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## **Merger Performance and Efficiencies in Horizontal Merger Policy in the US and the EU**

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# Merger Performance and Efficiencies in Horizontal Merger Policy in the US and the EU

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## Abstract

In current horizontal merger policy in the US and the EU an explicit efficiency defense is allowed. On both sides of the Atlantic mergers are unconditionally approved if internal efficiencies are sufficient to reverse the mergers' potential to harm consumers in the relevant market. Current merger policy is implicitly based on the assumption that rational managers will only propose privately profitable mergers. In this thesis I will show that the empirical evidence on merger performance suggests that this assumption can't be sustained. Managers do propose uneconomic mergers, motivated by non-wealth maximizing behavior. To tackle this problem I argue that efficiencies should not only be used as an efficiency defense, but efficiencies should work both ways. To avoid type I and type II errors the competition authorities in the US and the EU should undertake a sequential efficiency test in their assessment of specific mergers.

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## 1. Introduction

In both the US and the EU the competition authorities have the power to control mergers.<sup>1</sup> Both authorities may prohibit a merger that significantly reduces competition in the relevant market. Although competition policy in the US has always been concerned with mergers that possibly threaten competition, the European Commission has just received powers to control mergers under the Merger Regulation of 1990.<sup>2</sup> One reason for this late introduction may be that merger control does not really fit into competition policy. Unusual for competition policy, merger control is concerned with market structure rather than firm behavior.<sup>3</sup> Mergers as such do not constitute anti-competitive behavior; prior to a merger the competition authorities have to establish whether the merger constitutes anti-competitive behavior.

This unusual character of merger control raises the question on how mergers should be assessed by the competition authorities. The competition authorities in both the US and the EU are still struggling with this question. On both sides of the Atlantic the competition authorities have changed their horizontal merger guidelines to explicitly allow for an efficiency defense in the assessment of mergers. In current horizontal merger policy, mergers are unconditionally approved if internal efficiencies are sufficient to reverse the mergers' potential to harm consumers in the relevant market. Thus, the anti-competitive effects from mergers should be balanced against possible efficiency effects from mergers. However, under current horizontal merger policy, efficiencies may only be used as a defense.

In this thesis I investigate whether the assessment of efficiencies should be limited to an efficiency defense. After I have explained what the possible welfare effects of mergers are, I will study whether these theoretical effects actually occur in practice. Based on an evaluation of the empirical research on merger performance I conclude that efficiencies are often not generated by merger, mergers on average decrease profitability, and that mergers tend to increase consumer prices. This result contradicts the assumption that rational managers will only propose privately profitable mergers motivated by either expected market power or efficiency gains. I will show that there are other motivations for managers to propose mergers that are not based on wealth maximizing behavior. These motivations may explain why empirical research on merger performance finds a large number of uneconomic mergers.

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<sup>1</sup> In this thesis I do not make a distinction between mergers and acquisitions. In the remainder of this thesis I will only refer to merger and acquisition as "merger".

<sup>2</sup> Council Regulation (EEC) No. 4064/89 of 21 December 1989 on the control of concentrations between undertakings, OJ L 395 (1989).

<sup>3</sup> Sauter, W. (1997). *Competition Law and Industrial Policy in the EU*. Oxford: Clarendon Press, p. 132.

In order to determine what the policy implications of uneconomic mergers are for the use of efficiencies in merger policy in the US and the EU, I will evaluate current horizontal merger policy in both the US and the EU. Hereafter, I conclude that current merger policy should be amended to cope with the widespread occurrence of uneconomic mergers. In the final part of this thesis I argue that efficiencies should not only be used as an efficiency defense. I argue that the competition authorities should apply a sequential efficiency test. In the first step of this framework general presumptions on the size of the anti-competitive and efficiency effects of mergers should be used to establish a lower and an upper threshold. To economize on information costs, efficiencies should not be evaluated if structural indicators are below the lower or above the upper threshold. However, if a merger falls within both thresholds the competition authorities should, *inter alia*, undertake an efficiency test, in which efficiencies work both ways. This will significantly reduce the number of mergers that are approved by the competition authorities, despite their negative effect on consumer welfare.

## 2. The Welfare Effects from Mergers

In 1968 Oliver E. Williamson developed a simple analysis of the effects of a horizontal merger on total welfare.<sup>4</sup> Williamson created a “trade-off” model, in which he compared the anti-competitive effects of a horizontal merger with the internal efficiencies that are generated by that merger. Williamson concluded that (small) internal efficiencies could compensate for the anti-competitive effects of a merger. Williamson proposed to incorporate this analysis in the merger policy of the US as an efficiency defense. Before I will discuss this model in more detail, I will explain which anti-competitive effects may arise from mergers, and which possible efficiencies may be generated by mergers that may compensate for these anti-competitive effects.

### 2.1 Anti-competitive Effects from Mergers

The primary concern of competition authorities in their merger policy is about the anti-competitive effects of mergers. A distinction should be made between two different effects of a merger on competition. A merger may reduce competition as a result of a unilateral increase of market power or could change the industry conditions such that the risk of collusion in the industry is increased. Both the unilateral effect and the coordinated effect may lead to an increase in price.

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<sup>4</sup> Williamson, Oliver E. (1968). Economies as an Antitrust Defence: The Welfare Trade-offs. *American Economic Review*, 58, 18-36.

A merger between two or more firms, depending on the size of the firms in the merger, may unilaterally create or increase substantial market power of the merged firm. Market power is defined in this thesis as “the ability of a firm or a group of firms to profitably charge prices above the competitive level for a sustained period of time”.<sup>5</sup> Before the merger, effective competition restrains the market power of each firm in the market. A horizontal merger between former competitors reduces the number of competing firms after the merger. The most direct loss of the merger is the loss of competition between the merged entities. If one of the firms before the merger would raise its price, some demand would switch to the rival firms. The merger reduces this competitive constraint. Furthermore, after the price increase some demand will switch to the remaining competitors, which, in turn, will also find it profitable to increase their prices.<sup>6</sup> Oligopoly theory confirms this argument. Prior to the merger, firms make their price and output decisions independently of their competitors. But “after the merger, the merged firms maximize their joint profits, and thereby take into account the detrimental effect of quantity increases or price cuts on the market share of each others’ products”.<sup>7</sup> Due to the creation or increase of market power of the merged firm, the merged firm is able to raise prices above the competitive level and restrict output. This yields an allocative inefficiency, since a market outcome is allocatively efficient when the price is set equal to the marginal cost of production.<sup>8</sup>

Mergers may also have coordinated effects by increasing the risk of collusion. After the merger the number of firms is reduced. This reduction facilitates collusion since it becomes easier to monitor a cartel and this cartel will suffer from fewer coordination problems. It is widely recognized that the lower the number of firms in the market, the higher the scope for collusion and the more likely that firms will charge higher prices.<sup>9</sup> Coordination can occur in various forms. The most likely form of coordination is that firms charge prices above the competitive level. Other forms, for example limited production or the division of the market, are also possible.<sup>10</sup>

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<sup>5</sup> ABA, section of antitrust law (2005). *Market Power Handbook: Competition Law and Economic Foundations*. Chicago: ABA.

<sup>6</sup> Guidelines on the Assessment of Horizontal Mergers, 2004 O.J. (C 31) 5, available at [http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/c\\_031/c\\_03120040205en00050018.pdf](http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/c_031/c_03120040205en00050018.pdf).

<sup>7</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 23.

<sup>8</sup> Padilla, A.J. (2005). Efficiencies in Horizontal Mergers: Williamson Revisited. In: W.D. Collins (Ed.), *Issues in Competition Law and Policy*. Chicago: American Bar Association Press.

<sup>9</sup> Motta, M. (2004). *Competition Policy: theory and practice*. Cambridge: Cambridge University Press, p. 251.

<sup>10</sup> Guidelines on the Assessment of Horizontal Mergers, 2004 O.J. (C 31) 5, available at [http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/c\\_031/c\\_03120040205en00050018.pdf](http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/c_031/c_03120040205en00050018.pdf).

To which extent these effects actually raise prices in the market depends on a number of factors.<sup>11</sup> The merged firm may not be able to increase prices when: competitors are present which produce similar products; entry is likely; strong buyers have countervailing bargaining power; or one of the merging firms is failing.<sup>12</sup>

The effect of a price increase resulting from a merger is two-fold. Both of these effects are illustrated in figure 1 below. Figure 1 shows the welfare effects of a merger. This is the same analytical framework Williamson used in his classic “trade-off” model. Before the merger in a homogeneous goods market, where unit costs are constant, the competitive price  $P_1$  is equal to average cost (“AC”) in a long-run equilibrium. It should be noted that where before the merger, there is already market power;  $P_1$  would already be above AC. After the merger, market power is created or increased, so that price rises to  $P_2$ . The price increase implies a transfer of wealth from consumers to producers, represented by area B. This is a distributional effect. As we will see below, it depends on the applied welfare standard whether this distributional effect is regarded as negative.

Second, an increase in price above AC causes an allocative inefficiency, the dead-weight loss (C). As can be derived from figure 1, the analysis does not end at this point. A decrease in the average cost of production from  $AC_1$  to  $AC_2$  leads to an increase in productive efficiency. This increase in productive efficiency (A) needs to be traded off against the net losses from reduced consumption (C).

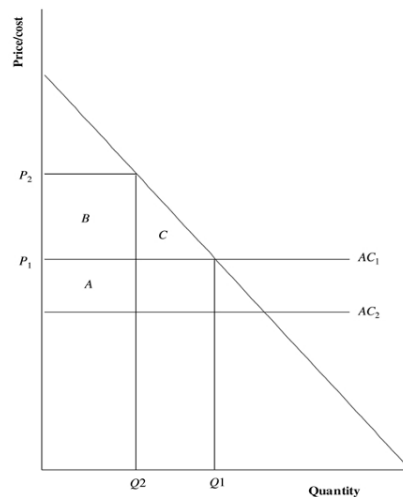


Figure 1. Welfare effects of a merger<sup>13</sup>

<sup>11</sup> I will only mention these factors briefly since the main focus of this thesis is on the efficiency effects from mergers.

<sup>12</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 23.

<sup>13</sup> Ilzkovitz, F. & Meiklejohn, R. (2003). European Merger Control: Do We Need an Efficiency Defence? *Journal of Industry, Competition and Trade*, 3:1/2, p. 59.



## **2.2 Efficiency Gains from Mergers**

As we have seen in the previous section, the anti-competitive effects of a merger should be traded off against possible efficiencies that may arise from the merger. But what kind of efficiencies may arise from a merger, and how do they affect efficiency in terms of allocative, productive and dynamic efficiency?

Efficiencies from a horizontal merger can arise from various sources. A horizontal merger may reduce the costs of supplying the market, and if this reduction in costs is passed on to the consumer in the form of lower prices, it will ultimately benefit consumers. Furthermore, mergers may create increased incentives for research and development (“R&D”) or savings from purchasing economies. Below I will identify the possible efficiencies from mergers. I will use a categorization of the different efficiency effects, which is widely used in the literature on the productivity measurement of mergers:<sup>14</sup>

- 1) Rationalization of production
- 2) Economies of scale and scope
- 3) Technological progress
- 4) Purchasing economies
- 5) X-inefficiency

These efficiencies may arise from a merger and are grounded in economic theory. The size of these efficiencies depends on many different factors, such as the intensity of competition before and after the merger or the size of the merging firms. In the next chapter I will evaluate if these theoretical effects actually occur in practice and see whether mergers do indeed generate efficiencies.

### **2.2.1 Rationalization of production.**

Rationalization refers to the optimal allocation of the production levels across the different plants of a firm.<sup>15</sup> Assume two firms with different marginal cost of production (“MC”). Differences in MC may stem from a variety of sources. The two firms may differ in the amount of physical capital or may have asymmetrical capacity constraints.<sup>16</sup> Furthermore, one of the firms could have an inherent competitive

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<sup>14</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 13.

<sup>15</sup> *Ibid.*, at 14.

<sup>16</sup> Padilla, A.J. (2005). Efficiencies in Horizontal Mergers: Williamson Revisited. In: W.D. Collins (Ed.), *Issues in Competition Law and Policy*. Chicago: American Bar Association Press.

advantage, due to a patent or other superior knowledge.<sup>17</sup> If these two firms merge, rationalization can occur by the transfer of production from the plant with higher MC to the plant with lower MC. Production levels across the plants will be optimally allocated, if MC is equal at all plants. This rationalization could even lead to the extreme case of shutting down production at the plant, which produces at a higher MC for all relevant production levels. By rationalization, costs savings are realized without changing the firms' joint production capabilities.<sup>18</sup> Clearly, rationalization has a positive effect on productive efficiency. A market is productive efficient if production is undertaken at the lowest possible marginal cost of production, and thus equal to average total cost in a long-run equilibrium.

### **2.2.2 Economies of scale and scope.**

In contrast with rationalization of production, economies of scale and scope in the production process expand the joint production possibilities of the firm after the merger. A firm can benefit from economies of scale when its average cost decreases as output increases. Post-merger, both firms have a certain level of fixed costs, i.e. costs that do not increase as total output increases. Even when production is minimal, the firm will have some expenditure on essential tasks, such as the purchasing of materials, billing of customers, marketing, and human resources. These costs are called indivisible. Before the merger both firms incur these costs separately, but after the merger the firm is able to spread these costs over the larger combined output. Duplication of fixed costs is avoided by the merger.<sup>19</sup> These economies of scale can be achieved already in the short-run, when capital is held fixed.

In the long-run, economies of scale can be achieved by the combination and integration of the assets of the merging parties. Previously independent investments in physical capital can be coordinated post-merger which could lower MC by the attainment of superior technology or through specialization.<sup>20</sup> Economies of scope are achieved when the cost of production of two products together is lower than the sum of the cost of producing these two products separately. For example, a common input is

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<sup>17</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 14.

