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The Impact of the 2004 EC Merger Regulation

An Empirical Study

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1 Introduction

On the 1st of May, 2004 the new EC Merger Regulation came into force. One objective for implementing the new regulation was that it was seen as desirable to have a European merger control which to a larger extent was similar to the US framework for merger control. One further objective was to develop an effects-based system that is more consistent with economic theory than the previous dominance-based system. In addition, the Court of First Instance and the European Court of Justice had in some cases overruled the decision of the European Commission, which further underlined the need for a new regulation.

The purpose of this paper is to investigate the differences between the European Council Regulation 139/2004 on the control of concentrations between undertakings [1] and the replaced original Council Regulation 4064/89 on the control of concentrations between undertakings[2], to find out what factors are the most important in the assessment of a merger. We investigate what factors determined the outcome of the European Commission's decisions on certain mergers both under the new ECMR and the original ECMR, and the differences between the two regulations. A similar study has been made by Bergman et al. (2005) on the original ECMR. This study, however, extends the analysis to both the new ECMR and the original ECMR.

In our analysis we have created an original dataset using a sample of 123 decisions from the European Commission, 78 of which were taken under the original ECMR and 45 under the new ECMR. Our sample is a full sample of all cases which have been notified on or after the 1st of January 1999 and in which a phase II decision have been taken before the 1st of November 2008. We have synthesized and extracted information from these cases and transformed the information into data that can be used for econometric analysis.

Since the focus is on the factors which are determinant for the European Commission's clearance or prohibition of a merger, we have used foremost the Commission's own guidelines for the assessment of a merger as a basis for finding the most important explanatory variables for a merger decision.

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[1] The regulation will henceforth be referred to as the new ECMR in this paper.
[2] The regulation will henceforth be referred to as the original ECMR in this paper.

Using a logit model we have ran different sets of regressions on the original ECMR and the new ECMR. As a second step we have singled out some important variables to further compare the differences between the original ECMR and the new ECMR, and as a last step we have analyzed what determined if a merger was assigned conditions and obligations or if it was prohibited.

Before turning to our empirical model, results and conclusions in the very last sections of this paper, we begin by describing the theoretical framework concerning mergers and merger regulation, followed by a description of earlier work within the field of interest of our paper.

2   Theoretical Framework

2.1   Competitive Effects of Mergers

Henceforth in this paper, the term merger will be broadly used for combining the activities of different companies, although the correct term would be "concentration" which includes any situation where change of control of assets on a lasting basis results from either a merger between companies, an acquisition or the creation of a joint venture.

The main reason for a merger is to increase profitability. A merger may improve efficiency, for example by reducing the costs of production or distribution but also through other ways such as new product development, which benefits consumers, but a merger may also allow firms to raise prices. A merger may eliminate a competing firm which may reduce competition in the market. This may lead to a monopoly or an oligopolistic market, which as explained by Schotter (2001) leads to higher prices, reduced choice or reduced innovation, which harms consumers.

When it comes to the effects of a merger, Theeuwes (2005) explains that the Williamson trade-off, the difference between the gain of producer surplus due to efficiencies and the possible loss of consumer surplus due to price increases, generally results in a benefit for the society. However, the result depends on the level of competition before and after the merger. Further, he stresses that

competition authorities are often focused on consumer surplus rather than total surplus, i.e. aggregate welfare.

2.2 The Role of Competition Law

Competition law exists to maintain and protect effective competition on the market and thereby increase welfare, and especially to protect the interest of the consumers. The regulation of mergers is an element of competition law conducted to deal with problems before they arise, by preventing the firms from reducing or eliminating competition through change of ownership.

The European Commission (2004) states several ways in which a merger between two competing firms may impede competition in the market. The case of *single dominance* means that a firm has such high market power that it can act independently of rivals and essentially set a monopoly price. The implication for merger control is to assess if the merger creates a dominant firm, or strengthens an already existing dominant position of a firm. As outlined by Ivaldi et al. (2003a), even if a merger does not create a dominant firm it can still lead to *unilateral effects* if the merging entities are close competitors. This means that the individual profit-maximizing responses of the remaining firms in the new market conditions lead to a non-competitive outcome if the concentration is too high. To sum up *single dominance* can be said to be the most extreme form of *unilateral effects*. The difference is that a position of *single dominance* must be made up by one leading firm whereas *unilateral effects* can originate from the formation of the second or third largest competitor if the merged firms were for example close competitors so that competition in the market was actually reduced.

Ivaldi et al. (2003b) explain that another situation which may arise is *tacit collusion*[3] where the behavior of a number of firms approximates the behavior of one single dominant firm by coordination to maintain higher prices, referred to as *collective dominance* or sometimes *coordinated effects*. For merger regulation it is necessary to consider if the concentration is high enough for collusion, if it is possible for firms to detect deviating rivals and if it is possible to punish deviating rivals.

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[3] Tacit collusion does not need to involve collusion in a legal sense.

A merger may also impact competition even if the concerned firms are not competing with each other on the same market, as explained by Church (2004) and European Commission (2008a). The most common consideration in such cases is *foreclosure*. If a firm in an upstream market merges with a firm active in a downstream market it is supplying, the combined entity may be unlikely to buy products from competitors in the upstream market as well as to supply competitors in the downstream market, affecting competition in both markets and possibly leading to increased prices for end consumers. This is referred to as *vertical effects*.

