing agreements, interlocking directorates, and mergers achieved by purchasing stock.*” In 1914 the Congress adopted also the Federal Trade Commission Act, this act established the Federal Trade Commission (FTC).

- *The second period (1915 - 1936)*

Although it might seem natural that after some start up issues competition policy would be more prominently present, it is just characteristic for the second period (1915 – 1936) that it was a relative quiet period. Kovacic and Shapiro (2000) cite Hofstadtner (1966), he calls this period the “era of neglect” for the antitrust laws. The courts decide in favour of the large companies most of the time in this period, the standard was that large companies got exonerated. In this period even a horizontal output restriction is not condemned by the Courts. Kovacic and Shapiro (2000) observe that at that time the Congress as well as the Court appeared to have lost faith in free market competition. Other factors responsible for the relaxed antitrust regime are the choice of the market definition and the position of the FTC. In this period the Court tended to use a wide market definition, this makes it harder to find a dominant position. For example in *Standard Oil* (1931) the Court chooses to use the wide market definition which gives Standard Oil a market share of only 26% instead of the narrower market definition which would have resulted in a market share of more than 60%. Regarding the position of the FTC, the Supreme Court ruled in *Kodak Eastman Co.* (1927) that the FTC did not have the power to command a divestiture to solve anticompetitive asset acquisitions.

- *The third period (1936 - 1972)*

The third period distinguished by Kovacic and Shapiro (2000) is from 1936 until 1972. Compared with the second period, competition policy almost takes the opposite form. In this era the leading paradigm is the “structure, conduct, performance” paradigm. The focus is on market structure and market share. Economists search to find empirical relations between market structure and for example price/cost-margins. Where in the second period a

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<sup>3</sup> Standard Oil had 90% market share with respect to refinery output, the Court used this share as a proxy for a monopoly position. The Court ruled that Standard Oil’s behaviour illegally supported and retained its dominant position. The final decision of the Court was to break up the company in 34 parts.

horizontal output restriction was not condemned, in this period the Court stated that a horizontal price fixing agreement is regarded a crime and condemned regardless of its actual effects. In this period the Court simplified the burden of proof for the government and used per se rules to condemn conduct. Tying arrangements, non price vertical restraints, group boycotts, horizontal arrangements to allocate markets and adoption of exclusive sale territories were characterized as per se unlawful. In this activism the courts even condemned price cuts to challenge a leading local producer and annulled a merger which created a 5% market share. The judgement of Kovacic and Shapiro (2000) about this period is the following: “few decisions of this era command praise today”. In Time Magazine of 24 June 1966 Justice Potter Stewart is quoted: “The government always wins” as this was the only pattern he could discover.

- *The fourth period (1973 - 1991)*

The reaction against this form of ‘antitrust activism’ came in the years 1973 – 1991. A group of scholars known as the Chicago School had a strong influence on competition policy. The Chicago School focused on new analytical concepts and explained mergers, industrial concentration and contractual constraints by efficiency advantages. It also criticized the per se rules which were developed in the previous era. One of the reasons why the thoughts of the Chicago School could gain ground was the focus on efficiency in a time that U.S. firms were losing market share in international markets as well as home markets.

During this period the courts struggled to find out what is the best approach in antitrust cases. It was searching for a balance between per se rules and a full-fledged rule of reason approach. During this period the point of view on antitrust changed and got more permissive. As a result dominant firms gained more freedom in setting prices and promotional strategies. The courts gave merging firms more freedom and assigned more weight to efficiency justifications. The analytical concepts of game theory were used in the most cases, because it helped the courts and antitrust agencies with its flexibility to assess the effects of dominant firm behaviour. A disadvantage of the flexibility of game theoretic concepts is that it is not always simple to see what the effect of specific behaviour is.

- *The fifth period (1992 – present)*

The last period Kovacic and Shapiro describe is from 1992 to present. This period is classified by the further implementation of game theoretic concepts and other economic concepts in competition policy. An example which illustrates this change is the adoption of a leniency program. The first cartel member that reveals the cartel gets criminal immunity. Another example of a game theoretic concept in antitrust laws is that the competition

authorities take legal action against the facilitation of coordination and not only against the coordinated behaviour.

➤ The history of competition policy in Europe

The start of competition policy in the European Union is marked by the Treaty of Rome in 1957. Belgium, France, Italy, Luxembourg, the Netherlands and West-Germany agreed on the creation of a customs union and the creation of a common market for goods, services, people and capital. This common market has created an economic area with free competition between member states. The provisions of the Treaty of 1957 have been rather stable over the years<sup>4</sup>. Abuses of a dominant position, state aid and some forms of anticompetitive behaviour were already prohibited in the Treaty of 1957. The goal of the Treaty was to remove the barriers for trade between member states. That is why the Commission has been focused on preventing companies to agree on dividing the common market. It had to be prevented that private parties imposed new barriers for trade and competition, instead of the just removed barriers. Waller (1993) writes about the European competition policy: *“It is a system without criminal penalties or significant private rights of actions for damages, but one in which the Commission can and does assess fines of up to 10 percent of the annual turnover of the firms involved. It is also a system which must make room for member states’ competition policies so long as they do not interfere with the enforcement of competition on a consistent basis at the Community level.”*

Before 2003 there were in the European Union a lot of different national competition policy regimes. For a long time the Commission seemed to be satisfied with imposing supranational laws to prosecute agreements and behaviour that distort trade between member states (Waarden & Drahos, 2002).

In the European Union four different areas of competition policy can be distinguished: cartel enforcement, abuse of a dominant position, state aid control and merger control. The first three areas have their own article in the Treaty of Rome, merger control has only been part of the European competition policy since 1990. I will discuss the content of the articles about cartel enforcement, abuse of a dominant position and merger control in the following sections. I will not discuss state aid control, because it falls outside the scope of my thesis, since the European Commission is the only competition authority with a state aid control division and the Commission does not estimate an outcome effect of state aid control.

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<sup>4</sup> European Commission (2011).

- *Anticompetitive agreements (cartel enforcement)*

All anticompetitive agreements between undertakings, which may affect the trade between member states, are prohibited in Article 85 of the Treaty of Rome<sup>5</sup>. Anticompetitive agreements include, inter alia: price fixing cartels; product quantity agreements; market sharing and price discrimination. The Commission has used a broad definition for ‘*which may affect trade*’. It includes agreements with the purpose to distort competition, agreements which limit competition and agreements which *potentially* distort competition. ‘*Trade between member states*’ is also defined broadly. Even agreements between undertakings in the same country fall under the scope of Article 85 if it affects competition.

With regard to exemption of article 85, for horizontal price cartels it is (almost) impossible to get exemption. For other agreements exemption can be given, for example, when an agreement contributes *to technological or economic progress, while allowing consumers a fair share of the resulting benefit* (Article 85.3) and meanwhile does not eliminate competition.

- *Abuse of a dominant position*

In article 86 of the Treaty of Rome abuse of a dominant position is addressed. The abuse of a dominant position could be, inter alia: imposing unfair purchase/selling prices (like predatory pricing), limiting production which harms consumers and discrimination of trading partners by imposing dissimilar conditions. Trade between member states is here again broadly defined like the definition in article 85. Also like in article 85, it is not necessarily that it effectively distorts competition, a potential distortion of competition is enough to be condemned. Waller (1993) explains that not the creation of a dominant position is prohibited, because this might contribute to the integration of the member states. Therefore the Commission strictly reviews the behaviour of firms with a dominant position.

- *Merger control*

While cartel agreements and the abuse of a dominant position were already prohibited in the Treaty of Rome, merger control is only since 1990 explicitly part of European competition policy. Since then the Commission has exclusive jurisdiction to deal with large scale mergers with an impact on the European Union. The acceptance of a new merger control regime was a reaction to the reduction of the barriers for cross border mergers and acquisitions and the accompanying merger wave (Thieffry, 1990). Thieffry (1990) describes that with the unification of Europe and the completion of the internal market in 1992, companies were

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<sup>5</sup> At present this is article 101 of the Treaty of the functioning of the European Union (TFEU). The former article 86 is at present article 102 of the TFEU.

preparing for a boost of growth. Member states were not ready to monitor this process. These circumstances pushed the member states to find a compromise and to accept the Merger Regulation after sixteen years of work and lobbying of the Commission. In the previous period the Commission tried to regulate mergers on the basis of Article 85 and Article 86, but according to the Court of Justice not all mergers were covered by these articles. Under the merger regulation<sup>6</sup> the Commission has the power to block a merger, if it strengthens or creates a dominant position on the common market.. As I describe in chapter 4 the European Commission Directorate General Competition received 3135 notifications of proposed mergers in the period 2000 – 2009. From these mergers 2736 were approved without conditions and only 9 mergers were prohibited in this period.

➤ The history of competition policy in the Netherlands

While in the United States and in the European Union competition policy had been common practice for many years, in the Netherlands it was only until 1998 that the Netherlands Competition Authority (NMa) was established. For many years the Netherlands had been seen as the cartel paradise in Europe. Under the “*Wet Economische Mededinging*” of 1956 cartels were allowed unless it was explicitly made clear that an agreement damaged the economic situation, an agreement was prohibited if it was contrary to the public interest. The Dutch competition policy regime was called an abuse and review system. This resulted in almost 300 registered agreements in 1989, of which were 129 price agreements and 69 market sharing agreements<sup>7</sup>. It happened only sporadically that the Minister of Economic affairs used its powers to prohibit an agreement. Until 1990 there was no example of a formal procedure against a cartel and between 1978 and 1987 only 22 cartels were voluntarily withdrawn.

With the Treaty of 1957 and subsequent agreements, the European competition policy was applicable in the Netherlands. Where the Dutch government did not use its possibilities to prosecute cartels, the European Commission was remarkable active in the Netherlands. This is illustrated by the fact that 40% of the procedures of the Commission against cartels from 1970 to 1990 were cartel agreements with respect to the Dutch markets<sup>8</sup>. This shows the ambiguity of the Dutch competition policy<sup>9</sup>: anticompetitive behaviour could be a violation of European laws but was not necessarily prohibited under the Dutch competition law.

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<sup>6</sup> Since 2004 there is a new merger regulation: Regulation 139/2004, the European Community Merger Regulation.

<sup>7</sup> De Jong (1992).

<sup>8</sup> De Jong (1990) took into account all the serious antitrust violations with a mainly national impact.

<sup>9</sup> Van Sinderen (2007).

From the late 1980s the view on competition policy in the Netherlands started to change. According to Van der Hoeven (2008) there are at least three economic reasons for this shift. The first is that Dutch economy scored relatively bad on market functioning in comparison to other industrialised countries. This caused the economy to slow growth by 0,25-0,5 percentage point. More competition on the national market should harden Dutch companies on the international playing field and is a necessary condition for long term expansion and employment in a country<sup>10</sup>. The second reason for the change in the assessment of cartels was that cartels turned out to be more stable and to have a longer than expected life expectancy. In the Netherlands 57% of the notified price agreements lasted longer than ten years<sup>11</sup>. The third economic reason is that more and more became clear that prosecuted cartels (in the United States and the European Union) had been very successful in raising prices. The most important reason is of political nature: the European Commission forced the Netherlands to change its policy in the late eighties/begin nineties. As a result, in 1996 the Minister of Economic Affairs proposed a new competition law in the Netherlands. The review system has been released and replaced with a system similar to the European competition policy.

The introduction of the new antitrust law and the establishment of the NMa thoroughly reformed Dutch competition policy. In the first few years after the introduction, more than thousand applications for exemption were submitted. The Netherlands changed from a cartel paradise to an ardent adapter of EU competition laws (Waarden & Drahos, 2002). In almost fifteen years of competition enforcement and regulation by the NMa the most important and most successful case clearly has been the prosecution of companies in the construction sector (more than 1400 companies were involved). This case marked the transition from a reactive competition regime to a (pro)active competition regime. Since its creation in 1998 the NMa quickly marked its position and added its value. The NMa is now among the leaders in the field of outcome measurement and has a strong position in comparison to other European competition authorities.

## **2.2 Economic effects of competition (policy)**

In section 2.1 I described the history of competition policy in the United States, the European Union and the Netherlands. In the following section I discuss the economic effects of competition policy and in doing so the reasons for competition policy. I start with the revenue effect, continue with several efficiency effects and I end with the deterrent effect and the

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<sup>10</sup> Hulst, N. van (1996).

<sup>11</sup> De Jong (1992).

over-deterrent effect. I conclude with an overview of some researches on the described economic effects in the Netherlands.

➤ Revenue effect

The most visible effect from competition policy is the revenue effect. The revenue effect is the effect that prices decrease (or that a price increase is prevented) after an interference from a competition authority. Price cartels and abuse of a dominant position raise the prices of the associated products, so after the detection the prices decrease. An anticompetitive merger results in a price increase, so if an anticompetitive merger is stopped, a price increase is prevented. For a graphical presentation of the revenue effect see area A in figure 1.

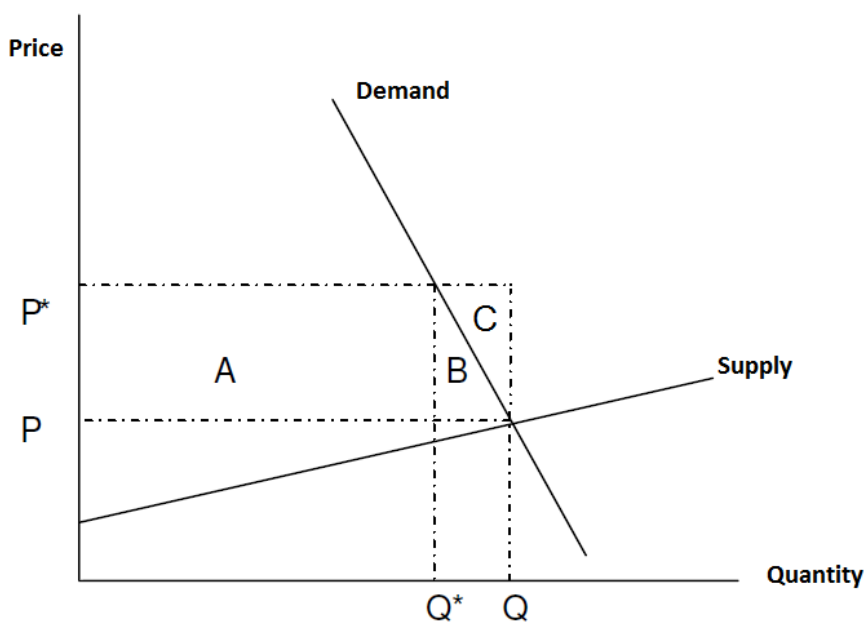


Figure 1 - Revenue effect (A) and allocation effect (B)<sup>12</sup>

Figure 1 shows the cartel price<sup>13</sup> ( $P^*$ ), the cartel quantity ( $Q^*$ ), the price without a cartel ( $P$ ) and the corresponding quantity ( $Q$ ). As shown is in the figure, the revenue effect can be calculated as follows:  $revenue\ effect = (P^* - P) Q^*$ . Area B and C in figure 1 will be discussed in the next section (allocative efficiency).

Especially for cartels there has been quite some research into the price effects, I will summarize some of this literature here. In several papers the conclusion is that cartels are

<sup>12</sup> From Kemp et al. (2010) with changes.

<sup>13</sup>In figure 4: for mergers  $P^*$  is the prevented post merger price and  $Q^*$  would be the corresponding quantity. For mergers  $P$  is the premerger price.



good in raising prices. A good example is the international Vitamin cartel, the annual turnover for Vitamin C decreased from 250 million in the last year of the cartel to 120 million three years after the cartel broke up. Connor (2010) gives a good overview of the overcharge effects of 1089 cartels. Table 23 in the appendix presents the results of his research. It shows that the mean overcharge of cartels in his database is 46,2%. Werden (2003) finds as mean 21,3%. Davis (2010) finds from Connor and Bolotova (2005) that domestic EU cartels raised prices on the average between 13% and 19%. Most competition authorities use a 10% overcharge as a rule of thumb, this will be discussed in following sections.

### ➤ Efficiency effects

In this section I describe the efficiency effects of competition and competition enforcement. In 2004 Oxera published a research commissioned by the Dutch Ministry of Economic Affairs. In this research they developed an extensive framework to do the cost-benefit analysis of a competition authority. Oxera (2004) also describes the economic effects of competition policy. I will use this analysis to discuss the effects of competition policy.

#### • *Productive efficiency*

Productive efficiency occurs when products are produced with the lowest possible cost with existing technology. An economy is productive efficient if its production is at a point on the production possibility frontier. There are two ways competition can improve the productive efficiency. More intense competition strengthens the reallocation effect: firms that produce at higher cost lose market share to more efficient producers. Intense competition also strengthens the selection effect: the less efficient firms leave the market and the more efficient firms keep producing<sup>14</sup>. Because of these effects firms have an incentive to produce at the lowest possible cost, this way the firms gain market share and maximise profit. Competition improves the productive efficiency when less efficient firms leave the market and more efficient firms gain market share.

Commissioned by the NMa, Sepinska (2008) made an overview of the international (empirical) literature that describes that relation between competition and productive efficiency. The conclusion of his paper is that the productive efficiency is 1,5 - 2% higher in a highly competitive market than in other markets. In a NMa working paper Kemp, Mulder and Van Sinderen (2010) describe that a merger might also have a negative effect on productive

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<sup>14</sup> Interesting food for thought: Van der Wiel 2010 remarks that the selection effect demonstrates that the The Herfindalh Hirschmann index is not always a good ratio to show how fierce competition is. Competition goes up, more efficient firms gain market share and as a result HHI goes up. The same holds for the price cost margin (PCM), more competition will cause a shift from less efficient firms to more efficient firms, efficient firms have a higher price cost margin, so as a result the PCM goes up.

efficiencies, when the merger reduces the incentive to minimize costs because of a lower level of competition. The effect of mergers on the productive efficiency is unclear. It is hard to predict the synergy effects of a merger in advance. Kemp, Mulder and Van Sinderen (2010) and Baker (2003) state that there are many studies which show that expected synergy benefits of a merger do not (fully) materialize. Apparently for the merging firms and their shareholders it is already hard to estimate the effects of a merger, for a competition authority which lacks the internal information this is even harder.

- *Allocative efficiency*

Allocative efficiency occurs if prices are equal to the marginal costs. Fiercer competition drives the prices to the marginal costs. When prices are above marginal costs some consumers which are willing to pay the marginal costs will not buy the product. Competition improves the productivity of the resources, because it pushes prices to marginal costs. Resources are allocated in the most efficient way when prices are equal to marginal costs, if so all consumers which are willing to buy the product at marginal costs are able to do so.

- *Static efficiency*

Static efficiency occurs when markets are productive and allocative efficient. The concept of static efficiency focuses on the optimal distribution of resources in the short run. When producer and consumer surplus are weighted equally, an economy is static efficient if total surplus is maximized. The counterpart of static efficiency is dynamic efficiency.

- *Dynamic efficiency*

The concept of dynamic efficiency focuses on the productive efficiency over a period of time. A market is dynamic efficient when it maximizes the present value of total surpluses<sup>15</sup>. Innovation can increase consumers' willingness to pay for a product. For example when a firm develops a new product or increases the quality of a product. Innovation can also reduce the marginal costs of production, when a firm develops new production technologies or improves the production process.

There is a trade-off between static efficiency and dynamic efficiency. Innovation should be profitable to firms, so to earn back the investments in innovation a firm should be able to have prices higher than marginal costs. This is not in line with allocative efficiency. For dynamic efficiency to occur the market cannot be completely static efficient. Nicolaides (1999) says about this trade off: *[o]f course, this does not mean that a regulator is always*

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<sup>15</sup> Van der Wiel (2010).

*functioning on the boundary of that trade-off. Often static and dynamic inefficiency coexist and, therefore, potential gains can be reaped by reducing both them. The “art” of regulation is to determine when it is possible to reduce both without trading one against the other.*

### **Innovation, productivity and competition**

The relation between innovation and productivity growth has been researched by many economists. Van der Wiel (2010) concludes that *“[i]n general, the empirical literature points to a positive effect of innovation on productivity at the firm level without giving an unambiguous result of the size of this effect.”* The relation between competition and innovation on the other hand is quite less clear cut. In the economic literature there are two camps, one that states that competition is bad for innovation and one that states that competition is good for innovation. Davies and Majumdar (2002) say *“[s]urveys of the theoretical literature are numerous, but rarely conclusive. A good example is Haskel (1996, p.16), who concludes: ‘So since theory seems to provide no unambiguous predictions it would seem to be an empirical matter.’ This is a fair conclusion, although it should be stressed that the lack of any strong consensus is not necessarily a weakness of the theory. If, indeed, there are factors working in opposite directions, it does seem perfectly reasonable to conclude that ‘it all depends on the case in hand. (sic)”*

According to Van der Wiel (2010) the empirical evidence is in favour of the ‘competition is good for innovation’-camp. The recent literature suggests that there might be another relationship between competition and innovation. Aghion et al. (2005) say there might be an inverted U-relationship between competition and innovation. Two effects determine this inverted U-relation. If a market is in a state of soft competition the profit of an innovating firm is not much different from the profit of a lagging firm. With more competition the benefits of escaping the competition via innovation get higher, therefore there will be more innovation. This effect dominates at the upward sloping part of the inverted U. In a situation with fierce competition the difference between the profit level at being two steps behind and the profit level at being one step behind is small. The incentives for a laggard to innovate get smaller the more competition there is. This effect dominates at the downward sloping part of the inverted U-shape. When firms are levelled and there is fierce competition, the benefits of innovation can be really high, but after a successful innovation the innovation level might drop.

#### ➤ Deterrent effect

With the increasing attention of competition authorities to the calculation of the outcome effects of competition policy there also has been more attention to the deterrent effect of

competition policy. Numerous studies are written about the deterrent effect and various papers try to quantify the deterrent effect. I start this section with some theory about the deterrent effect, continue with some remarks about the magnitude of the deterrent effect and finish with an overview of papers which try to measure deterrence.

- *Theory*

Deterrence is the effect that firms do not show behaviour because of the presence of the competition authorities and antitrust law. Firms do not form cartels, mergers do not take place or firms do not abuse their market power, because firms are aware of the fact that it might violate antitrust law.