<sup>18</sup> *Ibid.*, at 14.

<sup>19</sup> *Ibid.*, at 15.

<sup>20</sup> See for a more extensive discussion on the economies of scale that may arise from a merger: Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, pp. 15-16.

required to produce both products.<sup>21</sup> If these economies can be obtained by the merger, the merger will lower the average cost of production, and thus affect productive efficiency.

### **2.2.3 Technological progress.**

Diffusion of know-how across the merging parties may also lead to an improvement in productive efficiency. If the merging parties differ in their technological or administrative capabilities, technological progress can be increased by sharing knowledge and skills. This diffusion can be either one-way or two-way. One-way diffusion occurs when the firm with inferior know-how learns and adopts all skills from the partner with superior know-how. Two-way diffusion is possible when the merging parties are able to combine complementary assets and skills to improve technological progress.<sup>22</sup> This will bring the firms closer to their joint production possibilities frontier, without shifting the frontier itself.<sup>23</sup>

In addition, the merger can have an important effect on dynamic efficiency. The merger may alter the incentives to engage in costly R&D. Besides the economies of scale that can be attained in R&D expenditures, the merger could help to internalize some of the benefits from R&D among the merging firms, and thereby creating an increased incentive for R&D.<sup>24</sup> Röller *et al.* expect this effect because a horizontal merger reduces competition in the market through the merger of two former competitors. Whether the merger has this effect is questionable. Different scholars have addressed the question of the impact of competition on the incentives for R&D, but the result is still ambiguous. A recent study by Aghion showed that the relationship between innovation and product market competition is an inverted U-shape: innovation increases when concentration is low, but decreases when concentration is high.<sup>25</sup> Due to these uncertainties it is difficult to define the effect of a merger on innovation. In the next chapter we will evaluate empirical studies that focus on the effects of mergers on innovation.

### **2.2.4 Purchasing economies.**

A merger may also generate significant purchasing economies. This can be a result of increased bargaining power, but also when there is no increase in bargaining power. If upstream suppliers use two-part tariffs, consisting of a fixed fee and a price per unit, the merger allows the merged firm to

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<sup>21</sup> Ilzkovitz, F. & Meiklejohn, R. (2003). European Merger Control: Do We Need an Efficiency Defence? *Journal of Industry, Competition and Trade*, 3:1/2, p. 61.

<sup>22</sup> *Ibid.*, at 61.

<sup>23</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 17.

<sup>24</sup> *Ibid.*, at 18.

<sup>25</sup> Aghion, Phillipe; Bloom, Nicholas; Blundell, Richard; Griffith, Rachel & Howitt, Peter (2005). Competition and Innovation: An Inverted U Relationship. *The Quarterly Journal of Economics*, 2, p. 47.

spread the fixed fee over the combined amount of supplies. This reduces the average price for their supplies.<sup>26</sup> Furthermore, if the merger increases the bargaining power of the merged firm, quantity discounts may be negotiated with the upstream suppliers. It should be noted, however, that if the merged firm will have substantial bargaining power after the merger and there is little bargaining power on the side of the upstream supplier, this could have significant anti-competitive effects. Finally, a merger may lead to a lower cost of capital. These purchasing economies have both redistributive and real cost reducing effects.<sup>27</sup> Therefore purchasing economies affect both allocative and productive efficiency.

### **2.2.5 X-inefficiency.**

In large firms the management is in control of the firm, while shareholders are the owners of the firm. This separation between ownership and control could lead to X-inefficiency.<sup>28</sup> The main goal of the shareholders is profit maximization, but the goals of the management may diverge from profit maximization. Röller *et al.* recognizes several other goals of the management that could lead to the failure to maximize the profits of the firm: the personal ambitions to obtain power; to become the leader of a big or growing firm; not to change a chosen strategy and thereby admitting old mistakes or to avoid to fire excess personnel.<sup>29</sup> The problem of the separation of ownership and control may be reduced by profit maximizing incentives systems, but others like Manne and Marris argue that the market for corporate control will solve this principal-agent problem.<sup>30</sup> They argue that X-inefficiency lowers the firm's share price. This creates incentives for other firms or investors to take over the firm and reorganize the firm. The threat of take-over puts pressure on management to maximize profits, and thus creates incentives to avoid X-inefficiencies. However, it is questionable whether this take-over threat is credible. Take-overs are very costly and therefore may only be used in cases of severe mismanagement.<sup>31</sup>

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<sup>26</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 19.

<sup>27</sup> *Ibid.*, at 13 and 19.

<sup>28</sup> If a firm is producing the maximum output it can, given the resources it employs, and the best technology available, a firm is x-efficient. See Leibenstein, H. (1966). Allocative Efficiency vs. X-Efficiency. *American Economic Review* 56 (3), 392–415.

<sup>29</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 19.

<sup>30</sup> Manne, H.G. (1965). Mergers and the Market for Corporate Control. *The Journal of Political Economy*, 73 (2), 110-120, and Marris, R. (1964). *The Economic Theory of Managerial Capitalism*. Illinois: Free Press of Glencoe.

<sup>31</sup> Ilzkovitz, F. & Meiklejohn, R. (2003). European Merger Control: Do We Need an Efficiency Defence? *Journal of Industry, Competition and Trade*, 3:1/2, p. 62.

Furthermore, as we have seen above, a merger may reduce competition in the product market, which would also reduce the disciplining power of the product market and cause X-inefficiency. Others have argued the opposite, that increased competition limits managerial incentives and creates X-inefficiency.<sup>32</sup> Thus, the effect of competition on the internal efficiency of the firm may be either positive or negative.<sup>33</sup> Consequently, it is difficult to define the effect that a merger may have on the internal efficiency of the firm.

### ***2.3 The Right Welfare Standard***

The previous two sections described both the anti-competitive and efficiency effects that may arise from a merger. I have illustrated both of these effects in figure 1. Due to increased market power the merged firm is able to raise price above cost, thus yielding an allocative inefficiency. This is shown by area C. In addition, the rise in price leads to a transfer of consumer wealth to the producer (B). Consumers are worse off because they have to pay a higher price for the products. The internal efficiencies described above may lower the average cost of production, and thereby generate an increase in producer surplus. Area A represents this increase in producer surplus. Total welfare, the sum of producer and consumer surplus, increases or decreases, depending on the relative sizes of area C and A. If the efficiency effect (A) is larger than the dead-weight loss (C), total welfare will increase. Williamson consequently argued that a merger should be allowed, provided that the productive efficiency gain, which is a real resource gain, exceeded the dead-weight loss.<sup>34</sup>

How large the efficiency effect needs to be to offset the losses from the increased price is determined by the degree of competition, both before and after the merger.<sup>35</sup> The size of the efficiency effect depends on the industry output. The size of the losses from the increased price depends on the price-cost margin. Assuming that both the expected cost reduction and the expected output reduction are known, the expected welfare gains and losses from the merger can be calculated. Pre-merger output times the expected cost reduction would be approximately equal to the welfare gains of the merger. The

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<sup>32</sup> See Hermalin, Benjamin E. (1992). The Effects of Competition on Executive Behavior. *Rand Journal of Economics*, 23(3), 350-65 or Horn, H., Lang, H. & Lundgren, S. (1995). Managerial Effort Incentives, X-Inefficiency and International Trade. *European Economic Review*, 39(1), 117-38.

<sup>33</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 22.

<sup>34</sup> Williamson, Oliver E. (1968). Economies as an Antitrust Defence: The Welfare Trade-offs. *American Economic Review*, 58, 18-36.

<sup>35</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 30.

pre-merger mark-up of price over cost times the expected output reduction would be approximately equal to the welfare losses from the merger.<sup>36</sup>

Although theoretically correct, it is difficult to apply the Williamson analysis in practice to evaluate proposed mergers. First, Williamson assumes that all firms in the industry participate in the merger. Williamson considered the welfare implications of a merger to monopoly.<sup>37</sup> In practice only a few firms in the industry will participate in the merger, and there will be some form of competition before and after the merger. There are many different modes of competition, and accordingly competition authorities should apply, in each merger case, the right competitive model that reflects the actual mode of competition.<sup>38</sup> Röller *et al.* recognize that this is difficult because competition authorities are not always well informed about the market that they investigate. Secondly, the Williamson model only evaluates the effects of a merger in one market; it does not evaluate possible efficiency effects that the merger may have in other markets.<sup>39</sup> Furthermore, to show the potential of the proposed merger, the merging firms will claim as high efficiencies as possible, and therefore the competition authorities will have to evaluate these claims critically. The Williamson model may not be useful in this evaluation because this model relies on the pre-merger assessment of the expected cost and output reduction. It is very difficult to quantify these two effects before the merger.

Despite these difficulties, the Williamson model is of interest because it argues that in merger analysis a total welfare approach should be adopted. As we will see below, different scholars have argued otherwise. The discussion above described that a horizontal merger may affect allocative, productive and dynamic efficiency. The impact of mergers on all three types of efficiency is unlikely to be in the same direction or magnitude. As a result, competition authorities often face complex economic trade-offs.<sup>40</sup> Most economists agree that the effects of a merger on all three types of efficiency can only be considered in merger analysis when a total welfare standard is adopted, under which the effects of a merger on both consumer welfare and industry profits receive consideration.<sup>41</sup> Padilla showed that the

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<sup>36</sup> *Ibid.*, at 32.

<sup>37</sup> Padilla, A.J. (2005). Efficiencies in Horizontal Mergers: Williamson Revisited. In: W.D. Collins (Ed.), *Issues in Competition Law and Policy*. Chicago: American Bar Association Press, p. 20.

<sup>38</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 29.

<sup>39</sup> De la Mano, M. (2002). For the customer's sake: the competitive effects of efficiencies in European merger control (EC DG Enterprise Paper No 11). Luxembourg: Office for Official Publications of the European Communities, p. 24.

<sup>40</sup> *Ibid.*, at 14.

<sup>41</sup> See Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 30. See also, Muris, T.J. (1980). The Efficiency Defense Under Section 7 of the

main difference between a total welfare standard and the consumer welfare standard lies in the treatment of efficiencies.

A consumer welfare standard is mainly concerned with the competitive, or price effects, of mergers. This is not a pure price standard. A merger might be cleared even when price increases, if the overall benefit to consumers is positive, because of an increase in quality. In the remainder of this thesis, I will only refer to price, by which is meant quality-adjusted price.<sup>42</sup>

A consumer welfare standard only allows for efficiencies, if these efficiencies benefit consumers through lower prices. The transfer of wealth from consumers to producers, area B in figure 1, is regarded as negative. Therefore, a merger will only be allowed if the efficiency effect, area A, is larger than both areas B and C in figure 1. A total welfare standard is not concerned with the distributional effect of the merger. It does not take into account area B in figure 1. Thus, the total welfare standard allows a merger even if it raises price after the merger. In contrast to the consumer welfare standard, under a total welfare standard efficiencies do not have to be passed on to consumers.

According to several economists the total welfare standard should be applied in merger analysis because it is very difficult to assess the redistributive effects of a merger before the merger has taken place.<sup>43</sup> In addition, it is unclear why a transfer from consumer surplus to producer surplus should be regarded as negative. Heyer notes that in a sense an economy's producers are consumers as well, although consumers of products they do not produce themselves.<sup>44</sup> There is no basis for deciding that consumer surplus is more important than producer surplus. For this reason Padilla concludes that it is "unclear why a merger criterion that embraces not only efficiency but also distributive justice should be biased by construction in favor of consumers."<sup>45</sup>

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Clayton Act. *Case Western Law Review*, 30, 381-432, and Padilla, A.J. (2005). Efficiencies in Horizontal Mergers: Williamson Revisited. In: W.D. Collins (Ed.), *Issues in Competition Law and Policy*. Chicago: American Bar Association Press.

<sup>42</sup> Renckens, A. (2007). Welfare Standards, Substantive Tests, and Efficiency Considerations in Merger Policy: Defining the Efficiency Defense. *Journal of Competition Law and Economics*, 3(2), pp. 155-156.

<sup>43</sup> De la Mano, M. (2002). For the customer's sake: the competitive effects of efficiencies in European merger control (EC DG Enterprise Paper No 11). Luxembourg: Office for Official Publications of the European Communities, p. 19.

<sup>44</sup> Heyer, K. (2006). Welfare Standards and Merger Analysis: Why Not the Best? *Competition Policy International*, 2(2), p. 3.

<sup>45</sup> Padilla, A.J. (2005). Efficiencies in Horizontal Mergers: Williamson Revisited. In: W.D. Collins (Ed.), *Issues in Competition Law and Policy*. Chicago: American Bar Association Press, p. 27.

Others like Werden and Fridolfsson come to the conclusion that a consumer welfare standard should be applied, because competition authorities could more easily deal with this standard.<sup>46</sup> Accordingly, employing a total welfare standard is more costly than a consumer welfare standard. Furthermore, Renckens proposes to specify an efficiency defense along two dimensions: “a conceptual one—related to the welfare standard—and a procedural one—related to the application of the substantive test.”<sup>47</sup> In line with this, Farrell and Katz have argued that in order to maximize total utility on a conceptual level, competition authorities have to concentrate on maximizing consumer welfare on a procedural level. A consumer welfare standard at the process level gives competition authorities a pro-consumer counterweight to firms’ representation of their interests by choice of conduct and during lobbying, litigation and bargaining.<sup>48</sup>

Where does this leave us? The chosen welfare standard has an important influence on the strength of the efficiency defense in merger analysis by the competition authorities.<sup>49</sup> Under a consumer welfare standard there is less scope to take into account efficiencies than under a total welfare standard. Consequently, the question arises whether the scope to take into account efficiencies should be large or whether the competition authorities should be cautious when judging the claimed efficiency benefits from mergers. In order to answer this question I will now evaluate the empirical evidence on the performance of mergers.