2.3 The Legal Framework

Within the European Union, the European Commission is responsible for the supervision of concentrations that have a community dimension since the 21st of September, 1991. This competency is regulated by the Council Regulation 139/2004 on the control of concentrations between undertakings, which replaced the original Council Regulation 4064/89 on the control of concentrations between undertakings. The new ECMR was implemented on the 1st of May 2004, but the original ECMR continued to apply to any concentration subject to an agreement, announcement or acquisition before that date.

A concentration may be a merger, acquisition or a joint venture (Article 3 the new ECMR and the original ECMR respectively). A concentration falls under the control of the Commission if it has a turnover that is beyond certain thresholds (Article 1 the new ECMR and the original ECMR respectively).

As a first step in the procedure of the control over concentrations, a concentration shall be notified to the Commission before its implementation (Article 4 the new ECMR and the original ECMR respectively). The Commission shall upon receiving the notification examine it (phase I proceedings). If the Commission finds that the concentration falls within the scope of the ECMR and that it raises "…*serious doubts as to its compatibility with the common market*" the Commission shall decide to initiate phase II proceedings (Article 6 the new ECMR the original ECMR respectively).

According to Article 2(3) and 8(3) new ECMR the Commission shall declare that a concentration is incompatible with the common market if it

would *"...significantly impede effective competition, in the common market or in a substantial part of it, in particular as a result of the creation or strengthening of a dominant position"*. In the original ECMR there was a different standard for the appraisal of a concentration as incompatible with common market. A concentration should then be considered as incompatible with the common market if it would have created or strengthened "*...a dominant position as a result of which effective competition would be significantly impeded in the common market or in a substantial part of it*" (Article 2(3) and 8(3) the original ECMR). This standard of appraisal in the new ECMR is generally referred to as the SIEC Test and the standard in the original ECMR is referred to as the Dominance Test.

2.4 The SIEC versus the Dominance Test

As noted above the test for the appraisal of concentrations has been modified since the implementation of the new ECMR. The standard of appraisal is now the SIEC Test and no longer the Dominance Test. It is clear from the wording of the SIEC Test that the most important factor for prohibiting a concentration is that it would significantly impede effective competition. The term SIEC is in fact an acronym for Significant Impediment of Effective Competition.

The creation or strengthening of a dominant position is only an additional factor pointing in the direction of a prohibition under the SIEC Test. When applying the Dominance Test, however, it is required that the concentration creates or strengthens a dominant position. Thus the Dominance test more strongly emphasizes market domination than the SIEC test.

Since competition might be impeded even if a dominant position is not created or strengthened one can draw the conclusion that since the implementation of the new ECMR the Commission's margin of appraisal has been widened reaching beyond concentrations associated with dominance. That is, a merger may now be prohibited even though it would not create a dominant position if it would be damaging to effective competition. Under the Dominance test, however, domination was required.

With this background our hypothesis is that since the new ECMR's coming into force the Commission's appraisals of concentrations will reach beyond only such

factors associated with dominance such as concentration levels and market shares and include such factors as entry barriers.

3 Literature Review

A relatively large literature on mergers already exists, but there are very few quantitative empirical studies of the European Commission process which we are studying. The most relevant study for our topic that we have been able to find is a study by Bergman et al (2005), who, using logit regression techniques on 96 European merger cases, tried to establish which factors that influenced whether a phase II investigation was opened and the merger eventually prohibited under the original ECMR. They found no indication of political factors influencing the decision and rather found the predicted factors from the merger guidelines to be important. Our study is different in the way that in our study the purpose is to test the effects of the new ECMR and we use a larger sample from cases under both the original ECMR and the new ECMR.

A completely different approach was used by Duso et al (2006), who analyzed stock market reactions to evaluate whether the European Commission had made the right decision in 164 cases. Their study suggested that the commission had made type I errors in 4 of 14 cases (prohibiting pro-competitive mergers) and had made type II errors in about 23% of the cases (clearing anti-competitive mergers). They also indicated that type II errors had a more systematic pattern, with the factors of market definition and country of origin having an impact on mergers being incorrectly cleared in phase I.

Another study of relevance was done by Bergman et al (2007), comparing the merger enforcement policies of the European Commission and the US Federal Trade Commission. The most obvious differences found were in the European focus on dominance, while the US alto took considerable interest in collusion and unilateral effects.

4 Data and Empirical Model

As the new ECMR was implemented almost five years ago, we chose to focus on mergers reaching almost ten years back in time, defined by us as mergers notified on or after the 1st of January 1999. Secondly, we limited our study to mergers where a phase II investigation was conducted. One reason for this limitation was to assure that the case documentation included detailed enough information for our analysis, but we also believed that analyzing mergers where there were no competitive concerns at all would add very little to our study. During the time period in question, approximately 3000 mergers were notified. Out of these, 125 mergers entered a phase II investigation and there has been an outcome in 123 cases. In 32 cases, the merger was declared compatible with the regulation and 57 mergers were declared compatible with conditions and obligations applied, whereas 10 mergers were prohibited and 24 were withdrawn (see Table 1).

