

An economic analysis of EU competition policy on vertical mergers

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Introduction

In the past years serious media attention has been given to competition cases in the EU. Especially the Microsoft cases were widely debated, due to the large fines involved¹. There is no debate about the need for competition policy on EU level, an internal market requires special competition policy. While it is important to have this competition and antitrust enforcement, sometimes the effectiveness can be questioned. For example some counter-effective arguments were used in the Volvo/Scania² case.

One can hardly doubt the immense influence EU competition policy has on the economy. For this reason it is of vital importance that this policy is economically effective.

It is relevant that this competition policy is regularly compared to economic theory and updated when significant flaws are found. It would be virtually impossible to investigate the entire EU competition policy at once, this is why we chose to narrow our problem down to vertical mergers. This concerns mergers between firms that are vertically related, thus they are either buyer or supplier to each other. The economic literature on vertical integration is especially interesting because there have been many different opinions and schools of thought. Policy on vertical mergers has shifted during the years from strict to restrained and back, based on what economists thought at the time.

The main problem of this thesis will be: *Is EU competition policy on vertical mergers consistent with economic theory?*

It is normal that this policy is not always updated when new theories are being developed, it takes some time for scientists to reach a consensus. After this, policy makers still have to implement these theories and practitioners have to change their way of work. The purpose of this thesis is to find out whether competition policy on vertical mergers is in line with the established economic theory and to identify possible new theories that could be looked at when this policy is reviewed.

¹ See <http://ec.europa.eu/competition/antitrust/cases/microsoft/> for more information on these cases.

² Case No COMP/M.1672, the reasoning used by both the merging companies and the Commission contained some flaws from an economic perspective.

Methods

In order to answer our main problem, several topics require investigation. The setup of this thesis is straightforward, to be able to judge the EU competition policy on vertical mergers from an economic perspective we will need to find out what economic theory says on vertical integration. From an analytical perspective it makes sense to describe the EU policy as it is now, before we will try to evaluate this. This policy does not only consist of guidelines and written law, but needs to be applied to real cases. We will discuss three recent cases in the chemical industry to find out what happens in practice.

When a clear picture of both the economic theory and the EU policy has been given, we can compare the two and answer our main problem. This allows us to conclude whether EU competition policy on vertical mergers is in line with economic theory and make policy recommendations for the future.

Chapter 1: Economic theory on vertical integration

1.1 Introduction

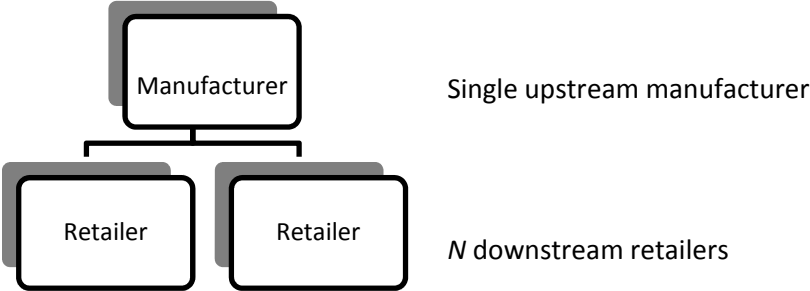
If we want to be able to judge whether EU competition policy is consistent with economic theory, we will first have to look for the effects that are generally recognized by economists. There has been much debate on the extent of some of the effects of vertical integration on competition and welfare, but we will try to find a consensus and create a framework for making policy decisions. To illustrate why vertical mergers exist and why there is need for competition policy on vertical mergers we will start with some abstract models of a vertical industry and look at the effects that play a role. We will see that vertical mergers can potentially increase welfare due to the mitigation of double marginalization problems, thus enhancing welfare for both the firms and consumers. After looking at the positive effects we will move on to the foreclosure theories that explain the need for competition policy on vertical mergers. We will study the shift from the original foreclosure theories to the modern theories on vertical mergers that exist today.

Apart from the straightforward foreclosure debate we will also take a brief look at some other economic considerations that should be taken into account, such as the level of product differentiation and the possible facilitation of collusion.

Looking at these models enables us to find a consensus and identify the main effects that play a role in vertical integration settings, later on this should allow us to give policy recommendations for assessing merger cases.

1.2 Double marginalization

To get a basic idea of the effects that play a role in vertical industries we consider a simple model, although too simplistic to give direct applicable policy recommendations it does give an illustration of some important effects.



Consider one manufacturer producing a good in the upstream industry that is an input to n retail firms in the downstream industry. For example the manufacturer produces shoes which get sold to the consumers through the retailers³. The downstream firms compete with each other on quantities. The manufacturer chooses the wholesale price w that he charges to the downstream firms and faces marginal costs c . The retailers choose the retail price P and face marginal cost w . Suppose demand is given by $P(Q) = a - bQ$, individual outputs of the retailers are denoted by q_i where $i \in \{0, 1, \dots, n\}$.

By backward induction one can calculate the equilibrium strategies and profits⁴.

$$\pi^{man} = \frac{n(a-c)^2}{4b(n+1)} \text{ with } \lim_{n \rightarrow \infty} \frac{(a-c)^2}{4b} \quad (1.1)$$

$$\pi^{ret} = \frac{n(a-c)^2}{4b(n+1)^2} \text{ with } \lim_{n \rightarrow \infty} 0 \quad (1.2)$$

$$q_i^{ret} = \frac{a-c}{2b(n+1)} \quad (1.3)$$

What is especially interesting is comparing the price that arises from this model P_{vert} with the optimal industry price P_{ind} ⁵.

$$P_{vert} = \frac{(n+2)a+nc}{2(n+1)} > P_{ind} = \frac{a+c}{2} \quad (1.4)$$

Some basic conclusions follow from this, the price in this vertical setting is higher than the optimal industry price. This means that by charging a lower price both the manufacturer and the retailers could profit. To explain how this suboptimal equilibrium emerges we have to look at the profit functions the firms optimize.

$$\pi_i^{ret} = (a - bq_i^{ret} - b \sum_{j \neq i} q_j^{ret} - w)q_i^{ret} \quad (1.5)$$

$$\pi^{man} = (w - c)(a - b \sum q_i^{ret}) \quad (1.6)$$

³ Note that this is just an illustrative example as shoes are probably a differentiated product and this model might not apply to them.

⁴ For proof see the Appendix

⁵ This is the industry profit maximizing price.

The problem starts at the retailers, they optimize their profits by taking into account the marginal costs w . However they do not take into account that an extra unit output will also generate profits for the manufacturer. The manufacturer on his part, does not take into account that if he increases w the downstream profits will go down. This problem is commonly known as the double marginalization problem and can be solved in a number of ways. Both the use of optimal two part tariffs and vertical mergers can solve or mitigate this problem.

Besides the too high price a few more intuitions follow from our basic model. As the number of retailers increases, the profits of the retailers go down (1.2) and eventually approach 0. Oppositely as the number of retailers increases the manufacturer's profits (1.1) will go up and eventually approach monopoly profits. More competition in the downstream industry is beneficial to the upstream firm, as profits are shifted upwards⁶.

This principle also holds for other types of effort to increase sales by one level in the industry, such as service. A retailer that provides service will not take into account that an additional unit of service will also increase upstream demand. An integrated firm would recognize this and would provide more service than un-integrated firms would.

If more downstream firms are involved there can be a free-rider problem. Because the amount of service offered by one firm raises the general demand for the final good, all of the downstream firms will be reluctant to offer an additional unit of service as they can also benefit from others providing the service. Vertical integration is capable of mitigating this problem.

Suppose that in these models the upstream firm merges with a downstream firm, this means that they will internalize the externalities they impose on each other. The integrated firm will realise that if it charges a lower price, its total profits will increase. Which will lead to a more efficient equilibrium, where generally both the consumers and the firms benefit. The same principle holds for the service provision example, when there is a monopoly upstream and downstream there is an under-provision of service due to the externalities. A vertical merger would cause the externalities they impose on each other to be internalized and they will move to a more efficient allocation, again both firms and consumers will benefit from such a merger. While we recognize that vertical integration is not the only solution to these efficiency problems, for instance the usage of vertical restraints can mitigate these problems in a similar way, we will take these effects into account while assessing the effects of a vertical merger on welfare.

⁶ For similar results and models see Motta (2004;310)

It appears that vertical integration would have a positive effect on welfare, which brings us to the question why there is need for competition policy on vertical mergers. Suppose, in our first model, there are several downstream firms and one upstream firm and the upstream firm merges with one of the downstream firms. The initial intuition we found in our model, that the manufacturer benefits by more competition in amongst the retailers, now gets altered because the integrated firm will have ambiguous incentives. On the one hand it will benefit from more fierce competition because it is able to shift profits upwards, on the other hand the downstream division will not benefit as fiercer competition decreases profits there.

The problem is that the integrated firm realizes that it could stop supplying to the downstream rival and simply reach monopoly profits. In our example the resulting price might not harm welfare more than in the initial situation⁷, but under different circumstances it could harm welfare and possibly deter entry into the market.

We now move on to a more thorough investigation on the full implications of this foreclosure effect.

1.3 Traditional foreclosure theories

During the 1950's to 1970's the competition policy on vertical mergers was enforced strictly, this was based on a simple foreclosure theory. Competition authorities were afraid that a vertical merger would cause the integrated firm to refuse to supply downstream rivals⁸. This would give the integrated firm a more dominant position, would force the rivals out of the market and cause entry deterrence.

Economists, mainly authors associated with the Chicago School⁹, began to criticize this policy. In their opinion the foreclosure theory was logically flawed, the integrated firm would not have an incentive to stop supplying rivals because this would not be profitable. Their analysis was based on two models similar to the one we used in section 1.2. In one version they used an upstream monopolist and perfect competition among the downstream producers¹⁰. In that case a vertical merger between the upstream firm and one of the downstream firms would not result in higher profits for the integrated firm, nor in higher prices. And as there are usually costs involved with mergers, firms would not have an incentive to vertically integrate. Even if the firm would choose to merge with a downstream firm it

⁷ This is because double marginalization gets eliminated when the integrated firm forecloses all rivals, although this will lead to monopoly prices, it could still be better for consumers, this depends on the number of firms in the downstream industry ex ante.

⁸ Or similarly it would not buy from rival upstream firms, these foreclosure effects are thought to be analogous. Note that refusing to supply is the extreme variant of choosing a less competitive strategy in the upstream market.