### 3. Merger Performance

In the previous chapter I have made clear that the chosen welfare standard defines the scope to take into account efficiencies in merger analysis by the competition authorities. In this chapter I will evaluate the empirical evidence on the performance of mergers, to see whether in practice efficiencies are generated by merger.

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<sup>46</sup> Fridolfsson, S. & Stennek, J.(2005). Why Mergers Reduce Profits and Raise Share Prices-A Theory of Preemptive Mergers. *Journal of European Economic Association*, 3, 1083-1104, and Werden, G.J. (1996). A robust test for consumer welfare enhancing mergers among sellers of differentiated products. *Journal of Industrial Economics*, 44(4), 409–413.

<sup>47</sup> Renckens, A. (2007). Welfare Standards, Substantive Tests, and Efficiency Considerations in Merger Policy: Defining the Efficiency Defense. *Journal of Competition Law and Economics*, 3(2), p. 152.

<sup>48</sup> Farrell, J. & M.L. Katz (2006). The Economics of Welfare Standards in Antitrust. *Competition Policy International*, 2(2), 3-28.

<sup>49</sup> Renckens, A. (2007). Welfare Standards, Substantive Tests, and Efficiency Considerations in Merger Policy: Defining the Efficiency Defense. *Journal of Competition Law and Economics*, 3(2), p. 175.



Merger performance has been studied in two ways; outcome and event studies. Financial economists appreciate mergers as a market process of allocating scarce resources to their most effective use.<sup>50</sup> They strongly believe that the stock market is able to correctly anticipate mergers' competitive effects.<sup>51</sup> To find evidence for this hypothesis, financial economists focused on the abnormal reaction of share prices around the announcement of a merger. This method is referred to as "event studies". If the assumption is made that the stock market is efficient, one potential benefit of this method is that share prices reflect the present value of expected future profits created by firms.<sup>52</sup>

In contrast, industrial organization economists are much more skeptical towards the ability of the market to correctly anticipate mergers' competitive effects. Industrial organization economists research the firms' economic performance and measure the (accounting) profits of the merging entities before and after the merger. These studies are called "outcome studies".

Not all of these studies have attempted to directly research possible efficiencies from mergers. Nevertheless, these studies can be used to show indirectly the existence and size of efficiency gains from merger. For example, if company performance is found to increase after the merger, this may be because of two reasons; the merger created market power or efficiency gains improved the competitiveness of the merged firm. A combination of both is also possible.<sup>53</sup> The main problem is how to disentangle the anti-competitive effect from the efficiency effect. In an attempt to solve this problem I will also review several studies that analyzed the effect of mergers on consumer prices and competitors' share prices. I will first review outcome studies focusing on the effects of mergers on profits, and market shares. Hereafter, I will analyze several outcome studies that study the effects of merger on other indicators, such as productivity, innovation, and consumer prices. Finally, I will elaborate upon the evidence from event studies on the effect of a merger on share prices.

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<sup>50</sup> Tichy, Günther (2001). What Do We Know about Success and Failure of Mergers? *Journal of Industry, Competition and Trade*, 1(4), p. 347.

<sup>51</sup> Duso, T., Gugler, K. & Yurtoglu, B. (2006). *Is the Event Study Methodology Useful for Merger Analysis? A Comparison of Stock Market and Accounting Data*. WZB Markets and Politics, Working Paper No. SP II 19, p. 1.

<sup>52</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). *Efficiency Gains from Mergers* (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 30.

<sup>53</sup> *Ibid.*, at 35.

### 3.1 Outcome Studies

#### 3.1.1 Effects of mergers on profits.

Most of the outcome studies into mergers have tried to find the effect of mergers on firm performance in terms of profitability. As we have seen in the previous chapter, from a theoretical viewpoint a merger may increase or decrease profitability, depending on the market shares of the merged entities, entry conditions, countervailing bargaining power, and efficiencies. A horizontal merger may increase market power, which would lead to a decrease in output and an increase in price. Furthermore, a merger may generate efficiencies, which could improve productive efficiency of the merged entity and increase profitability. However, we have seen that a merger can also increase X-inefficiency, which would lower profitability.

The outcome studies use different methods, comparing the merging firms with their base industry or matching firms, applying different time horizons and comparing cash flows or profits. As indicated by Tichy, this does not lead to much variance in the results of these studies. Variance may be attributed to the composition of the sample.<sup>54</sup>

Already in 1977 Meeks concluded that mergers do not create value and that most of them are even unprofitable for the participating firms.<sup>55</sup> Meeks studied the effect of merger on the rate of return on assets ("ROA"). He used a large sample of take-overs by U.K. listed firms of typical small firms, with average profitability, between 1964 to 1972. The U.K. listed firms typically had a higher profitability in comparison with a control group. Meeks found a decline in ROA for acquirers after the transaction. He concluded that nearly two-thirds of the acquirers had a ROA that was below the standard of the industry. According to Meeks a merger is just a disappointing marriage.

Similar negative results were reported by Dickerson *et al.* in 1997.<sup>56</sup> Dickerson *et al.* used a panel of almost 3000 U.K. listed firms that undertook acquisitions during the period 1948-1977. They found that acquisitions had a negative impact on company performance as measured by the ROA. In addition, Dickerson *et al.* concluded that internal growth was superior to merger, since a doubling of internal

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<sup>54</sup> Tichy, Günther (2001). What Do We Know about Success and Failure of Mergers? *Journal of Industry, Competition and Trade*, 1(4), p. 354.

<sup>55</sup> Meeks G. (1977). *Disappointing Marriage: A Study of the Gains from Merger*. Cambridge: Cambridge University Press.

<sup>56</sup> Dickerson A.P., Gibson H.D. & Tsakalotos E. (1997). The Impact of Acquisitions on Company Performance: Evidence From a Large Panel of UK Firms. *Oxford Economic Papers*, 49, 344-361.

growth increases long-term profits by 7%, while growth by mergers only causes profits to increase by ¼%.<sup>57</sup>

Probably the most famous study in this field is done by Ravenscraft and Scherer.<sup>58</sup> In terms of sample size, time span and care in handling the data this study was the most ambitious of all studies into merger performance.<sup>59</sup> Ravenscraft and Scherer used a special line-of-business database maintained by the Federal Trade Commission in the US. They used a very large sample of firms undertaking acquisitions during a very long period, i.e. 1950-1977. They found that acquiring firms were one to two percent less profitable in terms of operating income to assets. In addition, they found that merger intensity has a negative impact on profitability. Similar negative results are found by several other studies.<sup>60</sup> Moreover, Gugler *et al.* concluded that even if a merger shows improvements in profitability these are due to the creation of market power rather than efficiency or these improvements are not merger-specific.<sup>61</sup>

Two important studies actually found significant improvements in profitability. Healy *et al.* study post-merger performance of the 50 largest US mergers between 1979 and 1984. They use cash flow returns on assets and they use industry performance as a benchmark. They concluded that the industry adjusted return increased to around 3 percent after the merger.<sup>62</sup> Also Ikeda and Doi found statistical significant profit increases for a sample of forty-nine merging firms in the Japanese manufacturing industry between 1964 and 1975.<sup>63</sup> However, these positive results appear to be rare.

Furthermore, Mueller carried out several studies into merger profitability across several European countries and the US.<sup>64</sup> The dataset consists of firms undertaking mergers in the period 1962-1972. The same methodology is used in all the studies and therefore these studies allow a good international comparison between parts of Europe and the US. The sample is compared with matching firms and the

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<sup>57</sup> Tichy, Günther (2001). What Do We Know about Success and Failure of Mergers? *Journal of Industry, Competition and Trade*, 1(4), p. 358.

<sup>58</sup> Ravenscraft D.J. & Scherer, F. Michael (1987). *Mergers, Sell-offs, and Economic Efficiency*. Washington, D.C.: Brookings Institution.

<sup>59</sup> Mueller, D.C., (1980). *The Determinants and Effects of Mergers: An International Comparison*. Cambridge, MA: Oelgeschlager, Gunn & Hain.

<sup>60</sup> See Tichy, Günther (2001). What Do We Know about Success and Failure of Mergers? *Journal of Industry, Competition and Trade*, 1(4), 347-394. Tichy collects the most important results from about 80 empirical merger studies.

<sup>61</sup> Gugler, Klaus & Mueller, Dennis C. & Yurtoglu, B. Burcin & Zulehner, Christine (2003). The effects of mergers: an international comparison. *International Journal of Industrial Organization*, 21(5), p. 648.

<sup>62</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 3.

<sup>63</sup> Ikeda, Katsuhiko & Doi, Noriyuki (1983). The Performance of Merging Firms in Japanese Manufacturing Industry: 1964-75. *Journal of Industrial Economics*, 31, 257-266.

<sup>64</sup> Mueller, D.C., (1980). *The Determinants and Effects of Mergers: An International Comparison*. Cambridge, MA: Oelgeschlager, Gunn & Hain.

industry average. Profitability was measured by the rate of profit on equity, the rate of profit on total assets, and the rate of profit on sales. Mueller did not find any significant difference in the profitability of merged firms. Although no hard conclusions on the profitability of merged firms can be drawn from the research by Mueller, these studies are of importance because Mueller did find that post-merger patterns of profit and sales changes are similar across nations. This finding was recently confirmed in a study by Gugler *et al.* in 2003.<sup>65</sup>

Several other studies have found insignificant differences in profitability between merged firms and their control groups. Also some positive effects of a merger on profitability have been reported. But the preponderance of evidence for post-merger profitability suggests that mergers decrease profitability. It should be noted, however, that the empirical evidence is limited. Most of these studies concern mergers in manufacturing during the 1960s and 1970s. In addition, the empirical literature suffers from several methodological problems and one should be careful to draw too strong conclusions from this empirical evidence. For example, a merger could have a positive external effect, i.e. the outsiders may gain from the increase in price, without having to reduce their own production. As a result, measuring merger performance relative to the performance of firms may produce biased estimates, since the external effect is not controlled for.<sup>66</sup> Yet, the evidence for the hypothesis that mergers reduce profitability appears to be consistent across studies of financial as well as non-financial mergers as well as time periods.<sup>67</sup>

### **3.1.2 Effects of mergers on market shares.**

If a merger creates market power, the merged firm will be able to increase its price and lower its output. Increased demand will be available for competitors. Competitors will respond by expanding their output and raising their prices. To what extent prices are raised and output is restricted depends on the mode of competition in the market. In a market of Cournot competition, competitors would respond by increasing their output relatively much, but under Bertrand competition, competitors would respond by raising their prices relatively much.<sup>68</sup> Theory thus predicts that a merger generating significant market power will decrease the combined market shares of the merged entity. In case a merger also generates

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<sup>65</sup> Gugler, Klaus & Mueller, Dennis C. & Yurtoglu, B. Burcin & Zulehner, Christine (2003). The effects of mergers: an international comparison. *International Journal of Industrial Organization*, 21(5), p. 651.

<sup>66</sup> Fridolfsson, S. & Stennek, J.(2005). Why Mergers Reduce Profits and Raise Share Prices-A Theory of Preemptive Mergers. *Journal of European Economic Association*, 3, p. 1099.

<sup>67</sup> Schenk, Hans (2006). Mergers and Concentration Policy. In: Bianchi, P., Labory, S. (Ed.), *International Handbook of Industrial Policy*. Cheltenham: Edward Elgar.

<sup>68</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 47.

significant efficiencies, prices may be lowered by the merged firms and market shares may be increased. In contrast, a merger that reduces the efficiency of the merged firms may exacerbate the decrease in market shares of the merged firms.

The earliest study into the effects of a merger on the market share of the merged entity was done by Goldberg in 1973. Goldberg did not find significant changes in market shares of 44 advertisement firms in the 3.5 years following a merger.<sup>69</sup> Mueller reported significant declines in market shares of 209 manufacturing firms over an average of 11 years following the mergers.<sup>70</sup> Also Baldwin and Gorecki find significant declines in market shares for a sample of plants acquired in horizontal mergers. Interestingly, Baldwin and Gorecki did not find significant declines in market shares of plants acquired in non-horizontal mergers.<sup>71</sup> A study by Pharma Strategy Consulting showed a decline in market shares of 11 out of 12 pharmaceutical firms participating in a merger in the period 1990-1998, while 6 non-merging pharmaceutical firms increased their market shares.<sup>72</sup> Finally, Gugler *et al.* addressed the effects of a merger on both sales and profitability. They found that on average mergers do result in significant increases in profits, but reduce sales of the merging firms. Gugler *et al.* showed that only half of the mergers increased profitability. They concluded that “If one categorizes mergers that increase market power or that reduce efficiency as welfare reducing, then a majority of the mergers taking place around the world over the last 15 years appear to be welfare reducing”.<sup>73</sup>

### **3.1.3 Effects of mergers on productive and dynamic efficiency.**

A direct way of estimating the efficiency gains generated by mergers would be to measure productivity gains and economies of scale following a merger. In the previous chapter we have seen that there are several sources of efficiencies that could improve productive efficiency, for example economies of scale, economies of scope, and X-efficiency.

Not many studies have addressed this subject, but according to Schenk bank mergers show that mergers at best lead to very little improvements in productive efficiency.<sup>74</sup> Indeed, a study by Berger

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<sup>69</sup> Goldberg, L.G., (1973). The effect of conglomerate mergers on competition. *Journal of Law and Economics*, 16, 137–158.

<sup>70</sup> Mueller, D. C. (1985). Mergers and Market Share. *Review of Economics and Statistics*, 67(2), 259-267.