Bucirossi et al. (2009) provide an overview of, according to them, the six main features which determine the deterrent effect: “1) *sanctions and damages*<sup>16</sup>; 2) *financial and human resources of the competition authority (CA)*; 3) *powers the CA has during the investigation*; 4) *quality of the law*; 5) *independence of political and economic interests*; and 6) *separation of power between the investigating authority (CA) and the decision making authority (judicial power).*”

With respect to the magnitude of the deterrent effect the literature is quite clear: it is a couple of times the direct effects, but it is very difficult to measure. For example Baker (2003) writes: “[...]the efficiency gains achieved by preventing anticompetitive conduct—the deterrence benefits of antitrust—are at least as large as the potential gains from additional enforcement [...]” Baker shows that the results of four periods with less strict antitrust enforcement in the US, as well as a cross national comparison support his view. Baker (2003) continues with the conclusion that the benefits from competition enforcement probably dwarf every acceptable assessment of the direct cost of competition policy. Davies and Ormosi (2010) share this opinion. They state that the benefits from deterrence are likely to be much larger than the direct benefits from antitrust enforcement. They conclude that an analysis based on the direct effects seriously underestimates the actual benefits, but that little is known about the size of this underestimation. A part of deterrence which is easily ignored is the effect that cartel participants might have raised the prices even more in absence of efficient antitrust

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<sup>16</sup> Interesting food for thought is the suggestion from Bucirossi and Spagnolo (2005) about feature 1. They say the following about the optimal level of sanctions: “If fines became sufficiently high that some convicted cartel members went bankrupt, antitrust enforcement would have decreased the number of firms and (perhaps) competition in the industry of the convicted cartel for a period (until bankrupt firms changed hands and became again competitive, or other forms of entry took place), but, at the same time, they could have increased competition through ex ante, general deterrence in many other industries. The overall net effect might well be positive.”

enforcement. A good example is the international vitamin cartel. Clarke and Evenett (2003) compared the pricing of the vitamin cartel in countries with active antitrust enforcement to the pricing in countries without active antitrust enforcement. Their conclusion is that cartel participants raised prices more in countries without active antitrust enforcement.

There might also be factors which reduce the deterrent effect. Davies and Majumdar (2002) recall three factors which might exactly do this. The first is the probability of type 1 errors. If a merger has anticompetitive effects, the competition authority might clear it anyhow. The second is the possibility of an informal guidance of the competition authority. The (sunk) cost of such a request could be small and therefore attractive for a firm, if it is not sure about the assessment of the competition authority. The third factor has to do with remedies and / or multiproduct mergers. In both cases a firm can apply for a merger and negotiate with the antitrust authority which remedies would clear the merger. This lowers the deterrent effect, because firms can more easily achieve a better result.

- *Measuring the deterrent effect*

In the previous section I gave a description of the deterrent effect and I stated that the literature is quite clear about the existence and the magnitude of the deterrent effect. With respect to the measurement of the deterrent effect there also has been some literature. The main observation is that it is hard to measure the deterrent effect. In this section I will describe some of the issues one might encounter.

One of the reasons it is difficult to determine the benefits of deterrence is the choice of the relevant counterfactual. It makes quite a difference whether the counterfactual of active antitrust enforcement by a competition authority is the absence of a competition authority to enforce the antitrust law (enforcement through private litigation) or the absence of antitrust law. For example, if the relevant counterfactual is that there would be no competition authority, but only enforcement through private litigation, firms would particularly break the antitrust law in large consumer markets, because in business-to-business markets with a few buyers and sellers antitrust violations would be more visual and the buyers would have stronger incentives to start a lawsuit. Bucirossi et al. (2009) call consumers asymmetrically informed and dispersed. It is hard for consumers to recognize that they paid a collusive instead of a competitive price. Even if they do, it is harder for consumers to organize themselves and to defend their interests.

In an overview of some studies which try to estimate the deterrent effect<sup>17</sup>, Bucirossi et al. (2009) conclude that it is a complex issue to measure deterrence of anticompetitive behaviours. The main reason for this is that for non-mergers the only way to assess the deterrence of firms due to antitrust enforcement is via surveys. Bucirossi et al. (2009) state that: “[s]urveys have many limitations, which are due to the risk of biased responses and to the difficulty of comparing results across countries. Some researchers have tried to measure deterrence through hard data, but this literature is still very limited and new research is definitely needed to improve our understanding of the phenomenon.”

There are some studies which try to estimate the magnitude of the deterrent effect. Davies and Ormosi (2010) try to estimate the deterrent effects in the UK with the results of a research of Deloitte (2007). Deloitte was commissioned by the OFT to try to capture the amount of deterred cartel and merger cases. Davies and Ormosi (2010) use these estimates to calculate with a ‘back of the envelope methodology’ the frequency based deterrence. Figure 2 shows their general classification of potential competition cases.

<b>Deterred</b> $\omega$	<b>Undeterred</b> $(1-\omega)$	
	<b>Undetected</b> $(1-\varphi)$	<b>Detected</b> $\varphi$
	<b>Uninvestigated</b> $(1-\sigma)$	<b>Investigated</b> $\sigma$

Figure 2 - Structure to classify deterrence<sup>18</sup>

Using the figures of Deloitte(2007) Davies and Ormosi (2010) calculated the frequencies for the categories<sup>19</sup>. Table 1 shows the results of their research, it shows that more than half of the mergers and cartels are deterred. So depending on the balance between good and bad deterrence (business chilling, see next section) the outcome effect would be multiple times larger than the outcome effect measured by the direct effects. For cartel cases the group of investigated cases is almost 15 times smaller than the group of deterred cartels. For mergers the group of investigated cases is five times smaller than the group of deterred cases.

<sup>17</sup> For another good overview of the empirical literature I recommend SEO (2010). (Dutch)

<sup>18</sup> Davies and Ormosi (2010).

<sup>19</sup> Davies and Ormosi (2010) ignore the effects for over deterrence and Type II mistakes.

	Cartels	Mergers
Deterred	0.556	0.556
Undetected	0.368	0.222
Un-investigated	0.0377	0.111
Investigated	0.0377	0.111

Table 1 - Results of research about deterrent effect in the UK<sup>20</sup>

➤ Business chilling

*Finally, the most challenging task, both theoretically and empirically, is how to distinguish between “good” deterrence and “bad” deterrence. We have identified the features of a competition policy regime that make deterrence stronger. However, this does not mean that any change of these features that increase deterrence is socially desirable. Indeed, more deterrence is needed if and only if the current features of a competition policy regime lead to under-deterrence. If, on the contrary, firms are already over-deterred the competition policy regime should be changed so as to make the threat of its enforcement less harsh. Our current understanding of this last topic is to be judged completely unsatisfactory.” (Bucirossi et al., 2009)*

The previous section was about the here called good deterrence. As sure as economists are about the existence of a deterrent effect, there probably also is a business chilling effect, the above called “bad” deterrence. Business chilling occurs when firms abandon socially desirable (not anticompetitive) mergers and other agreements, because they expect a merger not to be cleared or to be modified by the competition authority.

Deloitte (2007) provides three circumstances in which business chilling might occur:

- If a merger is ‘incorrectly’ assessed anticompetitive by a competition authority. If a firm predicts this incorrect decision correctly it would deter from this possibly social desirable merger.
- If the competition authority correctly assesses a merger proposal (and therefore it will not block the merger), but because firms are uncertain about the decision of the competition authority they abandon the merger.
- If merging parties find the cost of delay and of obtaining clearance too large and therefore do not take the merger through the clearance process.

<sup>20</sup> From Davies and Ormosi (2010).

The effects antitrust laws are trying to prevent are the same as the costs from over-deterrence, higher prices and a decrease in welfare. Baker (2003) states that *“it seems unlikely that the current levels of antitrust enforcement activity and penalties are generally so high as to lead to over-deterrence.”*

At the end of this section I provide a little food for thought. Several economists have written that the success of a competition authority in fighting cartels and anticompetitive mergers might be seen as a failure of competition policy to deter anticompetitive actions. Baker (2003) wrote the following about this issue: *“[...] if antitrust enforcers uncover and prosecute a cartel engaged in price fixing, bid rigging or market allocation, does that suggest that antitrust is a success for stopping future harm or a failure for not deterring cartel formation? Both possibilities are presumably to some extent true: with rising marginal costs of antitrust enforcement, any enforcement regime subject to a budget constraint would be expected to deter the cartels that would otherwise be easy to detect and prosecute, but not to deter collusion altogether.”*

Davies and Ormosi (2010) continue in line with Baker *“[o]n the other hand, what is sometimes overlooked is that CAs inevitably fail to detect some anti-competitive cases and wrongly fail to investigate some others of which they are aware. Where this occurs, there is a lost opportunity to secure welfare enhancement by the CA, and in that sense a „cost“. Both success in deterrence and lost opportunities should be included in any aggregate assessment of competition policy.”* These authors recognise that in painting the whole picture of competition policy, failing enforcement should also be taken into account, but both studies do not try to measure these “costs”. This might be an interesting suggestion for further research. Some authors state that the cost of blocking pro-competitive mergers is probably small. Baker (2003) and Kemp et al. (2010) remind that in a substantial fraction of mergers the expected efficiency savings do not occur. This means that even if a pro-competitive merger is blocked, the cost of over-enforcement might be small.

➤ Economic effects of competition policy in the Netherlands

In this section I describe some researches on the above mentioned economic effects of competition for the Netherlands. Van der Wiel (2010) researches the inverse U relation between innovation and competition for the Netherlands. His main question is whether there is an inverse U relation, if so then it means that there is a trade off between static and dynamic efficiency. Therefore policymakers will have to choose between a high static or a low dynamic efficiency (or the other way around). Van der Wiel uses R&D expenses as a proxy for innovation and finds evidence for an inverse U relation between innovation and



competition. He also finds evidence that there is a trade off between innovation and competition, but he states that this only occurs at extraordinary high levels of competition. Another interesting conclusion is that he finds an inverted U shape for the Dutch industry sector but not for the Dutch service sector.

For the Netherlands there are two studies which try to determine the deterrent effect. The first is Oxera (2005) and the second is SEO (2010). Both studies use surveys with (legal) advisors and firms to estimate the deterrent effect. I will describe the results of SEO (2010). SEO (2010) was commissioned by the NMa to determine the (over-)deterrent effects<sup>21</sup> in the Netherlands. SEO surveyed firms and (legal) advisors to estimate the ratios of deterrence and over-deterrence. The results of the surveyed advisors are the following. Legal advisors were involved in 879 cases in which firms were not sure whether an action was anticompetitive or not. In 32% of these cases the proposed action was stopped after the antitrust advice was given. In 19% of the cases this was because firms expect the competition authority to incorrectly prohibit the agreement and in 12% of the case this was because firms terminate a proposal although the advisors expect that the agreement does not violate antitrust law. SEO asked advisors how many times over-deterrence in proposed mergers happened, on a scale from 1 (never) to 5 (very often) the mean score is 2,04 (N=70, 17 times 'do not know'). So, advisors answer that there is cartel over-deterrence but it does not happen often. SEO also asked firms this last question with respect to proposed mergers and with respect to other anticompetitive actions. Firms answer that over-deterrence in proposed mergers happens, but they do not consider it to happen often. On a scale from 1 (never) to 5 (very often) the mean score is 2,33 (N=130, 26 times 'do not know'). The result with respect to cartel / antitrust enforcement shows a more or less comparable result. The mean score here is 2,80 (N=355, 128 times 'do not know'). Clearly firms think over-deterrence in cartel enforcement occurs but do not think it occurs regularly.

Van Sinderen and Kemp (2008) measure the medium and long term effects of "*more competition on the economy as a whole*". They summarize some studies which researched the relationship between competition (and deregulation) and GDP growth, employment and productivity. The studies differ in the magnitude but they have in common that they show a positive effect of competition on employment and growth. With respect to outcome calculations Van Sinderen and Kemp state that: "[...] *outcome calculations only measure the static effects of law enforcement in one case or sector. The spillover to other companies and sectors is not included.*" To measure these dynamic effects, they use a general equilibrium

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<sup>21</sup> The deterrent effect is here called the anticipation effect.

model. Interesting in their model is that market power is modelled in the same way the tax wedge is treated in general equilibrium models. The model predicts that a decrease in the market power wedge of 0,75% of GDP<sup>22</sup> in the Netherlands will increase the production with 0,5% in the long term (of which is 0,4% employment and 0,1% productivity).

### 2.3 Outcome measurement of competition policy

In the previous section I described the economic effects of competition and competition policy. In this section I discuss the measurement of these economic effects. The first section discusses some general aspects of outcome measurement. The second section starts with summarizing some literature about the welfare standard and I continue in the third section with the choice of the welfare standard.

#### ➤ Introduction to outcome measurement

Outcome measurement is started to meet the need to provide more accountability. The Government Performance and Result Act (GPRA)<sup>23</sup> requires Federal Agencies in the United States to make Annual Performance Plans. From 2005 the OFT in the UK made an agreement with the Ministry of Finance (HM Treasury) to deliver consumer savings of at least five times the annual budget. The NMa started in 2004 with calculation of the outcome effect, mainly to show the benefits for consumers from competition policy<sup>24</sup>. The focus on consumers corresponds to the view that competition policy counteracts the dominant position of firms to protect the unorganized consumer. This protection of consumers might be more important than the economic effects of competition policy, which I described in the previous sections. The economic effects might be the rational economic reasoning behind the protection of consumers, but the most important social goal of competition policy is the protection of consumers. In the remainder of this section I describe some assumptions which underlie the methodology of outcome measurement.

- *Focus on consumer protection*

Outcome is measured in terms of consumer welfare. This corresponds to the choice of the consumer welfare standard as I describe in section about welfare standards. The focus on consumers can also be clearly seen in the methodologies of the competition authorities. All five competition authorities<sup>25</sup> do not take the savings for firms into account in calculating the

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<sup>22</sup> This is the calculated outcome of competition enforcement in The Netherlands between 1998 and 2007.

<sup>23</sup> See section 3.2.2 for more information.

<sup>24</sup> Another reason for the NMa to do outcome measurement is to be more effective in the future.

<sup>25</sup> Nma, DG Comp, OFT, DoJ and FTC.

outcome effect<sup>26</sup>. As a result of this the outcome effect is not a net benefit to society. Next to that, to give the whole picture one should take into account all the costs and benefits to society. As discussed before the relevant counterfactual strongly influences this result. Other factors which, for example, should be included are the costs of the competition authority and the costs to (merging) firms and efficiency effects.

- *Conservative estimates*

The competition authorities who estimate the outcome effect state that their calculations result in an underestimation of the real effect. Therefore it should be clear that outcome calculation is an estimate and not an attempt to exactly state the size of the outcome effect. Davies (2010) states that not necessarily all OFT's assumptions are conservative per se, but the resulting outcome is a conservative estimate.

- *No negative outcome*

Less conservative is the presumption that no single competition enforcement action can have a negative outcome effect. This implicitly assumes that the institutional structure is designed in such a way that it results in the right decision, it assumes that there are no type I errors. This is also a reason to use a method which results in conservative estimates, to counterbalance the less conservative assumption that no intervention can have a negative outcome.

- *Simple calculations*

Competition authorities do not spend expensive calculations to measure the outcome effect of competition policy, because it results in a conservative estimate. Another reason for broad calculations and rules of thumb is that, although more expensive calculations might result in better estimates, it will not significantly change the order of magnitude. Davies (2010) observes that outcome measurement is calculated ex ante. This is mostly for practical reasons, because it would be very costly and time consuming to measure all the effects of competition policy ex post.

- *Intermediate markets work*

A less implicit assumption is that competition authorities assume that intermediate markets work. When a merger, cartel or other 'competition reducing action takes place on a business-to-business market a price reduction is calculated as if it reduces the price of the final product on a consumer market with the same magnitude. It is assumed that the direct effect

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<sup>26</sup> Unless firms are customers of the firm(s) involved in the case. Still the NMa, for example, assumes that the savings in business to business markets is passed on to consumers for 100%.

to the buyer is the same as the direct effect to the final consumer. The NMa corresponds in its annual report 2011 that the outcome effect was 265 mln for *buyers* and consumers.

➤ Welfare standards

A competition assesses merger proposals on the basis of a particular welfare standard. It seems obvious that outcome calculations should be based on the same welfare standard. Therefore I continue this section about the measurement of outcome with a discussion about the welfare standard. Renckens (2007) provides a good overview of the basic welfare standards. I will use her overview to describe the most important welfare standards. In cartel cases and abuses of a dominant position there is no discussion about the welfare standard, because these agreements/behaviour violate competition law.

In most welfare standards the producer and consumer surplus play an important role, I show these in figure 3. In figure 3 the price of a product ( $P_0$ ) is where supply (the marginal cost of the producer) and demand (marginal benefits of the consumers) intersect. The consumer surplus is the grey shaded area. It is the area between the willingness to pay of the consumers (the marginal benefit) and the price. The producer surplus is the area between the price and the cost of making the (next) product (marginal cost). The consumer and producer surplus together is the total surplus.

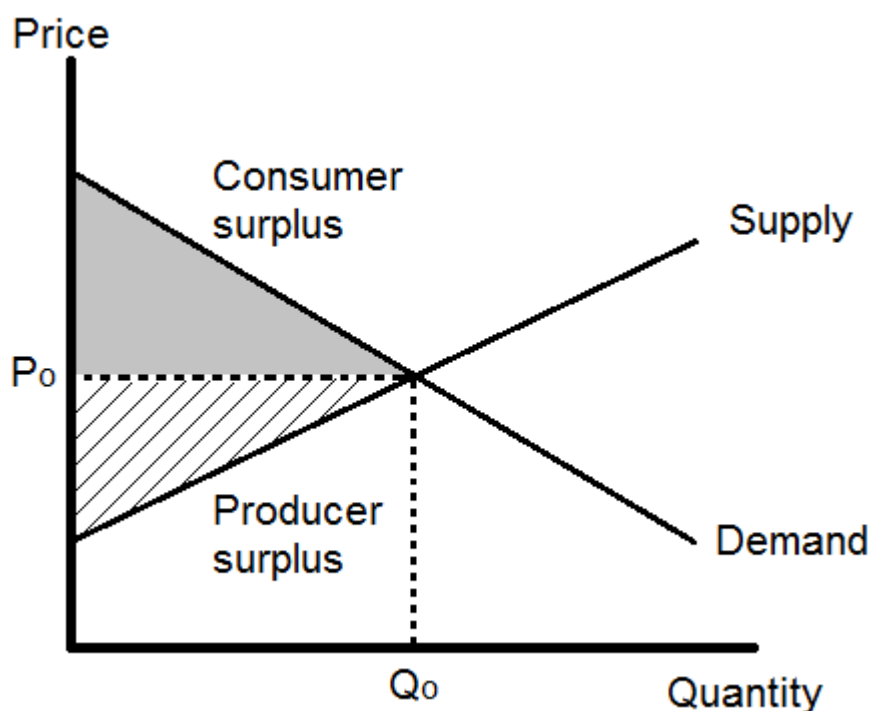


Figure 3 - The consumer and producer surplus

Renckens (2007) distinguishes five welfare standards that could be used by a competition authority to assess merger proposals:

1. the price standard;
2. the consumer surplus standard;
3. the Hillsdown standard;
4. the weighted surplus standard;
5. the total surplus standard.

- *The price standard*

If a competition authority uses the price standard, the only focus is on the price. This means that if a merger results in a price increase it will not be allowed. Renckens (2007) observes that the literature is not unanimous in the way efficiencies are treated in the price standard. In a pure price standard efficiencies from a merger are not considered even if it would lead to price decreases.

- *The consumer surplus standard*

A consumer surplus standard is closely related to the price standard, but unlike a price standard a consumer surplus standard also looks at product characteristics like quality, innovation and service. Van Sinderen and Kemp (2008) explain that, if a merger results in a price increase, but is approved because of better product characteristics, *"this can also be seen as an outward shift of the demand curve where consumers' willingness to pay increases because of the higher quality."*

- *The Hillsdown standard*

This welfare standard is named after the Hillsdown merger case in Canada (1992), in this case the courts' line of reasoning followed this standard unlike the usual interpretation of the Canadian antitrust law (total surplus standard). In the Hillsdown standard the transfer of surplus from consumers to producers is treated as a net cost. Fallon (2005) describes: *"the producer surplus associated with efficiency gains counts but the producer surplus from the exploitation of market power does not"*. Therefore the increase in producer surplus should be larger than the loss in consumer surplus.

- *The weighted surplus standard*

This standard gives the antitrust authority the flexibility to assign weights to the consumer surplus and the producer surplus. The sum of the changes in surplus times their respective weights should be larger than zero for a merger to be approved by the antitrust agency.

- *The total surplus standard*

In this standard the weights given to the consumer surplus and the producer surplus are equal. Mergers will be approved if they increase the total surplus. The reduction in competition may be offset by the efficiencies resulting from the merger.

- The choice of the welfare standard

At first sight the total surplus standard might seem to be the standard which results in the highest total surplus and therefore the standard that should be used by competition authorities. Unlike what you might expect the most competition authorities focus on the benefits of consumers. In this section I discuss some arguments in favour of the consumer welfare standard, because most economists seem to think that the total welfare standard does not need defence.

A good starting point in the literature is Williamson (1968). He was the first to address the possibility of efficiencies<sup>27</sup> from mergers. He argued that if a merger results in a price increase and also results in improved efficiency, an efficiency defence deserves consideration. Williamson argued that these efficiencies should be traded off against the anticompetitive effects.

Besanko and Spulber (1993) boost the discussion about the choice of the optimal welfare standard. Williamson recognized that antitrust authorities and courts do not have the expertise to make a judgement about efficiencies from a merger. In line with this problem Besanko and Spulber (1993) focus on the asymmetric information between merging parties and antitrust authorities. Their conclusion is that merging parties know whether cost savings will be achieved, therefore the competition authorities should be in favour of the consumers to counteract the asymmetric information of the firms. Farrel and Katz (2006) assess the paper of Besanko and Spulber critically. Farrel and Katz (2006) conclude that the main contribution of Besanko and Spulber' model is that the choice of the optimal welfare standard should be taken in the context of the system as a whole.

Lyons (2002) developed another model to proof why competition authorities should use the consumer welfare standard instead of the total welfare standard. His model shows that *the TWS [total welfare standard] is quite generally a sub-optimal rule and, in plausible cases, the CWS [consumer welfare standard] can indirectly result in higher total welfare. This is because the TWS provides a threshold rule, so mergers acceptable to the competition*

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<sup>27</sup> Williamson calls this economies.

authority need not be the most socially desirable. The argumentation for this is as follows. All mergers increase the concentration in a sector (the reduced competition might result in a price increase) and as discussed before some of these mergers will generate efficiency effects. Competition authorities can only approve or disapprove mergers. They do not have the authority to impose the most optimal mergers, or to propose a merger with another firm which would lead to higher (total) welfare. So, according to Lyons, firms have an advantage in which mergers they propose. Firms try to maximise their profits (independent of the welfare standard) and do not try to maximise social welfare. Therefore firms will not abandon a merger proposal if it is privately superior to an alternative, even when this merger is socially inferior to the alternative merger. Lyons (2002) paper “investigates the circumstances under which a tough merger standard will lead to a more desirable equilibrium market structure.”