⁹ Bork (1978) and Posner (1976) are representatives of this school of thought.

¹⁰ These models can be considered as the two extreme versions of the simple model we used in 1.2, one with $n=\infty$ and one with $n=1$.

would be indifferent between foreclosing and not foreclosing, because it is already able to extract all industry profits. The other model they used involved both a monopolist in the upstream and downstream industries. This would lead to a lower final goods price and higher profits for the firms. This analysis called for a more favourable treatment of vertical merger cases¹¹. However different economists soon began to criticize the foreclosure theory expressed by the Chicago School, because of the fact that in their models no un-integrated firms coexisted with the integrated firm after the merger¹². We will discuss three of the pioneer works that lay the foundation for modern foreclosure theories.

Salinger (1988) considers a model where both the upstream and downstream market is characterized by an oligopolistic competition. He concludes that if foreclosure does not occur after vertical integration the price of the final good will decrease due to the mitigation of the double marginalization problem, however if foreclosure does occur it is possible that the price of the final good increases in such a way that it dominates the efficiency effect. He recognizes that his assumptions are too abstract to be able to determine which mergers are welfare enhancing and which mergers harm welfare. The main difference between this work and the next is that Salinger (1988) uses a model that contains strategic substitutes, while Ordover et al. (1990) uses strategic complements¹³.

Ordover, Salop and Saloner (1990), which we shall refer to as OSS from now on, considers a straightforward model with two upstream firms that compete on prices with homogeneous goods and two downstream firms that compete with heterogeneous goods. They conclude that vertical integration can occur as an equilibrium outcome¹⁴. This is due to the fact that the integrated firm realizes that it can exit the upstream market. This allows the other upstream firm to raise its price above marginal costs¹⁵, which means the un-integrated downstream firm will now face higher costs than the integrated firm¹⁶. Essential for the profitability of the foreclosure in their model is the integrated firm's ability to commit to not undercutting the upstream rival.

¹¹ Rosengren & Meehan (1994) do not find an empirical basis for the original foreclosure theory, which would call for a more favorable treatment of vertical mergers by itself.

¹² See the assessment of the Chicago School models by Salinger (1988)

¹³ The Salinger (1988) model was later extended by Gaudet & Long (1996)

¹⁴ They show that after one upstream and downstream firm integrate, the optimal response for the other firms is to remain un-integrated.

¹⁵ Before integration the price was equal to marginal cost, due to a two player Bertrand homogeneous goods game. Note that as soon as there is a 3rd upstream firm the OSS results do not hold.

¹⁶ This is an example of the *raising rival's costs* strategy expressed by Salop & Scheffman (1983) and Salop & Scheffman (1987), they consider two types of strategies, either decreasing your own costs or raising the costs of competitors. Only the latter is thought to be anticompetitive.

Hart & Tirole (1990) consider a similar model as OSS, but with some more general assumptions. For instance they allow un-integrated firms to use two-part tariffs. Because of this their model is far more complex than in OSS, which can be considered as a special case of their model. They conclude that, as in OSS, it is possible for integrated firms to benefit from foreclosure, under certain conditions. In their model vertical integration is a means for an upstream monopolist to commit to not supplying other downstream firms, without this integration commitment would be a problem. They recommend that competition authorities should be aware of vertical mergers where one of the firms is especially efficient. The problem with this is that the possible gains from the merger would be larger in that case, so it is still hard to make clear policy assumptions based on this model.

These models gave a more theoretically based framework on how to assess vertical mergers, but some problems were still involved. The OSS model received some criticism by Reiffen (1992), which to an extent also applies to the other models. First of all OSS make abstract assumptions, which means it will be very hard to deduce policy recommendations that hold in the real world¹⁷. For instance the problem with a 3rd Bertrand competitor in the upstream market would eliminate the effect of their result, such a scenario could easily occur in the real world. Reiffen (1992) also points out that the link between the ability to make price commitments and the vertical integration still has not been proven by the OSS model, the OSS conclusions still rely on the ability to make a commitment not to undercut the rival in the upstream market.

Some, perhaps more relevant for policy making, critique by Riordan (1998) was that while these models do identify the problems involved with foreclosure, it is still very hard to make an assessment as to whether mergers are welfare enhancing. The foreclosure effect might negatively influence welfare, but the efficiency effects are not yet incorporated sufficiently. To be able to determine whether a vertical merger is welfare enhancing we need to determine whether the negative effects involved with foreclosure are larger than the efficiency gains by mitigating the double marginalization problem, and the other changes in efficiency due to merging firms¹⁸.

These pioneer works on the foreclosure theory may not have been able to give direct applicable policy recommendations, but they did start a new way of thinking about vertical mergers and the associated problems. They show that foreclosure can in fact happen and vertical mergers affect the pricing incentives of integrated firms in the upstream market. Note that competition authorities

¹⁷ Higgins (1999) finds that when the foreclosure assumption is dropped vertical mergers can even be pro-competitive, as we see there still is debate about the extent of the foreclosure theory.

¹⁸ As with horizontal mergers the firms could become more efficient due to economies of scale and scope.

should also be aware of the possible entry deterrence because of foreclosure, it would be harder for new firms to enter the market if the incumbent has an incentive to foreclose them. To be able to assess the social desirability of vertical mergers several effects will have to be incorporated, both the negative foreclosure effect and the possible efficiency effects. Economists soon began to develop more sophisticated models that incorporated these effects.

1.4 Modern theories on vertical integration

So far it has been established that a vertical merger changes the incentives for the integrated firm in the upstream industry, which could lead to foreclosure, or less extreme, less competitive strategies for the integrated firm in the upstream market. By building more complex models that attempted to incorporate the welfare effects of vertical mergers¹⁹, economists found that there was a lot more that should be taken into account while judging vertical mergers. The first two effects, the efficiency gain and the foreclosure effect, provide an abstract welfare analysis but do not give much practical guidance. First we will look at the research that has been done on the market characteristics and vertical integration²⁰, it turns out that certain types of markets require specific considerations if they are subject to vertical mergers. Beside the market setups more effects of vertical integration have been recognized in literature, we will also consider the facilitation of collusion and the effects of vertical integration on the downstream market.

1.4.1 Different market types and vertical integration

Competition upstream and downstream

When looking at a vertical merger the first relevant information seems the characteristics of the market²¹, fortunately research has been done on vertical mergers in certain types of markets. The first characteristic that calls for attention would be the level of competition in the market²², where

¹⁹ Examples of these more sophisticated models are Chen (2001), Choi & Yi (2000) and Church & Gandal (2000). They come up with more applicable policy considerations than the original foreclosure models, we will discuss these later on.

²⁰ For instance de Fontenay & Gans (2005) for the degree of competition and Church & Gandal (2000) for markets with systems competition.

²¹ We will assume that the competition authorities are able to define the relevant product market, although in practice this might be difficult.

²² The initial foreclosure models took the two extreme versions of monopoly and perfect competition, however the cases in between are far more relevant for practical decisions. Reiffen (1992) already shows that in the presence of more competition some of the earlier results did not hold, however the exact effects of more competition were not yet clear.

both the upstream and downstream level of competition could potentially influence the strength of the efficiency and foreclosure effects we mentioned²³.

Hackner (2003) provides a benchmark test for the general rule of thumb used by the EC that mergers with a combined market share of 25% or less do not require further investigation. In order to test this rule he develops a model for when vertical mergers tend to be welfare diminishing. He finds some interesting characteristics to keep in mind when making policy decisions. In his model vertical mergers where the upstream market is relatively less concentrated than the downstream market tend to be less anticompetitive. It is important to notice that it is about the relative competition here, and not the absolute amount of competition in the upstream market. This would call for a different initial screening process²⁴, and ask for more weight in the investigation on the degree of upstream competition.

Final good type, good or system

Church & Gandal (2000) provide an interesting analysis of more complex market types, it involves two types of goods, specifically they use hardware and software, where the value of the hardware is determined by the availability of software for the platform, the so called market for systems. They find that there are two situations where foreclosure is a specific risk, that is if either the software or the hardware market is differentiated and the other is not. If both are differentiated or not differentiated foreclosure will not be profitable and thus there is no real need to worry about strategic foreclosure. In their analysis two important equilibria are found, first the interior foreclosure equilibrium. This occurs when hardware firms are highly differentiated and the marginal benefit of the second software variety relatively low is. In this situation the consumer surplus will be lower than in the initial state. The other equilibrium is that standardization equilibrium, it is interesting that in this scenario foreclosure occurs but the consumer welfare increases. This happens when there is relatively less differentiation between hardware products, the value of the software is not of influence here. This means that competition authorities should be especially aware of vertical mergers that involve competition of systems, and where one of the two types of goods is differentiated and the other is not. Keep in mind that the standardization equilibrium enhances welfare for consumers, and by that is not something we would want to forbid.

²³ de Fontenay & Gans (2005) show that upstream bargaining power towards downstream firms and strategic vertical integration incentives change for different levels of upstream competition. Due to the complexity of their model there is no complete consensus on the extents of these effects.

²⁴ Although he suggests a different initial screening process he also points out that these results are based on an abstract model and should not be overemphasized.

Avenel (2008) research the degree of vertical integration by abstracting from the traditional foreclosure debate. In his model firms have a choice of technologies. Upstream firms are often found as multi-technology firms, his example is the paper industry where firms can make market pulp which is sold and then used to make paper or directly make paper from liquid pulp. Integrated firms have an incentive to directly make paper from the liquid pulp, because this is more efficient. Integration in this situation could lead to a better coordination of the production process. He finds that any degree of vertical integration can occur in an equilibrium. One of the important insights is that most models of foreclosure use duopolies, however in models with more competition the degree of vertical integration does not have to be so high that foreclosure is a problem²⁵, which calls for a more favourable treatment of vertical mergers.

Matsushima (2009) analyzes the degree of downstream product differentiation as a result of vertical mergers. It concerns a Hotelling-type location model, firms differentiate along a linear city. Conclusions are that the integrated firm will have an incentive to differentiate more to increase profits, however the non-integrated firms will also benefit from this. The integrated firm will choose its location at the edge of the Hotelling line, which means it will differentiate as much as possible. This mitigates competition among the other downstream firms and increases their profits. The effect on welfare will be negative²⁶, thus this effect on product differentiation should be taken into account. However it concerns a specific model with results that are not very robust, they might change when inputs are no longer homogeneous or when there are several inputs.