<sup>71</sup> Baldwin, J. & Gorecki, P. (1990). Mergers Placed in the Context of Firm Turnover. In: Bureau of the Census, *1990 Annual Research Conference, Proceedings*. Washington D.C.: US Department of Commerce.

<sup>72</sup> Economist, The (2000, April 29). Good Heavens, good governance, European Business Survey. *The Economist*, 17.

<sup>73</sup> Gugler, Klaus & Mueller, Dennis C. & Yurtoglu, B. Burcin & Zulehner, Christine (2003). The effects of mergers: an international comparison. *International Journal of Industrial Organization*, 21(5), p. 651.

<sup>74</sup> Schenk, Hans (2006). Mergers and Concentration Policy. In: Bianchi, P., Labory, S. (Ed.), *International Handbook of Industrial Policy*. Cheltenham: Edward Elgar.

and Humphrey on the effects of a merger on productive efficiency for a sample of 57 U.S. banking mergers undertaken between 1981 and 1989, showed that on average the mergers were not successful in improving productive efficiency and that due to diseconomies of scale the merged firms even performed slightly worse on average.<sup>75</sup> In addition, Berger and Humphrey find on average a 5% improvement in X-efficiency after the merger, but this result was not statistically significant. Yet, one should be careful to draw too strong claims from these results. Similarly indicated by Röller *et al.* there do appear to be some very successful mergers as well as some very unsuccessful mergers.<sup>76</sup>

Also Akhavein *et al.* study the effects of very large mergers on efficiency and prices. They point out that in bank mergers there is great potential for X-efficiency gains, since banks in their sample generally had 20-25% higher costs compared to the observed best-practice banks. Thus, a transfer of efficiency could lead to great improvements in X-efficiency. Citing several other studies they conclude similar to Berger and Humphrey.<sup>77</sup> Akhavein *et al.* also propose a distinction between internal efficiency and profit efficiency. The difference between these two is that profit efficiency takes into account the cost and revenue effects of the choice of the output. They argue that banks by merging may be able to improve profit efficiency through superior product combinations. They concluded that merged banks experience a 16% increase in profit efficiency relative to other large banks.<sup>78</sup> Finally, Cowling *et al.* also report productive efficiency losses for a sample of non-financial mergers by British firms.<sup>79</sup>

In conclusion, indeed the empirical evidence on the effects of mergers on productivity tends to show little or negative effects on the productive efficiency of the merged firms following the merger. However, this can't lead to the conclusion that (bank) mergers generate at best very little improvements in productive efficiency. Although, on average, mergers do not appear to be successful in improving productive efficiency, there is great variance in these results. Some mergers are very unsuccessful and others are very successful. Also, it is not possible to draw conclusions on this evidence for mergers outside the banking industry. One conclusion I would like to make at this point is that the variance in the results of the study by Berger and Humphrey show that efficiency gains from merger should be assessed

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<sup>75</sup> Berger, Allen N. & Humphrey, David B. (1992) Megamergers in Banking and the Use of Cost Efficiency as an Antitrust Defense. *Antitrust Bulletin*, 37(3), 541-600.

<sup>76</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 50.

<sup>77</sup> Akhavein J.D., Berger A.N. & Humphrey D.B. (1997). The Effects of Megamergers on Efficiency and Prices: Evidence from a Bank Profit Function. *Review of Industrial Organization*, 12, pp. 100-101.

<sup>78</sup> *Ibid.*, at 118.

<sup>79</sup> Cowling, Keith, Stoneman, Paul, Cubbin J., Cable John, Hall, Graham, Domberger S. & Dutton P. (1980). *Mergers and economic performance*. Cambridge: Cambridge University Press.

on a case-by-case basis. This finding, in conjunction with the finding that a large amount of mergers may reduce profitability, leads to the conclusion that a general presumption that mergers create efficiency gains can't be sustained.

In chapter 2 I have described that a merger can have an important effect on dynamic efficiency. However, it is still unclear whether the merger would increase or decrease dynamic efficiency, since only a few studies addressed the effect of mergers on innovation.

Hitt *et al.* studied the effects of 191 acquisitions in the U.S. on the expenditures on R&D. Hitt *et al.* find that expenditures on R&D decreased significantly after merger.<sup>80</sup> They also find that fewer patents were filed by merged firms compared to the industry average. Similar results were obtained by Ravenscraft and Scherer. The only exception for this was found in the chemical industry.<sup>81</sup> In contrast, Hall and Healy *et al.* find unchanged expenditures on R&D.<sup>82</sup>

The empirical evidence on this subject is very limited. At this point there is a lack of a clear theoretical or empirical connection between increased concentration, resulting from merger, and innovation.<sup>83</sup> Further research is necessary to come to a more definite conclusion on the effect of mergers on innovation.

### ***3.1.4 Effects of mergers on consumer welfare.***

If profitability and productive efficiency increase post-merger, this does not mean that the merger is beneficial for consumer welfare. To what extent an increase in efficiency lowers consumer prices depends on the rate at which these efficiency gains are passed on to consumers. If profits rise and there are no efficiency gains, the profit gains may be merely distributional at the cost of other firms (reduction in market shares or reduced input prices) or at the cost of employees (layoffs or wage cuts) or at the cost of consumers (higher prices) or the government (tax savings).<sup>84</sup> Thus, pass-on determines the distribution of wealth in society following the merger. In addition, pass-on has an important effect on

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<sup>80</sup> Hitt, M.A., Hoskisson R.E., Ireland R.D. & Harrison J.S. (1991). Effects of Acquisitions on R&D Inputs and Outputs. *Academy of Management Journal* 34 (3), 693-706.

<sup>81</sup> Ravenscraft D.J. & Scherer, F. Michael (1987). *Mergers, Sell-offs, and Economic Efficiency*. Washington, D.C.: Brookings Institution.

<sup>82</sup> Hall, Bronwyn H. (1991). *The Impact of Corporate Restructuring on Industrial Research and Development*. NBER Working Paper No. W3216, and Healy P.M., Palepu K.G. & Ruback R.S. (1992). Does corporate performance improve after mergers? *Journal of Financial Economics*, 31, 135-175.

<sup>83</sup> West, Jeremy K.,(2007). *Dynamic Efficiencies in Merger Analysis* (OECD Working Paper No. 77). Paris: Organisation for Economic Co-operation and Development.

<sup>84</sup> Tichy, Günther (2001). What Do We Know about Success and Failure of Mergers? *Journal of Industry, Competition and Trade*, 1(4), p. 359.

the dead-weight loss of a merger.<sup>85</sup> The more efficiency gains are passed on to consumers, the smaller the dead-weight loss of a merger will be. Remember, a market is allocatively efficient when the price is set equal to the marginal cost of production. This implies that, for a market to be allocatively efficient, all the efficiency gains should be passed on to the consumers.

Röller *et al.* evaluated the empirical literature focusing on pass-on and found that the general empirical finding was that pass-on is incomplete. Although they stressed that a more detailed study is necessary, they concluded that pass-on roughly varies between 30% and 70%. This finding suggests that a horizontal merger that yields market power should generate large efficiencies, before consumers will benefit from the merger. This is an important finding, since this supports the view that a consumer welfare standard is stricter than a total welfare standard. Under a consumer welfare standard a merger that yields significant market power will only be cleared if very large efficiencies are expected from the merger, since only between 30% and 70% of any cost savings are passed on to consumers in the form of lower prices. Under a total welfare standard this distributional effect is not regarded as negative.

Another way of assessing the effect of mergers on consumer welfare is to study the effect of mergers on consumer prices. From the above discussion it is clear that a merger, which generates significant market power, will only lower consumer prices in exceptional cases. Only when the cost savings are passed on to consumers at a high rate, or when the efficiency gains are substantial. Surprisingly, there are only a few studies on the effect of a merger on consumer prices.

In 1984 Barton and Sherman undertook a case study of mergers in the microfilm industry. Barton and Sherman study the price changes of two types of microfilms: diazo and vesicular microfilms. They compare the relative prices before and after the merger and found that prices increased 12% and 23% for the two mergers.<sup>86</sup>

Several economists have investigated the effect of mergers on airfares in the airline industry. The airline industry is well suited for research into the effect of a merger on airfares because each route between each city-pair can be considered as a separate market. Therefore, a single merger affects many different routes i.e. a single merger generates a large number of observations.<sup>87</sup> Borenstein examined the price effects of two airline mergers approved by the competition authorities in 1986. Borenstein

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<sup>85</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 52.

<sup>86</sup> Barton, David M., & Sherman, Roger (1984). The Price and Profit Effects of Horizontal Merger: A Case Study. *Journal of Industrial Economics*, 33(2), 165-77.

<sup>87</sup> Weinberg, Matthew (2008). The Price Effects of Horizontal Mergers. *Journal of Competition Law and Economics*, 4(2), p. 439.



found a significant increase in airfares for one merger, but found little or no evidence for an increase in airfares for the other merger.<sup>88</sup>

Kim and Singal use a larger sample of airline mergers. They examine 14 mergers undertaken between 1985 and 1988. They compared the price changes of sample routes with the average price change in a control group. They find significant increases in airfares of 9.44% for the merged firms relative to the control group.<sup>89</sup> Kim and Singal also evaluated whether the price increases were offset by increases in quality. Since the number of customer complaints filed with a government agency tripled in the period 1985-1988, this idea was rejected.<sup>90</sup>

Generally, studies on the price effects of mergers find an increase in prices following a merger, due to increased unilateral market power, increased collusive potential and a price increasing response by the competitors of the merged firms.<sup>91</sup> This result, in conjunction with the finding that market shares of participating firms tend to decrease, does not mean that a merger does not create any efficiency gains, but what it does show is that the market power effect is larger than the efficiency effect of a merger. Again, this result supports the view that under a consumer welfare standard there is less scope to take into account efficiencies in merger analysis.

## 3.2 Event Studies

### 3.2.1 Effects of mergers on share prices.

Event studies focus on the abnormal reaction of share prices of the merging firms around the announcement of the merger. This methodology assumes that capital markets are efficient and therefore are able to correctly anticipate mergers' competitive effects.

In 1983 Jensen and Ruback reviewed several event studies conducted between 1956 and 1981. They concluded that, around the announcement of the merger<sup>92</sup>, targets' share prices increased by 20-30%.

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<sup>88</sup> Borenstein, Severin (1990). Airline Mergers, Airport Dominance, and Market Power. *American Economic Review*, 80(2), 400-404.

<sup>89</sup> Kim, E. Han, & Singal, Vijay (1993). Mergers and Market Power: Evidence from the Airline Industry. *American Economic Review* 83(3), p. 550.

<sup>90</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 44.

<sup>91</sup> Tichy, Günther (2001). What Do We Know about Success and Failure of Mergers? *Journal of Industry, Competition and Trade*, 1(4), p. 360.

<sup>92</sup> Jensen and Ruback reviewed studies that were concerned with both tender offers and mergers. The target gains more in tender offers than in mergers; Jensen, Michael C., Ruback & Richard S. (1983). The Market for Corporate Control: The Scientific Evidence. *Journal of Financial Economics* 11(1-4), 5-50.

This reaction was abnormal in the sense that the change in share prices was compared with the change in share prices of a non-merging control group. Most of these studies before 1983 had an observation window of a few days or, at most, a few weeks around the announcement of the merger.<sup>93</sup> Jensen and Ruback also survey the empirical evidence on the abnormal price changes of shares of the bidder. These effects seem to be less positive; four percent for tender offers and zero percent for mergers. This evidence would suggest a positive total return, since the targets' share prices increase and the bidders' share prices do not decrease. However, Jensen and Ruback are reluctant to make this conclusion. The bidding firms tend to be larger than target firms. Consequently, small percentage losses to bidders may be larger in absolute terms than large percentage gains to targets.

More recent studies have tried to solve this problem. For example, Bradley, Desai and Kim investigated 236 successful tender offers between 1963 and 1984. Gains to targets averaged 32 percent. Furthermore, they find that bidders realize a small increase of about one to two percent. These small increases declined at the end of the 1970s and became negative in the 1980s.<sup>94</sup> The combined gains averaged 7 percent during the whole period. This result was statistically significant and Bradley, Desai and Kim controlled for the above described problem of size differences. Even larger combined gains were found by Stulz, Walking and Song i.e. a significant gain of about 11 percent.<sup>95</sup>

In contrast, a study performed by Schenk concluded that for a sample of 110 very large acquisitions undertaken during 1993-2001 bidders' abnormal returns were negative. Results varied from minus 3.4 percent to minus 8.5 percent. The results found by Schenk varied depending on the chosen observation period. When the abnormal returns are measured over a longer period after the announcement of the merger, returns to bidders tend to decrease.<sup>96</sup> Tichy summarized 32 event studies with different observation windows in figure 2 and showed that returns to bidders decrease in the long-term.

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<sup>93</sup> Tichy, Günther (2001). What Do We Know about Success and Failure of Mergers? *Journal of Industry, Competition and Trade*, 1(4), p. 349.

<sup>94</sup> Bradley, Michael, Desai, Anand, & Kim, E. Han (1988). Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms. *Journal of Financial Economics*, 21(1), p. 13.

<sup>95</sup> Stulz, Rene M., Ralph A. Walking, & Moon H. Song (1990). The Distribution of Target Ownership and the Division of Gains in Successful Takeovers. *The Journal of Finance*, XLV, 817-833.

<sup>96</sup> Schenk, Hans (2006). Mergers and Concentration Policy. In: Bianchi, P., Labory, S. (Ed.), *International Handbook of Industrial Policy*. Cheltenham: Edward Elgar.