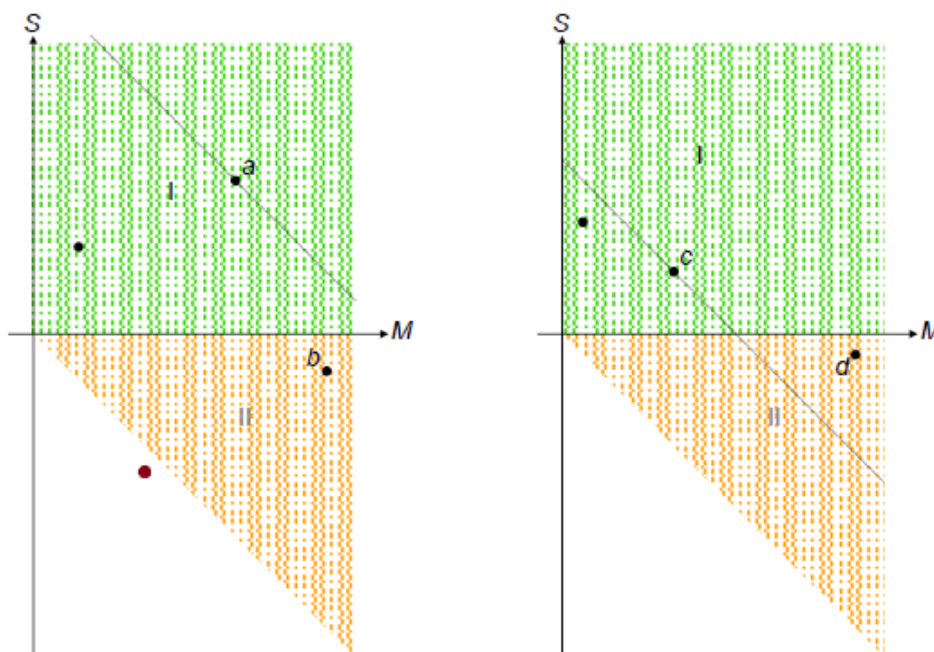


Figure 4<sup>28</sup> – The proposed and approved mergers under a CWS and a TWS.

Farrel and Katz (2006) provide a graphical overview of the above discussed Lyons model, see Figure 4. On the x-axis is the profit of the merging parties (M) and the y-axis shows the consumer surplus (S). Firms will only propose mergers with positive profits, which is why the figure only shows the right side of the x-axis. The black dots in figure 4 represent possible mergers. The green shaded area shows the mergers which will be approved under both the consumer welfare standard and the total welfare standard. The orange shaded area shows the mergers which will only be allowed under a total welfare standard. For example the red dot in the left panel shows a merger which increases the profits of the merging parties with x

<sup>28</sup> From Farrel and Katz (2006), the red dot is added.

and decreases the consumer surplus with  $-x+y$ . In this case the merger lowers the total surplus with  $y$  and will not be approved under the consumer surplus or the total surplus. The most important conclusion which is showed by the figure is the following. The left panel in the figure shows a firm which can choose between merger  $a$  and merger  $b$ . The firm maximises its profits with merger  $b$ , but this merger would not be approved under a consumer welfare standard because it lowers the consumer surplus. As is showed in figure 4, the total welfare of merger  $a$  is higher than the total welfare of merger  $b$ . This shows that in some situations the consumer welfare standard achieves a socially better result than the total welfare standard. The right panel shows the opposite, in some cases the total welfare standard will result in higher total (social) welfare. Here the competition authority will disapprove merger  $d$  and approve merger  $c$ , although merger  $d$  would maximise total welfare.

The OFT looks at it from another point of view, it states that the consumer welfare standard results in a higher total surplus in the long-term than the total welfare standard. According to the OFT this is caused by the fact that it stimulates innovation, productivity and economic growth and it also increases consumer confidence and general trust in markets. Davies (2010) states that *“any alternative approach that used a total welfare standard would need to capture these wider, potentially very significant, dynamic effects, in order to provide a fair picture of the value of competition interventions. In the absence of dynamic analysis, a methodology based on total welfare would be misleading since static total welfare would not provide a fair reflection of the value of the competition regime.”*

## **2.4 Conclusion about the economic effects of competition policy and outcome measurement**

I started this chapter with the history of competition policy in the US, Europe and the Netherlands. I described that competition policy in the Netherlands has been increased since 1998 with the introduction of a new competition law and the establishment of the Netherlands Competition Authority (NMa).

In the second part of this chapter I have discussed the economic effects of competition policy. I started with the most visible effect from competition enforcement, the revenue effect. I also described the direct effects of competition on productive, allocative and dynamic efficiency. I continued this chapter with the more indirect effects like deterrence and over-deterrence. There is quite some literature about the deterrent effect. There is a general agreement that the deterrent effect exists and that it might be quite large. With respect to the exact magnitude of the deterrent effect the literature is not unanimous. The main obstacle is the measurement of the deterrent effect. Contrary to the deterrence effect, there is little



literature about the over-deterrent effect, but there seems to be a general agreement that there is over-deterrent effect. With respect to the magnitude of the deterrent effect the literature is not clear.

The last part of chapter 2 was about outcome measurement in general and the choice of the welfare standard. I described that the literature seems to be unanimous in the fact that outcome calculations should be simple, conservative estimates. There has been more discussion about the relevant welfare standard for merger cases. I have showed that it is not clear cut that the total welfare standard results in higher total welfare. I have indicated that the consumer authorities involved in this research focus on consumer welfare, because competition authorities focus on consumer protection. In the remainder of this thesis I will use the consumer welfare standard as the relevant welfare standard, because I duplicate the methodologies of the different competition authorities.

In this chapter I gave an introduction on competition policy, described the economic effects of competition policy and described the principles of outcome measurement. In the next chapter I will discuss the methodologies of the competition authorities with respect to the measurement of the outcome effect. The outcome effect measures the in this chapter described economic effects of competition.

### 3 Methodology

More and more competition authorities make calculations to estimate the outcome effect of their competition policy. Although their methodologies are closely linked, there is not a standard internationally used method to calculate the outcome effects. That is the reason why it is also hard to compare the results of the different authorities. In this chapter I describe the different methodologies. I start with the methodology of the NMa, continue with the methodologies of other competition authorities and finish this chapter with a discussion about the differences between the competition authorities. I will present the methodology of the CA's in the following order: first the NMa followed by the OFT, the DOJ, the FTC and DG Comp.

#### 3.1 Methodology of the NMa

Within the NMa the Office of the Chief Economist (*het Economisch Bureau*) is responsible for the calculation of the outcome effect. It has published a working paper with a detailed description of its calculation methods (see Kemp et al. (2010)). In this section I summarize the most important part of their methods, but I skip the part about regulation in the transport sectors and energy markets, since that is not relevant in the European context. Although the regulation in these markets is a great part of the NMAs work. As I described in the literature review, sector regulators have been established to guide the change from a government monopoly to a competitive market.

##### ➤ The revenue effect

The NMa uses case file information or public information, if it is available, to calculate the revenue effect. If there is no such information available the NMa uses a rule of thumb to calculate the prevented price increase. For mergers this rule of thumb is one percent of the total relevant market. In cartel cases the rule of thumb is ten percent, but this is only multiplied with the relevant turnover of the cartel participants. The methodology in cases of an abuse of a dominant position is the same as in cartel cases.

The reasoning behind the difference in the choice of the relevant turnover is as follows. Cartel members or a merged firm will charge higher prices (*the revenue effect*), firms not participating in a merger or cartel can benefit from price increase by, at least partly, following this price increase (*the umbrella effect*). The NMa states that it is common practice to take the entire market into account for merger cases. In cartel cases the NMa is reluctant to take the entire market turnover. In these cases it seems to attach more weight to the wish to provide conservative estimates than in merger cases.

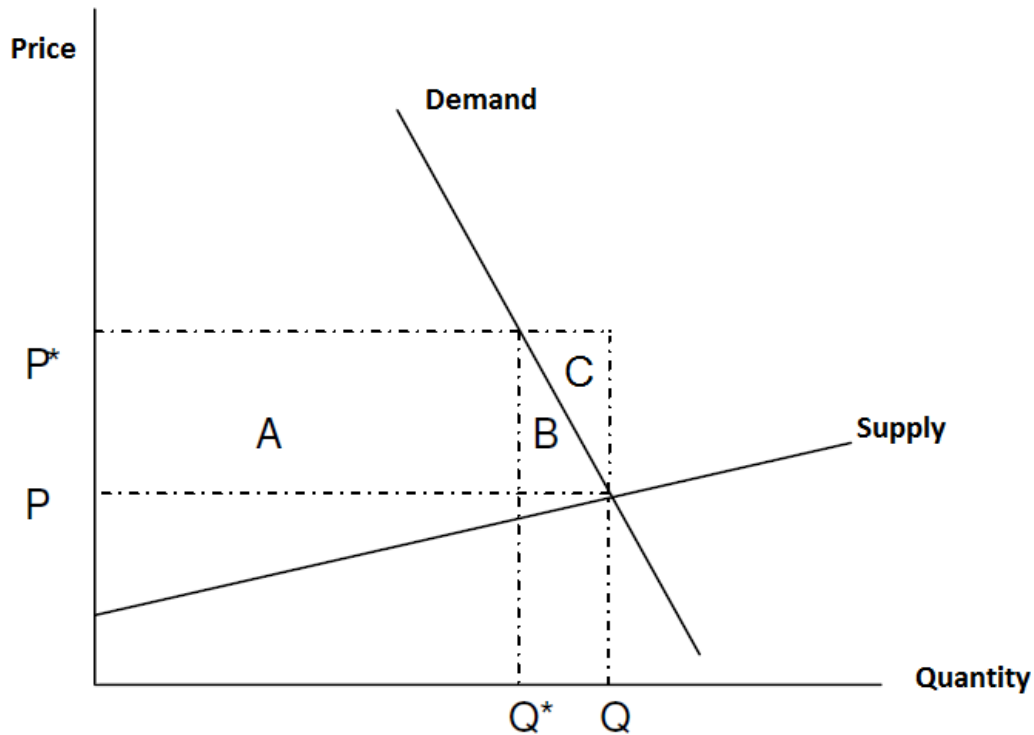


Figure 5 - Revenue effect (A) and allocation effect (B)<sup>29</sup>

In figure 5 the revenue effect is illustrated by area A. As described above, the NMa uses a rule of thumb, for mergers  $(P^* - P)$  is 1% and in cartel and antitrust cases this is 10%.

➤ The allocative effect

In the literature review I discussed allocative efficiency. Allocative efficiency occurs if prices are equal to the marginal costs. Resources are allocated in the most efficient way when prices are equal to marginal costs, because then all consumers which are willing to buy the product at marginal costs are able to do so. If prices increase because of a merger or a cartel, some consumers will not buy the product. Competition enforcement forces prices to decrease, as a result more consumers will buy the product, this effect is not included in the revenue effect. The allocative effect is illustrated in figure 5 by area B and can be calculated as follows:

$$\text{Allocative effect} = 0,5 (Q - Q^*) (P^* - P)$$

Another way to calculate the allocative effect is:

<sup>29</sup> From Kemp et al. (2010) (with changes)

*Allocative effect = 0,5 (- % price change<sup>2</sup> \* price elasticity \* revenues)*

Important to note is that the NMa uses the initial situation as starting point. For mergers this means the pre-merger quantity (Q) and for cartels and antitrust cases the cartel/antitrust quantity (Q\*). In the case of a cartel, area B in figure 5 should be added to the revenue effect. In the case of a merger the calculation of the revenue effect includes area B and C, because the quantity between Q\* and Q is included in the initial situation. To calculate the sum of the actual revenue effect and the allocative effect for merger cases, area C should be subtracted from the calculated figure for the revenue effect.

The NMa uses the same rules of thumb for the calculation of the allocative effect as with the calculation of the revenue effect: use case information or public information if available, if not use an estimate of 1% and the turnover of the entire market (mergers) or 10% and the turnover of the involved businesses (cartels, abuse of dominant position). For the price elasticity the NMa uses data from the case, if this data is not available it uses a dataset of elasticity's calculated on a 3-digit level firm classification with a dataset of PWC over the years 2000-2004<sup>30</sup>. The elasticity's are estimates of the elasticity of demand in the relevant market.

➤ Effect on productive efficiency

The NMa includes in the outcome calculation an estimate for the effect on productive efficiency. An extensive literature review from Sepinska (2009) estimated that this effect is on average some two percent. The NMa takes one percent as average effect, because the estimate of the consumer benefit should be a conservative estimate. For merger and for cartel cases the NMa uses the same rule of thumb, but again the relevant turnover is different. As for the direct effects (revenue effect and allocative effect) in the case of cartels the relevant turnover is the turnover of the cartel members on the market involved and for mergers the turnover of the entire involved market is the relevant revenue.

Unlike the revenue effect and the allocative effect, the NMa does not always take the effect on productive efficiency into account for an abuse of a dominant position. This is so, because the effect can be positive and negative. Only when it is possible to calculate a case specific productive efficiency effect it is taken into account. A check with the NMa provided that until recently there has not been a negative effect on productive efficiency.

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<sup>30</sup> The Nma uses the HHI (Herfindahl-Hirschman index) and the markup to calculate the price elasticities of demand ( $\epsilon^{Qp}$ ), it uses the Lerner index to do so:  $\text{markup} = \text{HHI} / \epsilon^{Qp}$ .

➤ Time frame

With respect to the three effects the NMa has made the choice to assume that a cartel, a merger or an abuse of a dominant position would last one year after the discovery of the infringement. The choice for this conservative number is made because it is hard to predict how long the infringement would have continued without the intervention of the NMa. The choice for this small time span is made for conservative reasons.

➤ Proportion of outcome of merger cases which is included

The NMa works with a merger control structure that takes place in two phases. In the first phase, the notification phase, the firms notify the NMa of their proposed merger. The NMa does a global examination and decides whether a license is needed, if so the case enters the second phase, the licensing phase. In this phase the NMa does a thorough investigation and thereafter the Board of the NMa decides whether a merger is prohibited or allowed.

The NMa distinguishes five situations which can occur during the merger process. In some cases the NMa takes 100% of the outcome effect into account, in others situations no outcome effect is taken into account:

- 1) Approval in the first or second stage → no outcome effect;
- 2) Approval with remedies in the first or second stage → outcome effect (100%);
- 3) Negative decision in the first phase, not followed by a request for a license → an outcome effect of 70%, unless there is evidence that there were other reasons why the merger is withdrawn;
- 4) Negative decision in the second phase → outcome effect (100%);
- 5) No decision, because the merging parties withdraw the merger proposal. Where the NMa finds it likely that the withdrawal is the result of serious doubts with respect to competition, it takes 70% of the calculated outcome for cases withdrawn in the first – phase and 100% for cases withdrawn during the second phase.

➤ Outcome effect of competition policy of the NMa

The NMa has calculated the outcome effect of their enforcement actions since 2005. The first estimates are from 2002. I show the outcome effect of the NMa in table 2.

Yearly outcome effect in million €	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Mean	Sum
<b>Competition policy</b>	132	487	260	530	403	29	49	6	101	405	240	2.402
<b>Regulation</b>	118	-	101	327	-	23	665	248	30	5	152	1.518
<b>Total outcome effect</b>	250	487	361	857	403	52	714	254	131	410	392	3.920
<b>3 year moving average</b>			366	568	540	437	390	340	366	265		

Table 2 - Outcome effect of the NMa

The outcome effect in table 2 includes the outcome of regulation (energy market and transport market) and of regular competition policy (merger policy, cartel enforcement and antitrust cases). The NMa shows its outcome effect in three year moving averages to reduce fluctuations. The three year moving average is between 264 million in 2011 and 568 million in 2005. Remarkable is the fluctuation in the outcome effect from regulation, in four years the outcome from regulation is less than 25 million, in three years the outcome is more than 200 million. The average annual outcome effect from regulation is 152 million. The average total outcome effect is 392 million. The total consumer savings from competition enforcement by the NMa between 2002 and 2011 is almost 4 billion euro. I use the outcome effect in the years 2002 – 2009 to calculate the total outcome effect for the Dutch consumers from national and European competition policy. For the missing years 2000 and 2001 I use the average of the other years eight years (422 million euro).

### 3.2 Methodology of other competition authorities

➤ The OFT

The Office of Fair Trade from the United Kingdom is one of the leading competition authorities with respect to outcome measurements. The main reason for this is the agreement the OFT has with HM Treasury to deliver benefits to consumers of at least 5 times the size of the OFT's budget. The OFT publishes each year impact estimations of the outcome effect of their competition enforcement in the UK. The first time was in December 2005 with an estimation of the impact over the period 2000/01 – 2004/05.

Commissioned by the OFT Stephen Davies has published several papers about the methodology of the OFT to calculate the impact estimations. In 2002 he proposed, together with Adrian Majumdar, a methodology how to calculate the estimates. In January 2010 he published a paper with a review of the methodology of the OFT. I have used these papers

together with the yearly published 'Positive Impact' to write this section. The 'Positive Impact' papers are quite extensive with respect to the methodology. The methodology for the impact estimations changed a few times in the last years. I describe the methodology of 2005 and the differences with the methodology in 2005 in subsequent years.

- *Methodology OFT in 2005*

Before I discuss the methodology for the three areas of competition policy (mergers, cartels and antitrust cases), I make a remark about the methodology of the OFT. In 2005 the OFT estimated a lower bound for the outcome effect<sup>31</sup> and estimated values of coming years were discounted with the social discount rate of 3,5%, so the outcome effect is presented as a net present value.

### **Cartel enforcement**

To calculate the direct benefits for consumers from cartel convictions, the OFT multiplies the price increase with the annual turnover of the goods or services affected by the cartel. These benefits times the number of years the cartel would have remained active without an intervention of the OFT give the total direct benefits of a convicted cartel case. The OFT adjusts the future savings to take account of the social discount rate. The affected goods/services by the cartel are the sales from the cartel participants, the turnover of competitors not involved in the cartel is not included in the relevant turnover. In the absence of detailed information about the price increase the OFT assumes that a cartel raises the price with 10%. After 2010 the OFT changed the assumption about the price overcharge: from 10% to 15%. With respect to the lifetime of a cartel the OFT used in 2005 the following finding in the economic literature: the average lifetime of a cartel was found to be 6,3 years<sup>32</sup>. If there is no better information available the OFT assumes that a cartel would continue 6 years from its detection<sup>33</sup>.

### **Mergers**

The methodology of the OFT is derived from the methodology adopted by the Federal Trade Commission and the Department of Justice in the US. The OFT assumes that the price will increase with 1% for a year in the market affected by the merger. Companies which are proposing a merger can get confidential guidance from the OFT. If merging parties get a negative advice from the OFT and therefore abandon a merger, the OFT takes these cases

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<sup>31</sup> OFT calls it the consumer savings, I will use both.

<sup>32</sup> Zimmerman and Connor (2005).

<sup>33</sup> Although the OFT explicitly states in positive impact 2006 that it assumes the cartel lifetime to be six years from inception, Davies (2010) states that the default is six years after detection. I use this last assumption.

into account with a discount of 30% on the direct benefit for consumers. This discount reflects the possibility that the merger might have been cleared after all.

### Antitrust cases

In the case of an abuse of a dominant position the OFT assumes that the direct benefits are at least one percent of the relevant market turnover for one year. The OFT developed an interesting methodology for cases which involve predatory pricing<sup>34</sup>. This methodology lies outside the scope of this paper<sup>35</sup>, in my database of European cases there is no predatory pricing case.

- *After 2005*

Characteristic for the competition enforcement in the UK is the cooperation between the Competition Commission (CC) and the OFT. The OFT refers cases to the CC when it believes that a merger will create a substantial lessening of competition. The OFT can also accept binding remedies from the firm that take away the competition concerns. The OFT and the CC have an agreement on how the direct consumer benefits of a merger case are divided<sup>36</sup>.

### Mergers

In 2007 the OFT changed the methodology with respect to the estimation of the consumer savings of merger cases. Instead of using a rule of thumb or the available case-specific information, the OFT started to use simulation models<sup>37</sup> to predict price increases. The OFT finds the rule of thumb of 1% too conservative since it is highly unlikely that it would block a merger in case of a 1% price increase. The simulation models are based on a few characteristics of the specific case, like price elasticity's, market shares, relative prices, profitability and ownership structure. The models calculate the pre-merger and after-merger equilibriums, the difference between those two is the price increase caused by the merger. In some cases it is not appropriate to do a merger simulation. In these cases the OFT calculates the consumer savings with the mean of the lower bound of all the simulated mergers in the last three financial years. The OFT uses the ratio of the consumer savings

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<sup>34</sup> Predatory pricing is lowering prices under marginal costs. By doing this competitors might be forced to leave the market, after which the 'predator' can raise the prices above the competitive level.

<sup>35</sup> See OFT Positive Impact 2005 (pp. 9-12) for more information about this methodology.

<sup>36</sup> Of OFT cases 80% of the outcome effect is for the OFT and 20% is for the CC. From the outcome of CC cases 80% is for the CC and 20% is for the OFT.

<sup>37</sup> The Antitrust Logit Model (ALM), developed by Werden and Froeb; the Proportionally Calibrated Almost Ideal Demand System (PCAIDS) developed Epstein and Rubinfeld.



divided by the relevant turnover to calculate this lower bound. Davies (2010) wrote that the mean simulated avoided price increase, as calculated by the model, was eight per cent.

From 2008 the OFT also estimates consumer savings from mergers which are referred to the CC, the methodology is the same as with other merger case but the estimated effect is multiplied by the hit rate, the percentage the CC finds a substantial lessening of competition, of the CC, in 2008 this was 50%<sup>38</sup>.

**Cartel lifetime**

The OFT also changed the method to calculate the expected lifetime of a cartel. In 2006 it used for the first time the information how long a cartel already ran. It has used a database with data from other cartels to estimate a function how long a cartel is expected to continue given the fact that it exists a specific period<sup>39</sup>. It estimated the following function: for the first seven years the expected additional lifetime of a cartel is six years, after this period the rule of thumb is based on a regression analysis which estimated the effect on 1,4 \* lifetime. In figure 6 the estimated function and the underlying data is shown.

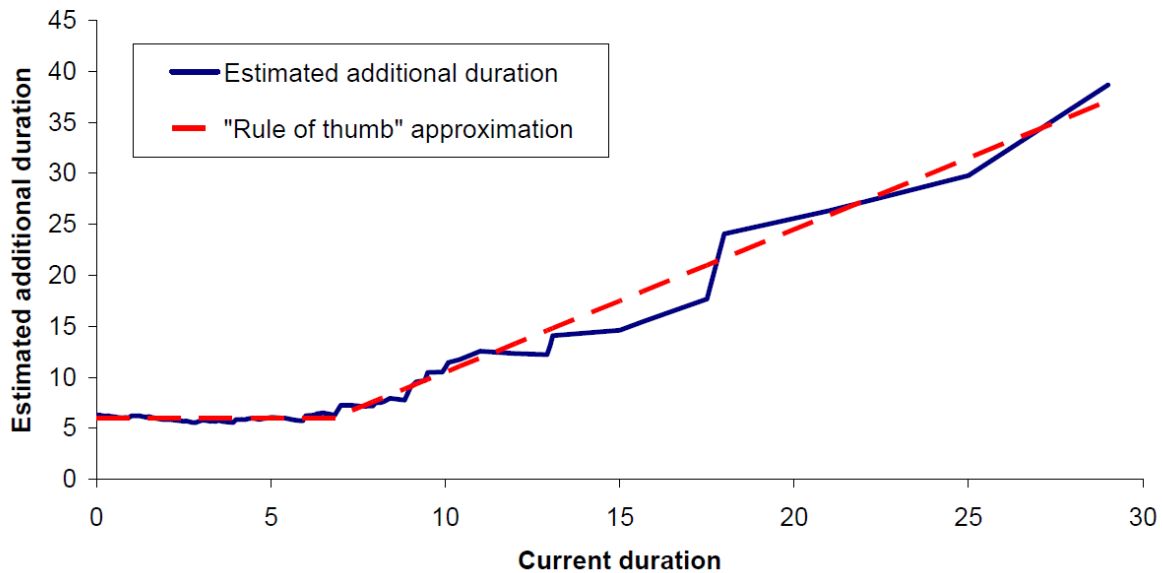


Figure 6 - Estimated cartel duration<sup>40</sup>

After recommendations of Stephen Davies in January 2010 the OFT has reversed the change in methodology, it now again uses the expected six years lifetime from inception.