Choi & Yi (2000) analyze a model where the upstream division of the integrated firm chooses to provide a specialized input for its downstream partner instead of the generalized input the rest of the upstream market competes on. This way it can commit to not undercutting rivals in the upstream market and profit from the *raising rival's costs* strategy²⁷. Anticompetitive foreclosure occurs in this model when the integrated firm chooses the specialized input over the generalized input. They explain this decision by the advantages of the downstream division that get internalized due to integration.

Cheng & Nahm (2007) look at complementary products and the double marginalization problem. Their model consists of two products, where one raises the value of the other product, but is

²⁵ As we have seen before other authors shared the view that foreclosure is less of a problem than often thought. Rosengren & Meehan (1994) show this in an empirical analysis.

²⁶ Note that not only the prices will increase but also the level of differentiation increases, consumers might value differentiation so that increase of prices does not necessarily diminish welfare.

²⁷ See Salop & Scheffman (1983) for the RRC strategy.

worthless alone. They find that for if the value of the main product is low, both products will be sold as a bundle and double marginalization exists. When the value of the product increases, for a certain range, there will not be a pure-strategy Nash equilibrium, however when it goes over a certain boundary the two products will be sold completely separately and no double marginalization will exist. These findings are relevant when looking at specific markets that concern main products, such as cell phones, and accessories, like headphones, AC/DC adapters etc. If the value of the main product in those markets is sufficiently high compared to the complementary product, there will not be an efficiency gain due to the mitigation of double marginalization.

1.4.2 Vertical mergers and upstream collusion

Many collusion cases involved vertically integrated firms, which raised suspicion that there might be a connection between vertical integration and collusion²⁸. Several authors have investigated this problem. Nocke & White (2007) find that vertical mergers will cause two effects, first the *outlet* effect, deviation from the collusion by upstream rivals will be less profitable because they cannot sell their product through the integrated firm's downstream division, this will make collusion easier to sustain. Secondly the *punishment* effect, it is not possible to punish an integrated firm as much as non-integrated firms because the downstream division of the integrated firm will make profits during the punishment phase, this would make collusion harder to sustain, however punishment by the integrated firm becomes more credible. This would lead to an ambiguous effect on collusion, however they show that the *outlets* effect will always be larger, consequently collusion will always be easier to sustain due to vertical integration. For the reasoning it is important to know that they do not assume that all firms will get an equal share of the collusive profits. The integrated firm would get a larger share because its incentives to collude decrease, but as long as the outlets effect is larger than the punishment effect re-allocation of profits allows collusion to be more stable than before. The results from their model are rather robust, no matter whether there is differentiated goods, homogeneous goods, quantity competition or price competition, in all these scenarios the results hold. This leads to an important effect that should be taken into account when making policy to assess vertical mergers, the facilitation of collusion could harm welfare.

Normann (2009) finds a complementary result to Nocke & White (2007), however he uses linear prices instead of two-part tariffs. He also concludes that a single vertical merger will always facilitate collusion in the upstream market, the effect on welfare in his model is less extreme. It is also important to notice that he draws a link between this facilitation of collusion and the foreclosure debate, the collusion will limit demand in the upstream market which is essentially a *raising rival's*

²⁸ Bernheim & Whinston (1990) is one of the first works that found a connection between vertical integration and collusion.

costs strategy as with foreclosure. Although the foreclosure effect is less strong than in the OSS result, there still is foreclosure in the broad sense.

Nocke & White (2010) take the now known connection between vertical integration and collusion into account and further investigate the specific conditions where mergers tend to facilitate collusion and when competition authorities should be aware. Their findings are in line with Nocke & White (2007), they recognize the same two effects of which the *outlets* effect is always dominant. They conclude that a vertical merger with a large downstream firm facilitates collusion more than a small downstream firm, so that the competition authorities should be aware of cases that involve large downstream divisions. They also find that it could be a remedy to divest some downstream divisions before allowing certain mergers.

Chen & Riordan (2007) find a connection between exclusive dealing²⁹ and vertical integration, the integrated firm is able to cartelize the downstream industry through exclusive dealing contracts. He hereby forecloses the upstream competitor from supplying to the downstream firms. These results however are less robust than the other models on the facilitation of collusion due to vertical mergers, but they do show that authorities will have to be aware not only of collusion in the upstream market but also in the downstream market.

The consensus in economic literature seems that vertical integration does in fact facilitate collusion, especially in the upstream market, but to a degree also in the downstream market.

1.4.3 Effects on the downstream market

An important insight was given by Chen (2001). We already established that vertical mergers affect the upstream market competition³⁰, but the effects of the merger on the downstream market have not been revealed. He shows that after a vertical merger the integrated firm will have an incentive to choose a less competitive strategy in the downstream market, because of the fact that it is not only a rival of the downstream firms but also a supplier. By choosing a less competitive strategy for its downstream division the integrated firm can raise profits due to the increased supply to the rivals in the downstream market. In the presence of switching costs, which is a fairly general assumption, the integrated firm can increase its prices in the upstream market and create more demand by lowering its output in the downstream market. This will raise total profits for the integrated firm and have an anticompetitive effect.

²⁹ Exclusive dealing refers to the situations where an upstream and downstream firm enter into a contract that prohibits at least one of the two to trade with competitors in the other firm's industry.

³⁰ See the earlier results from Hart & Tirole (1990) and Ordover, Saloner, & Salop (1990).

As we have seen in the last paragraph the downstream market also gets affected by the fact that the integrated firm could be able to force collusion in among downstream firms. Chen & Riordan (2007) Previously the negative effects of vertical integration were due to the effects on the upstream market, as we can now see the downstream market is also affected in several ways. When deciding on merger cases these effects should be taken into account as well as the upstream effects.

1.4.4 Customer foreclosure

Most models are designed for input foreclosure, the situation where an upstream firm refuses to supply to rival downstream firms. Customer foreclosure is usually thought to work analogous. The customer foreclosure theory is based on literature on exclusive dealing.

Customer foreclosure is based on the principle that a firm with downstream market power is able to refuse access to a sufficient customer base to upstream firms. This customer foreclosure allows the integrated firm to raise its price in the input market, by creating market power upstream.

From Salinger (1991) and Bernheim & Whinston (1998) follows that customer foreclosure is unlikely to occur if there is no double marginalization, and that anticompetitive customer foreclosure is possible if double marginalization is present.

Mathewson & Winter (1987) and Salinger (1991) show that backward integration by a monopolist will generally not lead to complete foreclosure. The downstream division of the integrated firm will usually keep both products, but it has an incentive to increase the price of the upstream rival's product. If the two products are relatively close substitutes this incentive is likely to be larger than the price decrease due to the elimination of double marginalization of the other product. This means that it is potentially harmful to consumers.

1.5 Conclusion

We first looked at some simple models that explain why vertical integration could occur and why there is need for competition policy on this type of mergers. Several welfare improving effects have been identified, vertical mergers mitigate the double marginalization problem and the under-provision of service. Additionally there might be efficiency gains due to economies of scale and scope, an effect generally acknowledged in horizontal merger cases which could also apply on vertical mergers. However the specific strength of these effects has to be approximated in merger cases and an estimation cannot be given ex ante. The need for competition policy on vertical mergers originates from the traditional foreclosure theory, vertically integrated firms were thought to exit either the upstream or downstream market in order to *raise rival's costs* and by that increase profits. This theory has been widely debated and more nuanced versions have emerged, however the foreclosure argument still holds. An incentive to foreclose rivals does exist for integrated firms, the

meaning of foreclosure, however, should be seen as a more broad effect. Choosing a less competitive strategy in the upstream market could be an alternative for integrated firms which raises total profits. It is also important to consider the possible entry deterrence from vertical mergers, which might not be obvious in the first place. Although foreclosure has been proven to be profitable in some situations, some authors are more reluctant to assume foreclosure and tend to think that it is less of a problem in practise. The profitability of foreclosure depends on many factors, but most commonly are the market shares of the merging firms and the upstream and downstream margins. Switching costs and product differentiation can also play a role.

Apart from these traditional effects of vertical integration more specific characteristic effects were found in literature, if we want to be able to assess policy decisions on vertical mergers we will first have to take a look at the market characteristics. The level of upstream and downstream competition has an effect on both efficiency gains and foreclosure, however the loss of welfare tends to get larger when there is less competition upstream. Economic literature also points out that it is not the degree of competition per se, but rather the ratio of competition between upstream and downstream markets that influences the welfare effects of a vertical merger.

Secondly the type of good should be looked at, there tends to be a larger concern for harmful integration when there is a market with competition of systems. So whether the final good is a simple product or there are complementary products makes a difference for the welfare effect of a merger.

The effect of vertical mergers on collusive incentives has been thoroughly investigated, several authors have found vertical integration to facilitate collusion in the upstream market. This is due to the fact that deviation from the collusive prices becomes less profitable for the non-integrated firms, because the deviating firm will not be able to sell its product through the integrated firm's downstream division. In the punishment phase the integrated firm will be able to make profits from its downstream division, which serves as cross-finance, making it harder to sustain collusion from the perspective of the integrated firm, but also making retaliation from the integrated firm more credible. The *outlet* effects is proven to be stronger, thus facilitating collusion, for very general assumptions, which means these results are very robust.

Not only the pricing incentives in the upstream market change due to vertical integration, an unnoticed effect has been recognized by Chen (2001). He finds, under relatively general assumptions, that compared to segregation the integrated firm will not only choose a slightly less competitive strategy in the upstream market, but it will also choose a less competitive strategy in the downstream market. This is due to the integrated firm being not only a rival but also a supplier of

other firms in the downstream market. The downstream market is also potentially affected by collusion through exclusive dealing contracts. The vertical merger creates multimarket interdependence and whether this is desirable depends on the switching costs and the degree of product differentiation.

The final possible anticompetitive effect from a vertical merger is customer foreclosure. This inverse variant of input foreclosure creates market power upstream by foreclosing access to a significant customer base. It is mainly based on literature on exclusive dealing and requires market power downstream.