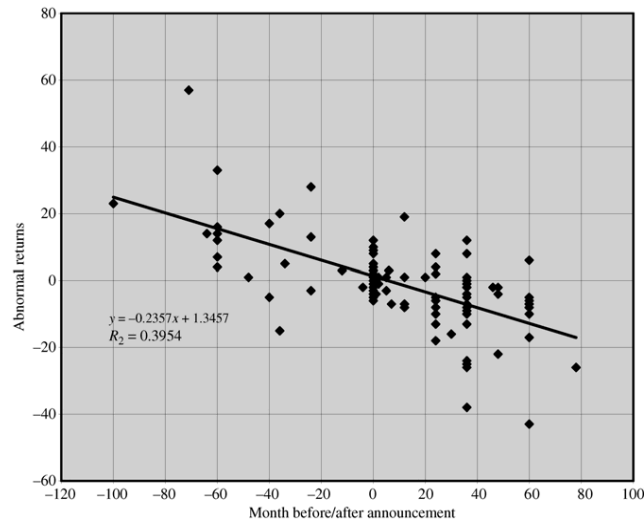


Figure 2. Decreasing long-run abnormal returns to bidders in event studies<sup>97</sup>

This finding contests the efficient market hypothesis, since it shows that, in the short-run, capital markets are unable to correctly predict merger performance. Therefore share prices may not correctly represent future profits.<sup>98</sup> All discussed event studies assumed that capital markets are efficient. Consequently, current empirical literature on the effects of mergers on share prices should be interpreted with care.

But even if the efficient market hypothesis is accepted, studies on the effects of mergers on share prices of the participating firms do not distinguish between the market power effect and the efficiency effect of mergers. To disentangle the effects from market power increases and from efficiency gains, Eckbo proposes to consider the effect of a merger on competitors' share prices. Mergers motivated by market power increases are beneficial for competitors, since these will be able to expand output and raise prices slightly to satisfy increased residual demand. On the other hand, mergers motivated by efficiencies will hurt competitors because they will become less competitive relative to the merged firm.<sup>99</sup> Unfortunately, the empirical evidence on competitors' share prices is inconclusive. Most studies find insignificant and very small effects.<sup>100</sup>

<sup>97</sup> Tichy, Günther (2001). What Do We Know about Success and Failure of Mergers? *Journal of Industry, Competition and Trade*, 1(4), p. 353.

<sup>98</sup> The efficiency of capital markets is hotly debated in the academic literature. See e.g. Shiller, R.J. (1984). Stock Prices and Social Dynamics. *Brookings Papers on Economic Activity*, 2, 457-510.

<sup>99</sup> Eckbo, B. Espen, (1983). Horizontal Mergers, Collusion, and Stockholder Wealth. *Journal of Financial Economics (JFE)*, 11, 241-273.

<sup>100</sup> For a more thorough discussion on this point, see Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, pp. 49-50.

In sum, event studies suggest that targets gain abnormal returns of around 20 to 30 percent, bidders gain slightly in the short-run but face negative returns in the long-run. Overall, the effects of mergers on share prices tends to be positive, but further research is necessary to disentangle the effects attributable to efficiency and the effects attributable to increased market power.

### **3.3 Additional Conclusions from Empirical Research**

In the previous sections we have seen that a merger may reduce profitability, market shares and even productive efficiency. In addition, a merger may raise consumer prices. But there are more conclusions to be drawn from the empirical literature on merger performance. Several determinants of success can be derived from this literature. For example, Scherer and Ravenscraft found that horizontal mergers are significantly more profitable than vertical mergers. Conglomerate mergers have the highest chance of failure. They conclude that the success of a merger depends on the relatedness of the activities of the merging firms.<sup>101</sup> In general, the empirical evidence indicates that mergers between firms with similar products or markets tend to be more successful. Another explanation for the fact that horizontal mergers are more profitable than conglomerate mergers may be that horizontal mergers create larger opportunities for market dominance.<sup>102</sup>

In addition, the success of a merger depends on the means of finance. Most of the studies on this issue suggest that mergers paid for in cash are likely to perform better than mergers via stock exchanges.<sup>103</sup> Furthermore, mergers of equal sizes are less successful relative to mergers in which the bidder is considerably larger than the target.<sup>104</sup> Finally, merger experience is no guarantee that a following merger will have a higher chance of success than would be the case for a first acquisition.<sup>105</sup>

These elements determine the success of a merger and therefore should be taken into account by the competition authorities in their assessment of proposed mergers.

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<sup>101</sup> Ravenscraft D.J. & Scherer, F. Michael (1988). Mergers and Managerial Performance. In: J.C. Coffee (Ed.), *Knights, Raiders and Targets*. New York: Oxford University Press.

<sup>102</sup> Megginson, W.L., Morgan A. & Nail L. (2004). The determinants of positive long-term performance in strategic mergers: Corporate focus and cash. *Journal of Banking and Finance* 28 (3), 523-552.

<sup>103</sup> Schenk, Hans (2006). Mergers and Concentration Policy. In: Bianchi, P., Labory, S. (Ed.), *International Handbook of Industrial Policy*. Cheltenham: Edward Elgar.

<sup>104</sup> See Mueller, D.C., (1980). *The Determinants and Effects of Mergers: An International Comparison*. Cambridge, MA: Oelgeschlager, Gunn & Hain or Ravenscraft, David J. & Scherer, F.M., (1989). The profitability of mergers. *International Journal of Industrial Organization*, 7, 101-116.

<sup>105</sup> Schenk, Hans (2006). Mergers and Concentration Policy. In: Bianchi, P., Labory, S. (Ed.), *International Handbook of Industrial Policy*. Cheltenham: Edward Elgar.

### ***3.4 Summary of Empirical Findings***

- The preponderance of evidence for post-merger profitability suggests that mergers on average decrease profitability.
- Post-merger patterns of profit and sales changes are similar across the EU and the US.
- Combined market shares tend to decrease significantly post-merger.
- On average, mergers do not appear to be successful in improving productive efficiency, however, there is great variance in these results; some mergers are very successful and others are very unsuccessful.
- The effect of mergers on innovation is ambiguous.
- Pass-on is incomplete; pass-on roughly varies between 30% and 70%.
- Consumer prices increase post-merger.
- Targets gain abnormal share price returns of around 20 to 30%, bidders gain slightly in the short-run but face negative returns in the long-run.
- Horizontal mergers are significantly more profitable than vertical and conglomerate mergers.
- Mergers financed by cash are likely to perform better than mergers financed by stock.
- Mergers of equal sized firms are less successful relative to mergers in which the bidder is considerable larger than the target.
- Merger experience is no guarantee that a following merger will have a higher chance of success.

### ***3.5 Why Do Uneconomic Mergers Occur?***

In chapter 2 I have shown that on the one hand a merger may create market power, but on the other hand a merger may generate significant efficiencies. From this, we can derive two motivations for the management of a firm to propose a merger. The management of the firm either expects to increase market power by the merger and thereby raise profits for the merged firm or expects to generate significant efficiencies that reduce the cost of production and thereby increase profits of the merged firm. Both of these motivations assume that the managers of a firm seek to maximize profits or shareholders' wealth. The market power motivation is to a considerable extent supported by the empirical evidence on merger performance. Market shares tend to decline post-merger and consumer prices tend to increase post-merger i.e. market power allows the merged firm to restrict output and raise the price. Theory consequently implies an increase in profits post-merger. However, we have seen that profitability does not increase, but on average decreases post-merger.

The efficiency motivation is also contradicted by the empirical results. Theory predicts that productivity, market shares, and in consequence share returns should increase post-merger due to higher efficiency. Furthermore, these efficiencies may put a downward pressure on consumer prices. On average most of these effects do not occur and consequently the question arises whether the assumption that managers seek to maximize profits and shareholders' wealth is legitimate. Since a large part of mergers do not increase profits or shareholders' wealth, managers may have other motivations to undertake a merger. This third category of motivation is what I will discuss now.

### **3.5.1 Principal-agent problem.**

In joint-stock firms ownership is to a large extent separated from control. Managers control the firm and shareholders are the owners of the firm. Shareholders are expected to seek maximization of their wealth. In the 1930s Berle and Means already showed that managers do not necessarily also seek maximization of shareholders' wealth.<sup>106</sup> A principal-agent problem may arise between the shareholders and the managers of the firm. Instead of wealth maximization, managers might seek maximization of personal utility, in terms of income and status. An expansion of the firm's size may enable the manager to bargain a higher income or improve the status of the manager.

Empire-building theories propose that managers engage in costly mergers because they seek the power, prestige and the perquisites of controlling large corporations, even if shareholders' value is reduced by the merger.<sup>107</sup> Furthermore, risk adverse managers may propose mergers to avoid loss of job and/or status.<sup>108</sup>

This principal-agent problem will be limited if the market for corporate control works efficient, since in that case managers that do not maximize wealth will be disciplined by the market. As I have already explained, it is questionable whether the market for corporate control is efficient.

### **3.5.2 Hubris.**

In 1986 Roll proposed the hubris hypothesis of corporate takeovers. The hubris hypothesis assumes that managers engage in costly mergers because they suffer from hubris, i.e. exaggerated pride or self-

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<sup>106</sup> Berle, A.A. & Means, G.C. (1932). *The Modern Corporation and Private Property* (rev. ed. 1968). New York: Harcourt, Brace, Jovanovich.

<sup>107</sup> Ravenscraft D.J. & Scherer, F. Michael (1987). *Mergers, Sell-offs, and Economic Efficiency*. Washington, D.C.: Brookings Institution, p. 211.

<sup>108</sup> Schenk, Hans (2006). Mergers and Concentration Policy. In: Bianchi, P., Labory, S. (Ed.), *International Handbook of Industrial Policy*. Cheltenham: Edward Elgar.

confidence.<sup>109</sup> Managers in this model assume that they can create more value from the free cash flows within the firm than the shareholders of the own firm, but also of the management and shareholders of the target firms. Managers suffering from hubris tend to be overly optimistic and therefore engage into value destructive mergers.<sup>110</sup> This optimism may also lead to high bidding premiums paid for the acquisition of the target. The hubris hypothesis is more recently confirmed in a study on 106 mergers by Hayward and Hambrick. They investigate three sources of hubris: recent organizational success, media praise for the CEO, and the CEO's self importance, as measured by the compensation relative to other top managers.<sup>111</sup> Hayward and Hambrick found, in accordance with Roll, that managers suffering from each of these sources of hubris paid higher premiums for targets.

### **3.5.3 Pre-emptive mergers.**

All of the theories discussed above explain why managers may propose mergers that are not wealth maximizing. These theories do not explain why profitability tends to reduce post-merger while share prices tend to increase post-merger (at least in the short-run). To explain this paradox Fridolfsson and Stennek introduced the pre-emptive merger hypothesis.<sup>112</sup> According to this strand of literature a manager's decision to merge may be partially driven by uncertainty about competitors' merger activity. If firm A expects firm B to takeover firm C, it may be rational, even if this merger reduces the combined profit flow compared to the status quo, for firm A to overtake firm C in order to pre-empt firm B. This decision will be rational for firm A when the losses following a successful merger between firm B and C are larger than the losses from his own merger with firm C, i.e. becoming an insider is more profitable than being an outsider. This theory shows that managers will rationally choose to merge even if this reduces profitability of the firm. They also explain why share prices of the merging firms tend to increase post-merger. Share prices and profits may move in opposite directions since "all unprofitable mergers occurring in equilibrium increase the combined stock market value of merging".<sup>113</sup> This is because the pre-merger share price of firm A reflects the risk of the larger losses due to a successful merger between firm B and C. Around the announcement of the merger between firm A and C, share prices will increase reflecting the decrease in the risk of becoming an outsider.

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<sup>109</sup> Roll R. (1986). The Hubris Hypothesis of Corporate Takeovers. *Journal of Business*, 59 (2), 197-216.

<sup>110</sup> Frensch, F. (2007), *The Social Side of Mergers and Acquisitions: Cooperation relationships after mergers and acquisitions*. Berlin: DUV, p. 31.

<sup>111</sup> Hayward M.L.A. & Hambrick D.C. (1997). Explaining the Premiums Paid for Large Acquisitions: Evidence of CEO Hubris. *Administrative Science Quarterly*, 42, 106-108.

<sup>112</sup> Fridolfsson, S. & Stennek, J.(2005). Why Mergers Reduce Profits and Raise Share Prices-A Theory of Preemptive Mergers. *Journal of European Economic Association*, 3, 1083-1104.

<sup>113</sup> *Ibid.*, at 1086.

### 3.6 Conclusions

This chapter showed the effects of mergers on different indicators of efficiency and market power. The empirical evidence on merger performance is striking. A large fraction of mergers is undesirable from a total welfare perspective. Profitability and productive efficiency decrease post-merger in a large number of cases and on average these indicators do not improve post-merger. Results on dynamic efficiency are ambiguous. Furthermore, an even larger fraction of mergers is undesirable from a consumer welfare perspective. Efficiencies generated by merger are only partly passed-on to consumers and consequently mergers tend to raise consumer prices.

Röller *et al.* concluded in 2001 that “there seems to be no support for a general presumption that mergers create efficiency gains”.<sup>114</sup> More recently Schenk concluded that “there *would be* support for the presumption that (large) mergers do not create efficiency”.<sup>115</sup> However, from this literature review I would like to conclude that competition authorities should be very reluctant to approve a merger that creates significant market power, solely based on efficiency considerations. Thus, the scope to take into account efficiencies should be small and the standard of proof should be high, since in practice efficiencies are often not generated by a merger.

In addition, I have shown in this chapter that in specific cases managers propose uneconomic mergers, motivated by other than wealth maximizing behavior, such as empire-building or hubris. These theories also show that neither one can presume that a merger will improve efficiency, nor that a merger will not create efficiencies. Moreover, the variance in the results on the discussed indicators suggests assessment of the presence and magnitude of efficiencies on a case-by-case basis.