<sup>38</sup> You might expect that the chance that there is a SLC is higher for a referred and abandoned merger than for a referred merger.

<sup>39</sup> Zimmerman and Connor (2005).

<sup>40</sup> From the Office of Fair Trade (2006).

The OFT also does impact estimations for market studies, market investigations references, consumer protection (scam and non-scam) and advocacy. Since these methodologies are outside the scope of this paper, I will not describe the methodologies here.

- *The outcome effect of the OFT*

In table 3 the outcome effect of the competition enforcement of the OFT is showed. For mergers the outcome fluctuates between £ 52 mln and £ 131 million. For cartels the fluctuation is less in the last years, (just £18 million) compared with the first estimated outcome effect the difference is £ 62 million.

Consumer Savings in million £	2000-2005	2004-2007	2005-2008	2006-2009	2007-2010	2008-2011
<b>Merger control</b>	128	52	115	131	125	90
<b>Cartels/competition enforcement</b>	22	64	77	78	84	83
<b>Anticompetitive practices / consumer protection</b>	-	10	12	68	42	36
<b>Market investigations regime</b>	-	-	122	132	107	117
<b>Total outcome effect</b>	150	126	326	409	358	326

**Table 3 - Outcome effect of the OFT**

The OFT calculates the consumer savings over a period of 3/4 years and presents the yearly averages. Therefore these numbers cannot be added up because of potential double counting and also because the methodology of the OFT has changed over the last years. Over the years 2008-2011 the OFT has achieved a benefit ratio of 7:1, putting them ahead of the 5:1 target which they agreed with HM Treasury.

I present the outcome effects of the competition authorities in their own currency. I do not try to compare the outcome effects of the different competition, because the economic situation, competition policy and the methodologies differ too much. I finish this chapter with an assessment of the different methodologies. In the next chapter I compare the outcome effects as calculated with the different methodologies from European competition policy with an outcome effect for the Netherlands.

➤ The Department of Justice

There are two competition authorities in the United States<sup>41</sup>: the Department of Justice – Antitrust Division (DoJ) and the Federal Trade Commission (FTC). These two were the first competition authorities to calculate the consumer savings of their competition enforcement.

<sup>41</sup> For the role of both authorities see: <http://www.ftc.gov/opa/2002/04/clearanceoverview.shtm>

The reason to start with the measurement of the benefits for consumers was the introduction of the Government Performance and Result Act (GPRA). This law of 1993 requires federal agencies to make strategic plans and annual performance plans, it was passed to give the Congress a better view on the federal agencies and to reduce the inefficiencies in the federal programs. Since 1999 the agencies have to explain in their annual performance plan the progress they make in meeting long-term goals which are described in their strategic plan. Part of the GPRA is also an extensive review of the resources and the strategies to reach these goals<sup>42</sup>.

I could not find an official document in which the FTC and the DoJ give an extensive review of their methods. Nelson and Sun (2001) published an article about the way the agencies deal with ‘consumer savings from merger enforcement’. They interviewed staff from the DoJ and the FTC to take a closer look at their methodology. For this literature review I have made use of Werden (2008), Nelson and Sun (2001), Davies (2010), Kemp et al. (2008) and several Congressional Budget Submissions of the DoJ – Antitrust Division.

I will start with describing the methodology of the DoJ. The DoJ calculates the consumer savings for three policy areas: cartels (criminal enforcement), civil merger cases and civil non-merger cases. In this sequence I will discuss the different methodologies.

- *Methodology*

**Cartel enforcement / Criminal enforcement**

In cartel cases the DoJ works with a simple rule of thumb, to estimate the consumer savings the DoJ multiplies the affected annual sales with 10%. The affected sales are the sales of one year in the relevant product and geographic market. If a cartel exists less than a year the DoJ estimates the savings over the lifetime of the cartel.

**(Civil) Merger cases DoJ**

The DoJ calculates the consumer savings of a merger case when it believes it has stopped an anticompetitive merger. It multiplies the volume of commerce in the relevant market (the sales) by an estimate of ‘the expected price increase without enforcement’. The DoJ takes the annual sales number in the relevant geographic and product market, which is why the outcome effect is annualized.

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<sup>42</sup> <http://www.john-mercero.com/gpra.htm>

The price increase is estimated using a formula or a model which takes into account the market shares on the relevant market and the market demand elasticity. The DoJ uses two simulation models, a standard Cournot model to calculate the price changes in a market with homogenous products and a Bertrand model in markets with differentiated products. In cases with more specific information about a price increase, the DoJ does not use these models but estimates the price change based upon this information. Also in cases where it believes that is inappropriate to use one of the models the DoJ makes an estimate based upon information obtained in the investigation.

Besides this formula the DoJ also works with a little bit different model. It has derived a table from the relationships implied in the Cournot model, which takes into account the effect that the output of competing firms can change after the merger. Together with this more sophisticated model the DoJ restricts possible values of the elasticity. Economists of the DoJ indicated to Nelson and Sun (2001) that they are convinced that these restrictions make their estimates more conservative. Werden (2008) writes more about the way the DoJ uses this formula: *“The computer program used to generate the consumer savings estimates permits two alternative demand assumptions and three alternative cost assumptions. The assumptions normally made are those resulting in the lowest post-merger price increases – linear demand and constant marginal cost without any capacity constraints. A different cost assumption is used only if the evidence indicates that the marginal costs of non-merging competitors are increasing or that capacity constraints would bind for non-merging competitors in the post-merger equilibrium.”*

For the large majority of merger cases this is the appropriate model, because only a small proportion of cases involve branded consumer goods. According to Werden (2008) this formula can be used even if the market structure is not equal to that of the model.

In merger cases which involve differentiated product markets the DoJ uses the results of the simulation models run by the case handlers. These models are based on the assumption that in Bertrand competition firms choose prices which maximise their profits under the assumption that rival firms maintain their current prices, this assumption implies that firms behave like ‘the game’ is only played once. To use this simulation model the DoJ has to make some more assumptions about demand and costs.

### **Civil non-merger cases**

As described in the literature review the outcome from civil non-merger cases is hard to estimate. Vertical exclusionary conduct can have efficiency effects at the same time as it is

exclusionary. Werden (2008) writes about predation that it is hard to distinguish between predatory behaviour and competition on the merits. Even harder it is to predict the effect of enforcement actions against such behaviour. Therefore the DoJ writes in its Congressional Submission of the fiscal year 2012: *‘We are more limited in our ability to estimate price effect, and thus rely on a conservative one percent figure for our estimate. We believe our consumer savings figure to be a very conservative estimate.’* The DoJ multiplies this price effect with the affected commerce, again the DoJ supposes that this effect will last for one year. The DoJ believes that the estimate of the affected market is also an underestimation of the actual size of the relevant market. In most cases the anticompetitive conduct has influence on a much larger market than described in the formal charge.

- *Size of the consumer savings measured by the DoJ*

In the Congressional Submissions the DoJ reports several numbers to conclude if it has achieved its target. The consumer savings is one of these measures together with the Dollar Volume of U.S. Commerce Affected. In table 4 I show the consumer savings of the period 2000 – 2009, this is the same period as my research period, the consumer savings are in millions of dollars. Table 5 shows the affected sales in billions of dollars.

Consumer savings in million \$	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Sum	Mean
Cartel enforcement	390	260	45	91	116	330	55	561	21	605	2.474	247
Civil - Merger	6.049	1.875	480	1.420	15	99	1.951	149	462	1.015	13.515	1.351
Civil - Non-merger	0	490	1	888	0	65	1	17	48	207	1.717	172
<b>Total outcome effect</b>	<b>6.439</b>	<b>2.625</b>	<b>526</b>	<b>2.399</b>	<b>131</b>	<b>494</b>	<b>2.007</b>	<b>727</b>	<b>531</b>	<b>1.827</b>	<b>17.706</b>	<b>1.771</b>

Table 4 - Outcome effect of DoJ competition enforcement

Sales affected in billion \$	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	Sum	Mean
Cartel enforcement	3,9	2,1	0,5	0,9	1,2	3,3	0,6	5,6	0,2	6,1	24,2	2,4
Civil - Merger	79,1	18,1	6,8	29,3	0,7	1,7	100,7	2,0	11,9	73,9	324,2	32,4
Civil - Non-merger	0,1	7,2	0,1	88,5	44,2	6,6	0,1	0,9	4,2	20,7	172,6	17,3
<b>Total outcome effect</b>	<b>83,1</b>	<b>27,4</b>	<b>7,3</b>	<b>118,7</b>	<b>46,1</b>	<b>11,6</b>	<b>101,4</b>	<b>8,6</b>	<b>16,3</b>	<b>100,7</b>	<b>521,1</b>	<b>52,1</b>

Table 5 - The affected sales of DoJ competition enforcement

The savings and the sales are calculated by the DoJ with the methodology described above. As can be seen in table 4, over the years 2000 – 2009 the DoJ saved the American consumer at least 17,7 billion dollars, this might be a lot more since the methodology is set up to give a conservative estimate. The largest benefit comes from merger cases with a total of 13,5 billion dollar. For cartel enforcement it sums up to 2,4 billion dollar and non-merger

cases contribute 1,7 billion. The total affected volume of commerce of the cases in these ten years of competition enforcement by the DoJ is a total of 521 billion dollars.

In none of the three policy areas the consumer savings are constant. This shows the dependence of antitrust authorities of the behaviour of firms. Striking examples are the years 2000 – 2005 in non-merger cases. In three of the years the consumer savings are (almost) zero and in the other two years the consumer savings are 490 million (2001) and 888 million (2003). This last year is more than 50% of the total savings for consumers in civil non-merger cases. For merger cases the year 2001 is the largest contributor with 44,8% of the total outcome effect of mergers, for cartel cases this is 2009 with 24,5% of the total outcome effect of cartel enforcement.

In table 6 below, I have calculated the ratio of the savings divided by the affected sales. What is remarkable is the uniformity of the percentage of savings for cartel cases, it is almost every year 10%, and only in the year 2001 the savings are higher than 10%. For merger cases and non-merger cases the savings differ a lot every year. An interesting figure is the percentage of the total savings per policy area divided by total affected sales of that area. This figure shows the expected 10% for cartel cases. The average price effect for merger cases over the last decade is 4%. For non-merger cases, for example exclusionary conduct, the average annual price effect is 1%. Although this is the rule of thumb the DoJ uses for these cases it seems to be a coincidence. In 2000 and 2004 the savings are 0% but the affected sales are more than 25% and in 2001 this percentage is 6,8%. What is clear out of these figures is that the DoJ changes the estimates for civil non-merger cases often. Apparently the different cases ask for adjustment of the one percent rule of thumb.

Consumer Savings / Sales affected	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	% of Total Sales
<b>Criminal (cartels)</b>	10,0%	12,5%	10,0%	9,9%	10,0%	10,0%	10,0%	10,0%	10,0%	10,0%	10,2%
<b>Civil – Merger</b>	7,6%	10,4%	7,1%	4,8%	2,0%	5,8%	1,9%	7,3%	3,9%	1,4%	4,2%
<b>Civil - Non-merger</b>	0,0%	6,8%	1,2%	1,0%	0,0%	1,0%	1,0%	1,8%	1,1%	1,0%	1,0%

Table 6 - Ratio of the consumer savings versus the affected sales (DoJ)

I will use the ratio in the most right column in table 6 as an estimate for a rule of thumb. I will use this rule of thumb to duplicate the methodology of the DoJ on the cases of the European Commission with an outcome for the Dutch consumer. The cases in my database will be different than the cases of the DoJ, but because of data constraints it is not possible to use the merger simulation of the DoJ or to give case specific estimates for antitrust cases. This

ratio of consumer savings versus the affected sales is therefore the best guess for the price effect of a blocked or modified merger/cartel/antitrust case. I will use the same methodology to duplicate the methodology of the FTC.

➤ FTC

The FTC calculates the outcome of their competition policy in two areas, merger and non-merger. I will first describe the calculation method with respect to merger cases, followed by the methodology for non-merger cases and finish this section with the size of the consumer savings of the FTC.

- *Methodology*

### **Merger cases**

The consumer savings from competition enforcement in merger cases are derived from a thorough analysis of documents available through the investigations. The FTC uses this information to estimate the magnitude of a price increase of an anticompetitive merger. In cases where this information is not available the FTC works with a conservative estimate: a price increase of at least one percent times the sales of the affected market. Contrary to the methodology of the NMa and the DoJ, the FTC multiplies the affected market turnover times two. In this way the outcome effect last for two years. This indicates that the FTC expects that without their intervention a firm can raise prices in the affected market with at least one percent for two years after an anticompetitive merger. In an interview with Nelson and Sun economists of the FTC indicated that they use this small price increase to account for possible cost reductions. The sales of the relevant market are available in all the cases, because the staff assigned to a case knows that the figure will be used for the calculation of the consumer savings. The FTC does not take productive efficiency into account, although they are aware that it might stop mergers which otherwise would have had an anticompetitive effect in R&D markets.

### **Non-merger cases FTC**

The methodology for non-merger cases is approximately the same as with merger cases. The only difference between these two is the assumption that the price effect of one percent will last one year with non-merger cases instead of two years. As with merger cases, if there is information available to estimate a price increase the FTC will use this information.

- *Size of the consumer savings measured by the FTC*

The FTC has published the results of their outcome calculations for merger and non-merger case for the first time in 2007. In table 7 are the results in consumer savings of their

competition enforcement in million dollars. The annual average consumer savings are 863 million dollar over the last five years. For mergers this is 615 million dollar, compared to the DoJ this a little less than half their savings (46%). Table 8 shows the affected sales per policy area per year in billion dollars.

Consumer savings in million \$	2007	2008	2009	2010	2011	Sum	Mean
<b>Merger</b>	805	360	791	586	532	3.074	615
<b>Non-merger</b>	75	28	188	508	445	1.244	249
<b>Total</b>	880	388	979	1.094	976	4.317	863

Table 7 – Outcome effect of FTC competition enforcement

Sales affected in billion \$	2007	2008	2009	2010	2011	Sum	Mean
<b>Merger</b>	42,6	14,9	22,3	22,5	22,7	125,0	25,0
<b>Non-merger</b>	2,6	0,4	14,6	11,7	11,6	40,9	8,2
<b>Total</b>	45,2	15,3	36,9	34,2	34,3	165,9	33,2

Table 8 – The affected sales of FTC competition enforcement

Like the consumer savings of the DoJ, the consumer savings are not constant but fluctuate per year. Especially for non-merger cases the differences are large (min. 28, max. 508). Table 9 shows the ratio of the consumer savings versus the affected sales per policy area per year. It also shows the ratio of the total consumer savings divided by the total affected sales per policy area. Because the FTC uses the sales for two years, I also show the yearly effect for mergers.

Consumer Savings / Sales affected	2007	2008	2009	2010	2011	% of Total Sales	% yearly price effect
<b>Merger</b>	1,9%	2,4%	3,5%	2,6%	2,3%	2,46%	1,23%
<b>Non-merger</b>	2,9%	7,0%	1,3%	4,3%	3,8%	3,04%	3,04%

Table 9 – Ratio of the consumer savings versus the affected sales (FTC)

Remarkable is the percentage of savings for merger cases. For the DoJ this is 4,2% and for the FTC this is 2,46%, the difference in the yearly price effect is even larger 4,2% and 1,2%, although it should be noticed that these savings are over a different time period. The decision who investigates a merger (DoJ or FTC) is partially made by the experience an authority has in a particular industry<sup>43</sup>. Obviously the difference in methodology explains a part of this difference. Given the 4,2% average price increase the DoJ has, their models regularly predict a higher than 1% price increase.

<sup>43</sup> John D. Carroll, Ropes & Gray LLP, *The Widening Gap Between FTC, DOJ Merger Review Portfolio Media*, publisher of Law360.



The average price effect of non-mergers is 2,7% this figure is higher than the standard price increase of 1%. For all five years for which data are available this effect is higher than 1%. Clearly, the FTC has had at least one case each year in which there was more information available to make a better (higher) estimation.

➤ The European Commission / DG Competition

The Directorate-General Competition of the European Commission (DG Comp) has published an estimate of the customer savings<sup>44</sup> of their competition enforcement for the first time in their *Annual Management Plan 2008*. This estimate involves the outcome effect of the cases in the year 2007. Over the past few years the methodology for the calculation of the customer savings has changed several times. I will describe the methodology of 2007 and the changes made in the method since then. I conclude this section with an overview of the outcome effect per policy area over the years 2007 – 2011.

- *Methodology*

**Cartel Enforcement**

The methodology of DG Comp with respect to cartels is based on three assumptions. The first is that it expects that a cartel raises the price of the affected sales by 10%. The second is about the expected lifetime of a cartel without intervention. DG Comp assumes that a cartel would have lived for 5 years without discovery. The last assumption is regarding the annual discount rate. For each year of the five year period the customer savings are calculated. An annual discount rate of 3,5% is applicable from the second to the fifth year. The European Commission states that all these estimations are conservative.

In 2011 DG Comp has changed the calculation method of the consumer savings from cartel intervention. The methodology is now based on three factors and the outcome effect is the product of these three factors. The estimation of the price increase is roughly the same, a 10% average overcharge is assumed, but now they Commission does a sensitivity analysis for 5% and 15%. This shows more clearly that outcome calculation does not try to state the exact benefit from competition enforcement, but that it primarily is a (conservative) estimate of how large the direct effects might be. The assumption about the lifetime of a cartel is in the new calculation method more based upon case specific information. DG Comp classifies cartels in three categories, all with a different expected lifetime: unsustainable (one year), fairly sustainable (three years) and very sustainable (six years). According to the Commission this classification is done by combining economic insights and evidence of the

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<sup>44</sup> DG Comp uses the term ‘customer savings’ instead of outcome effect.

file. It seems that the commission has dropped the annual discount rate, but this is not clear in Commission documents.

### Merger enforcement

The calculation of the customer benefits derived through the intervention of anti-competitive mergers handled by the European Commission is quite straight forward. DG comp considers the ‘mergers which are prohibited’ and ‘mergers which are cleared with a remedy’ as mergers that constitute the outcome effect, these mergers are called the corrective mergers. It assumes that there would have been a 10% price increase without the intervention in a corrective merger case. DG Competition multiplies this 10% with the total value of the sales affected. The relevant market is based upon the SSNIP test (Small but Significant and Non-transitory Increase in Price test).

In 2011 DG Comp has changed this method, the basic idea of the new methodology is comparable to the method used to calculate the outcome effect of cartel cases. The same three factors influence the consumer savings. The first is the size of the market, this is not changed compared to the former calculation method. The price increase is no longer standard 10%, but it follows from ex-ante merger simulation models. These models use information about market conditions and take into account the behaviour of consumers and firms. As with cartels the Commission takes into account the expected time needed for the market to self-correct. This is based on the chance that there will be new entries into the market and on the likelihood that consisting competitors increase their output. As with cartel cases, the merger cases are divided in three different categories. If a firm is classified in the first category, the expected time the price increase will last is two years, in the second group this is three years and in the last group the expected time is five years.

### Antitrust cases<sup>45</sup>

The way the consumer benefits of antitrust cases are calculated is equal to the way the benefits of merger cases were calculated from 2008 – 2010. The assumption is that the effect of the intervention is a customer saving of 10% of the affected market sales. After the change of methodology in 2011 the method had a metamorphose. DG comp explains in Annual Management Plan 2011: *It is important to stress that the above estimates cover only a part of DG COMP's activities and therefore underestimate the actual impact of DG COMP's enforcement activities. While it can be assumed that significant customer benefits also arise from the Commission's enforcement action against abuses of a dominant position and*

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<sup>45</sup> Cases under the Articles 101 and 102 TFEU, this are cases involving restrictive agreements (ex art. 81 and 82 EC), and cases under Article 106 TFEU (ex art. 86 EC).

anticompetitive vertical agreements, due to important structural differences among these cases DG COMP has decided not to apply a single, generalised benchmark to these types of practices. DG Comp will now use ex-post case by case analysis to give an estimation of the outcome effect of competition enforcement in this area.

- *Size of the consumer savings measured by DG Comp*

The methodology used by the Directorate-General Competition results in the consumer savings as showed in table 10. The Commission did not publish an ex-post analysis for an antitrust case over the year 2010. Over the last five years the European competition policy saved the European customer 57 billion euro. In the following chapters I show the outcome effect for the Dutch consumer from European competition policy.

Consumer Savings in billion euro	2007	2008	2009	2010	2011	Sum	Mean
Merger	1,3	3,1	5,6	5,3	3,5	18,8	3,8
Cartels	9,0	1,2	1,7	9,0	7,4	28,3	5,7
Anticompetitive practices	3,5	4,3	2,5	N.A.	N.A.	10,3	3,4
<b>Total</b>	<b>13,8</b>	<b>8,6</b>	<b>9,8</b>	<b>14,3</b>	<b>10,9</b>	<b>57,4</b>	<b>11,5</b>

Table 10 - Outcome effect of DG Comp competition enforcement

### 3.3 Assessment of the different methodologies of outcome measurement

In table 11 I give an overview of the methodologies of the competition authorities. In this section I describe the differences among the methodologies of the different competition authorities. I start with the differences with respect to mergers, then the differences with respect to cartels and finish this section with the difference with respect to antitrust cases.

Before doing so I start with some remarks from Werden (2008) about the revenue effect. According to Werden (2008) the revenue effect (relevant revenue of cartel participants multiplied with the average price raise of cartel) is a good estimate of the harm to consumers from cartels. Still, Werden identifies three effects which are not included in the turnover effect. The first is the lost utility because of the reduction in consumption through to the higher prices. He remarks that if reducing prizes strongly decreases the purchased quantity a cartel is less attractive. So the harm to consumers that stop purchasing a product is probably small in cartel cases. The second is the umbrella effect. This is the effect that other producers in the same market or in a market for substitutes which are not involved in the cartel also raise their prices. This effect should also be small in cartel cases, if not, the cartel participants would lose too many sales and that would make the cartel unsuccessful. The third effect Werden (2008) identifies is the deterrent effect. I have discussed this effect extensively in section 2.2.

Davies (2010) gives some extensions which could improve outcome measurement. The first is that competition authorities should label estimates good or speculative. It is unavoidable that in some cases a competition authority has better information or that some cases are easier to predict than others. Therefore some estimates will be more precise than others. Davies proposes to count the good and speculative estimates separately, and present a one total outcome effect with and one without the speculative estimates. Another option would be to reduce the speculative results with a percentage for uncertainty. The second extension is closely related to the first. Davies suggests a lower and upper bound estimation. The lower bound would be the traditional way of calculation and the upper bound might include a mark up for the deterrent effect. The last extension proposed by Davies is to work with confidence intervals. Just like with most statistic results it is possible to give an exact figure and also estimate a confidence interval. To illustrate how this works out Davies gives an example: “[f]or expositional purposes only, suppose that Connor’s extensive research on real world cartels has approximated the ‘population’ distribution of price-raising effects of all cartels, we could easily identify the 95 per cent or 90 per cent confidence interval around his mean (of about 20 per cent).”