We have seen that vertical mergers affect welfare in numerous ways, there are both positive and negative effects: potentially the merger could enhance welfare through efficiency gains, however foreclosure effects and the facilitation of collusion can harm welfare. When deciding on a case the extent of these effects will have to be estimated. The relevant details of the market will have to be taken into account, as different types of markets sometimes get affected in different ways by vertical integration.

Chapter 2: European competition policy on vertical mergers

2.1 Introduction to EU competition policy

After having seen the economic theory on vertical mergers, we move on to the policy of the EU. We will take a short look at the basic law that governs the regulatory authority and find that most of the policy on vertical mergers is laid down in the Non-horizontal merger guideline. A large part of this chapter will focus on this guideline and describe the main issues involved in the investigation of the Commission in merger cases. The policy is quite elaborate, we will try to describe the policy as clear as possible, without evaluating it from an economic perspective. The purpose of this chapter is merely to describe the policy as it is.

2.2 Treaty, merger regulation

Most of the competition policy of the EU is based on the EU treaty. The treaty itself does not provide rules for concentration control, but based on the provisions³¹ 83 and 308 the EC made a regulation on merger control³². This regulation provides a system of rules for notifying mergers to the Commission. It gives general indications that have to be taken into account³³.

The merger regulation declares the principles for the concentration control, and determines that mergers that *significantly impede effective competition* will be declared incompatible with the common market. Factors such as market position, resources and financial power will have to be taken into account in the investigation.

The regulation itself does not define whether or not a merger significantly impedes effective competition, the final decision on this will have to be made by the ECJ. However the EC made guidelines on how they interpret the merger regulation, to be clear: This is not law, just the policy used by the EC to determine their point of view on mergers. It gives a clear picture of the EC policy, we will later on compare this policy with our earlier findings on economic theory. For our topic there are specific guidelines: the non-horizontal merger guidelines. We will move on to a more thorough investigation of the EC policy on this type of mergers.

2.3 Non-horizontal merger guidelines

The specific EU policy on vertical mergers is laid in the Non-horizontal guideline³⁴. This guideline elaborates on two types of non-horizontal mergers, the vertical mergers and the conglomerate

³¹ These are the old treaty provisions, the new provisions in the Lisbon treaty are articles 103 and 352.

³² EC regulation 139/2004

³³ For more information on the basis and system of merger control see Jones & Sufrin(2004) and Whish(2009).

³⁴ 2008/C 265/07, http://ec.europa.eu/competition/mergers/legislation/notices_on_substance.html

mergers³⁵. Conglomerate mergers are mergers between firms in different markets, we will not discuss these because this goes beyond the scope of this thesis.

The EU policy on vertical mergers consist of several sections, we will follow the guideline closely and summarize the essential factors that are taken into account. Although we will sometimes translate terms to our economic framework, we will not yet compare the policy to economic theory.

In the general part of the guideline the EU recognizes that the effect of vertical mergers on competition is not the same as horizontal mergers, they do not change effective competition by lowering the amount of firms in the market. Vertical mergers can even be pro-competitive under some circumstances.

2.3.1 General indicators

The Commission uses some general indicators to decide whether a proposed merger calls for a thorough investigation or whether it is unlikely that the merger will be a problem. Vertical mergers only pose a threat to competition when the merging firms have a significant degree of market power in at least one of the markets. The Commission uses market shares and concentration levels to give an indication of the level of market power. If the combined market share after the merger is lower than 30% and the HHI is below 2000 in both markets the merger is unlikely to pose a problem for competition. This means that the Commission will normally approve the merger and no further investigation is needed³⁶.

2.3.2 Pro-competitive effects

Throughout the guideline a number of positive effects and efficiency gains are mentioned. In order to keep our analysis systematic we choose to discuss them all in this section. The Commission will first investigate whether the merger raises doubts due to negative effects, if such effects exist it will weigh them against the positive effects we discuss here. If the pro-competitive effects outweigh the anticompetitive effects, and consumers benefit from this, the EC will approve the merger.

General efficiencies and other effects

The Commission refers to the Horizontal Merger guideline for general efficiencies it takes into account when looking at merger cases. It recognizes that mergers can increase the efficiency of firms due to economies of scale and scope and better internal coordination.

³⁵ The Guideline is based on Church (2004), a study done in 2004 commissioned by the EC. This study uses similar literature as chapter 1 in this thesis, the reason we will only compare our theory to the guideline is that converting theory in policy requires interpretation by practitioners, which sometimes causes trouble. See also the critique on this study by Cooper et al. (2005).

³⁶ Unless there is a special situation described in the exceptions.

As with horizontal mergers the Commission also considers other possible forces on the market, such as countervailing buyer power and entry. Because we chose to focus specifically on the effects of vertical mergers, and we did not extensively discuss other effects in our economic chapter, we will not further investigate these general effects.

Vertical specific efficiencies

The Commission recognizes several specific efficiency gains related to vertical mergers. It acknowledges that these efficiencies can occur, but the merging parties themselves have to prove that they exist and what their size is.

The first specific positive effect of a vertical merger is the internalization of double mark-ups. Un-integrated downstream firms do not recognize that if they lower their price it will increase the demand upstream and the profits of upstream firms. Integrated firms will recognize this and will have an incentive to decrease prices and increase output. The same can also apply to any other type of effort to increase sales, such as service levels and innovation, provided by one level in the industry.

Vertical mergers may also decrease transaction costs and improve the coordination of the production process. Production and distribution costs may be coordinated in a more efficient way and the incentives to make investments may be aligned in the same way due to such mergers.

2.3.3 Anticompetitive effects

The anticompetitive effects are divided in two sections, non-coordinated effects and coordinated effects. Non-coordinated effects are input foreclosure and customer foreclosure.

In the section on coordinated effects the Commission considers whether the merger would change firms' incentives in such a way that it will be more likely for them to coordinate their strategies. In economic theory this is often referred to as collusion.

2.3.3.1 Input foreclosure

Input foreclosure occurs when the integrated firm would be able to profitably refuse to supply rival downstream firms. This can lead to higher input costs and higher effective prices for consumers. Input foreclosure does not have to lead to rival firms exiting the market, it can also lead to increased costs for rivals. The relevant question here is whether input foreclosure would lead to higher prices for consumers, if efficiency gains cause prices to remain the same or decrease the merger would not significantly impede effective competition.

To decide whether input foreclosure is a problem the guideline describes a three-step model to assess the problem, (i) is the integrated firm able to foreclose rivals, (ii) is it profitable to do so and (iii) what are the effects on the downstream market.

(i) Is the integrated firm able to foreclose rivals

There are several forms of input foreclosure. Not only can the integrated firm can refuse to supply rival firms completely, but it could also choose to increase its price slightly, lower the quality or negatively change the conditions of supply.

According to the guideline three important factors indicate whether input foreclosure is a risk: It has to concern an important input, the integrated firm needs a significant degree of market power on the upstream market and the integrated firm needs to be able to negatively influence the availability of the input.

Input foreclosure has to concern an important input. This can be if it is a critical component³⁷, if it represents a large part of the variable costs of the downstream product or if the costs of switching to a different input are relatively high. If the input is not sufficiently important the foreclosed firms could switch to an alternative and continue production.

The integrated firm will need a significant degree of market power in the upstream market. Without a significant degree of market power in the upstream market the foreclosure strategy would not have an effect on prices and overall output in the upstream market.

Whether the integrated firm is able to foreclose downstream rivals also depends on whether it is able to negatively influence the availability of the input. Even if the integrated firm has market power, there are situations where it is not able to influence prices. This can be due to the presence of effective counter-strategies for rival firms. It is relevant to take into account the capacity constraints on the upstream rivals, and possible entrants in the upstream market. These counter-strategies will be considered, including the possibility that downstream firms change their production process or sponsor new entrants on the upstream market.

If a foreclosure strategy is pursued, the downstream division of the integrated firm may choose to buy from its upstream partner. It could be that this only leads to a re-allocation of goods on the market, and that the overall availability of the input is not affected.

Foreclosure strategies in an oligopolistic market will cause the remaining upstream firms to enjoy more market power, which allows them to charge a higher price. The degree of product differentiation will influence this increased market power, the more differentiated the products are

³⁷ A critical component refers to the case where the component is necessary to produce the output, without the component it is simply impossible to continue production.

the less additional market power firms will enjoy. The Commission finds it possible that individual upstream firms respond to the decline in demand³⁸ by pricing more aggressively, this could lead to lower instead of higher input prices. The nature of supply contracts also influences the ability to foreclose, complex supply contracts might change the effect in such a way that it leads to higher constant costs for rival firms, but not higher marginal costs.

(ii) Is it profitable for the integrated firm to do so

The profitability of foreclosure is considered as a trade-off between the loss of profits of the upstream division due to the reduction of input sales and the extra downstream profits because of the raised costs on rivals which allows the downstream division either to expand sales or raise prices. This trade-off will depend on the margins upstream and downstream, lower margins upstream will result in lower losses of the upstream division and higher margins downstream will result in higher increases in profits downstream.

The incentive will also depend on the degree to which the demand will be diverted from foreclosed downstream firms to the downstream division of the integrated firm. This will depend on whether the downstream products are close substitutes and the capacity constraints of the downstream firms. If the affected input is an important input the effect on downstream demand will be higher.

The incentive to foreclose rivals may also depend on how much the integrated firm is able to profit from higher prices. A higher market share of the downstream division will enable the integrated firm to profit more from higher prices.

An upstream monopolist that is able to extract all industry profits may not have an incentive to foreclose rivals after a merger. A very high market share does not always mean that the firm is able to extract all industry profits, if the monopolist is not able to extract the profits it could still have an incentive to foreclose rivals after a merger.

In the investigation to determine whether the firm would have an incentive to foreclose rivals the Commission takes into account the ownership structure, past strategies and business plans for the future. It is possible that choosing a certain foreclosure strategy is illegal. This would create a serious disincentive, depending on the likelihood that the conduct is illegal, the chance of being detected and the possible penalty.

(iii) Does this strategy have a significant effect on downstream competition

³⁸ Due to the loss in demand of the downstream division of the integrated firm.

Input foreclosure is a problem in EU policy if it raises the prices of the downstream market, this means the foreclosure must have an effect on prices in the downstream market.