Before I will explain which implications this analysis has for the use of efficiencies in merger review, I will first explain how efficiencies are currently assessed in the United States and the European Union.

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<sup>114</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 35.

<sup>115</sup> Schenk, Hans (2006). Mergers and Concentration Policy. In: Bianchi, P., Labory, S. (Ed.), *International Handbook of Industrial Policy*. Cheltenham: Edward Elgar, p. 154.



## 4. Laws and Regulations in the US and the EU

### 4.1 Laws and Regulations in the US

Competition policy in the US has always been concerned with mergers that possibly threaten competition. However, policy stances towards mergers within the US have varied widely, from very lax in the 1920s and 1980s to very strict during the 1960s.<sup>116</sup> Modern merger law was introduced in the US with the passage of the Cellar-Kefauver Act in 1950. This Act amended section 7 of the Clayton Act and substantially broadened its reach. Under the Clayton Act a merger may be forbidden if it substantially decreases competition or tends to create a monopoly.<sup>117</sup> Both the Federal Trade Commission (“FTC”) and the Department of Justice (“DOJ”) are concerned with the enforcement of this provision. In 1986 the Antitrust Division of the DOJ and the FTC jointly issued Horizontal Merger Guidelines. Subsequently, guidelines were issued in 1982, 1984, and 1992. Moreover, in April 1997 the section on efficiencies of the Horizontal Merger Guidelines 1992 has been revised. The revised Horizontal Merger Guidelines 1992 (“Guidelines”) are still in use today.<sup>118</sup> These Guidelines are meant to reduce the uncertainty associated with enforcement of the antitrust laws on horizontal mergers. The Guidelines explain the analytical framework the agencies apply in determining whether a merger substantially decreases competition or tends to create a monopoly. The Guidelines are not binding to the courts, but many courts use this analytical framework as a basis.<sup>119</sup>

According to the Guidelines, in the preliminary assessment of the legality or illegality of a proposed merger, concentration levels play an important role. The decision to investigate and challenge a merger is for a large extent based on the pre- and post-merger levels of concentration. This reflects the view that anti-competitive effects increase with concentration.<sup>120</sup> The level of concentration is measured by the Herfindahl-Hirschman index (“HHI”). The HHI is calculated by summing the squares of the individual market shares of all firms in the market. According to the Guidelines a merger will not be challenged if the post-merger HHI is below 1000, since it is unlikely that such mergers have adverse competitive effects. Mergers in markets with a post-merger HHI of between 1000 and 1800 will not be challenged, if

<sup>116</sup> Fox, E.M. (1997). US and EU competition law: a comparison. In J.D. Richardson (Ed.), *Global Competition Policy* (pp. 339-354). Washington, D.C.: Peterson Institute for International Economics, pp. 347-348.

<sup>117</sup> Clayton Act, 15 U.S.C. § 18 (1988).

<sup>118</sup> FTC, Federal Trade Commission (1997), *1992 Horizontal Merger Guidelines* [With April 8, 1997, Revisions to Section 4 on Efficiencies], Washington: Federal Trade Commission ([ftc.gov/bc/docs/horizmer.htm](http://ftc.gov/bc/docs/horizmer.htm)).

<sup>119</sup> Kinne, Konstanze (1998). *The “Efficiency Defence” in the U.S. American Merger Policy* (Diskussionspapier 67). Hamburg: HWWA – Institut für Wirtschaftsforschung.

<sup>120</sup> Ilzkovitz, F. & Meiklejohn, R. (2003). European Merger Control: Do We Need an Efficiency Defence? *Journal of Industry, Competition and Trade*, 3:1/2, p. 66.

the merger does not produce an increase in the HHI by more than 100 points. If the HHI does increase more, further analysis is necessary. Mergers that increase the HHI by less than 50 will not be challenged even if the HHI is above 1800. However, further investigation will be necessary when a merger increases the HHI by more than 50 points and a post-merger HHI of 1800 is found.<sup>121</sup> Thus, the Guidelines provide for certain thresholds that indicate the safe harbors.

If a merger does not fall within one of the safe harbors, the merger potentially raises significant competitive concerns and a deeper investigation into the competitive effects of the merger is deemed to be necessary. Both unilateral and coordinated effects will have to be assessed, entry conditions in the market will have to be evaluated, and efficiencies will have to be considered.<sup>122</sup>

#### **4.1.1 Efficiency defense in the US.**

Section 4 of the Guidelines provide for an efficiency defense. This section was revised in 1997 to clarify the efficiency defense, and allows for “merger-specific” efficiencies to be taken into account, i.e. efficiencies that “are likely to be accomplished with the proposed merger and unlikely to be accomplished in the absence of either the proposed merger or another means of having comparable anticompetitive effects”.<sup>123</sup> Furthermore, the efficiencies must be verifiable: “merging firms must substantiate efficiency claims so that the Agency can verify, by reasonable means, the likelihood and magnitude of each asserted efficiency, how and when each would be achieved (and any costs of doing so), how each would enhance the merged firm’s ability and incentive to compete, and why each would be merger-specific”.<sup>124</sup> In addition, efficiencies may not arise from anti-competitive reductions in output. If all these conditions are met, the claimed efficiencies are determined to be cognizable, and will be taken into account by the agencies in their consideration on whether the cognizable efficiencies are “sufficient to reverse the merger’s potential to harm consumers in the relevant market”.<sup>125</sup> Thus, the Guidelines explicitly state that the asserted efficiencies have to be passed on to consumers.

In addition, the Guidelines provide us with some guidance on which efficiencies are likely to be cognizable and substantial. Efficiencies from rationalization are more likely to be cognizable than efficiencies in procurement, management, or capital cost. The first reduces the variable cost of

<sup>121</sup> FTC, Federal Trade Commission (1997), *1992 Horizontal Merger Guidelines* [With April 8, 1997, Revisions to Section 4 on Efficiencies], Washington: Federal Trade Commission ([ftc.gov/bc/docs/horizmer.htm](http://ftc.gov/bc/docs/horizmer.htm)), p. 16.

<sup>122</sup> Since the focus of this thesis is on efficiencies, only the efficiencies section will be reviewed in detail.

<sup>123</sup> FTC, Federal Trade Commission (1997), *1992 Horizontal Merger Guidelines* [With April 8, 1997, Revisions to Section 4 on Efficiencies], Washington: Federal Trade Commission ([ftc.gov/bc/docs/horizmer.htm](http://ftc.gov/bc/docs/horizmer.htm)), p. 30.

<sup>124</sup> *Ibid.*, at 31.

<sup>125</sup> *Ibid.*, at 31.

production and the latter reduces the fixed cost of production. Apparently, the agencies recognize that reductions in variable costs are more likely to be passed on to consumers, at least in the short-run. Efficiencies from R&D and innovation are also less likely to be susceptible to verification, merger-specific, and substantial. This policy stance can be defended by the fact that dynamic efficiencies are very difficult and costly to verify and therefore pose too large information costs on the agencies. The empirical literature on the effects of mergers on dynamic efficiency, although limited, also did not find significant effects. Until better methods are found to quantify these effects, due to large information costs, not much weight should be given to efficiencies from R&D and innovation in merger review. I do not reject the huge potential of dynamic efficiency; however, due to a lack of a clear theoretical or empirical connection between increased concentration, resulting from merger, and innovation, dynamic efficiencies should be given less weight in merger review.

For example, computer based simulation analysis could be used to quantify cognizable efficiency effects from mergers. These simulation analyses have the potential to significantly decrease information costs. This argues in favor of introducing more econometric analysis in the courtroom. Traditionally, the courts have been reluctant to introduce econometrics into the courtroom, however, econometric analysis has become of increasing importance in the courtroom, especially in the US and Canada.<sup>126</sup>

Finally, the Guidelines explicitly require that when the anti-competitive effects are likely to be large, only very large efficiency gains would be able to prevent the merger from being anti-competitive: “Efficiencies almost never justify a merger to monopoly or near-monopoly”.<sup>127</sup> By this, the agencies introduce a certain upper threshold, to determine which mergers are presumed to have a larger market power effect relative to the efficiency effect. But also in these cases efficiencies will have to be assessed. In the next chapter I will argue that, based on the empirical findings from chapter 3, a definite upper threshold should be implemented. If the anti-competitive effects are larger than this upper threshold, efficiencies will not have to be assessed. The market power effect is presumed to be larger than the efficiency effect.

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<sup>126</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 110. See also in this respect, Rubinfeld, D.L. (1985). Econometrics in the courtroom. *Columbia Law Review* 85(5), 1048–1119.

<sup>127</sup> FTC, Federal Trade Commission (1997), *1992 Horizontal Merger Guidelines* [With April 8, 1997, Revisions to Section 4 on Efficiencies], Washington: Federal Trade Commission ([ftc.gov/bc/docs/horizmer.htm](http://ftc.gov/bc/docs/horizmer.htm)), p. 32.

According to a study by Camesasca the agencies have rarely taken into account efficiencies in their decisions to challenge or not to challenge a merger.<sup>128</sup> However, the Federal Courts have recognized the efficiency effects of mergers. In for example *FTC v University Health Inc*, *FTC v HJ Heinz Co*, and *FTC v Staples*, the Federal Courts have explicitly recognized efficiencies, but according to the Federal Courts, these efficiencies were insufficient to compensate for the anti-competitive effects of the merger.<sup>129</sup> The Federal Court also emphasized in several cases that some of the efficiencies generated by the merger have to be passed on to consumers, thus the Federal Courts confirmed the consumer welfare standard in these cases.<sup>130</sup> In addition, the Federal Courts have rejected several claims because the efficiencies generated by the merger were not merger-specific. For example, in *FTC v Cardinal Health* the court recognized efficiencies of between \$38 and \$52 million a year, but rejected an efficiency defense since the efficiencies could also be generated by continuing competition.<sup>131</sup> According to Gifford and Kudrle no published Court of Appeals decision has upheld a merger solely on the grounds that it furthered efficiency.<sup>132</sup>

## 4.2 Laws and Regulations in the EU

In contrast to the US, the case for merger control in the European Union has long been contested. While the EEC Treaty did not provide for merger control, discussion on this issue started already in 1965.<sup>133</sup> Member States were reluctant to cede competence to the European Commission (“Commission”) over changes in national industrial structure. Member States wanted to protect economic sovereignty and viewed mergers as an important instrument of industrial policy. However, in 1989 the first Merger Regulation was finally adopted. This Merger Regulation was brought into force in September 1990.<sup>134</sup> The Commission was entitled to enforce this regulation. Under art. 2(2) and 2(3) of this Merger Regulation, a concentration which “creates or strengthens a dominant position as a result of which effective competition would be significantly impeded” shall be prohibited. Furthermore, art. 2(1) b,

<sup>128</sup> Camesasca, P.D.N. (1999). The Explicit Efficiency Defence in Merger Control: Does it Make the Difference? *European Competition Law Review*, 20(1), 14-28.

<sup>129</sup> *FTC v University Health Inc*, 938 F2d 1206 (11th Cir 1991); *FTC v HJ Heinz Co*, 2436 F3d 708, 345U.S. App DC 364 (DC Cir 2001); *FTC v Staples*, 970 F Supp 1066 (DDC 1997).

<sup>130</sup> See, e.g. *FTC v Cardinal Health*, 12 F Supp 2d34 (DDC 1998) at 62; *FTC v University Health Inc*, 938 F2d 1206 (11th Cir 1991) at 1223; *United States v. United Tote Inc.*, 768 F. Supp. 1064 (D.Del. 1991) at 1084-85.

<sup>131</sup> *FTC v Cardinal Health*, 12 F Supp 2d34 (DDC 1998) at 62-63.

<sup>132</sup> Gifford, D.J. & Kudrle, R.T. (2005). Rhetoric and reality in the merger standard of the United States, Canada and the European Union. *Antitrust Law Journal*, 72(2), p. 447.

<sup>133</sup> Overbury, H. Colin (1994). Politics or Policy? The Demystification of EC Merger Control. In: B. Hawk (Ed.), *International Antitrust Law and Policy 1994: Annual Proceedings of the Fordham Corporate Law Institute*. New York: Fordham Corporate Law Institute, p. 561.

<sup>134</sup> Council Regulation (EEC) No. 4064/89 of 21 December 1989 on the control of concentrations between undertakings, OJ L 395 (1989).

provided that the Commission shall take into account in their consideration, “the development of technical and economic progress provided that it is to the consumer’s advantage and does not form an obstacle to competition”. It has been argued that this article provided for an efficiency defense under the Merger Regulation of 1990. In 1996 the Commission made clear that “(t)here is no real legal possibility of justifying an efficiency defence under the Merger Regulation”.<sup>135</sup> The Commission argued that efficiencies were implicitly taken into account in the overall assessment of dominance.

In response to criticism from the Court of First Instance in three merger cases, the Merger Regulation of 1990 was reformed in 2004. In *Airtours/First Choice*, *Schneider/Legrand*, and *TetraLaval/Sidel* the Commission was criticized on the Commission’s dealing with evidence and facts. In addition, the use of economic analysis in these cases was considered to be inadequate.<sup>136</sup> In response to this criticism, along with the new Merger Regulation (“ECMR”)<sup>137</sup>, new Horizontal Merger Guidelines were introduced and a Chief Economist was appointed at the EU Competition Directorate.<sup>138</sup>

Article 2(2) of the ECMR provides that the Commission must assess whether or not a concentration would significantly impede effective competition, in particular as a result of the creation of a dominant position, in the common market or a substantial part of it.