Table 1. Number of notified cases per year.

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	08-aug	Total
Notified cases	276	330	335	277	211	247	313	356	402	249	2996
Phase II decisions	20	15	23	9	5	8	10	14	13	6	123
Compatible	0	3	6	2	1	3	2	4	9	2	32
Conditions and obligations	13	7	8	7	3	2	6	6	3	2	57
Prohibition	2	2	4	0	0	1	0	1	0	0	10
Withdrawn in phase II	5	3	5	0	1	2	2	3	1	2	24

Source: European Commission (2008b).

Our population consisted of observations of all 123 cases which entered a phase II investigation and were notified on or after the 1st of January 1999, and where an outcome was reached before the 1st of November 2008. In 6 cases the decision documentation was not available and 24 cases were withdrawn, leaving us with a net sample of 93 cases with available information. The number of observations during the new ECMR and the original ECMR, and the outcomes, are presented in Table 2.

Table 2. Case population and net sample.

	Original ECMR	New ECMR	Total
Population	78	45	123
Decision document not available	1	5	6
Withdrawn	15	9	24
Cases with available information[4]	62	31	93
Compatible (art 8.1)	13	18	31
Conditions and obligations (art 8.2 co)	40	12	52
Prohibition (art 8.3)	9	1	10

To conduct a quantitative empirical study we transformed the information in the decision documents from the Commission into variables (European Commission, 2008c). While some numbers, such as market shares, were given, we had to interpret the written text into dummy variables in many cases. This research was a major part of our work and as such the study was based on our own judgment. Further, we assumed the information in the decision to be correct. For example, we took the market shares stated by the commission as given, without examining whether this information was accurate and we did not examine the phase I decisions. Therefore, our study only analyzed the decisions based on the provided information rather than the entire process including the collection of information. Additionally, in some cases the Court of First Instance annulled the Commission's decision. In these cases we analyzed the original phase II decision.

Data was missing in some cases for two reasons, the first being that some information has been kept confidential due to business secrets. Another problem was that the Commission did not evaluate all aspects in every case. For example, in a case the Commission could initially have concerns about single dominance and collective dominance. As the Commission found single dominance, the parties submitted remedies (such as divesting parts of the organization) which removed all concerns about both single and collective dominance, and the Commission proceeded to clear the merger with conditions and obligations, without further examining the collective concerns since it was then redundant.

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[4] Not all cases had complete information. For example, in two cases an industry classification code was not given, and in a number of cases market shares were censored. Further, in three cases market shares were only stated for the combined entity, making it possible for us to run regression with combined market share but not with HHI values.

While such a process was not a problem for the case itself, it eliminated information from our study and lowered the number of times an observation of a certain variable was made.

Finally, the withdrawn cases were also a problem. While it may happen that the plans for a merger are shelved for other reasons, in reality most withdrawn cases should be considered as prohibitions, since a withdrawn case usually meant that the parties were unwilling to submit substantial enough remedies for the merger to be cleared with conditions and obligations.

From the Commission's own guidelines on their assessment of mergers we extracted factors which the Commission had described as determinant of their decision on a merger and turned them into explanatory variables (European Commission, 2004 and 2008a). We also added some own additional variables that we wanted to test such as variables for the nation where the parties were registered.

Our explanatory variables which were used in the presented results in this paper will be described hereafter. To describe the level of concentration within a market we employed several measures. Large concentration levels are expected to lead to large market power and thus anticompetitive effects. *Combined MS* is the combined market share of the merging firms post-merger. In most cases, market shares were not given exactly but in a range, for example between 30% and 40%. We therefore created some different variables for market shares, which yielded basically the same results. The variable used in the results presented is the minimum combined market share, the sum of the lowest values stated for the involved firms. In some cases market shares were not specified due to business secrets, hence this variable could not be used for all cases in our net sample.

HHI is the Herfindahl-Hirschman Index, which measures the concentration in the market as the squared individual market shares of all firms in a market summed up pre-merger. For example, this means a monopoly has an index of 10000, while a market where 10 firms each have 10% of the market has an index of 1000. Again, due to market shares given in ranges, as well as sometimes only given for very few competitors, we used several different variables. The different measurements did not have a significant impact on the results, and the variable used in the presented results is the minimum HHI, calculated using the minimum

stated market share for the involved parties and competitors, and where for the small competitors for which we did not have data we assumed their market shares to be zero. The *HHI* draws special attention to large market shares of few firms. *Delta HHI* is the change in HHI after the merger has occurred, that is the difference between the post-merger and pre-merger HHI, denoting the change in concentration on a market. In 3 cases individual market shares pre-merger were not given, only the combined market share was stated, so HHI values could be used in fewer cases than combined market share.

To describe the market structure in the relevant market we made use of a number of binary variables taking the value of 1 if a certain characteristic was present on the market and taking the value of 0 otherwise. *UnstableMS* takes the value of 1 if market shares are described as unstable in the Commission's decision. If customers have large switching costs when changing supplier, the variable *Switching Cost* takes the value of 1. *Entry Barriers* is 1 if entry barriers are said to be high. If there are large entry barriers in a market it is costly for new competitors to enter and increase competition. *Countervailing BP* takes the value of 1 if the customers of the concerned firms are seen to be powerful enough to reduce competitive concerns on the market.