Anticompetitive foreclosure could occur by using a *raising rivals' costs* strategy, in such a strategy the foreclosed firms must play a sufficiently important role in the competitive process. The higher the market shares of the foreclosed firms, the more likely it is that the prices in the downstream market will increase. Sometimes firms with small market shares can play a significant competitive role, because it is a close competitor to the merging firms or an aggressive competitor.

Entry deterrence forms a second way in which the merger could result in a significant impediment of effective competition. The fact that the integrated firm might pursue a foreclosure strategy can deter potential entrants. Input foreclosure could make it necessary that entrants will have to enter both the upstream and downstream market in order to be able to compete effectively. Entry barriers particularly raise concerns in industries that are opening up for competition, or will in the foreseeable future.

If there remain enough downstream competitors that are not affected by the foreclosure, for example because they are themselves integrated, they can create competitive pressure on the downstream market which prevents prices from rising above the current level.

2.3.3.2 Customer foreclosure

The second possible negative effect of vertical mergers the Commission considers is customer foreclosure. In this scenario the downstream division of the merged firm is able to foreclose access to a customer base to rivals in the upstream market. This will make it harder for upstream rivals to compete, which increases the input prices. Downstream rivals will face higher input costs, which allows the merged firm to profitably charge higher prices in the downstream market. As with input foreclosure, the relevant question is whether customer foreclosure would lead to higher prices on the downstream market, it is not necessary that rival firms are forced to exit the market.

The same model as with input foreclosure applies to customer foreclosure: (i) is the integrated firm able to foreclose, (ii) is it profitable to do so and (iii) what are the effects on the downstream market.

(i) Is the integrated firm able to foreclose

Customer foreclosure can have various forms, the downstream division could choose to buy only from its integrated upstream partner, it could choose to buy less from upstream rivals or buy on less favourable terms to the supplier.

For the integrated firm to be able to foreclose suppliers it has to be an important customer of the foreclosed firm and have a degree significant market power in the downstream market. If consumers are likely to switch to other suppliers in the near future, customer foreclosure is not a problem.

Customer foreclosure is particularly a problem in markets with economies of scale and scope, or in the presence of network externalities. Mainly in those cases the ability for upstream firms to compete will be affected.

If upstream rivals are operating just over their minimum efficient level³⁹, customer foreclosure can be a problem, losing output in such a situation will create a larger pressure on the costs than normal, which can result in firms exiting the input market.

Customer foreclosure may reduce the possible profits for potential entrants in the upstream market, in the presence of economies of scale or scope. If entry deterrence is successful this way, input prices may remain at a higher level than they otherwise would have been.

If customer foreclosure affects upstream profits, the incentive to invest in cost reduction or product quality may be decreased, which could lead to firms exiting in the long run.

Different types of markets will be taken into account by the EC while assessing the possibility of customer foreclosure, if large parts of the customers are foreclosed the effect will be high, if downstream firms are able to find other methods of obtaining input supplies it will be less of a problem.

Counterstrategies will be taken into account, such as more aggressive pricing from the upstream rivals in order to mitigate the foreclosure.

(ii) Is it profitable for the integrated firm to do so

Whether customer foreclosure is a profitable strategy depends on a trade-off between the profits lost downstream due to not buying from the upstream rival, and the profits gained by being able to raise prices upstream and/or downstream.

The loss of profits due to not buying from upstream rivals is larger when the upstream division of integrated firm is less efficient or produces a less attractive differentiated product than upstream rivals. Capacity constraints on the upstream division also might increase the loss of profits due to not buying from upstream rivals.

The extent of the positive effect depends on the ability to profit from the increase in prices in the upstream or downstream market, a larger market share for the integrated firm will mean a larger ability to profit from this increase.

³⁹ The Commission assumes economies of scale in this scenario.

The illegality of possible conduct is taken into account in the same way as with input foreclosure. This means that it will depend on how clear it is that the conduct will be unlawful, what the chance of being discovered is and the possible penalties that could be imposed.

(iii) Does this strategy have a significant effect on the downstream market

By foreclosing upstream rivals from a significant customer base the rivals will not be able to compete effectively, this may lead to higher upstream prices. Rival downstream firms will face higher input costs, which puts them at a competitive disadvantage. This may allow the integrated firm to raise prices in the downstream market, which would hurt consumers.

It might take time before the negative effect on consumers materializes. If the upstream firms' profits are affected they will have less incentive to invest in cost reduction, product quality or other ways of remaining competitive, it will take some time before the prices in the upstream market actually increase.

For customer foreclosure to be a problem a sufficiently large fraction of the upstream output must be affected, otherwise input prices will not increase. Furthermore the increase in input prices must affect a sufficiently large fraction of the downstream firms to lead to higher prices.

Entry deterrence in the upstream market could also lead to higher input prices, this is especially effective if new firms would have to enter both markets in order to compete effectively. Entry deterrence is especially a problem in markets that are opening up to competition. Customer foreclosure and input foreclosure could both be part of such a deterring strategy.

2.3.3.3 Coordinated effects: Facilitation of collusion

The EC considers the possibility of coordination, also known as collusion. A merger may change the nature of competition in such a way that collusion becomes more likely. It may also make collusion easier, more stable and more effective for firms that were already colluding.

A number of factors could facilitate collusion. Collusion due to a vertical merger is considered to be the same behaviour as in article 81⁴⁰, this can either be explicit or tacit collusion. The essence is that firms choose a less competitive strategy now in order to avoid punishment in the future and increase joint profits over a longer period, at the cost of consumers. The possible negative effect of facilitating collusion are divided in four categories: *(i)* how easy is it to reach terms of understanding, *(ii)* the ability to monitor deviations, *(iii)* the ability to punish deviating firms and *(iv)* the reaction of outsider firms and customers.

⁴⁰ The old article 81 in the EG-treaty, that contained the basis for antitrust policy. The new Lisbon treaty provision is article 101.

(i) Reaching terms of understanding

A vertical merger may make it easier for firms in the upstream or downstream market to reach terms of understanding.

When a vertical merger leads to foreclosure it reduces the number of players in the market, less players in the market make it easier to coordinate.

Vertical integration may lead to more symmetry and transparency in the market, this would make it easier for firms to coordinate and come to a common understanding.

A maverick is a firm that, for some reason, does not want to accept the coordinated terms. If the maverick firm integrates vertically its incentives may change in such a way that it will no longer prevent coordination.

(ii) Monitoring deviations

Vertical integration may increase the transparency in the market, for example because one of the markets is more transparent than the other. More transparency allows firms to monitor deviations and punish deviating firms.

Foreclosure may lead to less competitors, a lower amount of firms in the market makes it easier to monitor deviations.

(iii) Deterrent mechanisms

Vertical integration may change the incentives for firms whether or not to deviate. This could be because vertically integrated firms are able to punish more severely because they are also a crucial supplier or buyer from the deviating firm.

(iv) Reaction of outsiders

Increasing barriers to enter the market may make it harder for outsider firms to destabilize the coordination. Vertical mergers may result in increased entry barriers.

Elimination of disruptive buyer, a large downstream firm could increase the profitability of deviating from coordination by upstream firms. If it offers to buy substantial quantities, upstream firms could be tempted to deviate. Integration of such a large buyer could remove this incentive.

2.4 Conclusion

EU competition policy distinguishes vertical mergers from horizontal mergers, usually vertical mergers are less anticompetitive according to their policy. For vertical mergers they recognize a number of efficiency effects, and several possible anticompetitive effects.

Merging parties have to claim and prove their efficiency gains. The Commission first investigates whether there are anticompetitive effects, if none exist the merger can be approved without further investigation. If there are anticompetitive effects they will be weighed against the claimed efficiency gains.

The anticompetitive effects mainly consist of input and customer foreclosure and the facilitation of collusion. Whether foreclosure strategies are profitable is investigated by looking at the ability, profitability and the effect on consumers. The degree of market power, upstream and downstream margins and possible counter-strategies by rivals play an important role in the assessment of foreclosure strategies.

Whether collusion becomes more likely depends on individual circumstances, this is mainly considered to be a problem by changes in monitoring and information exchange.

Chapter 3: The practice of EU competition policy

3.1 Introduction

In order to find out what happens in practice in EU policy we will look at three merger cases in the chemical industry. We will see that in practice mergers can be very complicated. Because these chemical companies often produce a lot of different products there are numerous horizontal and vertical overlaps. In each case we try to focus on the most important vertical overlaps and follow the reasoning of the Commission. These cases are relatively recent and follow the system of the Non-horizontal merger guideline. In practice the effects that are not considered to be a problem are left out, which means that the vertical investigation is not as elaborate as one might expect.

We will later compare the reasoning in these cases with economic theory and form a conclusion on whether the practice in these cases follows our theoretic findings

3.2 IPIC/ MAN Ferrostaal AG⁴¹

3.2.1 Market

IPIC proposed to acquire the sole control of MAN Ferrostaal AG. IPIC is an investment company from the United Arab Emirates that mainly invests in energy related companies. Through subsidiaries IPIC owns and controls AMI, one of the large melamine producing companies.

MAN Ferrostaal AG is a company that builds industrial plants as a contractor. It has a minority share (30%) in Eurotecnica, a company that provides licensed technology for companies that intend to produce melamine.

Melamine is a chemical that is used in a wide range of products, such as surface applications and glues. Two types of melamine can be distinguished, low-grade melamine and high-grade melamine. For the scope of this thesis we will focus on the market for high-grade melamine, as this is the only type that is being used in the relevant geographical market. Melamine can be produced in different ways, some companies use LPT (Low Pressure Technology) and some use HPT (High Pressure Technology). AMI, DSM and BASF use LPT, which they adapted to their own specific needs. They use this to produce high-grade melamine, which they sell on the downstream market⁴². The other companies rely on HPT, which they have to buy from a third party. Eurotecnica currently is the only company that supplies third parties with HPT, other companies that have HPT only use this for their own production.

Through the proposed merger IPIC (AMI) would gain a 30% interest in Eurotecnica, this means that certain vertical effects need to be analyzed.

⁴¹ IPIC / MAN Ferrostaal AG, Case No COMP/M.5406

⁴² AMI uses both LPT and HPT.

3.2.2 Input foreclosure

Ability

The ability to foreclose rivals depends on two facts: Does it concern an important input for the downstream market, and will the integrated firm have a significant degree of market power?

Technologies to produce melamine exist among several firms, both LPT and HPT are being used.