The EU Horizontal Merger Guidelines use both market shares and concentration thresholds to decide whether a merger will be challenged or not. Similar to the US, concentration levels are measured by the HHI. Post-merger market shares of 50% or more may in themselves be evidence of the existence of a dominant market position, and thus raise competitive concerns. Post-merger market shares of 25% or less are presumed to be compatible with the common market.<sup>139</sup> Furthermore, the Commission uses HHI levels as an initial indicator of the existence or absence of competitive concerns. The Commission is unlikely to challenge a merger with a post-merger HHI below 1000. The Commission is also unlikely to challenge a merger with a post-merger HHI between 1000 and 2000 and an addition to the HHI of less than 250 points. Mergers with a post-merger HHI of above 2000 and an addition of not more than 150

<sup>135</sup> European Commission (1996). Contribution to Efficiency Claims in Mergers and Other Horizontal Agreements. *O.E.C.D./GD(96)65*.

<sup>136</sup> Case T-342/99 (2002) ECR II-2585 *Airtours v. Commission*; Cases T-310/01 and T-77/02 (2002) ECR II-4071 *Schneider v Commission*; and Cases T-5/02 and T-80/02 (2002) ECR II-4381 *Tetra Laval v Commission*.

<sup>137</sup> Council Regulation (EC) No. 139/2004 of 20 January 2004 on the control of concentrations between undertakings (the EC Merger Regulation), OJ L 24 (2004).

<sup>138</sup> Brouwer, M. (2008). Horizontal mergers and efficiencies; theory and anti trust practice. *European Journal of Law and Economics*, 26(1), p. 16.

<sup>139</sup> Guidelines on the Assessment of Horizontal Mergers, 2004 O.J. (C 31) 5, available at [http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/c\\_031/c\\_03120040205en00050018.pdf](http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/c_031/c_03120040205en00050018.pdf), at C31/7.

points are also unlikely to be challenged. Other factors, such as that one of the merging parties is an important innovator, recent entrant, or maverick could increase the likelihood that the Commission will challenge the merger.<sup>140</sup> Thus, the EU Horizontal Merger Guidelines also provide for certain thresholds that indicate the safe harbors. The thresholds are somewhat above the threshold levels of the US, but, due to the discussed factors, EU merger policy is not expected to be less restrictive than the merger policy of the US.<sup>141</sup>

If a merger does not fall within one of the safe harbors, the merger potentially raises significant competitive concerns and a deeper investigation into the competitive effects of the merger is deemed to be necessary. Both non-coordinated (unilateral) and coordinated effects will have to be assessed, entry conditions in the market and countervailing buyer power will have to be evaluated, and efficiencies will have to be considered.<sup>142</sup>

#### **4.2.1 Efficiency defense in the EU.**

Before the introduction of the ECMR in 2004 there was considerable debate on whether an efficiency defense was allowed under the Merger Regulation of 1990. Under the new ECMR an efficiency defense is explicitly recognized; in section 7 of the Horizontal Merger Guidelines it is stated that “efficiencies brought about by a merger counteract the effects on competition and in particular the potential harm to consumers that it might otherwise have”.<sup>143</sup> Similar to the former Merger Regulation, the ECMR provides for an overall competitive appraisal and according to article 2(1) ECMR the Commission should take into account “the development of technical and economic progress provided that it is to the consumers’ advantage and does not form an obstacle to competition”.

The Commission will only take into account efficiencies that are to the benefit of consumers, merger-specific and verifiable. According to these guidelines, the relevant benchmark is that consumers will not be worse off as a result of the merger. Thus, a consumer welfare standard is chosen. Efficiencies should be substantial and timely. The later the efficiencies will materialize the less weight the Commission will assign to them. Furthermore, consumers will either benefit from the merger in price or in quality. The Commission considers, similar to the US, that cost efficiencies that lead to reductions in variable or

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<sup>140</sup> *Ibid.*, at C31/7.

<sup>141</sup> Brouwer, M. (2008). Horizontal mergers and efficiencies; theory and anti trust practice. *European Journal of Law and Economics*, 26(1), p. 17.

<sup>142</sup> Since the focus of this thesis is on efficiencies, only the efficiencies section will be reviewed in detail.

<sup>143</sup> Guidelines on the Assessment of Horizontal Mergers, 2004 O.J. (C 31) 5, available at [http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/c\\_031/c\\_03120040205en00050018.pdf](http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/c_031/c_03120040205en00050018.pdf), at C31/13.

marginal costs of production are more likely to be relevant to the assessment than reductions in fixed costs, since the former are more likely to be passed on to consumers.

In contrast to the US, the EU Horizontal Merger Guidelines explicitly state that “consumers may also benefit from new or improved products or services, for instance resulting from efficiency gains in the sphere of R&D and innovation”.<sup>144</sup> Thus, the Commission is not reluctant to take into account dynamic efficiencies generated by merger. As I have already argued in section 4.1.1, not much weight should be given to efficiencies from R&D and innovation in merger review, due to ambiguous empirical results on this issue and large information costs. In my view, it is therefore advisable to incorporate in the EU Horizontal Merger Guidelines a similar text as in the US Horizontal Merger Guidelines: “Efficiencies, such as those relating to research and development are generally less susceptible to verification and may be the result of anticompetitive output reductions”.<sup>145</sup>

Similar to the US, the EU Horizontal Merger Guidelines provide for a certain upper threshold in the assessment of efficiencies: “it is highly unlikely that a merger leading to a market position approaching that of a monopoly, or leading to a similar level of market power, can be declared compatible with the common market on the ground that efficiency gains would be sufficient to counteract its potential anticompetitive effects”.<sup>146</sup> However, the EU Horizontal Merger Guidelines, similarly to the US, do not exclude an efficiency analysis if the potential anti-competitive effects are above a certain threshold. I will argue in the next chapter, based on the empirical findings from chapter 3, that such a definite upper threshold should be introduced in the merger control systems of both the US and the EU.

Finally, the efficiencies should be merger-specific and verifiable. The merging parties have the burden of proof to establish that the efficiencies cannot be achieved by less anti-competitive alternatives. The Commission considers that most of the information on potential efficiencies is solely in the possession of the merging parties, and therefore the merging parties should provide the necessary information in due time. Moreover, these efficiencies should be verifiable such that the Commission can be reasonable certain that these efficiencies will materialize. Where reasonable possible, the efficiencies should be quantified.

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<sup>144</sup> Guidelines on the Assessment of Horizontal Mergers, 2004 O.J. (C 31) 5, available at [http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/c\\_031/c\\_03120040205en00050018.pdf](http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/c_031/c_03120040205en00050018.pdf), at C31/13.

<sup>145</sup> FTC, Federal Trade Commission (1997), *1992 Horizontal Merger Guidelines* [With April 8, 1997, Revisions to Section 4 on Efficiencies], Washington: Federal Trade Commission ([ftc.gov/bc/docs/horizmer.htm](http://ftc.gov/bc/docs/horizmer.htm)), at 32.

<sup>146</sup> Guidelines on the Assessment of Horizontal Mergers, 2004 O.J. (C 31) 5, available at [http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/c\\_031/c\\_03120040205en00050018.pdf](http://europa.eu.int/eur-lex/pri/en/oj/dat/2004/c_031/c_03120040205en00050018.pdf), at C31/14.

In practice, only in one case the Commission cleared a merger based on efficiency considerations.<sup>147</sup> In the case *Korsnäs/Assidomän Cartonboard* the Commission explicitly recognized merger-specific and verifiable efficiencies that would be passed on to consumers as an argument to clear the merger.<sup>148</sup> Surprisingly, the Commission has used efficiencies in the opposite direction, as an “efficiency offence”. For example, in *Aerospatiale-Alenia/de Havilland*, *Metso/Svedala* and in *GE/Honeywell* the Commission argued that the efficiencies generated by the merger would strengthen the dominant position of the merging parties.<sup>149</sup> In sum, not many cases have been decided solely on the basis of efficiency considerations. However, this does not mean that efficiencies have never been considered. Renckens sums up several cases in which the Commission has considered efficiencies.<sup>150</sup>

## 5. The Implications of Uneconomic Mergers for the Use of Efficiencies in Merger Control in the US and the EU

In the previous chapters I have elaborated upon the theoretical aspects of mergers, the empirical evidence on merger performance and the current application of the efficiency defense in both the US and the EU. The purpose of this chapter is to combine these three elements and present a new framework for the analysis of efficiencies in merger control.

### 5.1 Different Approaches

Until now I have recognized two approaches towards the use of efficiencies in merger analysis: the general presumptions approach and the case-by-case approach. Before the introduction of the ECMR, the Commission had taken a general presumptions approach towards efficiencies; the Commission did not explicitly allow for an efficiency defense, but efficiencies were implicitly taken into account in the overall assessment of dominance. The Commission relied on general presumptions about the likely efficiency effects of mergers. Structural indicators such as market shares were used to determine a threshold below which efficiency gains were expected to be larger than the anti-competitive effects. If the structural indicators were above the threshold, the merger was expected to have larger anti-

<sup>147</sup> Renckens, A. (2007). Welfare Standards, Substantive Tests, and Efficiency Considerations in Merger Policy: Defining the Efficiency Defense. *Journal of Competition Law and Economics*, 3(2), p. 161.

<sup>148</sup> Case M 4057 *Korsnäs/Assidomän Cartonboard* of 12 May 2006, paras. 57–64.

<sup>149</sup> Case M 53 *Aerospatiale-Alenia/de Havilland* of 9 September 1991; Case M 2220 *GE/Honeywell* of 3 July 2001; Case M 2033 *Metso/Svedala* of 24 January 2001.

<sup>150</sup> Renckens, A. (2007). Welfare Standards, Substantive Tests, and Efficiency Considerations in Merger Policy: Defining the Efficiency Defense. *Journal of Competition Law and Economics*, 3(2), p. 161.



competitive effects relative to the efficiency gains. This general presumptions approach is based on an implicit recognition on the existence of average efficiencies originating from mergers.<sup>151</sup>

An advantage of this method is that it eliminates high information costs. As discussed earlier, horizontal mergers may affect allocative, productive, and dynamic efficiencies in several ways, and consequently competition authorities face complex economic trade-offs. These effects are difficult to qualify and even more difficult to quantify. Under a general presumptions approach these effects do not have to be measured and only a set of structural indicators will have to be determined. However, this approach has some obvious flaws; competition authorities will be likely to accept a merger that has net harmful effects (type I error) or to reject a merger that has net beneficial effects (type II error). The empirical research on merger performance shows that there is a large variance in the results on post-merger profitability, and productivity. Many factors influence the success of a merger and although mergers on average tend to have little or negative effects on profitability and productivity, market shares or concentration levels alone can't be good approximations of average efficiencies across different industries.

With the reform of the Merger Regulation, the approach towards efficiencies was changed significantly. Similar to the US<sup>152</sup>, the Commission adopted a case-by-case approach. According to the Horizontal Merger Guidelines in both the US and the EU, proposed mergers above a certain threshold, determined by HHI levels and market shares, are subject to a full competitive appraisal in which also efficiencies are considered. This approach recognizes that there is a great variance in post-merger profitability and productivity; a case-by-case analysis is necessary to assess possible efficiencies in each and every case. This methodology will avoid most type I and type II errors, at least to the extent that the investigation is successful without any unforeseen contingencies.<sup>153</sup> However, the case-by-case approach poses enormous information costs on the competition authorities. Possible efficiency gains will have to be assessed for each proposed merger that does not fall below the threshold. Furthermore, Ilzkovitz and Meiklejohn argue that there are various methodological and practical problems with this

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<sup>151</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 91.

<sup>152</sup> Ilzkovitz, F., Meiklejohn, R. (2003), European Merger Control: Do We Need an Efficiency Defence? *Journal of Industry, Competition and Trade*, 3:1/2, p. 73.

<sup>153</sup> Ilzkovitz, F. & Meiklejohn, R. (2003). European Merger Control: Do We Need an Efficiency Defence? *Journal of Industry, Competition and Trade*, 3:1/2, p. 93.

approach: “there are a lot of difficulties associated with the quantification of the market power effects and efficiencies”.<sup>154</sup>

In an attempt to solve the problems with a general presumptions approach (type I and type II errors) and the case-by-case approach (large information costs), Fisher and Lande propose a third, sequential approach towards the analysis of efficiencies in merger review.<sup>155</sup> The sequential approach proposes to assess efficiencies only in cases where efficiencies are relevant. In the first step structural indicators, such as market shares and HHI levels, will have to be assessed. Efficiencies should not be considered in this first step. If these structural indicators are above or below certain thresholds, no efficiency defense is allowed. Thus, general presumptions are used to compute a lower and an upper threshold. A lower threshold should be set at a level at which efficiency gains are presumed to be larger than the anti-competitive effects of mergers. When in the first step the structural indicators are below this threshold, the merger should be automatically accepted. However, in contrast to the current policy in the US and the EU, also an upper threshold should be set.<sup>156</sup> If structural indicators are above this threshold, efficiencies will not have to be evaluated. Mergers with structural indicators above this threshold are presumed to have large anti-competitive effects that outweigh the efficiency effects of these mergers. If a merger falls within these thresholds, market power and efficiency effects resulting from the merger should be balanced in the second step. I will discuss the second step in more detail in section 5.3 and 5.4.

The first three different approaches are illustrated in figure 3 on the next page.

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<sup>154</sup> Ilzkovitz, F. & Meiklejohn, R. (2003). European Merger Control: Do We Need an Efficiency Defence? *Journal of Industry, Competition and Trade*, 3:1/2, p. 73.

<sup>155</sup> Fisher, Alan A. & Lande, Robert H. (1983). Efficiency Considerations in Merger Enforcement. *California Law Review*, 71, 1580-1691.