Another interesting topic is the effect of competition policy on the dynamic efficiency. Although a dynamic efficiency effect would be hard to measure, Werden (2008) writes that dynamic efficiency might be the most important benefit of competition for consumers. As far as my knowledge goes, I am not aware of a competition authority which takes the dynamic efficiency effect into account in calculating the outcome. After the publication of Aghion (2005) with respect to the relation between competition and innovation, this could be stated as a work in progress.

Competition Authority	OFT			DoJ			FTC	
	Merger	Cartel	Antitrust	Merger	Cartel	Antitrust	Merger	Antitrust
Policy area	Market	Cartel participants	Market	Market	Market	Market	Market	Market
Relevant turnover	Market	Cartel participants	Market	Market	Market	Market	Market	Market
Yearly price change	Model (or 1%, average is 8%)	10% <sup>46</sup>	1%	Model (average 4,2%)	10%	1%	Model (average 1,2%)	Model (average 3,0%)
Number of years	1	6,00	1	1	1	1	2	1
Yearly discount rate for future savings	N.A.	3,5%	N.A.	N.A.	N.A.	N.A.	No	N.A.
Productive efficiency	No	No	No	No	No	No	No	No
Correction for the allocative effect	No	No	No	No	No	No	No	No

Competition Authority	DG Comp <sup>47</sup>			NMa		
	Merger	Cartel	Antitrust	Merger	Cartel	Antitrust
Policy area	Merger	Cartel	Antitrust	Merger	Cartel	Antitrust
Relevant turnover	Market	Cartel participants	Market	Market	Cartel participants	Dominant firm(s)
Yearly price change	10%	10%	10%	1%	10%	10%
Number of years	1	5	1	1	1	1
Discount rate for future savings	N.A.	3,5%	N.A.	N.A.	N.A.	N.A.
Productive efficiency	No	No	No	1%	1%	1%
Correction for the allocative effect	No	No	No	Yes	Yes	Yes

Table 11 - Overview of methodologies of different competition authorities

<sup>46</sup> Since 2011 the OFT uses a 15% price change.

<sup>47</sup> I describe here DG Comp’s methodology before 2011, because that is the methodology I use to duplicate the methodology with respect to an outcome effect from European cases for the Dutch consumer.

➤ Mergers

All competition authorities take the turnover of the relevant market, but the price change is calculated in various ways. OFT, DoJ and FTC use model simulations which result in an average price increase between 1,2% (FTC) and 8% (OFT). DG Comp uses a rule of thumb of 10% and the NMa uses a 1% rule of thumb. Only the FTC assumes that the price effect of a merger would last for two years. Other competition authorities use a one year estimate. The NMa is the only competition authority which takes an effect on the productive efficiency into account. It also is unique in the fact that it makes a correction for the allocative effect. Most other competition authorities do not make remarks about the overestimation of the revenue effect. As described above Werden<sup>48</sup> (2008) is aware of the existence of the revenue effect. These last two differences count not only for merger cases but also for cartel and antitrust cases. This counterbalances the conservative methodology of the NMa. Although for merger cases it makes the methodology of the NMa even more conservative. As described before, all competition authorities state to give conservative estimates, but the methodology of the NMa gives the lowest estimates as I will show in 5.6.

➤ Cartels

The differences with respect to the outcome of cartel cases might be even larger. All competition authorities use the same rule of thumb: a 10% price increase, but the main difference is in the assumed duration of the number of years a cartel would have lasted without an intervention. NMa and DoJ assume that this is one year, were OFT uses a lifetime of six years and DG Comp uses a lifetime of five years. The last two authorities discount the future savings with a 3,5% discount rate. The DoJ counterbalances its conservative methodology with the relevant turnover, it uses the turnover of the relevant market, where the other three competition authorities use the turnover of the cartel participants. In my database this leads to an increase of 19% of the outcome effect. Although the NMa takes a correction for the allocative and productive efficiency into account, it still is the most conservative methodology.

Since there are differences in the assumption with respect to the cartel lifetime it is interesting to take a closer look at the cartel life time. As described in the section about the calculation method of the OFT, the average lifetime of cartels is estimated at 6,3 years<sup>49</sup>. In my dataset the average lifetime of a cartel is 8,0 years. I show the distribution of the cartel lifetimes in figure 7. It should be noted that these are cartels involving at least the

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<sup>48</sup> Gregory Werden is senior economist at the Antitrust Division of the DoJ.

<sup>49</sup> Zimmerman and Connor (2005).

Netherlands and also only the cartels which have been condemned by the commission. Important to note is also that I have used the lifetimes of the cartels as proved by the European Commission. A large part of the cartels start earlier than the Commission can prove. Therefore the cartel lifetime might in fact be higher. The average lifetimes might also be higher for undetected cartels and for cartels in countries without a competition authority.

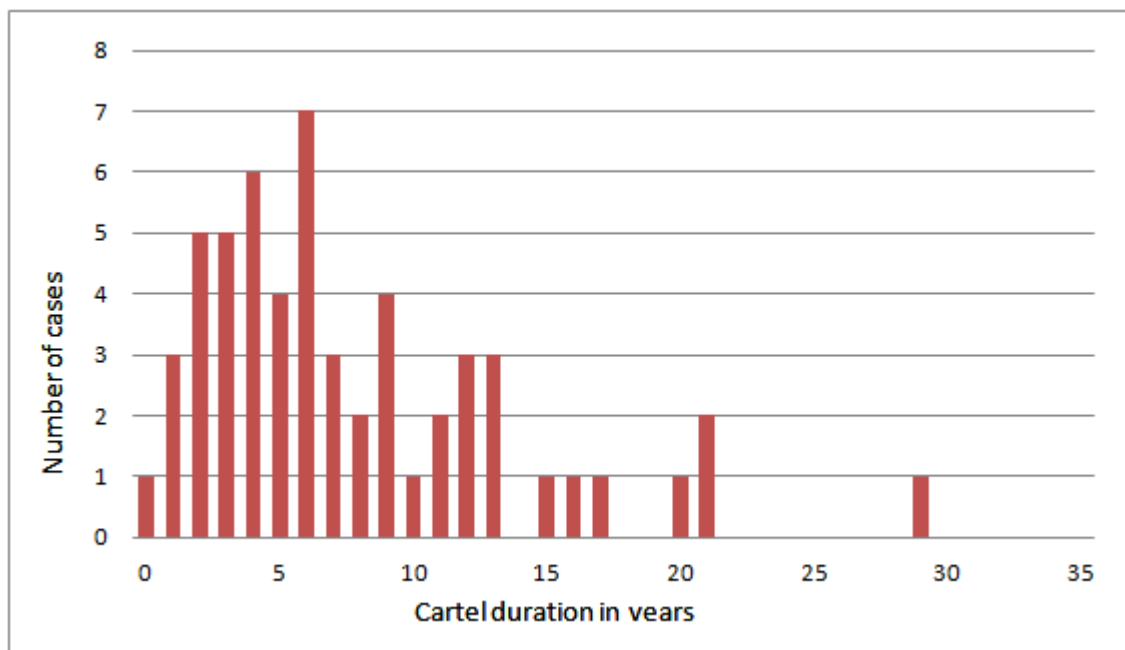


Figure 7 - Cartel cases: cartel duration

Given these estimations of the average cartel lifetime, the assumption of a one year price increase might be too conservative. Interesting is the old methodology of the OFT which I described earlier in this chapter. This methodology used the time the cartel already ran to estimate the expected future lifetime. Although this is not in line with conservative estimations it is an interesting approach. On the other hand the claim that the assumptions of DG Comp and the OFT (respectively 6 and 5 years) are conservative, can also be questioned.

All competition authorities use a 10% rule of thumb for the price increase. I described in section 2.2 about the revenue effect, that Connor (2010) finds that the average cartel overcharge in a database of more than 1000 cartels is 46,2%. So the rule of thumb is more than four times smaller than this estimate. Therefore this rule of thumb is conservative as well. Davies (2010) advises the OFT to use a 15% rule of thumb instead of the standard 10%, he states that this is still conservative compared to the price effect in the literature.

➤ Antitrust cases

The FTC is the only competition authority which uses a simulation model to calculate an outcome effect from antitrust cases. The average simulated price increase is 3%. OFT and DoJ use a rule of thumb of 1%, where DG Comp and the NMa use a rule of thumb of 10%. Only the NMa uses the turnover of the dominant firm(s) as the relevant turnover, the other competition authorities use the market turnover. As with merger and cartel cases the NMa also estimates an effect on the productive efficiency and the allocative effect.

As regards the methodology of DG comp and the NMa, the 10% of the relevant market/dominant firms seems to be quite high if we look at other competition authorities and the subjects of these cases. DG Comp's new methodology with respect to antitrust cases is to only take ex post estimations into account. DG Comp stopped using a rule of thumb for antitrust cases, as I described earlier in this chapter. For the NMa it is even more striking given the conservatism of the methodology for cartel and merger cases. Where in the other policy areas the NMa could be less conservative, with respect to antitrust cases the calculation method of the NMa might overestimate the outcome effect. A suggestion for further research is to estimate for some cases the ex post effects for abuses of a dominant position.

### **3.4 Conclusion about the methodologies of outcome measurement**

In this chapter I described the methodologies of the competition authorities to calculate the outcome effect of their competition policy. All competition authorities take the revenue effect into account. None of the competition authorities take the effect on dynamic efficiency or the deterrent effect into account. The NMa is the only competition authority which takes the productive and allocative effect into account.

In the final part of this chapter I compared the different methodologies. I described that the methodologies of OFT and DG Competition are less conservative than the methodologies of DoJ and NMa. All competition authorities strive to give conservative estimates of the competition policy. Therefore the conservatism of the NMa and DoJ compared to other competition authorities might be a good thing, but could also be a sign that their methodologies are too conservative. For example with respect to cartel duration the length of the outcome effect might be extended and still remain conservative. The same applies for the rule of thumb on the price increase of cartels, a 10% price increase might be too conservative. Less conservative is the methodology of the NMa for the calculation of the outcome effect from antitrust cases, a ten per cent price increase is higher than the rule of thumb of the other competition authorities.



In the previous chapter I described the economic effects of competition policy and the principles of outcome measurement. In this chapter I described the different methodologies of the competition authorities to calculate the outcome effect of their competition policy. I continued with a comparison of these methodologies and an assessment of the rules of thumb compared to the economic evidence. In the next chapter I will describe the way I have collected the relevant data to use the above described methodologies.

## 4 Data on the outcome effect in the Netherlands

In this section I write about the choices I had made to obtain all the relevant data to calculate the outcome effect for the Dutch consumer from the competition enforcement of the European Commission. In my research I focus on the period 2000 – 2009. In this period the European Commission and the Courts have taken a decision in 69 cartel cases, 3135 merger cases and 121 antitrust cases. For my research I used the methodology of the NMa<sup>50</sup> where I could and I explain it where I deviate from this methodology. I start with describing which cases I selected, I continue with the selection of the cases which generated an outcome effect. The subsequent section is about the estimation of the sales. Further, I describe the way I estimated the sales which were relevant for the Netherlands and the calculation of the relevant price elasticity. I finish the description of the methodology used with the assumptions and changes I have made to use the methodology of other competition authorities (DG Comp, OFT, FTC and DoJ).

### 4.1 Methodology regarding the selection of cases

The Directorate-General Competition publishes documents on its website for all the official decisions they make. This website is the main source of my data. I have selected the relevant cases per policy area. On the website of DG Competition it is possible to select case by legal basis / decision type. For example this means for merger cases that you can select the mergers which have been opposed or mergers which were allowed without further investigation.

I included a case in my database if the last decision in this case falls into the 2000 – 2009 timeframe. Exceptions are the cases in which a decision is made before the year 2000 and in which the decision of the Court of First Instance or Court of Justice falls in the 2000 – 2009 period. These cases fall outside the scope of my research, because the Netherlands Competition Authority (NMa) changes the outcome of appeal cases retrospective if necessary. Cases with a decision before 1 January 2010 fall in my research even if there is an appeal running. There were no cases included in my dataset, in which it was needed to change the outcome because the Court of First Instance or the Court of Justice completely rejected a commission's decision after 31 December 2009.

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<sup>50</sup> As described in chapter 3.1.

#### 4.2 Selection of cases which generate an outcome effect

Convicted cartels and antitrust cases in which a business is fined always have an outcome effect, so I have taken into account all these cartel and antitrust cases<sup>51</sup>. With mergers this is more complex. Merger control takes place in two phases. First, firms notify the Commission of a proposed concentration, followed by an initial examination of the Commission. This (quick) examination can result in the approval of the Commission if a merger does not raise concerns with respect to competition. This is what happens in the mass of the merger cases (2736 out of 3135 cases). Such cases do not result in a direct effect of competition enforcement for consumers (no outcome effect). If a concentration raises serious doubts with respect to competition, then the case enters the second phase of merger control unless the parties offer commitments which take away the competition concerns before a decision in the first phase is made. If so, the merger can be approved with conditions and obligations within the first phase. In the second phase there is a more extensive examination of the market structure and the competition effects of the merger. The Commission sends a statement of objectives to the parties and the parties have the right to ask for an oral hearing and discuss the facts and the theories in the file. At the end of phase two the Commission publishes their opinion. This can be an approval of the merger; an approval with remedies or a prohibition decision. The European Commission takes approvals with remedies (first and second phase) and prohibition decisions into account when calculating the customer benefits.

The merger control regime of the NMa has a comparable structure, with a notification phase and a licensing phase. A difference between DG Comp and the NMa is that the second calculates an outcome effect for cases in which firms withdraw a merger, considered that it is likely that the withdrawal is at least partly caused by its actions. Although I use the methodology of the NMa, with respect to the selection of merger cases I use the methodology of DG Comp. It is hardly possible to find out in which cases a merger is withdrawn because of the competition concerns of DG Comp and in which cases the merger proposal is withdrawn for other reasons. So the merger cases which are included in my research are cases with a prohibition decision or an approval with conditions and obligations.

Another difference between the NMa and DG Comp is which proportion of the outcome effect is taken into account. As described in section 3.1 the NMa adjusts this percentage in case of a withdrawal in the first phase (70%, unless there are other reasons why the proposal is

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<sup>51</sup> In the calculation of the outcome for the Needles case I have adjusted the rule of thumb to measure the revenue effect. Instead of an expected price increase of 10% I used 5%. This is due to the Commission's observation that the impact of the cartel was limited.

withdrawn) and if it gives a negative decision in the first phase, which is not followed by a request for a license (70%). Because I do not take withdrawn cases into account, I also do not use these adjustments in calculating the outcome effects of European merger cases.

### **Cartel**

I have thoroughly investigated the 69 cartel cases and selected the 50 cartel cases which affected the relevant market in the Netherlands. Four of these selected cases consider two cartels, one case involves three different cartels and one case even covered four different cartels<sup>52</sup>. This results in 59 cartel decisions that directly benefited the Dutch consumer. Of the 19 cartels which were not selected, 12 had no sales or almost no sales in The Netherlands, 2 were rejections of the Commission to complaints and the remaining 5 cases are re-adoptions of older decisions. I used the public documents on the website of DG Comp to find out whether a cartel case concerned The Netherlands.

### **Merger**

The European Commission - Directorate General Competition received 3135 notifications of proposed mergers in the period 2000 – 2009. From these mergers 2736 were approved without conditions. There were 58 cases which resulted in a second phase decision approval with conditions and obligation. In 146 cases this decision was made in the first phase. In ten years time only 9 mergers were prohibited. Of these 213 cases, 92 cases have an outcome effect for the consumers in The Netherlands.

### **Antitrust**

There have been 121 antitrust cases from 2000 to 2009. Only 23 of these cases generated a potential outcome effect for the Dutch consumer. In most of the remaining cases there were no sales (or nil sales) affected by the violations in the relevant market in the Netherlands. In other cases there was probably no competition effect. For antitrust cases the selection of the decisions that cause a positive competition effect is the hardest part. The NMa uses a rule of thumb to estimate the outcome effect of antitrust cases. Since 2010 DG Comp uses ex-post case by case analysis to calculate the competition effect of a case. After reading the content of the antitrust cases I can understand this choice. The cases are quite different, in some cases you might expect almost no effect at all, but for example in the Nintendo case<sup>53</sup> prices in the UK were, according to the Commission, 65% higher than in Germany and the Netherlands. Of the 23 relevant cases for the Dutch consumer, I have estimated an outcome effect for 11 cases, for the remaining 12 cases I have not tried to estimate the outcome effect

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<sup>52</sup> This is the Fasteners case in 2007, DG Competition case number 39168.

<sup>53</sup> Omega/Nintendo+1 (casenumber 36321)

with a rule of thumb like I did for merger cases. This is due to the conclusion of DG Competition: antitrust cases differ too much to use a rule of thumb.

#### 4.3 Methodology concerning the estimation of sales

The Commission publishes press releases accompanying its official documents, if there is an estimation of the market value and the market share of the cartel participants in a press release I use this figure. If data is available I always take the last year of the cartel for which it is available, unless it is stated differently in the decision<sup>54</sup>. If specific data about the Netherlands is available or if there is information about a smaller group of countries, including the Netherlands, I always use the more specific data. If there is no figure of market shares for this specific data I use the market shares the companies have in the EEA to estimate the sales of the parties. Sometimes the total market sales are available, sometimes the percentage of cartel participants is available, I use whatever is available to calculate the relevant sales figures. The documents published on the website of the Commission are the non-confidential versions. Therefore sometimes the turnover figures and market shares are not given as an exact figure but are indicated with a lower and an upper bound. If this is the case, I have used the average of these two values<sup>55</sup>. For some cartels there is no figure available for the market share of the cartel participants. In these cases I have multiplied the total sales on the relevant market (for these six cartels this totals € 1871 million, less than 10% of the sales of all cartel cases) with the average cartel market share in rest of the dataset (83,8%<sup>56</sup>).

In three antitrust cases I have used the basis amount of the fines as a guideline for the estimation of the yearly relevant sales. I assumed that the basis amount of the fine was 20% of the relevant sales of the dominant firms.

#### 4.4 Methodology about the rate of sales affecting The Netherlands

In some cases there is specific information about the turnover of cartel participants for the Netherlands. For cartels and mergers sometimes DG Comp publishes in the press releases the relevant product and geographic markets, if so I used this information to determine whether a merger is relevant for the Dutch consumer. In cases where this information is only available for a larger region I estimated which part of these sales can be assigned to the Netherlands. I have divided the Dutch GDP by the total GDP of the countries to which the

<sup>54</sup> In some cases the commission states that a specific year is not a regular year.

<sup>55</sup> For example if the decision notes [60-70] million, I use as estimate of the sales 65 million.

<sup>56</sup> Statistics of the market share of cartel participants: median is 90%, maximum is 100%, minimum is 38% and standard deviation is 0,15.

sales figure relates, most of the time this is the EEA. DG Comp has used different definitions of EEA. Before 2004, DG Comp used mostly the EU-15, wherein at times the EFTA states have been included. From 2004 this is the EU-25 and from 2007 this is EU-27. In some cases the European Commission is not clear about which definition of the EEA has used, if so, I included all member states at the time of the decision. The GDP numbers are from Eurostat and from the Worldbank. In two antitrust cases and in a cartel case only the sales figures for the world markets were available. In these three cases I have used all the available data of GDP figures from the Worldbank database. The ratio of the Netherlands resulting from this calculation is multiplied by the sales figure to get the relevant sales for the Netherlands. The relevant ratio for the Netherlands is based on the GDP figures of the year in which the decision is published.

For merger cases I had to deal with some data issues. Out of the 92 cases, I could find for 25 of these cases the relevant sales number for the Netherlands. I have used the average turnover of the merging parties in the Netherlands of these 25 cases to estimate an outcome effect for the remaining 67 cases. The average turnover is 295 mln this results for the 67 cases in an outcome effect between 5,8 and 5,9 million<sup>57</sup>. In chapter 5 about the results of my research, I will explicitly make clear when I use the outcome effect of these 25 cases or the outcome effect of these 92 cases. For cartel enforcement I have used the same methodology.

#### 4.5 Methodology with respect to the price elasticity of demand

For the calculation of the price elasticity of demand I have used the elasticity figures available within the NMa. The NMa has a database with HHI-figures and mark up-figures on a third digit industry level. This database is created by PWC using CBS micro-data, the elasticity figure is calculated with the Lerner index:  $Mark-up = HHI / price\ elasticity\ of\ demand$ . The industry classification SBI<sup>58</sup> is developed by the CBS, the Dutch Statistics Bureau. The industry classification of the CBS is based on the classification of the European Union, the NACE: Nomenclature statistique des activités économiques dans la Communauté Européenne, and on the classifications of the United Nations, the ISIC: International Standard Industrial Classification of All Economic Activities. The first four digits of the SBI are the same as the first four digits of NACE and the first two digits of the SBI and NACE are equal to the first two digits of ISIC<sup>59</sup>.

<sup>57</sup> The outcome effect depends on the price elasticity of the relevant market.

<sup>58</sup> SBI means *Standaard Bedrijfsindeling* or Standard Industry Classification.

<sup>59</sup> [www.cbs.nl](http://www.cbs.nl)

The European Commission publishes for (almost) all the cases they investigate which economic activities a particularly case concern, this is the NACE 2008-code. I have used this code to link a SBI-code to the cases. This is possible because the first four digits of the NACE Rev 2-code<sup>60</sup> are equal to the first four digits of the SBI. For the elasticity's only the first three digits are required because that is the level on which the NMa database is based. The PWC data is based upon the SBI '93, so I have rewritten the NACE codes, to do this I have used the correspondence table of the CBS. In some cases a SBI 2008 code consists of several SBI'93 codes, where this occurs I have taken the average of the elasticity's of the specific codes. In cases where there is no elasticity for a SBI-code I have replaced this value with the average elasticity in the NMa database. If DG Comp publishes multiple NACE codes for a case, I assumed that the case specific elasticity is equal to the average elasticity of the published codes.

#### **4.6 Methodology to use the methods of other competition authorities**

To estimate the outcome effect of the cases using the methodologies of other competition authorities I have used the methodology of the competition authorities where possible. In some case it is impossible to duplicate the method of a CA. For example the merger simulations of the different authorities require too much (confidential) data to use it. As described in the methodology section about the FTC, OFT and the DoJ, I calculated an average effect of their simulations and case specific estimates. For the DoJ this is based on the years 2000 – 2009 so this corresponds with the timeframe in my dataset. For the FTC this is based upon the years 2007 – 2011, because of lack of data this was the only period for which this data was available. For the OFT this is based upon the paper of Davies (2010) which describes that the mean simulated price increase is eight per cent. I have multiplied these averages with the relevant turnover to get estimates of the outcome effect.

#### **4.7 Conclusion**

In the previous chapters I described the economic effects of competition policy and the different methodologies of the competition authorities to calculate the outcome effect of competition policy. In this chapter I described the way I collected the data to calculate the outcome effect of European competition policy for the Netherlands with the methodology of the NMa and with the methodologies of DG Comp, DoJ, FTC and OFT. In the following chapter I describe the results of these calculations.