Most of the companies that possess these technologies only use this to supply their downstream divisions. Eurotecnica is the only firm that has HPT and is not integrated. It is also the only firm that offers licensed HPT to third parties that want to produce melamine.

For an un-integrated firm that wants to enter the melamine market it is essential that it has access to Eurotecnica's technology, as no viable alternatives exist at the moment. HPT is therefore an important input for melamine production.

MAN Ferrostaal holds 30% of Eurotecnica's shares, this might be a minority interest, but it gives MAN Ferrostaal influence on the licensing decisions made by Eurotecnica. The Commission considers this a sufficient share to be able to foreclose new entrants trying to purchase licensed technology.

HPT forms an important input factor for the production of melamine, and the integrated firm would have a significant degree of market power after the merger. The ability to foreclose can be established, the integrated firm would be able to foreclose new entrants from essential technology.

Market investigation has shown that supply side substitution for producers that use LPT is restricted. The firms that use HPT could potentially increase their capacities, but the total level of supply side substitution would be limited.

Incentive

The Commission has done empirical research on whether it would be profitable for the integrated firm to foreclose rivals. This research considered a trade-off between the loss in profits at Eurotecnica and a gain in profits for AMI. Because the integrated firm would only have a 30% interest in Eurotecnica the loss in profits will be lower than the gain in profits for AMI. AMI has a substantial market share, which means if the downstream price increases the profits would be large. This means that it would be profitable for the integrated firm to foreclose rivals. According to the Commission past behaviour of AMI also points out that it will have incentives to foreclose, as it has been profitable in the past⁴³.

⁴³ Whether AMI was convicted cannot be concluded from the released documents, but input foreclosure does not necessarily have to be illegal conduct.

Impact on competition

As established the integrated firm would be able to deter entry or limit capacity expansions on the melamine market. It would also be profitable for the integrated firm to do so.

During the economic crisis the foreclosure strategy is not thought to be a very large problem, but with increasing demand after the crisis new capacity will be needed to supply the market. Currently the competitors in the EU and US are using approximately 90-100% of their capacity. The only competitor that is planning on expanding capacity is ZAP, which is depending on Eurotecnica's technology.

The integrated firm would therefore be able to successfully foreclose rivals in the near future, either by deterring new entry or limiting capacity expansions. This would stop pricing from decreasing, or even increase them when demand increases.

3.2.3 Coordinated effects

The proposed merger will lead to less competition on the market because entry could be deterred. This loss of competition increases the likelihood of collusion between AMI and DSM, the two market leaders.

The market of high-grade melamine concerns a homogeneous good and is highly transparent. AMI and DSM are relatively symmetric, both have similar capacities and both are vertically integrated. AMI will also have more information on the firms that use licensed technology from Eurotecnica, because those firms are obligated to provide Eurotecnica with substantial information on their company.

The transaction therefore might facilitate collusion, however the parties proposed commitments that compensate this effect, which means no additional coordination effects have to be considered.

Decision

The vertical relations raise serious doubts about the effect on competition, primarily input foreclosure could lead to higher downstream prices. Coordinated effects were also considered.

The merging parties proposed to divest the 30% share in Eurotecnica, taking these commitments into account the Committee agreed upon the merger. If IPIC no longer has decisive influence on Eurotecnica input foreclosure is no longer a problem, and coordination does not become more likely than originally.

3.3 Arsenal / DSP⁴⁴

3.3.1 Market

Arsenal proposed to acquire 100% of the shares of DSP. Arsenal is private equity firm that owns Velsicol, a company that produces food additives, plasticizers and industrial intermediates. DSP is a subsidiary of DSM and also produces food additives and industrial intermediates.

Besides horizontal issues on some other products the vertical issues concern two types of products: benzoic acid and benzoate plasticizers. Both Velsicol and DSP produce liquid and solid benzoic acid, which is an important input in the production of benzoate plasticizers. Velsicol also produces benzoate plasticizers, a chemical used in the production of PVC, which is used in a wide range of products such as medical tubes, toys and footwear.

Velsicol was already vertically integrated, we will focus on the vertical overlap that is created by the acquisition of DSP.

3.3.2 Input foreclosure

The Commission only considers input foreclosure as a possible negative effect of the proposed merger. Due to the fact that after the merger the integrated firm will have a monopoly on the upstream market customer foreclosure and coordinated effects do not have to be taken into account from a vertical perspective. The investigation follows the non-horizontal guideline closely, by first discussing the ability, incentives and effect on the downstream market, and considers the factors provided by the guidelines.

Ability

The ability to foreclose rivals depends on three factors: (i) the degree of market power, (ii) whether it concerns an important input and (iii) whether the integrated firm is able to negatively influence the availability of the input on the market or whether there are counter-strategies available for rivals.

After the proposed merger the integrated firm would have 100% of the liquid benzoic acid market and 90-100% of the solid benzoic acid market. This gives the integrated firm significant market power on the benzoic acid market.

Benzoic acid is necessary to produce benzoate plasticizers, there are no alternative substances that can be used to produce benzoate plasticizers. Most companies use liquid benzoic acid, but a few also use solid benzoic acid. Benzoic acid represents 55-60% of the variable costs in the production of benzoate plasticizers. From this we can conclude that benzoic acid is an important input in the production of benzoate plasticizers.

⁴⁴ Arsenal / DPS, Case No COMP/M.5153

Available counter-strategies

Exxon/Mobil has a long-term contract with DSP for liquid benzoic acid. Evonik and Caffaro have short-term contracts with DSP. Ferro has a contract with DSP that will end soon, but is negotiating a new five year contract. The integrated firm would be able to foreclose downstream rivals in the benzoic acid market, but this is mitigated due to long-term contracts. The foreclosure would not be possible with regard to all downstream firms, and sometimes it would only be possible later in the future.

Incentive

Whether the integrated firm will choose a foreclosure strategy depends on the profitability of such a strategy. There will be a trade-off between the profits lost in the benzoic acid market (upstream) and the profits gained in the benzoate plasticizers market (downstream) by raising rivals cost.

The guidelines describe two important factors:

- the extent to which downstream demand is likely to be diverted away from foreclosed rivals
- the share of that diverted demand that the downstream division of the integrated firm can capture

For di-benzoate plasticizers the integrated firm would have to capture 50-60% of the diverted demand in order for a foreclosure strategy to be profitable⁴⁵.

For mono-benzoate plasticizers the integrated firm would have to capture 30-40% of the diverted demand in order for a foreclosure strategy to be profitable. Note that Velsicol only produces di-benzoate plasticizers in the EEA, the foreclosure strategy would have to lead to customers switching from mono-benzoate plasticizers to di-benzoate plasticizers.

It is unlikely that the integrated firm will be able to capture more than 38% of the diverted demand of mono-benzoate plasticizers because customers would prefer similar phthalate plasticizers instead of switching to di-benzoate plasticizers. Foreclosure of Evonik and Exxon/Mobil is therefore not likely to be profitable.

Caffaro is a small competitor in the market for di-benzoate plasticizers. It uses benzoic acid to produce both di-benzoate plasticizers and ketones. It is unlikely that it is profitable for the integrated firm to foreclose Caffaro because it uses more than 50% of its benzoic acid to produce ketones. The gain in downstream profits would also have to cover the loss incurred due to the lower production of ketones, which is unlikely because the integrated firm does not produce those. It is therefore not likely that the integrated firm will have an incentive to foreclose Caffaro.

⁴⁵ The Commission has done empirical research that supports these estimations. We will assume this research is correct.

Ferro is another small competitor in the market for di-benzoate plasticizers. It is much smaller than Velsicol and does not impose a competitive constraint on the company. DSP has also recently offered a long-term contract to supply benzoic acid to Ferro. It is therefore unlikely that the integrated firm will have an incentive to foreclose Ferro.

Effect on downstream market

The integrated firm would have limited ability to pursue a foreclosure strategy, due to long-term contracts with some customers. The integrated firm does not have incentives to foreclose either mono-benzoate plasticizer producers or di-benzoate plasticizer producers, both foreclosure strategies are not profitable. Since foreclosure is unlikely to happen, the proposed merger will not have a negative effect on the downstream market.

Decision

The merger does not raise any serious doubts about effective competition

3.4 DOW / ROHM and HAAS⁴⁶

3.4.1 Market

Dow, a chemical company from the US that produces plastics and energy products, proposed to takeover Rohm and Haas (R&H). R&H is also a chemical company from the US. It produces performance polymers and specialty chemicals. Because both companies produce a wide range of chemicals a number of possible vertical overlaps exist. We will focus on the most important overlap: the production of Ion Exchange Resins from Divinylbenzene.

Divinylbenzene (DVB) is an input in the production of Ion Exchange Resins (IER). IER's are small plastic resin beads that contain ions. IER's are a highly differentiated product, they can contain different types of ions and can be made from different types of resins. The ions react with impurities in liquids and can remove or separate them. They are mostly used in the purification of water and the pharmaceutical industry.

Dow and R&H both produce IER's, they have a market share of approximately 40-50%⁴⁷. Unlike R&H, Dow also produces DVB and has a market share of approximately 20-30%.

⁴⁶ Dow / Rohm and Haas, Case No COMP/M.5424

⁴⁷ Based on value, their market share based on volume is approximately 30-40%.

3.4.2 Input foreclosure

One of the customers of Dow complained that it might be foreclosed after the merger. The Commission considers the possibility of switching DVB supplier. It concludes that it is possible to switch supplier, it has happened in the past. However switching supplier does involve costs, it will take at least several months before a new supplier would be able to provide the correct DVB. DVB is a homogeneous good, but it has different impurities⁴⁸ that require changes in the production process.

Ability

For Dow to be able to foreclose the complaining firm, the firm would have to depend on Dow for its DVB supply, if alternative sources of DVB exist there would be no problem. The Commission finds that there are other suppliers of DVB and that it is possible to switch, although there might be some switching costs.

Generally the Commission finds that there is no reason to believe that the availability of DVB on the market will not be sufficient. The fact that R&H might start to buy from Dow after the merger only means that there will be a re-allocation and the volumes it is now buying from other sources would free up on the market.

Incentive

After the proposed merger the integrated firm would have a larger market share in the IER market, which would create more incentives for a foreclosure strategy. The Commission considers Dow's DVB capacity and concludes that it would be in Dow's interest to keep supplying downstream firms.