If the merged firms are seen as possibly their respective closest competitor in the market, the variable *Close Comp* takes the value of 1. If the smaller firm is not a close competitor today, but is seen as a likely close competitor in the future, the variable *Potential Comp* takes the value of 1.

German and *US* take the value of 1 if any of the parties is from Germany or the United States respectively. *EU15* is 1 if any of the firms is from one of the 15 first member states of the European Union. *Large nation* is 1 if any of the firms is from a nation with a population of more than 50 million.

The variables *iCombined MS, iHHI, iDelta HHI, iEU 15, iLarge Nation, iClose Comp and iEntry Barriers* are the products of an interaction variable which is zero if the observation is under the original ECMR and 1 under the new ECMR, meaning that these variables are zero under the original ECMR and otherwise take the same value as the variables *Combined MS, HHI, Delta HHI, EU 15, Large Nation, Close Comp and Entry Barriers* respectively.

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In this paper we used a logit regression model to estimate the likelihood of the Commission's prohibition or clearance of a certain decision. The reason for us not using the normal OLS-regression model in our analysis was that we needed a model that could estimate certain variables conditional on a certain outcome, which the OLS-regression is incapable of.

The logit model of a binary variable with multiple regressors is

$$P(Y=1 \mid X_1, X_2, ..., X_k) = F(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_k X_k)$$
$$= 1/(1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_k X_k)}.$$

The model depicts the probability (P) that the event Y=1 occurs given the observations 1...k. $X_{1...k}$ are vectors of explanatory variables and the betas are the parameters to be estimated (Stock and Watson, 2007). For example, if "Y=1" is the event that the Commission will prohibit a merger this model depicts the probability given our explanatory variables that the event occurs.

It should also be clarified that while the European Commission has three options of decision to take, this is a two step process. First, the Commission investigates whether to clear the merger as proposed, that is whether to take an 8(1) compatible decision or not. If not, the Commission will then investigate whether remedies suggested by the parties are enough to declare it 8(2) compatible with conditions and obligations or whether to prohibit the merger 8(3).

5 Results

We commenced our empirical analysis by compiling some descriptive statistics to pick up things of notice to be investigated further in our regressions. In Table 3, the mergers are listed by the nationality of the first notifying firm in the case.

Table 3. Number of cases by notifying firm's nationality.

Nationality notifying firm	Original ECMR	new ECMR	Total
Germany	19	6	25
United States	12	10	22
France	9	3	12
Sweden	6	2	8
Austria	2	5	7
United Kingdom	4	3	7
Canada	4	2	6
Finland	4	1	5
Norway	2	1	3
Switzerland	1	1	2
Ireland	1	1	2
Italy	2	0	2
Netherlands	1	1	2
Portugal	2	0	2
Australia	1	0	1
Belgium	0	1	1
Denmark	0	1	1
Spain	1	0	1
Hong Kong	1	0	1
Japan	1	0	1
China	0	1	1
Luxemburg	1	0	1
South Korea	0	1	1
Total[5]	74	40	114

Interestingly, for Germany and the United States, the two countries with the highest number of mergers, we also found that the distribution of decision types seemed to stand out from the average, and we investigated these countries further. Additionally, to only look at the first listed notifying firm as in Table 3 may not give a complete picture. For example, sometimes the notifying firm could be a venture capital firm acquiring two companies which compete in a different

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[5] The sample in this table is our net sample and the withdrawn cases, minus three cases in which it was not specified where the notifying firm was registered.

country, the notifying firm might be a large multinational company acquiring a small supplier or competitor in one specific other country, or the notifying company could be controlled by a company from another country. Table 4 and Table 5 show the distribution of decision types in mergers which involved any firm from Germany and the United states respectively.

Table 4. Decisions involving any German firm.

Decision Type	Without German firm	With German firm	Total
Compatible (art 8.1)	17	13	30
	22%	33%	26%
Conditions&Obligations (art 8.2 co)	32	21	53
	41%	54%	45%
Prohibition (art 8.3)	10	0	10
	13%	0%	9%
Withdrawn	19	5	24
	24%	13%	21%
Total	78	39	117

The top number is the number of cases, the bottom number is the ratio.

Table 5. Decisions involving any US firm.

Decision Type	Without US firm	With US firm	Total
Compatible (art 8.1)	18	12	30
	20%	44%	26%
Conditions&Obligations (art 8.2 co)	44	9	53
	49%	33%	45%
Prohibition (art 8.3)	8	2	10
	9%	7%	9%
Withdrawn	20	4	24
	22%	15%	21%
Total	90	27	117

The top number is the number of cases, the bottom number is the ratio.

Table 4 shows that there were no prohibited mergers involving a German firm. Table 5 suggests that there were numerous mergers involving a US firm which were declared as compatible. We decided to further investigate these issues when running our regressions, as well as the effect of one firm being from a large nation or from one of the 15 first members of the European Union.

Additionally, we investigated the allocation of mergers among different sectors, as shown in Table 6. However, we did not find any striking differences in decision

types between different industries; therefore industry classifications were not included in the regression results presented later.