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<sup>60</sup> The Regulation establishing NACE Rev. 2 was adopted in December 2006

## 5 Results

In this chapter I give an overview of the results of my research and will answer the question what the outcome effect is for the Dutch consumer from European competition policy. As described in the methodology I use the methodology of the NMa to calculate the outcome effect for the Netherlands. In the first three sections I describe the results with respect to the three policy areas: cartel cases, merger cases and antitrust cases. I continue with the total outcome effect to compare the policy areas. I continue with the results of the calculation of the total outcome effect of the competition policy of the NMa and DG Comp for the Netherlands. In the final section of this chapter, I show the outcome effects of European competition policy for the Dutch consumers with the different methodologies of DG Comp, OFT, FTC and DoJ. I compare these results with the outcome as calculated with the methodology of the NMa.

### 5.1 Cartel cases

In the previous chapter I described that there have been 59 cartel cases between 2000 and 2009 which result in an outcome effect for the Dutch consumer. These 59 cartel cases give an outcome effect in terms of a three year moving average as showed in figure 8. The three year moving average fluctuates in the first five years between 5 mln and 11 mln. From 2007 the outcome effect is larger, mostly because of two large cartel cases. I describe some of these large cases in the next section.

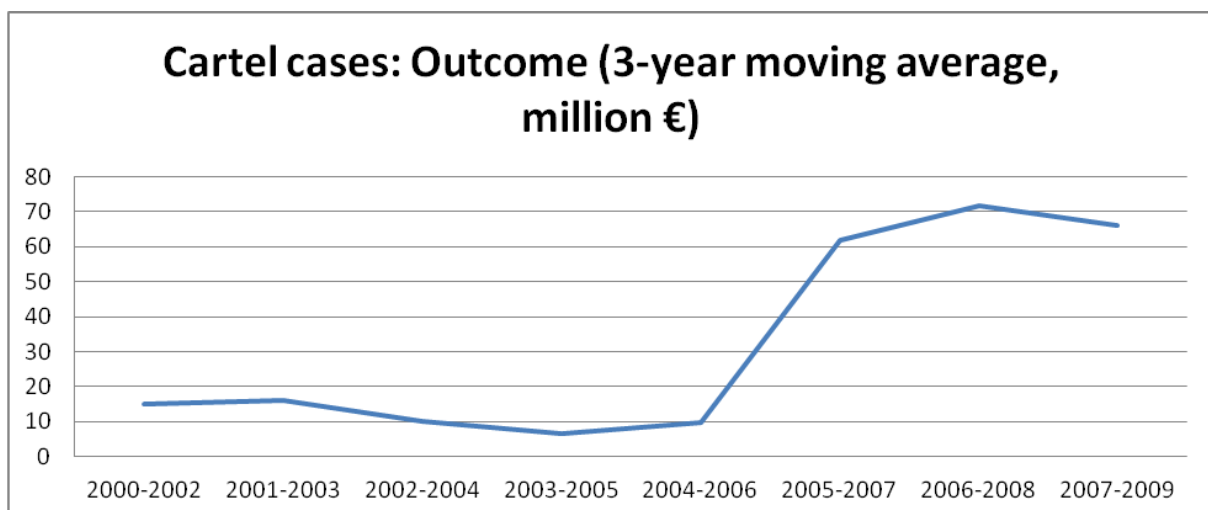


Figure 8 - Cartel cases: outcome effect

Table 12 shows the exact values of the outcome of cartel cases per year, the value of the three year moving average and the number of cartel cases per year. It shows that 2007 was a special year regarding the magnitude of the outcome effect, but also that there were more



cartels convicted. The total outcome effect of cartel cases between 2000 and 2009 is 281 mln.

Year	Outcome effect (million €)	3-year moving average (million €)	Number of cases
2000	5,6		2
2001	23,6		6
2002	15,6	14,9	8
2003	8,8	16,0	4
2004	5,7	10,0	4
2005	5,0	6,5	6
2006	18,7	9,8	6
2007	161,4	61,7	10
2008	34,7	71,6	6
2009	2,4	66,1	7
<b>Total</b>	<b>281,4</b>		<b>59</b>

Table 12 - Cartel cases: outcome per year

➤ Cases with largest outcome effect

In 2007 there were two cases which strongly influenced the outcome effect. These two cases are responsible for 56,1% of the total outcome effect for the Netherlands from cartels in the period 2000-2009. The largest case was the Dutch beer cartel (*het bier cartel*) which was responsible for 42,5% of the total outcome effect from cartels in the 2000-2009 period.

The Beer cartel was formed by the four major beer suppliers in the Netherlands. Heineken, InBev, Grolsch and Bavaria colluded to raise prices simultaneously and divide the market between the suppliers. The collusive behaviour took place between at least 1996 and 1999. After the Commission found out about a Belgium Beer cartel, InBev decide to give the Commission information, under the leniency policy, about beer cartels in other European countries. The total sales on the Dutch beer market were more than one billion euro per year. The market share of the four convicted brewers was around 93%. These numbers clearly explain the magnitude of the outcome effect. Just the revenue effect is almost 95 mln.

The brewers planned side events next to the meetings of the Central Brewery Office (Centraal Brouwerij Kantoor) to discuss their anticompetitive behaviour. The Commission carried out investigations in March 2000 at several places in The Netherlands. In August 2005 the Commission started the proceedings in this cartel case. In April 2007 it published its decision. The Commission assessed the infringements as “very serious” and fined the cartel members. InBev did not get fined because it gave the Commission information under the

leniency policy, the fine would have been 84 mln. Without this fine the total sum of the fines was 274 mln. The Commission also fined beer brewers in Belgium, France and Luxemburg. The second largest case is the ‘Elevators and escalators’-case (*liften en roltrappen*). In this case five companies: KONE, Mitsubishi, Otis, Schindler and ThyssenKrupp colluded between at least 1995 and 2004. The Commission described the infringements in the press release accompanying the decision in the following way: “[...]these companies rigged bids for procurement contracts, fixed prices and allocated projects to each other, shared markets and exchanged commercially important and confidential information. The effects of this cartel may continue for twenty to fifty years as maintenance is often done by the companies that installed the equipment in the first place; by cartelising the installation, the companies distorted the markets for years to come.”

The Commission proved that the infringements took place in Belgium, Germany, Luxemburg and the Netherlands. The infringements involved the sales, the maintenance and the modernisation of elevators and escalators. In the Netherlands the yearly sales value of these markets are approximately 128 mln on the market of new elevators and escalators, 177 mln on the maintenance market and 58 mln on the market for modernization of elevators and escalators market. The sum of these markets was 363 mln of which the cartel members accounted for 316 mln.<sup>61</sup> The total sum of fines relating to the Netherlands was 140 mln. This excludes the fine of the largest cartel member (Otis), which was more than 109 mln. This fine was reduced to zero because Otis enabled the Commission to do the investigations in the Netherlands. The total fines in the four countries after reductions totalled 992 mln. At that time it was the largest sum of fines for cartel violations<sup>62</sup>.

Table 13 shows the characteristics of the five largest cartel cases in terms of outcome effect for the Netherlands in the period 2000-2009. The outcome effect of these five cartel cases is 70% of the total outcome effect for the Netherlands from European competition policy in this period.

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<sup>61</sup> Own calculations with numbers published in the Commission’s decision.

<sup>62</sup> After this decision there have been two cases with larger fines: the carglass case in 2008 (fines: 1384 mln.) and the gas case in 2009 (fines: 1106 mln.). The first is the 4<sup>th</sup> largest case in The Netherlands (outcome effect: 10 mln.) and the last is a cartel which happened acted on the German and France gas markets.

Case	Year	Outcome (million €)	% of total outcome 2000-2009	Relevant geographic markets of the cartel
Netherlands beer market	2007	109,5	38,9%	The Netherlands
Elevators and escalators	2007	34,9	12,4%	Belgium, Germany, Luxembourg and the Netherlands
Bananas	2008	16,3	5,8%	Austria, Belgium, Denmark, Finland, Germany, Luxembourg, the Netherlands and Sweden
Carglass	2008	10,0	3,6%	EEA-wide
Vitamins	2001	9,5	3,4%	(At least) EEA-wide

Table 13 - Cartel cases: cases with largest outcome

➤ Distribution of the outcome effect

As is clear from the table 13 above, the magnitude of the outcome effect is primarily impacted by a few large cases. Figure 13 in appendix 1 illustrates the distribution of the 59 cartel cases. Figure 13 in the appendix shows that there are a lot of cases which result in a small outcome effect. The top ten cases accounts for 83% of the outcome effect from cartel and 54% of the cases has an outcome effect lower than one million. Table 24 in appendix 3 shows some statistics of the outcome effects of the cartel cases.

Total revenue effect	Total allocative effect	Total productive efficiency effect	Total outcome effect
246,0	10,8	24,6	281,4
87,4%	3,8%	8,7%	

Table 14 - Cartel cases: outcome per economic effect

As is shown in table 14 the revenue effect constitutes the main part of the outcome effect. Because of the used rule of thumb, for cartels the revenue effect will always be 10 times as large as the effect for productive efficiency. The allocative effect is 3,9% of the total outcome effect. This effect is based upon the price elasticity of demand and the market sales. The average price elasticity of demand is 0,85. As described in the literature you might expect the elasticity to be low, because, if not, it would not be profitable to raise the product prices.

## 5.2 Merger cases

From 2000 until 2009 there have been 92 European merger cases which are relevant for the Dutch consumer with respect to the outcome effect. Of these 92 cases I could calculated an outcome effect for only 25 merger cases because of missing data. These 25 cases result in an outcome effect of 145 million. As described in chapter 4, I have used these 25 cases to estimate the outcome effect of all the relevant merger cases (average outcome effect (5,9mln.) times 67). Figure 9 shows the outcome effect from all the relevant merger cases.

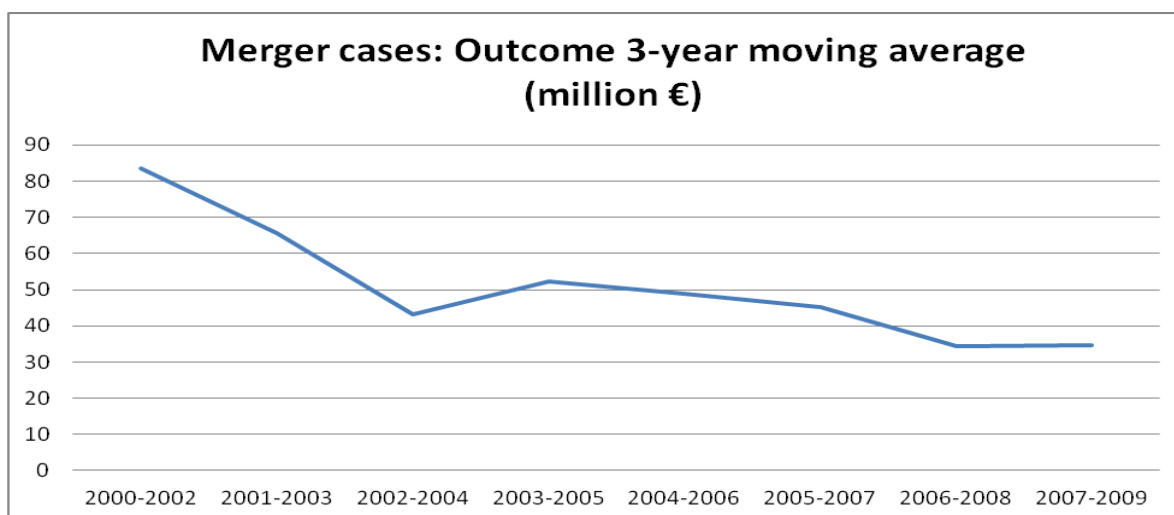


Figure 9 - Merger cases (92): outcome effect

Year	Outcome effect	3-year moving average	Number of cases
2000	94,4		18
2001	105,0		10
2002	51,0	83,5	7
2003	41,2	65,7	7
2004	37,1	43,1	7
2005	78,4	52,2	11
2006	30,8	48,8	8
2007	26,0	45,0	9
2008	46,7	34,5	8
2009	31,1	34,6	7
<b>Total</b>	<b>541,6</b>		<b>92</b>

Table 15 - Merger cases (92): outcome per year

Table 15 shows the exact values of the outcome of mergers cases per year, the value of the three year moving average and the number of cartel cases per year. It illustrates that in 2000 and 2001 there were more merger cases. This also explains why the outcome effect is larger in these years. The total outcome effect of mergers between 2000 and 2009 is 542 mln.

➤ Cases with largest outcome effect

In table 16 I show the three cases with the largest outcome effect for the Dutch consumer. All these three cases involve merger proposals between Dutch companies.

Case	Year	Outcome	% of total outcome 2000-2009	Relevant geographic markets of the merger
<b>Burhmann / Samas Office Supplies</b>	2001	54,2	36,8%	the Netherlands
<b>Wegener / PCM</b>	2005	19,5	13,2%	the Netherlands
<b>Friesland / Campina</b>	2008	16,7	11,3%	the Netherlands, Belgium and Germany

Table 16 - Merger cases (25): Cases with largest outcome

The case with the largest outcome effect is the merger between Burhmann and Samas in the year 2000. Burhmann is a Dutch company active in the office supplies market and a dealer of paper. Its market is not limited to the Netherlands, it sells in the European Union and in the United States. Samas is also a Dutch company, active on the markets in the Netherlands, Germany and the UK. It manufactures and distributes office furniture and distributes office products. Burhmann proposed to acquire the office supply division of Samas.

The Commission had some concerns about the market for the distribution of office supplies in the Netherlands. Samas and Burhmann were number one and number three before the merger. After the merger Burhmann would become the number one, with more than twice the sales of the closest competitor. To take away these concerns Burhmann proposed to sell its subsidiary Corporate Express. The Commission accepted this remedy and cleared the merger on this condition.

The second largest case is the joint venture between Koninklijke Wegener and PCM Holding. Both companies are active in the Dutch newspaper market. Wegener has subsidiaries which are also active in other West-European countries. As a result of the joint venture some of the newspapers would be combined in an innovative format: a national newspaper with regional editions. The Commission had competition concerns regarding the possible coordination of the sale of advertising space. The Commission also investigated the potential anti-competitive effects for readers but assessed that the impact would be limited.

On the market for sale of advertisement space the two companies would have a combined market share of almost 50% in the Netherlands. The commitment the parties proposed is that Wegener will not offer or sell advertisement space together with advertisement space of the joint venture or PCM. The proposed commitment eliminated the competition concerns of the Commission.

The third merger I describe is the merger between Friesland Foods and Campina. Just as the two mergers described above, this merger is cleared by the Commission, subject to some conditions. Friesland Foods and Campina were large players on the Dutch dairy market (*zuivelproducten*) and also selling in Germany, Belgium and other European countries. On the Dutch market the Commission came to the conclusion that the merger raised competition concerns in the market for long life milk in Belgium, Germany and the Netherlands, as well as in the markets for yoghurt and quark, cheese, custard, porridge, raw milk, other fresh dairy products and fresh dairy drinks. The total relevant turnover of these markets in the Netherlands is 841 mln a year<sup>63</sup>.

To take away the concerns of the Commission Campina and Friesland Foods proposed to divest some of their brands and some plants in the Netherlands. Next to that the merging parties proposed remedies to ensure the fresh dairy and cheese businesses, which will be divested, access to raw milk. These remedies consist of three parts. First the divested businesses would be enabled to buy raw milk from the merged entity in the transition period. After that, a fund would be established to guarantee the divested companies and other competitors the access to at most 1,2 billion kilogram of raw milk. Finally, Campina and Friesland Foods committed to lowering the exit barriers for dairy farmers, if they wish to leave the newly formed cooperation. The Commission settled for the commitments proposed by the parties and cleared the proposed merger.

➤ Distribution of the outcome effect

Figure 14 and figure 15 in the appendix show the distribution of the outcome effect from merger cases. Like with the outcome effect of cartels a few cases account for a large part of the total outcome effect. Figure 14 shows that there are a quite some cases which result in a small outcome effect. The top five cases together accounts for 79% of the outcome effect from mergers and that 56% of the merger cases has an outcome effect for the Dutch consumer that is lower than one million euro.

Table 25 and table 26 in the appendix show some statistics of the outcome effects of the merger cases and table 17 shows how much each effect contributes to the total outcome effect. As can be seen in this table, the revenue effect is corrected for the overestimation of the relevant sales, as I explained in chapter 3. Compared to the other two effects the allocative effect is small, it contributes only 0,3%.

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<sup>63</sup> This is except the market for sale of Dutch type cheese to specialized cheese wholesalers and modern retailers.

	Total revenue effect	Total allocative effect	Total productive efficiency effect
Million	268,4	1,6	271,6
Per cent	49,5%	0,3%	50,2%

Table 17 - Merger cases (92): outcome per economic effect

### 5.3 Antitrust cases

In chapter 4 (the data and methodology) I described that of the 121 European antitrust cases between 2000 and 2009, 23 cases were relevant for the Dutch consumer and that I was able to estimate an outcome effect for 11 cases. Figure 10 shows the three year moving average of these eleven cases.

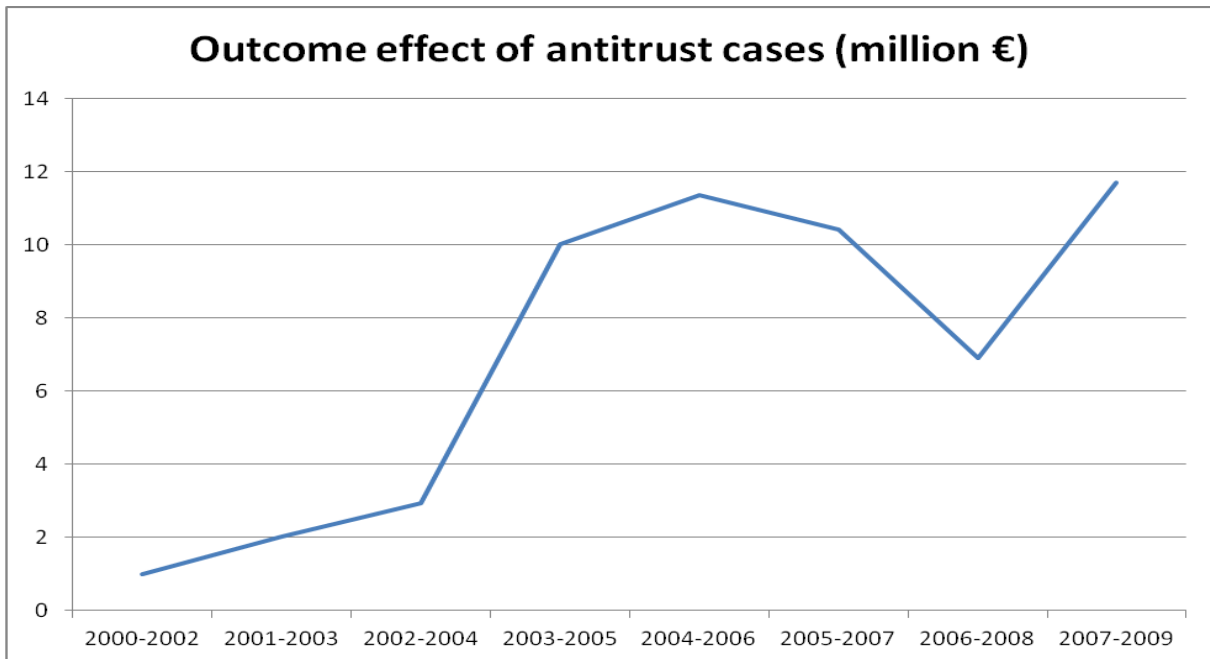


Figure 10 - Antitrust cases: outcome effect

As is showed in figure 10 and in table 18 the total outcome effect from antitrust cases between 2000 and 2009 is almost 100 mln. Like with cartel and merger cases, the outcome effect of antitrust cases is strongly determined by some large cases. The three year moving average fluctuates between 1 million (2002) and 12 million (2009).

Year	Outcome effect (million €)	3-year moving average (million €)	Number of cases
2000	0,0		0
2001	1,1		1
2002	1,9	1,0	1
2003	3,1	2,0	2
2004	3,8	2,9	1
2005	23,1	10,0	1
2006	7,1	11,4	2
2007	1,1	10,4	1
2008	12,6	6,9	1
2009	21,5	11,7	1
<b>Total</b>	<b>75,3</b>		<b>11</b>

Table 18 - Antitrust cases: outcome per year

➤ Cases with largest outcome effect

Table 19 shows the three antitrust cases with the largest outcome effect. Together these three cases are responsible for 76% of the total outcome for the Dutch consumer from European antitrust cases between 2000 and 2009.

Case	Year	Outcome	% of total outcome 2000-2009	Relevant geographic markets of the cartel
<b>Generics / Astra Zeneca</b>	2005	23,1	30,7%	Belgium, Denmark, Germany, the Netherlands, Norway and the United Kingdom
<b>Intel</b>	2009	21,5	28,5%	Worldwide
<b>CISAC / BUMA</b>	2008	12,6	16,7%	EEA

Table 19 - Antitrust cases: largest cases

Table 27 in the appendix shows some statistics of the outcome effects of the cartel cases..



#### 5.4 Total outcome effect

In the previous three sections I have described the cases of the European Commission for cartels, mergers and antitrust cases and the corresponding outcome effects for the Dutch consumer. In this section I summarize the results and give an overview of the total outcome effect of European competition policy. Next to that, I use the estimates of the NMa for the outcome of their competition policy to give an estimate of the total outcome effect of competition policy in the Netherlands.

➤ Total outcome effect from European competition policy

Table 20 shows that the total outcome effect of European competition policy over the years 2000 – 2009 resulted in an outcome effect for the Netherlands of at least 898,3 million. Figure 11 shows the three year moving average of the total outcome effect and gives an overview of the contribution per policy area. From figure 11 is clear that the most important policy area with respect to the outcome effect is merger control, this is also shown by table 20. Merger control contributed more than 60% of the total outcome effect. Cartel prosecution only contributed a significant amount from 2006, mainly because of the removal of the Dutch Beer cartel (outcome effect 110 mln.). Antitrust cases contribute maximal 39% tot the total outcome effect in 2005. For mergers the maximum share of the total outcome effect is 94% in 2000 and for cartels this is 85% in 2007.