3.4.3 Customer foreclosure

Dow currently supplies its own downstream division, customer foreclosure could only occur if R&H would choose to buy from Dow instead of the external sources it uses now. The Commission finds that even if R&H would choose to source internally the DVB producers would still have a sufficient large customer base to sell their DVB.

Decision

The proposed merger does not raise concerns about competition with regard to the vertical aspects. It is unlikely that the integrated firm will profitably foreclose rivals in the IER's market.

⁴⁸ DVB is considered to be a homogeneous product, but the production process requires small alterations in order to cope with different impurities. It is homogeneous because producers are able to use DVB from all suppliers in exact the same way. The small adaptations in the production process can be seen as switching costs.

3.5 Conclusion

Looking at real merger cases gives a whole new perspective on competition policy. Where many of our findings in chapter 1 were abstract and hard to relate to, the cases in this chapter involved real companies and the Commission had to decide on whether or not to oppose the merger. We found that in practice the investigation of the vertical aspects is not as elaborate as one might think. Input foreclosure is the only effect that was thoroughly investigated in some cases. In practice this is considered along the framework of the guidelines. Customer foreclosure and coordinated effects are only considered to a small extent.

Chapter 4: Comparing economic theory with EU policy

4.1 Introduction

Now that we have seen economic theory on vertical mergers and the EU policy we can compare them and look at the EU policy from an economic perspective.

Most of the economic theory we analyzed was rather abstract, while EU policy has to deal with individual cases. For this reason EU policy addresses certain individual situations, which are not directly discussed in economic theory. We will check whether the main effects that the policy is based on are economically founded and whether the reasoning they make on individual situations makes sense from an economic perspective.

4.2 EU competition policy

4.2.1 General indicators and efficiencies

EU policy is consistent with economic theory when it comes to identifying that vertical mergers differ from horizontal mergers. They do not entail a loss of direct competition, and can even be pro-competitive. Both recognize the possible pro-competitiveness due to the mitigation of the double marginalization problem and allow several efficiency gains. Apart from these positive effects vertical mergers can also have anticompetitive effects. It makes sense that the EU first looks at possible anticompetitive effects. If they do not exist the merger can be approved without further investigation and otherwise the efficiencies will have to be weighed against the anticompetitive effects. The only possible problem could be that the merging parties themselves have to claim efficiency gains, but it is likely that the parties have large incentives to properly claim efficiency gains.

EU policy uses a general indicator that mergers where the combined market share is 30% or less and HHI is at least 2000 normally do not pose a threat to competition. Economic theory does not provide a cut and clear market share or HHI under which mergers are not a problem, but it does support the intuition that the anticompetitive effects of mergers with small market shares are generally small. In the initial screening the relative degree of upstream and downstream competition is not taken into account, while economic theory suggests otherwise⁴⁹.

4.2.2 Input foreclosure

EU policy uses the same type of input foreclosure as economic theory, in both cases an integrated firm refuses to supply (or changes the conditions) a downstream rival in order to *raise its costs*. The

⁴⁹ We have seen in Hackner (2003) that the relative level of competition influences possible anticompetitive effects.

remaining upstream suppliers enjoy increased market power and are able to raise prices. This allows the integrated firm to raise its prices in the downstream market. As in economic theory EU policy recognizes that input foreclosure can be broader than a simple refusal to supply strategy, it includes other strategies that increase the costs of rival, by for example charging a higher price.

The EU policy uses a three step model to decide whether foreclosure is a problem, but the total analysis will have to include all aspects. The ability to foreclose can depend on factors such as switching costs and the degree of market power, these factors also influence the profitability.

There is a similar difference in the investigation of the effects on the downstream market. Economic theory also does a welfare analysis, but this is merely a result of the rest of the analysis.

Whether the strategy has an effect on the downstream market is closely connected to whether it is profitable for the firm to pursue such a strategy.

Ability to foreclose

The ability to foreclose in EU policy depends on three factors, which are all found in economic models.

Important input

The EU policy requires that input foreclosure has to concern an important input. If it does not, the downstream rivals would be able to continue production by switching to one of the alternatives. It finds that it can concern an important input when the costs of switching are relatively high, but it does not provide a clear benchmark. Economic theory usually does not explicitly say the input is important. Some models use a necessary input, while others simply use some level of switching costs. As the switching costs increase the anticompetitive effects tend to get stronger, which supports the EU policy. However a gradual scale would make more sense than formulating a necessary condition. Note that any switching costs will also be used in the investigation of the profitability of foreclosure.

Degree of market power

One of the key factors provided by economic theory is the presence of market power. It is important to keep in mind that market power is a necessary condition for anticompetitive foreclosure but not a sufficient condition or bad phenomenon. What the precise level of market power that is required is not clear. But what is clear is that as firms enjoy more market power the anticompetitive effects tend to get stronger. This reasoning is also found in EU policy.

Ability to negatively influence the total availability

For foreclosure to be effective, the integrated firm must be able to influence the total availability of the foreclosed product. EU policy considers some practical situations, where other firms might be able to choose counter-strategies. Economic theory is more abstract on this matter, in most models the loss of one upstream competitor will lead to some increased market power. EU policy recognizes that in oligopolistic markets the remaining suppliers will indeed enjoy more market power. The reasoning that product differentiation and concentration affects the additional market power for upstream firms makes sense from an economic perspective.

The EC considers that an individual input supplier might react to the reduction in demand, from the downstream division or independent firms, by pricing more aggressively. This is strange from an economic perspective, because the integrated firm exists the upstream market, this leads to more demand for the remaining suppliers. The only explanation would be that the downstream division of the integrated firm switches suppliers, which causes one of the upstream firms to price more aggressively. But this would mean that the upstream firm that starts to price more aggressively fails to notice that the supply of input has gone down, while the demand has remained the same. Such a scenario is not very likely and should not affect total prices. If that firm prices more aggressively it will get more customers, and soon realize that it is using a sub-optimal strategy⁵⁰. It is therefore not likely that this scenario occurs.

Incentive to foreclose

Both the EU policy and the economic theory find that the profitability depends on a trade-off between the lost profits by not selling to downstream rivals and on the other hand the increased profits because of the higher marginal costs on downstream rivals.

⁵⁰ With less competitors in the upstream market a less competitive strategy is usually more profitable for the upstream firms.

The lost profits in the upstream industry depend on how much profits the integrated firm otherwise would have been able to make. The additional downstream profits depend on the share of the diverted demand that the integrated firm is able to capture and the market share over which it can enjoy increased prices. EU policy correctly identifies these main issues that play a role in the profitability of input foreclosure strategies.

EU policy also mentions the critical component and switching costs as influencing factors on the profitability, we can see here that it is hard to break the analysis down to a three step model. But the policy is correct in taking these factors into account.

Whether firms are able to extract industry profits depends on how efficient contracting is and the bargaining position. EU policy is correct in identifying that a vertical merger can be used to solve a commitment problem and allows the integrated firm to extract industry profits⁵¹.

Economic theory usually does not take ownership structures and illegality of conduct into account, but the reasoning made by the Commission is consistent with economic theory. Illegality of conduct would bring a serious disincentive, depending on the chance of being caught and possible punishments.

Effect on downstream market

Economic theory generally looks at the effects on the downstream market as a result of the choices that were made. It contains a welfare analysis. EU policy treats this in a slightly different way, it looks at how much the downstream market will be affected. From an economic perspective the downstream market must be affected in order for a foreclosure strategy to be profitable. However this difference is only in an analytical sense, the correct factors are taken into account.

Possible entry barriers can indeed be part of the anticompetitive effect of the vertical merger. This claim by the EU is supported by the literature on input foreclosure. The risk of being foreclosed can cause potential entrants to stay out of the market.

⁵¹ The EC refers to a situation similar to the model by Hart & Tirole (1990), where the integrated firm needs to commit to not supplying other downstream firms.

4.2.3 Customer foreclosure

The EU policy uses the same customer foreclosure theory as economic theory, in this scenario foreclosure is used to create market power upstream. This allows the integrated firm to profitably raise prices in the upstream and/or downstream markets.

Ability

To be able to pursue a successful customer foreclosure strategy a significant degree of market power in the downstream market is required. This is consistent with economic theory.

The reasoning in EU policy that firms operating just over their efficient scale could be forced out of the market by customer foreclosure makes sense from an economic perspective. Customer foreclosure normally decreases profits for upstream firms, but in the presence of economies of scale and/or scope it is possible that it would no longer be possible for a firm to operate in the input market⁵².

With respect to long run R&D investments the reasoning in EU policy differs from economic intuitions. It may indeed be possible that the incentives to make investments are altered if firms are forced out of the market, but investments that reduce costs could still be profitable. These effects have to be investigated in individual cases.

The customer foreclosure hypothesis in economic theory suggests that denying access to a substantial customer base allows firms to raise input prices by creating market power upstream. EU policy is correct in identifying that downstream a substantial part of the market has to be foreclosed in order for such a strategy to be effective.

Incentive

Both EU policy and economic theory find that the profitability of customer foreclosure depends on the trade-off between the loss in profits by not buying from rivals and the increase in profits by being able to enjoy more market power upstream. The upstream market power may enable the firm to profitably raise prices in the upstream and/or downstream market.

If the integrated firm is less efficient than other firms in the upstream market it will lose more profits by not being able to buy from rivals. Capacity constraints may limit the ability to foreclose in the short or medium run. EU policy is sometimes not entirely clear on the effects of capacity constraints, it is important to notice that in the long run a foreclosure strategy could be possible.

⁵² It is possible that due to economies of scale and/or scope some minimum scale is deemed necessary in order to operate in a certain market, if due to customer foreclosure the output of firms is pushed below this scale they will be forced out of the market. In a similar way entry barriers could be imposed.

The additional profits due to enjoying more market power in the upstream market could allow the firm to profitably raise its prices. Such a strategy could impose higher marginal costs on downstream rivals, which also allows the integrated firm to profitably raise prices in the downstream market. Such a scenario is consistent with economic theory on customer foreclosure.

It is very well possible that customer foreclosure and input foreclosure are part of the same strategy, the effects can potentially reinforce each other.

Again the reasoning by the Commission that higher market shares allow the integrated firm to benefit more from foreclosure is consistent with economic theory.