Table 6. Number of cases by sectors.[6]

Market sector	Orginial ECMR	New ECMR	Total
Manufacturing	46	23	69
Information Technology	7	9	16
Energy	8	3	11
Entertainment	7	4	11
Mining	6	2	8
Transportation and Storage	5	2	7
Administrative Services	3	2	5
Automobiles	1	3	4
Construction	1	1	2
Consulting	0	2	2
Finance	1	0	1

Based on our theoretic framework, we expected that market shares and HHI levels had a significant impact on decisions. We also expected that under the new ECMR the average market share or concentration level when not clearing a merger would be lower than under the original ECMR, since the assessment under the new ECMR focuses on effects rather than dominance, as mentioned above.

From Table 7 it can be seen that the average concentration level indeed was lower, the exception being the article 8.3 prohibition under the new ECMR where only one observation existed. However, the concentration levels for the different types of decisions did not differ by a large number. It was also important to keep in mind that the average concentration level in the phase II investigations under the new ECMR was smaller than in the typical case under the original ECMR. The impact of concentration level on a decision was further investigated using regressions later in this paper.

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[6] Note that one merger may involve more than one sector.

Table 7. Market shares, HHI's and decision types.

Combined Market Shares original ECMR					
Decision Type	Observations	Mean (%)	Standard Deviation (%)	Min (%)	Max (%)
Compatible (art 8.1)	13	40	19	10	75
Conditions&Obligations (art 8.2 co)	37	57	23	5	95
Prohibition (art 8.3)	9	62	21	34	91
Total	59	54	23	5	95
Combined Market Shares new ECMR					
Decision Type	Observations	Mean (%)	Standard Deviation (%)	Min (%)	Max (%)
Compatible (art 8.1)	16	38	15	15	68
Conditions&Obligations (art 8.2 co)	12	51	22	15	90
Prohibition (art 8.3)	1	80		80	80
Total	29	45	20	15	90
HHI original ECMR					
Decision Type	Observations	Mean	Standard Deviation	Min	Max
Compatible (art 8.1)	13	2231	1228	800	4082
Conditions&Obligations (art 8.2 co)	34	3067	2115	400	9025
Prohibition (art 8.3)	9	2876	1447	1074	5049
Total	56	2842	1854	400	9025
HHI new ECMR					
Decision Type	Observations	Mean	Standard Deviation	Min	Max
Compatible (art 8.1)	16	2287	1235	500	4625
Conditions&Obligations (art 8.2 co)	12	2998	2080	700	8100
Prohibition (art 8.3)	1	3300		3300	3300
Total	29	2616	1630	500	8100
Delta HHI original ECMR					
Decision Type	Observations	Mean	Standard Deviation	Min	Max
Compatible (art 8.1)	13	453	552	0	1800
Conditions&Obligations (art 8.2 co)	34	868	1040	0	3600
Prohibition (art 8.3)	9	1719	1495	0	4121
Total	56	908	1094	0	4121
Delta HHI new ECMR					
Decision Type	Observations	Mean	Standard Deviation	Min	Max
Compatible (art 8.1)	16	426	572	0	1920
Conditions&Obligations (art 8.2 co)	12	546	660	0	1800
Prohibition (art 8.3)	1	3200		3200	3200
Total	29	571	778	0	3200

Based on the descriptive statistics above and the theoretical framework, we analyzed why the Commission had objections to a merger, that is either prohibited it or declared it compatible with conditions and obligations. To make a more detailed and accurate analysis we separated the decisions based on the different ways competition can be impeded.

There were eight cases where the Commission had objections due to vertical restrictions, four under the original ECMR and four under the new ECMR. However, all of these were explained by the ability and the incentive to foreclose competitors and as such did not leave a reason for us to run further regressions.

In a total of six cases the Commission had objections because of tacit collusion, all of which were under the original ECMR. We did not further investigate these cases because of the lack of phase II decisions on tacit collusion and the limited width of this paper.

Therefore, we focused our attention on mergers with non-coordinated effects, i.e. cases with single dominance or unilateral effects. From our net sample of 93 cases we deducted 9 cases which we had classified as not horizontal mergers, leaving us with a sample of 84 horizontal mergers. Further, combined market share figures were available in 80 of these cases and HHI levels were available in 77 cases. In 54 of these 84 mergers the commission had objections about either single dominance or unilateral effects, and combined market share and HHI levels were available in 51 and 48 of these cases respectively.

To provide an overview of the mergers in question we plotted the 80 respectively 51 cases by combined market share and notification year in Figure 1 and Figure 2.