<sup>156</sup> In chapter 4 I have argued that the competition authorities in both the US and the EU do not apply a definite upper threshold. Although the Horizontal Merger Guidelines provide that efficiencies are unlikely to compensate for large anti-competitive effects, also in these cases efficiencies will have to be evaluated.

General presumptions approach:



Case-by-case approach:



Sequential approach:



Sequential efficiency test approach:



Figure 3. Different approaches towards efficiencies in merger review

The arrows in figure 3 show that when the lower and the upper threshold are moved closer to each other, the scope to take into account efficiencies becomes more limited. If these two thresholds are moved closer to each other, such that they coincide, a general presumptions approach is applied.<sup>157</sup> Low thresholds indicate that efficiencies have a low average and that already for small mergers the anti-competitive effects outweigh the efficiency effects. In contrast, very high thresholds indicate a strong belief that a merger generates efficiencies that outweigh the anti-competitive effects.

## 5.2 The Sequential Efficiency Test

At which level should the competition authorities define these thresholds? For several reasons large mergers should be under stricter review than small mergers. A large fraction of mergers are undesirable from a total and a consumer welfare perspective. Profitability and productivity do not increase significantly post-merger and even decrease in a large fraction of these mergers. It is therefore highly unlikely that efficiencies could counterbalance large anti-competitive effects. This is also recognized by the competition authorities in both the US and the EU. Second, mergers paid for in cash tend to be more successful than mergers via stock exchanges. Since large mergers are more often financed by stock

<sup>157</sup> Röller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 98.

compared to smaller mergers, large mergers are expected to perform worse.<sup>158</sup> Third, managers of large corporations are more likely to suffer from a principal agent problem, hubris or empire building. Finally, I have concluded that mergers of equal sizes are less successful than mergers in which the bidder is considerably larger than the target. This advocates for a more generous stance towards mergers that do not increase the HHI levels and market shares significantly post-merger. Thus, competition authorities can presume that mergers with high post-merger HHI levels and market shares do not generate enough efficiencies to counterbalance the anti-competitive effects of these mergers.

This advocates for a relatively low upper threshold, as shown by the “sequential efficiency test approach” in figure 3. Currently, the Horizontal Merger Guidelines in both the US and the EU state that efficiencies *almost* never justify a merger to monopoly or a near-monopoly position. Under the sequential efficiency test, competition authorities should not consider efficiencies when evaluating mergers to monopoly or a near-monopoly. In these cases the market power effect of the merger is presumed to outweigh the efficiency effect.

Evidently, if the lower threshold remains at place, the number of cases in which efficiencies are investigated is reduced. This reduces information costs significantly. I have already concluded above that the scope to take into account efficiencies should not be very large. The sequential efficiency test is consistent with this finding. The lower threshold will not have to be changed, since on the one hand small mergers have less market power effects and on the other hand small mergers tend to be more successful in generating efficiencies. Therefore, the current lower threshold applied in the US and the EU should remain at the current HHI and (only in the EU) market share levels. The competition authorities can presume that in these cases the merger is unlikely to have adverse competitive effects or that efficiencies will compensate for these small anti-competitive effects.

However, to reduce the risk of rejecting beneficial and approving harmful mergers, other indicators have to be taken into account as well. Ilzkovits and Meiklejohn recognize that HHI and market share levels alone can't solely be considered as a good indicator of potential market power. In for example, markets where technological development is rapid, the market shares of firms can be high just because there are not yet competitors in these new product markets. Contestability and dynamic efficiencies could be high in these markets, and in these cases a merger will unlikely have significant anti-

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<sup>158</sup> Schenk, Hans (2006). Mergers and Concentration Policy. In: Bianchi, P., Labory, S. (Ed.), *International Handbook of Industrial Policy*. Cheltenham: Edward Elgar.

competitive effects.<sup>159</sup> To avoid type I and type II errors, other factors such as entry conditions, existence of sunk costs, differentiation of products, excess capacity and technological innovation should also be taken into account as indications in the first step. Similar to current policy in the US and the EU, only in the second step a deeper investigation into the competitive effects of mergers will have to be undertaken.

### **5.3 The Efficiency Test**

Under the sequential efficiency test, the second step will consist of a full competitive appraisal of the proposed merger. In this competitive appraisal the competition authorities should also undertake an efficiency test. If a merger falls within the thresholds discussed above I do not want to limit the assessment of efficiencies to an efficiency defense; the competition authorities should test the merger for their potential efficiency effects. If the outcome is that the merger will likely have negative effects in terms of efficiency, this could exacerbate the competitive concerns from the market power analysis; efficiencies should work both ways. So, if in the second step is found that a merger will not have significant market power effects, the merger may nevertheless be rejected based on efficiency considerations. Schenk, who does similar proposals, considers “if because of productive or dynamic efficiencies it would be in society’s interest to accept a merger that would be anti-competitive, on the one hand, then it becomes increasingly relevant to wonder why firms can get away with uneconomic mergers on the other”.<sup>160</sup>

The empirical studies discussed in chapter 3 showed that mergers often generate negative effects, in terms of profitability, productivity, and consumer prices. On average, negative or insignificant positive effects are found. I concluded, however, that the great variance in these results argued in favor of an efficiency analysis in the merger control systems in the US and the EU. But, if only an efficiency defense is allowed, only the very successful fraction of the mergers are filtered out and allowed. Under a full efficiency test also the very unsuccessful mergers are filtered out, and consequently blocked. This will significantly reduce the number of type I errors. In contrast to an efficiency defense, under an efficiency test, a proposed merger that does not generate significant market power effects (determined in the competitive appraisal), but reduces efficiency significantly, and thus has net harmful effects, will be blocked.

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<sup>159</sup> Ilzkovitz, F. & Meiklejohn, R. (2003). European Merger Control: Do We Need an Efficiency Defence? *Journal of Industry, Competition and Trade*, 3:1/2, p. 76.

<sup>160</sup> Schenk, Hans (2006). Mergers and Concentration Policy. In: Bianchi, P., Labory, S. (Ed.), *International Handbook of Industrial Policy*. Cheltenham: Edward Elgar.

The argument that a full efficiency test is extremely costly can be rebutted, since only in intermediate cases such analysis will have to be made. Furthermore, the burden of proof should rest upon the merger candidates.

One important aspect of the efficiency test should be the assessment of the motivation behind the merger. In the previous chapters I have shown that wealth maximizing managers will propose mergers, motivated by market power or expected efficiency gains. However, mergers motivated by non-profit maximizing behavior should also be recognized because they have the largest chance of failure. Currently, managers suffering from for example hubris will be able to conclude a (large) merger when they convince the competition authorities that the merger does not create significant anti-competitive effects; under the efficiency test they will also have to convince the competition authorities that the merger does not have negative effects on efficiency. The adoption of an efficiency test in merger control will thus limit the number of proposed mergers motivated by non-wealth maximizing behavior.

An argument against the efficiency test is put forward by Brouwer. She argues that the competition authorities do not have a screening device to select potential merger successes.<sup>161</sup> Skilled staff with solid management consultancy experience or training is required. Although correct, this problem will probably not be very large. First, the efficiency test will only have to be done in intermediate cases; in current merger control systems efficiencies always have to be assessed. Second, the burden of proof should be on the shoulders of the merging parties. Finally, simulation analysis can be used to compute the competitive effects of mergers. Simulation models have already been used in the US and the EU. It should be noted, however, that simulation analysis is still a very young and innovative instrument of antitrust and should be combined with other, more traditional instruments of competition policy in order to comprehensively unfold its beneficial effects.<sup>162</sup>

In a legal sense not much will have to be changed in both the US and the EU to adopt this sequential efficiency test. Only the Horizontal Merger Guidelines will have to be amended to provide for this two-step procedure. Furthermore, these guidelines should also provide for which efficiencies should be taken into account in the efficiency test.

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<sup>161</sup> Brouwer, M. (2008). Horizontal mergers and efficiencies; theory and anti trust practice. *European Journal of Law and Economics*, 26(1), p. 20.

<sup>162</sup> Budzinski, Oliver & Ruhmer, Isabel (2009). *Merger Simulation in Competition Policy: A Survey* (Working Papers 82/09). University of Southern Denmark: Department of Environmental and Business Economics.

### 5.4 The Relevant Benchmark

The relevant benchmark in the efficiency test should be consumer welfare. A merger that raises the quality-adjusted price should be prohibited. On the other hand, a merger that reduces efficiency, but does not raise the price should be allowed. This will for example occur if the merger reduces productive efficiency of the dominant firm, but not until the point that the price will also be raised to compensate for this loss. Thus, the pass-on requirement currently applied in both the US and the EU remains in the proposed efficiency test. A consumer welfare standard should be chosen, since current competition policy in the US and the EU is (increasingly) based upon a consumer welfare standard.<sup>163</sup> Second, a consumer welfare standard is relatively easy to apply<sup>164</sup> and Werden and Fridolfsson found that employing a total welfare standard is more costly than a consumer welfare standard.<sup>165</sup> Third, it gives competition authorities a pro-consumer counterweight to the information asymmetry between merging firms and the competition authorities, and to the lobbying and bargaining power of the merging firms.<sup>166</sup> Finally, a consumer welfare standard is relatively strict. Only efficiencies are taken into account that lead to changes in the price. This will prevent managers from proposing mergers motivated by market power or by non-profit maximizing behavior, since these mergers are not proposed with the aim to bring benefits to consumers.

Since a consumer welfare standard is chosen, the question arises which *verifiable* efficiencies are more likely to influence the price, and thus should be taken into account in the efficiency test. Changes in variable costs are more likely to affect consumer prices and therefore changes in variable costs should be given priority in the assessment of efficiencies.<sup>167</sup> Dynamic efficiency gains have great potential to influence the price level. However, as I have explained in the previous chapter, less weight should be given to dynamic efficiencies in the efficiency test, since these efficiencies are less susceptible to verification. This is also the reason why the US Horizontal Merger Guidelines emphasize the importance of production efficiencies in contrast to dynamic efficiencies. I want to highlight again that not only changes in the costs of production, but also quality adjustments should be taken into account.

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<sup>163</sup> Fox, E.M. (1997). US and EU competition law: a comparison. In J.D. Richardson (Ed.), *Global Competition Policy* (pp. 339-354). Washington, D.C.: Peterson Institute for International Economics, pp. 340-341.

<sup>164</sup> De la Mano, M. (2002). *For the customer's sake: the competitive effects of efficiencies in European merger control* (EC DG Enterprise Paper No 11). Luxembourg: Office for Official Publications of the European Communities, p. 25.

<sup>165</sup> Fridolfsson, S. & Stennek, J. (2005). Why Mergers Reduce Profits and Raise Share Prices-A Theory of Preemptive Mergers. *Journal of European Economic Association*, 3, 1083-1104, and Werden, G.J. (1996). A robust test for consumer welfare enhancing mergers among sellers of differentiated products. *Journal of Industrial Economics*, 44(4), 409-413.

<sup>166</sup> Farrell, J. & M.L. Katz (2006). The Economics of Welfare Standards in Antitrust. *Competition Policy International*, 2(2), 3-28.

<sup>167</sup> Rölller, L-H., Stennek, J. & Verboven, F. (2000). Efficiency Gains from Mergers (Working Paper No. 543). Stockholm: The Research Institute of Industrial Economics, p. 116.

Furthermore, a distinction between redistributive efficiencies and real social efficiencies should be made.<sup>168</sup> Only real social efficiencies should be taken into account.

## **6. Conclusion**

Williamson's classic trade-off model showed that a merger may have two effects; a market power effect and an efficiency effect. It is clear that the market power effect is negative from a consumer welfare perspective. However, this thesis has shown that the efficiency effect may be either positive or negative. In theory, a merger that creates internal efficiencies should be allowed if these efficiencies outweigh the anti-competitive effects of that merger.

A review of the empirical evidence on merger performance suggests that one should be careful to approve mergers solely based on efficiency considerations. In practice, efficiencies do not often materialize. Profitability and productive efficiency decrease post-merger in a large number of cases and on average these indicators do not improve post-merger. Furthermore, efficiencies generated by merger are only partly passed-on to consumers and consequently mergers tend to raise consumer prices. The empirical evidence contradicts the assumption that rational managers will only propose privately profitable mergers. Thus, besides market power and efficiency motivations, there is a third group of motivations for managers to propose mergers. Managers propose mergers motivated by non-wealth maximizing behavior, such as empire-building or hubris. Furthermore, managers may be forced to propose uneconomic mergers in an attempt to pre-empt competitors.

Current horizontal merger policy in the US and the EU has not explicitly recognized this third category. I have proposed a new framework for the analysis of efficiencies in merger control that does recognize the existence of uneconomic mergers, while economizing on information costs. In a sequential procedure the competition authorities should first screen the proposed merger using structural indicators as thresholds. The lower threshold can be held at the current levels in both the US and the EU. In addition, a relatively low upper threshold should be set, since large mergers are likely to have large anti-competitive effects and tend to be less successful in generating efficiencies.

If a merger falls within the lower and upper threshold, the competition authorities should undertake an overall competitive appraisal of that merger. In this appraisal also efficiencies should be considered.

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<sup>168</sup> Ilzkovitz, F. & Meiklejohn, R. (2003). European Merger Control: Do We Need an Efficiency Defence? *Journal of Industry, Competition and Trade*, 3:1/2, p. 80.



The assessment of efficiencies should not be limited to an efficiency defense. The great variance in the results on merger performance argues in favor of a true efficiency test, in which mergers that have net harmful effects, mainly due to a reduction in efficiency, are blocked by the competition authorities. This will significantly reduce the number of type I errors.

The relevant benchmark in this test should be consumer welfare. This will limit the number of proposed mergers motivated by market power and non-wealth maximizing behavior, since these mergers are not proposed with the aim to bring benefits to consumers.

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