Effect on downstream market

EU policy correctly finds that the effect of customer foreclosure on the downstream market requires the foreclosure of a significant fraction of the upstream market. In this same way a significant part of the downstream market needs to be affected in order for consumers to be harmed. Although most economic models do not give specific information on how long it might take for such an effect to harm the consumers, the reasoning that it may take some time before the effects harm consumers makes sense from an economic perspective. In reality firms do not exit the market immediately when profits go down, it might take time before such effects in the upstream market materialize and before the downstream market is affected.

4.2.4 Coordinated effects

Economic theory tries to isolate the effect of a vertical merger on the incentives to collude. The EU policy sees collusion as the result of changes in the market, for example due to foreclosure or changes in the ability to monitor deviations.

First the EU policy allows the possibility that vertical mergers allow for easier coordination, increase symmetry or transparency in the market. This might be possible in individual scenarios, but this certainly does not have to be the case.

EU policy recognizes that the incentives to adhere to the coordinated conditions may change, because punishment by an integrated firm can be more severe. Although this is also true in economic literature, the EU policy does not recognize the other changes in incentives. Deviation by un-integrated firms becomes less attractive because the profits will be lower, and the integrated firm cannot be punished as severely as other firms. The net effect is that the merger will always facilitate collusion to some degree, because the former effect is always smaller than the latter⁵³. Economic

⁵³ For a full explanation Paragraph 1.4.2

theory also finds evidence that it might be possible to cartelize the downstream market by using exclusive dealing contracts⁵⁴.

Other effects found in EU policy, such as the elimination of a maverick firm, are not directly found in economic theory, but the reasoning makes sense from an economic perspective.

The facilitation of collusion in EU policy mainly depends on structural changes in the market, which depend on individual circumstances. Economic theory shows that vertical mergers typically make collusion more sustainable.

4.3 Practice

4.3.1 IPIC / Man Ferrostaal

The consideration of input foreclosure in this case makes sense from an economic perspective. After the merger the integrated firm would have the control over Eurotecnica, which is the only company that offers HPT to un-integrated firms. It would be possible to limit capacity expansions for several upstream rivals and to deter entry for new firms. Supply side substitution was correctly addressed, but this appeared this possibility appeared to be limited. Input foreclosure raises doubts about the effects of the merger.

The consideration of coordinated effects due to entry deterrence is consistent with economic theory, although the Commission does not recognize the general facilitation of collusion the same way economic theory does.

These anticompetitive effects were not weighed against possible pro-competitive effects because the parties themselves proposed commitments. From an economic perspective it would make sense to weigh these positive and negative effects. In reality firms do not want to take the risk of having their merger disapproved, for this reason they submitted commitments. We can conclude that the decision to approve the merger after these commitments is in line with our economic findings.

4.3.2 Arsenal / DSP

Input foreclosure of benzoic acid was the main problem in this case. The investigation of the ability and incentives to foreclose was very thorough. We were pleased to see econometrical research on the profitability of such a strategy, this allows for a better founded decision on the likelihood of such a strategy.

The fact that long term contracts limit the ability to foreclose rivals in the short and medium run is consistent with economic findings. Although this would still allow the integrated firm to pursue such a strategy in the long run, possible entrants in the upstream market could mitigate this.

⁵⁴ See Chen & Riordan (2007) and Paragraph 1.4.2 for more on this issue.

As for the two smaller firms that did not have long term contracts it indeed does not seem that an input foreclosure strategy would be profitable. Caffaro also uses benzoic acids to produce ketones, which makes the loss in profits due to not selling much larger compared to the possible gain in profits downstream. Input foreclosure with respect to Ferro was not likely because this was such a small competitor that it did not put competitive pressure on the merging firms in the first place. Foreclosing them would not lead to a large increase in profits because only a small amount of demand would be diverted to the integrated firm.

The reasoning made here by the Commission is consistent with our findings on input foreclosure.

4.3.3 Dow / R&H

Input foreclosure was not thought to cause problems in this case because DVB would remain widely available on the market. This means that there is sufficient competition in the upstream market and that if the integrated firm exits the upstream market it would not be able to influence prices significantly. It is hard to estimate to what degree the integrated firm would be able to influence prices in the upstream market, but with enough competition that is capable of expanding capacity it is understandable from an economic point of view that input foreclosure strategies would not be profitable. If the integrated firm is not able to influence the prices or outputs in the upstream market the downstream rivals will not be harmed, which makes it unlikely that an input foreclosure strategy is feasible.

Dow was already supplying its own downstream division, after the merger the only type of customer foreclosure that would be possible is by R&H. The customer base from R&H is not sufficient to influence the upstream prices. We can see the link between both foreclosure strategies here, if competition in the upstream market is fierce enough and the market is efficient, it is hard for an integrated firm to successfully pursue a foreclosure strategy and influence upstream prices. The reasoning made here by the Commission is consistent with economic theory.

4.4 Conclusion

Generally the reasoning in EU competition policy is consistent with economic theory. We found that economic theory is abstract and does not support individual situations, but the arguments proposed by the Commission are in accordance with economic theory. It is normal that economic theory is more abstract than the practice, therefore the fact that certain effects are being considered while they are not specifically addressed by theory is not a problem. When these effects were being considered we tried to follow the reasoning in the light of the existing economic theory.

The general indicators and efficiencies that are being considered by both economic theory and EU policy are consistent. Specific rules for general indicators from economic theory are not yet incorporated, but it might be wise to be reluctant in changing the policy when there is not yet a broad consensus between economist.

EU policy on input foreclosure uses the main effects that were recognized in economic theory. Most of the individual situations described in EU policy were understandable from an economic point of view. The only situation that raised questions was the possibility that an upstream rival would respond to foreclosure by pricing more aggressively. EU policy added certain effects such as the structure of ownership and the change in incentives due to the illegality of conduct. These added factors could fit inside existing models and allow for more accurate estimations in real cases. The only danger is that they might be overemphasized, additional research in economic literature could be done on these issues.

The customer foreclosure hypothesis from economic theory can also be found in EU policy. They recognize the same type of customer foreclosure. EU policy finds that customer foreclosure depends on market power in the downstream market, used to create market power in the upstream market. Individual situation described in the policy made sense from an economic perspective.

Coordinated effects in EU policy are based on changes in the number of firms on the market or enhanced monitoring. The situations described in the policy were consistent with economic theory. Economic theory also suggests that incentives to deviate are altered due to vertical integration, this means that vertical mergers typically make coordination more sustainable. These effects are not yet incorporated in EU policy, this might be because the literature on this topic is relatively recent.

The reasoning made in practice is often more concise than the guidelines. Only the effects that are thought to be large are discussed. Although the effects that are not mentioned are thought to be negligible, sometimes economic theory suggests that they should be taken into account when the anticompetitive effects are weighed against the pro-competitive.

Conclusions and policy recommendations

The goal of this study was to find out whether EU competition policy on vertical mergers is consistent with economic theory. We described both economic theory and EU policy extensively and compared the results in the last chapter.

Overall we can conclude that the reasoning in practice systematically followed the guidelines and made use of arguments that were economically founded.

Economic theory is typically very abstract, this makes it hard to come to decisions in real cases. EU policy is able to correctly identify the important effects that are related to vertical integration. It was only to a minor extent that we found differences. To be able to make decisions in real merger cases EU policy relies on both general effects that have to be looked at and many different effects that could potentially occur. These potential situations are usually not described in economic theory, but we tried to follow the reasoning made by the Commission from the economic perspective we build up. The fact that specific economic theories were not yet found in economic theory is not a problem, because a broad consensus is desirable before policy is altered. With respect to the facilitation of collusion we found such a consensus.

At this time we would not suggest any changes to the EU competition policy on vertical mergers, because most of the policy is up to date. With respect to the facilitation of collusion we would suggest that antitrust authorities increase their monitoring on the market after a vertical merger was approved. This should increase the chance of being caught, which creates a disincentive that compensates the collusive effect created by the merger.

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Appendix

$$\pi_i^{ret} = \left(a - bq_i^{ret} - b \sum_{j \neq i} q_j^{ret} - w \right) q_i^{ret} \quad (1.5)$$

$$FOC = a - 2bq_i^{ret} - b \sum_{j \neq i} q_j^{ret} - w$$

$$2bq_i^{ret} = a - b \sum_{j \neq i} q_j^{ret} - w$$

$$2bQ = na - nb \sum_{j \neq i} q_j^{ret} - nw$$

$$b(n+1)Q = na - nw$$

$$Q = \frac{n(a-w)}{b(n+1)}$$

$$\pi^{man} = (w-c) \frac{n(a-w)}{b(n+1)}$$

$$\pi^{man} = \frac{wna - nw^2 - cna + cnw}{b(n+1)}$$

(1.6)

$$FOC = \frac{na - 2nw + cn}{b(n+1)}$$

$$2nw = na + cn$$

$$w = \frac{a+c}{2}$$

$$Q = \frac{n(a - \frac{a+c}{2})}{b(n+1)} = \frac{n(a-c)}{2b(n+1)}$$

$$q_i^{ret} = \frac{a - c}{2b(n + 1)} \quad (1.3)$$

$$P = a - bQ = a - b \frac{n(a - c)}{2b(n + 1)} = a - \frac{n(a - c)}{2(n + 1)}$$

$$P = \frac{2(n + 1)a - n(a - c)}{2(n + 1)} = \frac{2na + 2a - na + nc}{2(n + 1)}$$

$$= \frac{(n + 2)a + nc}{2(n + 1)} \quad (1.4)$$

$$\pi^{man} = \frac{n(a - c)}{2b(n + 1)}(w - c) = \frac{n(a - c)}{2b(n + 1)} \left(\frac{a + c}{2} - c \right)$$

$$= \frac{n(a - c)}{2b(n + 1)} \frac{a - c}{2} = \frac{n(a - c)^2}{4b(n + 1)} \quad (1.1)$$

$$\pi^{ret} = \frac{n(a - c)}{2b(n + 1)}(p - w)$$

$$= \frac{n(a - c)}{2b(n + 1)} \left(a - \frac{n(a - c)}{2(n + 1)} - \frac{a + c}{2} \right)$$

$$\pi^{ret} = \frac{n(a - c)}{2b(n + 1)} \left(\frac{(n + 1)(a - c) - n(a - c)}{2(n + 1)} \right) = \frac{n(a - c)^2}{4b(n + 1)^2} \quad (1.2)$$