Figure 1. Combined market shares of the 80 horizontal mergers under phase II investigation by notification year.
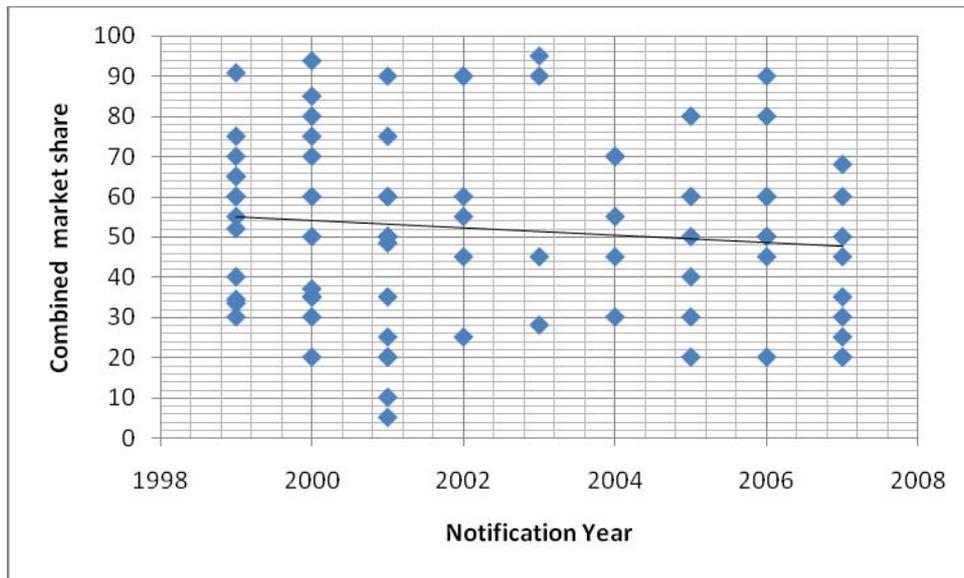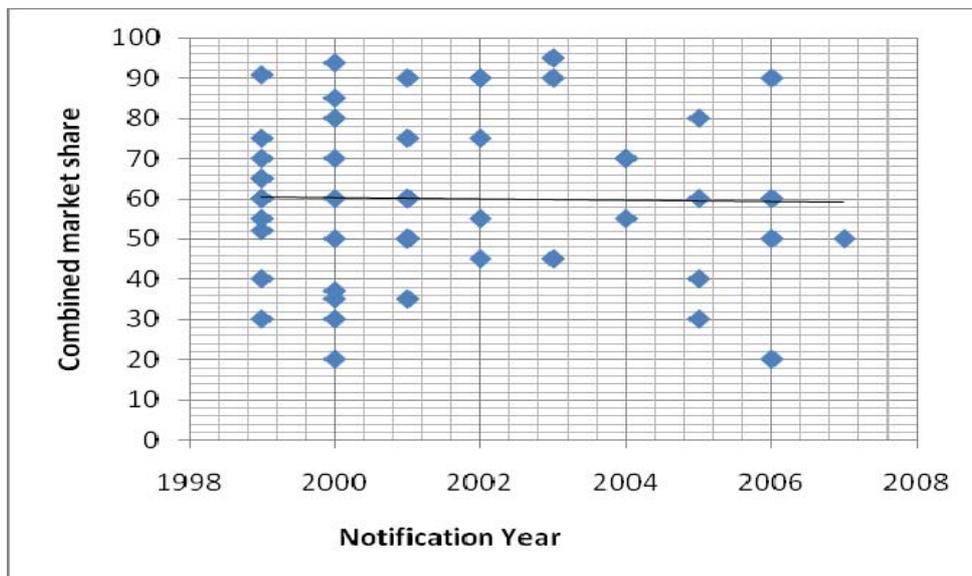

Figure 2. The combined market share of the 51 horizontal mergers where the Commission had objections about non-coordinated effects by notification year.

It could be noted from Figure 1 and Table 7 that the average combined market shares in the notified cases under the new ECMR was lower than under the original ECMR. However, Figure 2 and Table 7 did not provide any clear indication about whether the assessment of mergers has changed under the new ECMR

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We proceeded to run a number of logit regressions on these 84 mergers to establish which factors had influenced the decisions. In these regressions we let the dependent variable be 1 in the 54 cases where the Commission had objections about either single dominance or unilateral effects and otherwise 0, and we introduced a number of explanatory variables. The results from 4 of these regressions, with the explanatory variables we found of high interest and which we found fairly robust, are presented in Table 8. Of the 80 cases where *Combined MS* were available, there were objections in 51 cases and of the 77 cases with *HHI* available there were objections in 48 cases.

Table 8. Regressions on horizontal mergers.

	1	2	3	4
#observations	80	77	80	77
Combined MS	0,0619706		0,0629811	
	3,74***		3,32***	
HHI		0,0003417		0,0002639
		1,71*		1,35
Entry Barriers	0,3039171	0,6287711	0,3585416	0,6015511
	0,51	1,12	0,56	1
Delta HHI		0,0006568		0,0008863
		1,78*		2,02**
Close Comp	1,539434	1,377266	1,97603	1,732964
	2,09**	2,03**	2,47**	2,40**
EU 15			-1,141463	-0,6647882
			-1,31	-0,86
Large Nation			-2,297041	-2,548375
			-1,96*	-2,18**
Constant	-2,975844	-1,578075	-0,2298922	1,178282
	-3,42***	-2,36**	-0,16	0,88
Pseudo R2	0,2789	0,1971	0,3688	0,2812
Correct predictions	63	59	64	58
% correct predictions	79%	77%	80%	75%

The numbers below each coefficient are the t-values based on the standard errors. *, ** and*** denoted significance at the 10-, 5- and 1% levels respectively.

As expected, the variable *Combined MS* turned out to be very significant in all regressions. The variable *HHI* on the other hand was only sometimes significant, and at a low level, while *Entry Barriers* never turned out significant.