	Antitrust	Cartel	Merger	Total (million €)	3- year moving average
2000	0,0%	5,6%	94,4%	100,0	
2001	0,8%	18,2%	81,0%	129,6	
2002	2,7%	22,8%	74,5%	68,5	99,4
2003	5,9%	16,6%	77,5%	53,1	83,7
2004	8,2%	12,2%	79,6%	46,7	56,1
2005	21,7%	4,7%	73,6%	106,6	68,8
2006	12,5%	33,0%	54,4%	56,5	69,9
2007	0,6%	85,6%	13,8%	188,4	117,2
2008	13,4%	36,9%	49,7%	94,0	113,0
2009	39,1%	4,3%	56,6%	54,9	112,4
<b>Total</b>	8,4%	31,3%	60,3%	898,3	

Table 20 - Total outcome per policy area

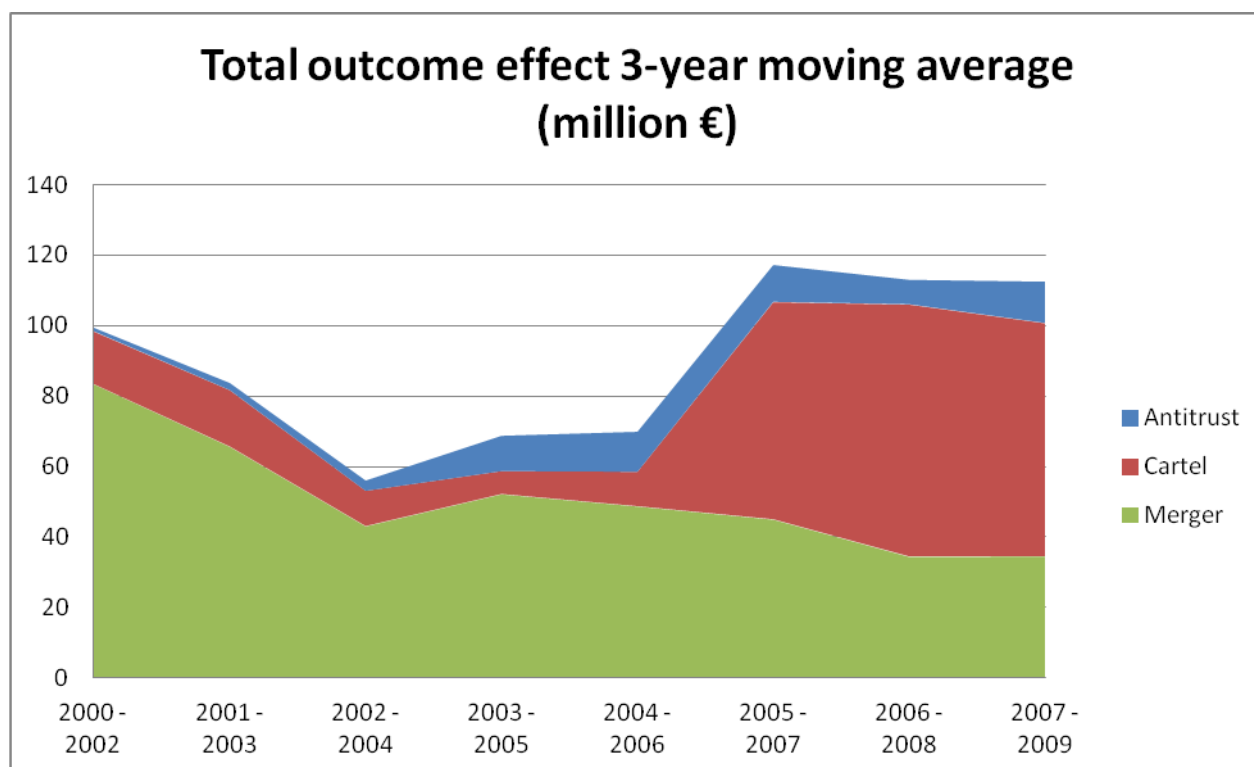


Figure 11 - Total outcome: 3-year moving average

The year with the highest outcome effect is 2007 with 188 mln. The year with the lowest outcome effect from European competition policy is 2004 with 47 mln. The three year moving average fluctuates between 117 mln (2007) and 56 mln (2004).

➤ Total outcome effect of competition enforcement in the Netherlands

In the previous section I described the outcome effects of European competition policy for the Dutch consumer. In this section I give the total outcome effect of competition policy in the Netherlands. That is to say the sum of NMa competition enforcement and European competition policy. The outcome effect of NMa competition enforcement is described in section 3.1.

Table 21 shows the total outcome effect for the Dutch consumer from competition policy over the years 2000 – 2009. The total outcome effect from competition enforcement for the Dutch consumer in this period is more than 5,1 billion euro. The NMa contributes the largest part to this outcome effect. In fact, the outcome effect for the Dutch consumer from the NMa is 4,7 times the outcome effect of DG Comp. The three year moving average fluctuates between 422 million (2004) and 637 million (2005). It should be noted that I have included the outcome effects of regulation by the NMa in the energy market and public transport market. As I described in chapter 4, I have used the average of the years 2002 – 2009 to calculate an outcome effect for the years 2000 and 2001.

In million €	Total outcome from NMa cases	Total outcome from DG Comp cases	Total	3- year moving average
2000	422	100	522	
2001	422	130	552	
2002	250	69	319	464
2003	487	53	540	470
2004	361	47	408	422
2005	857	107	964	637
2006	403	57	460	610
2007	52	188	241	555
2008	714	94	808	503
2009	254	55	309	453
<b>Total</b>	4224	898	5122	

Table 21 - Total outcome effect: DG Comp and NMa

### 5.5 Total outcome effect with methodology of other competition authorities

Up to now, I described the results of the outcome calculation with the methodology of the NMa. In this last section of the results I show the outcome effect as calculated with the methodologies of other competition authorities. Table 22 shows the outcome effect as calculated with the methods of different competition authorities per year and per policy area. Important to note is that the FTC has no cartel cases, so I did not estimate an outcome effect for this policy area for the FTC.

What is striking is the large difference between the outcome with the methodology of DG Competition and the OFT on one hand and the NMa on the other hand. For mergers the outcome of DG Competition is more than five times as large as with the methodology of the NMa. DG Comp uses a rule of thumb for mergers of 10% where the NMa uses a rule of thumb of 1%, next to that the NMa takes an effect of 1% for productive efficiency and makes a correction for the allocative effect.

For cartels the outcome effect of DG Competition is almost four times the outcome effect of the NMa. The rule of thumb for the price change is the same (10%), but DG Competition estimates discounted future savings for five years, where the NMa takes a one year estimate. Like with mergers, the NMa also takes the effect on productive efficiency (1%) and a correction for the allocative effect into account. The outcome effect of the OFT with respect to cartels is almost five times larger than the the outcome effect of the NMa. Like I described in chapter 3.3, the OFT uses a 10% rule of thumb for the price change, but expects the cartel to continue for at least six years without the intervention of the OFT (future savings discounted by 3,5%).

	OFT			DoJ			FTC		DG Comp			NMa		
Year	Merger	Cartel	Antitrust	Merger	Cartel	Antitrust	Merger	Antitrust	Merger	Cartel	Antitrust	Merger	Cartel	Antitrust
<b>2000</b>	378,6	27,3	0,0	198,8	5,9	0,0	116,4	0,0	473,2	23,1	0,0	94,4	5,6	0,0
<b>2001</b>	421,2	109,0	0,2	221,1	23,4	0,2	129,5	0,6	526,5	92,4	2,1	105,0	23,6	1,1
<b>2002</b>	204,7	76,5	0,4	107,5	15,9	0,4	62,9	1,4	255,9	64,8	4,5	51,0	15,6	1,9
<b>2003</b>	165,3	42,4	0,3	86,8	9,1	0,3	50,8	0,9	206,7	36,0	3,1	41,2	8,8	3,1
<b>2004</b>	149,0	27,1	0,4	78,2	6,1	0,4	45,8	1,2	186,2	23,0	4,0	37,1	5,7	3,8
<b>2005</b>	314,0	24,4	2,0	164,9	6,0	2,0	96,6	6,1	392,5	20,7	20,1	78,4	5,0	23,1
<b>2006</b>	123,8	90,6	0,6	65,0	17,3	0,6	38,1	1,8	154,7	76,8	6,0	30,8	18,7	7,1
<b>2007</b>	104,3	776,8	0,2	54,8	159,1	0,2	32,1	0,6	130,4	658,6	2,0	26,0	161,4	1,1
<b>2008</b>	187,6	167,3	1,1	98,5	53,3	1,1	57,7	3,3	234,5	141,8	11,0	46,7	34,7	12,6
<b>2009</b>	124,6	11,1	3,1	65,4	2,6	3,1	38,3	9,4	155,8	9,4	30,8	31,1	2,4	21,5
<b>Total per area</b>	2173,1	1352,5	8,4	1140,9	298,7	8,4	668,2	25,4	2716,4	1146,6	83,7	541,6	281,4	75,3
<b>Total outcome</b>	<b>3533,9</b>			<b>1448,0</b>			<b>693,7</b>		<b>3946,7</b>			<b>898,3</b>		

Table 22 - Total outcome per year

The outcome of the NMa for antitrust cases is higher than most other competition authorities. This is caused by the fact that the NMa uses a price change of 10% as rule of thumb (and also a 1% productive efficiency effect), where the DoJ and the OFT use a 1% price change. This difference is partially reduced by the relevant turnover. The NMa takes as relevant turnover the turnover of the dominant firm(s) in the relevant market. The DoJ and OFT take the turnover of the relevant market as relevant turnover. For most antitrust cases this difference is small because most of these cases are abuses of a dominant position.

Figure 12 on the next page gives a graphical presentation of the yearly outcome effects per methodology of a competition authority. Although I remarked in chapter 3 that the calculation method of the NMa with respect to the calculation of the outcome of antitrust cases is not very conservative, this is in my database more than counterbalanced by the conservative methodologies for merger and cartel cases. Figure 12 clearly shows that the methodologies of DG competition and the OFT give higher estimates of the outcome effect than the methodology of the NMa. The methodology of the DoJ is also more conservative than the methodologies of DG Comp and OFT, but is less conservative than the methodology of the NMa. I have not included the outcome effect of the FTC, because it does not calculate an outcome effect from cartel cases. The outcome effect with the methodology of the FTC with respect to merger and cartel cases is larger than the outcome effect of the NMa. Hence, I conclude on the basis of my database that the methodology of the NMa gives the most conservative estimate of the outcome effect from competition policy.

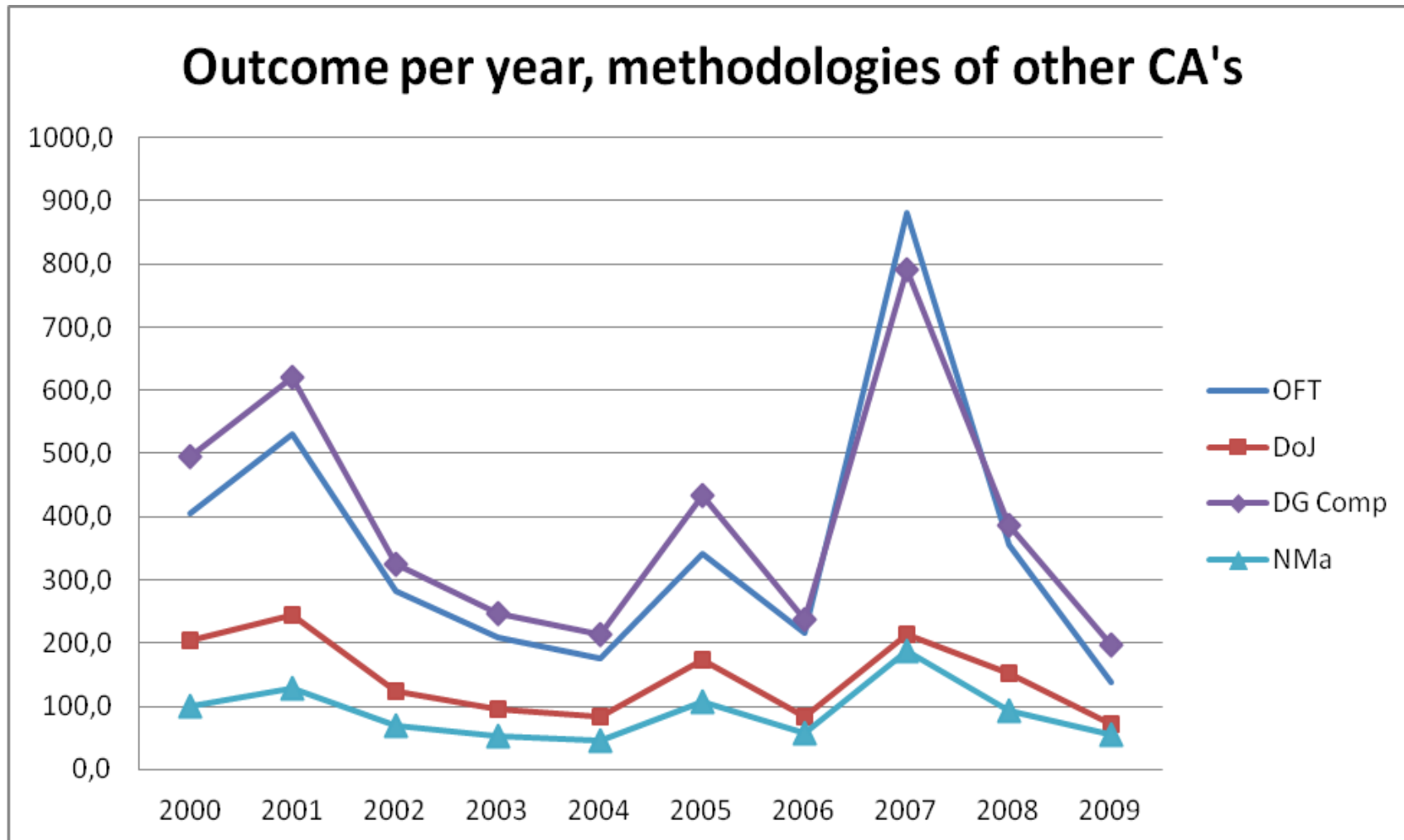


Figure 12 - Total outcome effect: methodologies of other competition authorities

## 6 Conclusion

In this paper I described my research on the outcome effects of European competition policy by Directorate General Competition for the Dutch consumer in the period 2000 – 2009. I started with an overview of the history of competition policy in the United States, the European Union and the Netherlands. I continued with a description of the economic effects of competition policy and a discussion of the literature about these effects. After the discussion of these economic effects, I have given an overview of the different methodologies of the competition authorities to calculate the outcome effect of competition policy. I compared these methodologies with the described economic effects. The main conclusion from this comparison is that the methodologies are probably conservative, because they do not take the deterrent effect and the productive and dynamic efficiency into account. The NMa is an exception, because it takes a productive efficiency effect into account and a makes correction for the allocative effect.

In chapter 3 I discussed the most remarkable differences between the different methodologies of the competition authorities. I discussed the cartel lifetime, because the differences are quite large on this point. I have stated that the NMa might be too conservative at this point. Regards the rule of thumb for cartel overcharge I stated that the competition authorities could use 15% instead of 10% and that it still might be a conservative estimate. I also discussed the rule of thumb for the price increase in cases with an abuse of dominant position. My conclusion on this point is that the methodology of the NMa is not conservative compared to the methodologies of other competition authorities. This area could be an interesting object for further research.

I continued my thesis with the calculation of the outcome effect from European competition cases for the Dutch consumer. In chapter 4 I described the way I have collected the data to calculate this outcome effect. I have calculated the outcome effects for the three policy areas (cartels, mergers and antitrust cases). I have shown that merger policy is the most important policy area for the Dutch consumer. The outcome effect from European competition over the period 2000 – 2009 totals € 898 million. The three year moving average moves between 56 million and 117 million.

In the second part in chapter 5 I compared the total outcome effect of competition enforcement by DG Comp with the outcome effect of competition enforcement by the NMa. The total outcome effect of competition policy in the Netherlands is 5,122 million over the period 2000 – 2009. The competition enforcement by the NMa contributes more than 82% of

this outcome effect and the competition policy of DG Comp the remaining part. The three year moving average fluctuates between 422 million and 637 million.

In the final section of the chapter on the results of my research I have shown the outcome effects of European competition policy for the Netherlands with the different methodologies of other competition authorities. The outcome effect fluctuates between 1448 million (DoJ) and 3947 million (DG Comp). Figure 12 illustrates the differences between the methodologies of the competition authorities. It shows that the methodology of the NMa is the most conservative compared to the other methodologies.



## 7 Bibliography

1. Aghion, P. Bloom, N., Blundell, R., Griffith, R. & Howitt, P. (2002), *Competition And Innovation: An Inverted U Relationship*, NBER Working Paper Series: Working Paper 9269.
2. Aghion, P., Blundell, R., Griffith, R., Howitt, P. & Prantl, S. (2006), *The Effects Of Entry On Incumbent Innovation And Productivity*, NBER Working Paper Series: Working Paper 12027.
3. Ahn, S. (2002), *Competition, Innovation And Productivity Growth: A Review Of Theory And Evidence*, OECD: Economics Department Working Papers no. 317.
4. Algemene Rekenkamer (2007), *Toezicht op mededinging door de NMa*, Den Haag: Algemene Rekenkamer.
5. Baker, J. (2003), The Case for Antitrust Enforcement, *Journal of Economic Perspectives*, Vol. 17 No.4, pp. 27–50.
6. Barendregt J. (1991), *Het Mededingingsbeleid In Nederland: Konjunkturgevoeligheid en effectiviteit*, Serie Research Memoranda, 1991 - 17, Vrije Universiteit.
7. Barros, P.P., Clougherty, J.A. & Seldeslachts, J. (2010), How to Measure the Deterrent effects of Merger Policy: Frequency or Composition?, *International Journal of the Economics of Business*, 17, 1-8.
8. Bergeijk, P. (2005), Fouten maken, *ESB*, 21-10-2005, p. 476.
9. Bergman, M. A. (2008), Quis Custodiet Ipsos Custodes? or Measuring and Evaluating the Effectiveness of Competition Enforcement, *De Economist*, 156, 387-409.
10. Besanko, D. & Spulber, D.F. (1989), Antitrust Enforcement Under Asymmetric Information, *The Economic Journal*, Vol. 99, No. 396, pp. 408-425.
11. Besanko, D. & Spulber, D.F. (1993), Contested Mergers and Equilibrium Antitrust Policy, *Journal of Law, Economics and Organization*, 9(1), pp. 1–29.
12. Bian, L. and D.G. McFetridge (2000), 'The Efficiencies Defence in Merger Cases: Implications of Alternative Standards', *Canadian Journal of Economics*, 33, pp. 297–318.
13. Owen, B.M. (2003), *Competition policy in Latin America*, John M. Olin Program in Law and Economics, Working Paper 268.
14. Buccirosi, P., Ciari, L., Fridolfsson, S.O., Duso, T., Spagnolo, G. & Vitale, C. (2008), A Short Overview Of A Methodology For The Ex-Post Review Of Merger Control Decisions, *De Economist*, 15, 453-475.
15. Buccirosi, P., Ciari, L., Duso, T., Spagnolo, G. & Vitale, C. (2009), *Deterrence in Competition Law*, GESY Discussion Paper, No. 25 (October).

16. Buccirosi, P. & Spagnolo, G. (2005) *Optimal Fines in the Era of Whistleblowers - Should Price Fixers Still Go to Prison?*, Lear Research Paper, No. 05-01.
17. Canton, E., Minne, B., Nieuwenhuis, A., Smid, B. & Steeg, M. van der (2005), *Human capital, R&D, and competition in macroeconomic analysis*, CPB Document, No 91, Den Haag:CPB.
18. Clarke, J.L., & Evenett, S.J. (2003), The Deterrent Effects Of National Anticartel Laws: Evidence From The International Vitamins Cartel, *The Antitrust Bulletin*, fall 2003, pp. 689-726.
19. Collie, D.R. (2000), State aid in the European Union: The prohibition of subsidies in an integrated market, *International Journal of Industrial Organization*, 18 (2000), pp. 867–884.
20. Competition Commission (2006), *Annual Report and Accounts 2005/2006*, London: Competition Commission.
21. Competition Commission (2010), *Estimated benefits to consumers from the CC's actions in mergers and market investigations between April 2009 and March 2010*. London: Competition Commission.
22. Connor, J.M (2010), *Price-Fixing Overcharges: Revised 2nd Edition*, Purdue University; American Antitrust Institute (AAI).
23. Connor, J.M., Helmers, C.G. (2007), *Statistics On Modern Private International Cartels, 1990-2005*, The American Antitrust Institute: AAI Working Paper, No. 07-01.
24. Connor, J.M. & Lande R.H. (2005), How High Do Cartels Raise Prices? Implications For Optimal Cartel Fines, *Tulane Law Review*, December 2005.
25. Crandall, R. & Winston, C. (2003), Does Antitrust Policy Improve Consumer Welfare? Assessing the Evidence, *Journal of Economic Perspectives*, 17-4, pp. 3-26.
26. Davies, S. W. (2010) *A Review of OFT's Impact Estimation methods*, Office of Fair Trading, OFT1164.
27. Davies, S. & Majumdar, A. (2002), *The Development of Targets for Consumer Savings Arising from Competition policy*, Report prepared for the Office of Fair Trading, OFT386.
28. Davies, S. & Ormosi, P. (2010), *Assessing Competition policy: Methodologies, Gaps and Agenda for Future Research*, CCP Working Paper 10-19, ESRC Centre for Competition policy.
29. De Jong, H.W. (1990), Nederland: het kartelparadijs van Europa?, *ESB*, 14-3-1990.
30. De Jong, H.W. (1992), Het kartelparadijs: de punten van bezwaar, *ESB*, 23-9-1992.
31. Deloitte (2007), *The deterrent effect of competition enforcement by the OFT*, OFT 962.

32. Department of Justice, The Antitrust Division (2011), *FY 2012 Congressional Budget Submission*, Washington: Antitrust Division.
33. Don, F.J.H., Kemp, R.G.M. & Sinderen, J. van (2008). Measuring the Economic Effects of Competition Law Enforcement, *De Economist*, 154(4), 341-348.
34. European Consumer Consultative Group (2011), *Report of the ECCG on monitoring indicators of the consumer movement*, Brussels: ECCG.
35. European Commission (2011), *Report on Competition policy 2010, Report from The Commission*, Brussels: European Commission.
36. European Commission (2010), *EU Competition Law Rules Applicable to Merger Control, Competition Handbooks*, Brussels: European Commission.
37. European Commission, DG Competition (2007), *Management Plan 2008*, Brussels: European Commission.
38. European Commission, DG Competition (2010), *Facts and figures on State aid in the Member States, Accompanying the Report From The Commission*, Brussels: European Commission.
39. European Commission, DG Competition (2010), *Management Plan 2010*, Brussels: European Commission.
40. Fallon, J. (2005), ACCC's Authorisation Decisions: Interpretation of Public Benefit, *Agenda*, Volume 12, Number 4, 2005, pp.335-350.
41. Farrell, J. & Katz M.L. (2006), The Economics of Welfare Standards in Antitrust, *Competition Policy International*, 2(2), pp. 3–28.
42. Gordon, F. & Squires, D. (2008) The Deterrent Effect Of Uk Competition Enforcement, *De Economist*, 156, pp. 411-432.
43. Hashmi, A. (2011), *Competition and Innovation: The Inverted-U Relationship Revisited*, National University of Singapore: Department of Economics.
44. Hulst, N. van (1996) De baten van het marktwerkingsbeleid, *ESB*, 81e jaargang, nr. 4053.
45. Hüschelrath, K. (2008), *Is it Worth all the Trouble? – The Costs and Benefits of Antitrust Enforcement*, ZEW Discussion Paper, No. 08-107, Mannheim: ZEW.
46. Kalbfleisch, P., Sinderen, J. van, Ende, A. van den, Oers, M. van, Bergeijk, P.A.G. van (2008) *Trust en Antitrust*, Redactie bureau Editor, Rotterdam
47. Kemp, R., Mulder, M. & Sinderen, J. Van (2010), *Outcome of NMa activities, A description of the calculation method*, NMa Working Papers, No. 1.
48. Kemp, R., Mulder, M., Sinderen, J. van, Borkent, K., Cordeweners, J. & Leliefeld, D. (2011), *Outcome van NMa-optreden resultaten voor 2009 en 2010*, NMa Working Papers No 4.