The variables *Delta HHI* and *Close Comp* both turned out significant. Interestingly, the variable *EU 15* did not turn out significant while *Large Nation* did.

As a next step, we examined if the importance of these seven variables had changed under the new ECMR. To pick up the differences under the new ECMR, interaction variables were introduced, which took the value zero if the observation was from the original ECMR and included the same variables one more time if the observation was from the new ECMR. These variables would signal if there were differences in their influence under the new ECMR compared to the entire sample. Results from regressions with these variables are shown in table 9. Of the 80 cases where *Combined MS* were available, there were objections in 40 of the 56 cases under the original ECMR and in 11 of the 24 cases under the new ECMR. Of the 77 cases with *HHI* available, there were objections in 37 of the 53 cases under the original ECMR and in 11 of the 24 cases under the new ECMR.

Table 9. Regressions on differences in the new ECMR.

	1	2	3	4
#observations	80	77	80	77
Combined MS	0,074992		0,0889807	
	3,45***		3,28***	
iCombined MS	-0,1297651		-0,0670242	
	-2,3**		-1,86**	
HHI		0,0003447		0,0003871
		1,58		1,51
iHHI		-0,0015494		-0,000259
		-1,56		-0,65
Entry Barriers	-1,113855	-0,4896187	0,244978	0,4137938
	-1,36	-0,67	0,35	0,62
iEntry Barriers	8,031305	7,300395		
	2,13**	1,79*		
Delta HHI		0,0008832		0,0010916
		1,83*		1,89*
iDelta HHI		-0,0005304		-0,0009678
		-0,24		-0,91
Close Comp	0,957301	0,9197893	2,1368	1,764079
	1,13	1,2	2,52**	2,38**
iClose Comp	21,47979	21,75538		
	∞	∞		
EU 15			-2,387213	-1,494591
			-1,89*	-1,42
iEU 15			2,644675	1,827196
			1,52	1,14
Large Nation			-2,5599947	-2,230615
			-1,66*	-1,67*
iLarge Nation			-0,1841822	-1,154901
			-0,1	-0,65
Constant	-2,244464	-0,7513869	0,2839779	1,51889
	-2,22**	-1,02	0,19	1,08
Pseudo R2	0,4918	0,37	0,4316	0,3191
Correct	68	59	68	60
% correct predictions	85%	77%	85%	78%

The numbers below each coefficient are the t-values based on the standard errors. *, ** and*** denoted significance at the 10-, 5- and 1% levels respectively. The sign ∞ denotes a perfect classifier.

The result from these regressions clearly indicated that the importance of *Combined MS* has decreased under the new ECMR, and although not significant, the importance of *HHI* may have decreased as well. *Entry Barriers*, which we found rather irrelevant on the whole sample, had greatly increased in importance under the new ECMR, and out of 12 observations of *Entry Barriers* under the new ECMR the Commission had objections in 11 cases. The importance of *Delta HHI* did not appear to have changed under the new ECMR. *Close Comp* however,

which was important on the whole sample, turned out to be a perfect classifier under the new ECMR as the Commission had objections in all 7 cases where *Close Comp* was observed under the new ECMR.

These regressions also suggested that there might after all have been some bias towards firms from the nations that make up the *EU 15* variable under the original ECMR, but that it was no longer the case under the new ECMR. However, the importance of the variable *Large Nation* did not seem to have changed under the new ECMR.

It can also be noted that when we included the variable *US* in a number of regressions, it did not turn out significant. The variable *German* turned out significant in some regressions on the original ECMR only, but considering both *US* and *German* are included in the variable *Large Nation,* which to much greater extent turned out significant, it appeared incorrect to focus on these two specific nations.

A number of other explanatory variables were observed in such few cases that their inclusion in the regressions is questionable, however some results were highly interesting and worth mentioning as they might be perfect classifiers. *Potential Comp* was observed 5 times under the original ECMR and 3 times under the new ECMR, and there were objections in each of these 8 cases. *Countervailing BP* was never observed under the original ECMR, but there were no objections in any of the 5 observations under the new ECMR, suggesting it might be a perfect classifier introduced in the new ECMR. *Unstable MS* was observed 3 times under the original ECMR and 4 times under the new ECMR, all 7 of which were cleared. Finally, *Switching Cost* was observed in one case under the original ECMR and in 3 cases under the new ECMR, and in all of these 4 cases there were objections.

It should further be pointed out that the combination of only the two variables *Close Comp* and *Entry Barriers* could almost perfectly predict the result in cases under the new ECMR. This was in line with our hypothesis that other factors than market concentrations may gain importance under the new ECMR.

Until this point we have only considered whether the Commission had objections to the merger without paying interest to whether the merger was declared compatible with conditions and obligations or whether it was prohibited. Next we

investigated this further by running regression where the dependent variable was 1 if the merger was prohibited and with the sample being the 53 horizontal mergers where an article 8(3) decision or an article 8(2) decision with conditions and obligations was taken because of non-coordinated effects.