49. Kobayashi, B.H, (2001), Antitrust, Agency, and Amnesty: An Economic Analysis of the Criminal Enforcement of the Antitrust Laws Against Corporations, *The George Washington Law Review*, Vol 69 No. 5/6, pp. 715-744.
50. Kovacic, W. (2011), Private Monitoring and Antitrust Enforcement: Paying Informants to Reveal Cartels, *The George Washington Law Review*, 69, pp. 766-797.
51. Kovacic, W. & Shapiro, C. (2000), Antitrust Policy: A Century of Legal and Economic Thinking, *Journal of Economic Perspectives*, 14, pp. 43-60.
52. KPMG (2004), *Peer Review of Competition policy*, Report for the UK Department of Trade and Industry.
53. Kwink Groep BV & TU Delft, (2010), *Eindrapport: Evaluatie van de Raad van Bestuur van de Nederlandse Mededingingsautoriteit (NMa)*, Den Haag: Kwink Groep BV.
54. Landes. W.M. (1983), Optimal Sanctions for Antitrust Violations, *The University of Chicago Law Review*, Vol. 50, No. 2, pp. 652-678
55. Leslie, R. (2006), Antitrust Amnesty, Game Theory, and Cartel Stability, *The Journal of Corporation Law*, pp. 453-88 (2006).
56. Lyons, B. (2002), *Could Politicians Be More Right Than Economists? A Theory of Merger Standards*, University of East Anglia Centre for Competition & Regulation, Working Paper CCR.
57. Majoras, D. (2005), *A Dose of our Own Medicine: Applying a Cost/Benefit Analysis to the FTC's Advocacy Program*, Charles River Associates.
58. Ministry of Economic Affairs, The Netherlands (1995), *Nieuwe regels omtrent de economische mededinging (Mededingingswet)*, Kamerstuk 24 707, Den Haag: Ministry of Economic Affairs.
59. Ministry of Economic Affairs, The Netherlands (2008), *Letter to The Parliament: Onderzoek Marktwerkingsbeleid*, The Hague: Ministry of Economic Affairs.
60. Mortelmans, K.J.M. (2001), Naar een vernieuwd mededingingsrecht in Europa, *Ars Aequi, mei 2001*, p. 339-350
61. Nicolaides, P. (1999), *Enlargement of the EU and Effective Implementation of Community Rules: An Integration-Based Approach*, Maastricht: European Institute of Public Administration.
62. NMa (2006), *Jaarverslag 2005 NMa*, Den Haag: NMa.
63. NMa (2007), *Jaarverslag 2006 NMa*, Den Haag: NMa.
64. Nelson, P., & Sun, S. (2001), Consumer savings from merger enforcement: A review of the antitrust agencies' estimates, *Antitrust Law Journal*, 69, pp. 921-960.
65. Neven, D. J. (2006), Competition economics and antitrust in Europe, *Economic Policy*, vol. 21, no.48, pp. 742–91.

66. Neven, D. & Zengler, H. (2008), Ex-post evaluation of enforcement: a Principal-Agent Perspective. *De Economist*, 156, 477-490.
67. Niels, G. & Dijk, R. Van (2008), Competition policy: What Are The Costs And Benefits Of Measuring Its Costs And Benefits?, *De Economist*, 156, pp. 349-364.
68. OECD (2004), *Netherlands - Report On Competition Law And Institution*, Country Studies: Netherlands – Updated Report.
69. OECD, (2005), *Competition Law And Policy In The European Union*, Peer Review of Competition Law and Policy.
70. OECD (2005), *Evaluation Of The Actions And Resources Of Competition Authorities*, Competition policy Roundtables.
71. Office of Fair Trading (2005), *Positive impact: An initial evaluation of the effect of the competition enforcement work conducted by the OFT*, London: OFT 827.
72. Office of Fair Trading (2007), *Consumer savings from merger control*, London: OFT 917.
73. Office of Fair Trading (2007), *Positive impact 06/07: Consumer benefits from competition enforcement, merger control, and scam busting*, London: OFT 928.
74. Office of Fair Trading (2007), *Productivity and competition*, London: OFT 887.
75. Office of Fair Trading (2007), *The deterrent effect of competition enforcement by the OFT - Discussion document*, London: OFT 963.
76. Office of Fair Trading (2008), *Approach to calculating direct benefits to consumers*, London: OFT 955.
77. Office of Fair Trading (2008), *Positive impact 07/08: Consumer benefits from competition enforcement, merger control, market studies and market investigation references, and scam busting*, London: OFT 1007.
78. Office of Fair Trading (2009), *Positive impact 08/09 Consumer benefits from the OFT's work*. London: OFT 1102.
79. Office of Fair Trading (2009), *Evaluation of a sample of Consumer Enforcement Cases*, London: OFT 1139.
80. Office of Fair Trading (2010), *A guide to OFT's Impact Estimation methods*, London: OFT 1250.
81. Office of Fair Trading (2010), *Evaluation of OFT Competition Advocacy*, London: OFT 866.
82. Office of Fair Trading (2010), *OFT Response to the review of impact estimation methods*, London: OFT 1164r.
83. Office of Fair Trading (2010), *Positive Impact 09/10: Consumer benefits from the OFT's work*. London: OFT 1251.

84. Office of Fair Trading (2010), *Positive Impact 10/11: Consumer benefits from the OFT's work*. London: OFT 1354.
85. Oxera (2004a), *Costs and Benefits of Market Regulators, Part I: Conceptual Framework*, Oxford: Oxera.
86. Oxera (2004b), *Costs and Benefits of Market Regulators, Part II: Practical Application*, Oxford: Oxera.
87. Oxera (2009), *Should aid be granted to firms in difficulty? A study on counterfactual scenarios to restructuring state aid*, Report Prepared for the European Commission, Oxford: Oxera.
88. Renckens (2007), Welfare Standards, Substantive Tests, And Efficiency Considerations In Merger Policy: Defining The Efficiency Defense, *Journal Of Competition Law And Economics*, 3(2), pp. 149–179
89. Renckens, A. (2008), *Competition policy And The Role Of Communication: Decision-Making In Merger Control And The Internal Organization Of Cartels*, Antwerp: University of Antwerp.
90. Röller, L., Stenneck, J. & Verboven, F. (1999), Efficiency gains from mergers. *European Economy* 5, 2001.
91. Sabbatini, P. (2008), Assessing the impact of antitrust intervention by the Italian Competition Authority. *De Economist*, 156, pp. 491-505.
92. Sharma, K., Shankar S. & Venkatasamy, S. (2011), *Economies (Efficiencies),– An Essential Consideration In Merger Analysis*, publisher unknown.
93. Seldeslachts, J., Clougherty, J.A. & Barros, P.P. (2007), *Remedy for Now but Prohibit for Tomorrow: The Deterrent effects of Merger Policy Tools*, Discussion Paper SP II 2007 – 02, Wissenschaftszentrum Berlin.
94. SEO (2010), *Anticipatie Op Kartel- En Concentratietoezicht*, SEO-rapport nr. 2010-76.
95. Sinderen, J. (2007), *Tussen micro en macro: van Commissie Economische Mededinging naar Nma*, Overdrukkenreeks no. 2007/3, Den Haag: NMa.
96. Sinderen, J. Van & Kemp, R. (2008), The Economic Effect Of Competition Law Enforcement: The Case Of The Netherlands, *De Economist*, 156, pp. 365-385.
97. Sorgard, L. (2009), Optimal Merger Policy: Enforcement vs. Deterrence, *The Journal Of Industrial Economics*, 57(3), pp. 438–456
98. Thieffry, P. (1990), The New EC Merger Control Regulation, *The International Lawyer*, pp. 543 - 551.
99. Tingvall, P.G. & Poldahl, A. (2006), Is there really an inverted U-shaped relation between competition and R&D?, *Economics of Innovation and New Technology*, 15:2, pp. 101-118.

100. Twynstra Gudde (2005), *Onderzoek naar anticipatie op concentratiecontrole*, Amersfoort.
101. Voigt, S. (2006), *The Economic Effects of Competition policy: Cross Country Evidence Using Four New indicators*, University of Kassel and ICER, Torino.
102. Waarden, F. van & Drahos, M. (2002), Courts and (epistemic) communities in the convergence of competition policies, *Journal of European Public Policy*, 9:6 December 2002, pp. 913–934
103. Waller, S.W. (1992), Understanding And Appreciating EC Competition Law, *Antitrust Law Journal*, Vol. 61-1992, pp. 55-77.
104. Werden, G.J. (1996), A robust test for consumer welfare enhancing mergers among sellers of differentiated products, *Journal of Industrial Economics*, 44(4), pp. 409–413.
105. Werden, G.J. (2003), *The effect of antitrust policy on consumer welfare: What Crandall and Winston overlook*, Economic Analysis Group Discussion paper.
106. Werden, G.J. (2008), Assessing the effects of antitrust enforcement in the United States, *De Economist*, 156, pp. 433-451.
107. Werden, G.J. & Froeb, L.M. (1994), The Effects of Mergers in Differentiated Products Industries: Logit Demand and Merger Policy, *Journal of Law, Economics and Organization*, Vol. 10 (1994), pp. 407-426.
108. Werden, G.J. & Froeb L.M. (2002a), *Calibrated Economic Models Add Focus, Accuracy, and Persuasiveness to Merger Analysis, The Pros and Cons of Merger Control*, Swedish Competition Authority.
109. Wiel, H. Van der (2010), *Competition and innovation: Together a tricky rollercoaster for productivity*, PhD dissertation, CentER/Tilburg University.
110. Williamson, O.E. (1968), Economies as an antitrust defense: the welfare trade-offs, *American Economic Review*, 58 No. 1, pp. 18-36.
111. Zimmerman, J.E. & Connor, J.M. (2005), *Determinants Of Cartel Duration: A Cross-Sectional Study Of Modern Private International Cartels*, Draft August 2, 2005.

## 8 Appendices

### 8.1 Appendix 1 – Distribution of outcome

➤ Distribution of cartel cases

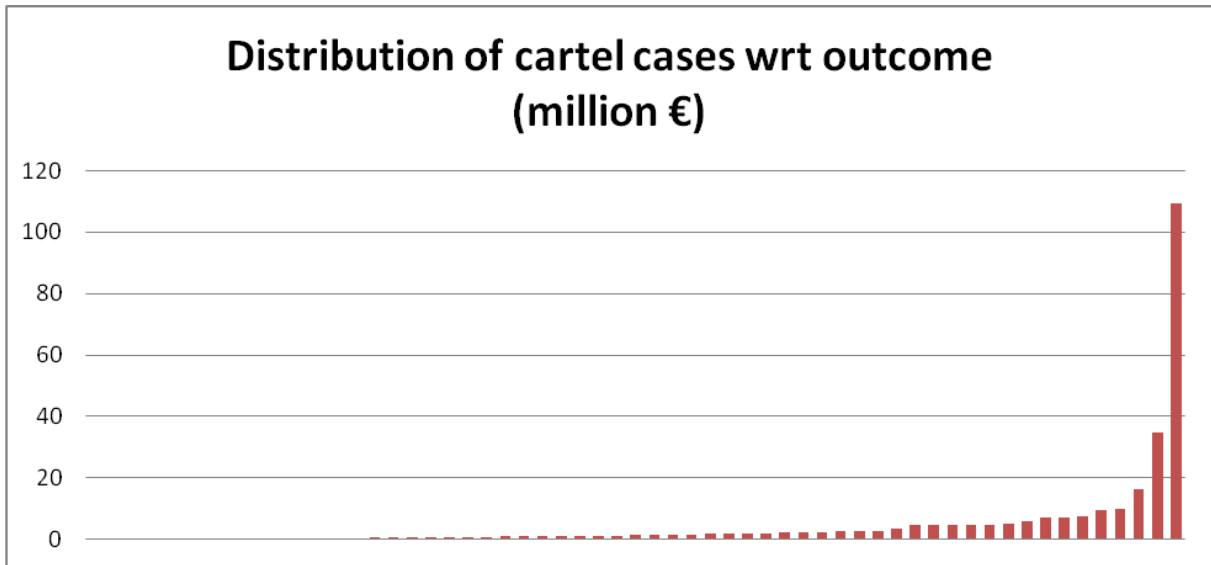


Figure 13 - Cartel cases: distribution of outcome effect

➤ Distribution of merger cases (25)

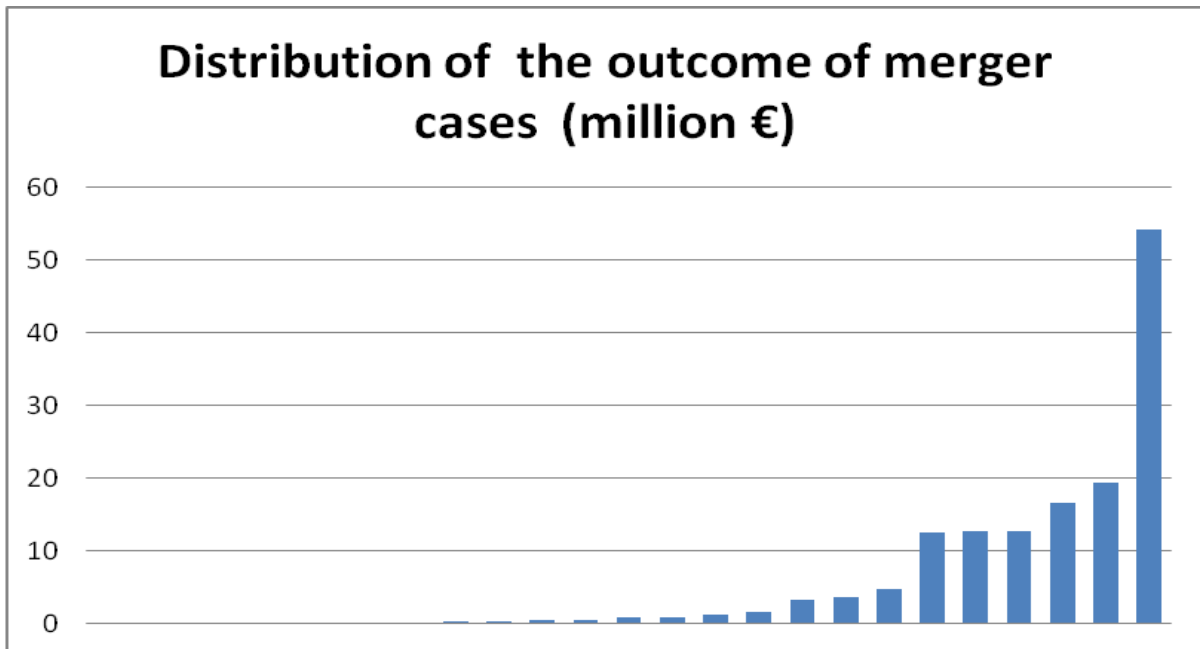


Figure 14 - Merger cases (25): distribution of outcome effect



➤ Distribution of merger cases (92)

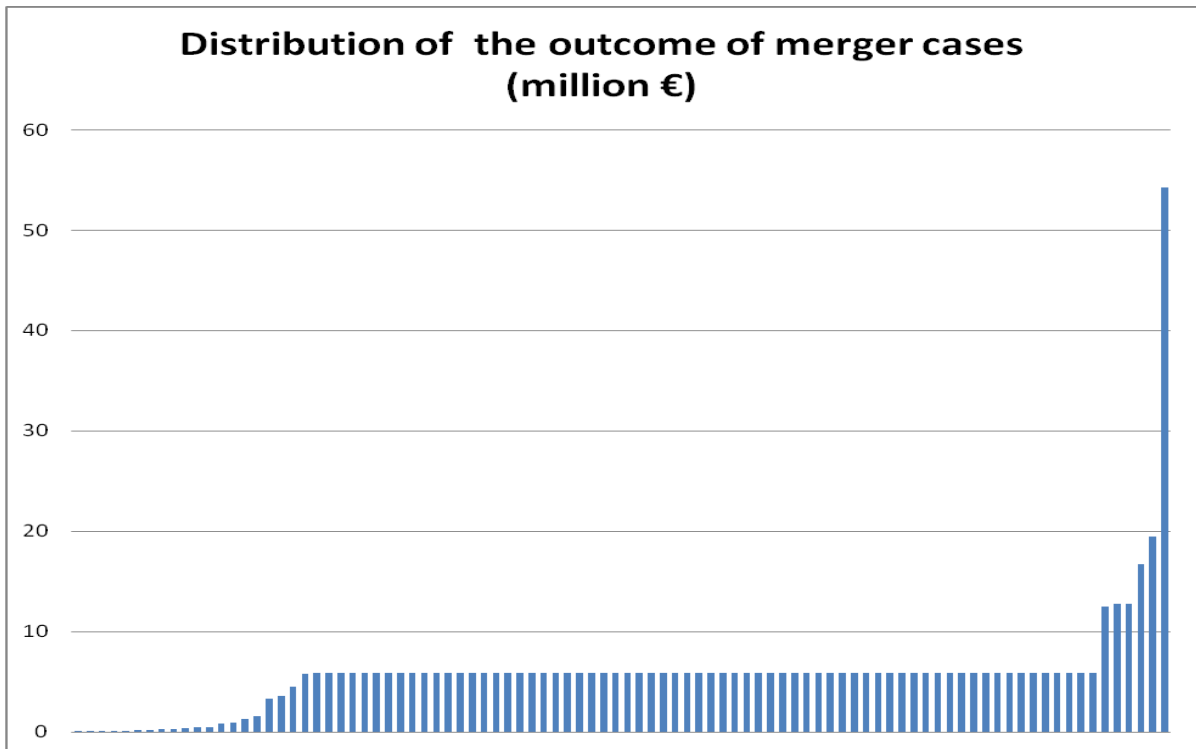


Figure 15 - Merger cases (92): distribution of outcome effect

➤ Distribution of antitrust cases

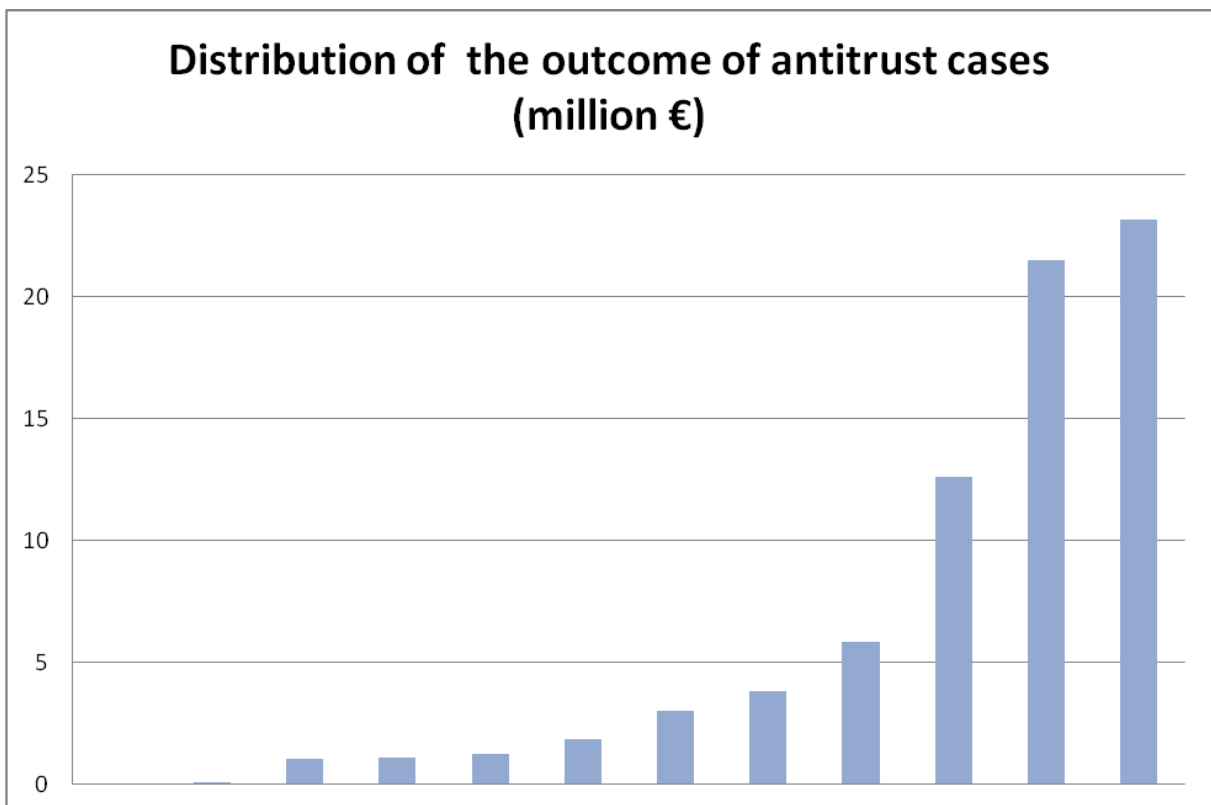


Figure 16 - Antitrust cases: distribution of outcome effect

**8.2 Appendix 2 – Cartel overcharge**

Percentage overcharge range	Number of observations	Mean average (%)	Percentage of total
Zero or less	91	0%	8%
0.1-9.9	153	6%	14%
10.0-19.9	232	14%	21%
20.0-29.9	163	24%	15%
30.0-39.9	129	35%	12%
40.0-59.9	136	48%	13%
60.0-79.9	73	68%	7%
80.0-99.9	17	90%	2%
100.0-199.9	55	133%	5%
200 to 886	40	434%	4%
<b>Total</b>	<b>1089</b>	<b>46%</b>	<b>100%</b>

Table 23 - Cartel overcharge in %<sup>64</sup>

<sup>64</sup> From Connor (2010) with changes.

### 8.3 Appendix 3 – Statistics

Outcome effect of cartel cases (million €)	
Number of cases	59
Std deviation	14,8
Mean	4,8
Median	1,3
% < 1 million	46%

Table 24 - Cartel cases: statistics

Statistics merger cases (million €)	
Number of cases	25
Mean outcome	5,9
Median outcome	0,9
Standard Deviation	11,7
% < 1 million	56%

Table 25 - Merger cases (25): statistics

Statistics merger cases (million €)	
Number of cases	92
Average outcome	5,9
Median outcome	5,9
Standard Deviation	6,0
% of cases < 1 million	15,2%

Table 26 - Merger cases (92): statistics

Statistics antitrust cases	
Number of cases	11
Average outcome	6,8
Median outcome	3,0
Standard Deviation	8,4
Outcome effect <1 million €	9,1%

Table 27 - Antitrust cases: statistics