The difference of the 53 cases here to the 54 cases stated earlier was because one case where the Commission had objections was declared compatible as it was a special case of a failing firm: the acquired firm was in bankruptcy and the Commission found it better to clear the merger than have the firm dissolved. In total 9 of these 53 cases were prohibited. In 3 cases market shares were not specified and in another 3 cases HHI levels were not available, and all of these 6 cases were article 8(2) decisions with conditions and obligations. Due to the low number of cases under the new ECMR, 12 mergers of which 1 was prohibited, we only analyzed this for the whole sample rather than for the different regulations and the results are presented in Table 10.

Table 10. Regressions on article 8(3) decisions in comparison to article 8(2) decisions with conditions and obligations.

	1	2	3	4	5	6
#observations	50	47	47	47	47	47
Combined MS	0,0223616					
	1,16					
HHI		-0,000163	-0,0001659	-0,0000428	-0,0002105	-0,0001459
		-0,54	-0,54	-0,12	-0,64	-0,38
Entry Barriers				1,334835		0,5455823
				1,15		0,42
Delta HHI		0,0008421	0,0007994	0,0011453	0,0008207	0,0013424
		2,30**	2,13**	2,52**	2,16**	2,39**
Close Comp				-2,879963		-3,29289
				-2,24**		-2,11**
EU 15			-0,2882129			
			-0,3			
Large Nation			-0,554314			
			-0,64			
German					-18,55447	-19,88104
					-∞	-∞
Constant	-2,929825	-2,147482	-1,473907	-2,937666	-1,538647	-1,737057
	-2,22**	-2,39**	-1,12	-2,02**	-1,61	-1,21
Pseudo R2	0,0301	0,1458	0,1563	0,306	0,277	0,4392
Correct	41	40	41	39	40	40
% correct predictions	82%	85%	87%	83%	85%	85%

The numbers below each coefficient are the t-values based on the standard errors. *, ** and*** denoted significance at the 10-, 5- and 1% levels respectively. The sign ∞ denotes a perfect classifier.

The *Combined MS* and *HHI* did not turn out significant. In fact, the regression with only combined market share predicted an 8(2)co decision in every single case. The *Delta HHI*, however, was significant at the 5% level in all of our regressions, suggesting that the change in concentration is important for a prohibition. The only other variable which turned out significant was *Close comp*, which interestingly had a negative sign.

The variable *German* was a perfect classifier as not a single case with a German firm was prohibited, but while adding the variable *German* increased the regression fit it did not increase the number of correct predictions.

None of the large number of other explanatory variables available in our database could single handedly predict article 8(3) decisions, only a combination of a number of variables could increase the correctly predicted outcomes further.

6 Conclusions

This study examined the new ECMR and the original ECMR, focusing primarily on finding differences in how mergers were assessed under the new ECMR respectively the original ECMR, and also tried to explain why some cases were declared compatible with conditions and obligations while others were prohibited.

The combined market share of the merging parties turned out to be a very significant factor in the European Commission's decisions, but our study found it to be less important under the new ECMR, suggesting that the Commission paid more attention to other factors under the new ECMR.

Our analysis suggested that two such factors were whether the involved firms were close competitors and whether there were high entry barriers on the relevant market. Close competitors was found to be an important factor under the original ECMR as well, but its significance seemed to have largely increased under the new ECMR to a point where it might be a perfect classifier. Entry barriers on the other hand appeared to be irrelevant under the original ECMR while it seemed to be a very important factor under the new ECMR.

Some scarcely observed factors appeared to be perfect classifiers, one of which, the market power of the involved firms' customers, only was observed under the new ECMR suggesting that this might be another factor which the Commission paid great attention to under the new ECMR.

Our analysis also indicated that the nationality of a firm was important both under the original ECMR and the new ECMR. However, the only variable which was significant under the new ECMR was for if any of the involved firms came from a nation with a population of at least 50 million. We could not find any significant difference in the importance of nationality between the two regulations. There are several possible explanations for why mergers were more likely to be declared compatible if a firm was from a large nation, and it does not have to be a case of political bias. For example, it could be possible that these firms had access to better advisors who could better argue their case in front of the Commission. It would also seem reasonable to assume that mergers only involving firms from

small nations to a large degree only concern the markets in some small member states, and although we included a large number of explanatory variables in our study, it is possible that we have missed out on some variable which would indicate that the situation is less competitive on these smaller markets.

In trying to explain the difference between mergers which were prohibited or declared compatible with conditions and obligations, our first interesting finding was that in contrast to the assessment of whether the merger created competitive concerns or not, the change in HHI levels turned out significant while the combined market share did not, suggesting that the change of concentration in the market was an important factor.

The only other variable which was significant was for whether the firms were close competitors. This factor turned out negative, something we found interesting and which might suggest that it was easier for close competitors to propose sufficient remedies for the merger to be declared compatible with conditions and obligations.

That not a single merger involving a German firm was prohibited was another important finding. We have no clear reason for this. It could be due to political bias or just the nature of the German cases in the sample.

Due to the low number of prohibitions under the new ECMR, only one single case, we could not analyze whether the considerations in this decision have changed under the new ECMR. An analysis of this question might be suitable for a future study when more observations are available.

To summarize, we can say that our results confirm that the European merger control truly has gone from a dominance based test, in which combined market shares are of high importance, to a more effect based test in which other variables in addition to market shares are seen as important by the Commission.

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