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## The impact of horizontal mergers on rivals: Gains to being left outside a merger

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SOCIAL SCIENCE RESEARCH  
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**The Impact of Horizontal Mergers on Rivals:  
Gains to Being Left Outside a Merger**

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## ABSTRACT

### **The Impact of Horizontal Mergers on Rivals: Gains to Being Left Outside a Merger \***

by Joseph Clougherty and Tomaso Duso

It is commonly perceived that firms do not want to be outsiders to a merger between competitor firms. We instead argue that it is beneficial to be a non-merging rival firm to a large horizontal merger. Using a sample of mergers with expert-identification of relevant rivals and the event-study methodology, we find rivals generally experience positive abnormal returns at the merger announcement date. Further, we find that the stock reaction of rivals to merger events is not sensitive to merger waves; hence, 'future acquisition probability' does not drive the positive abnormal returns of rivals. We then build a conceptual framework that encompasses the impact of merger events on both merging and rival firms in order to provide a schematic to elicit more information on merger type.

*Keywords:* Rivals, Mergers, Acquisitions, Event-Study.

*JEL Classification:* G34, G14, M20, L22

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**Die Wirkung von horizontalen Zusammenschlüssen auf Wettbewerber:  
Der Nutzen einer Außenseiterposition bei Fusionen**

Es ist gemeinhin bekannt, dass Unternehmen nicht Außenseiter einer Fusion zwischen eigenen Wettbewerbern sein wollen. In dieser Arbeit zeigen wir, dass es für Unternehmen durchaus vorteilhaft sein kann, sich an einem großen horizontalen Zusammenschluss nicht zu beteiligen. Anhand einer Datenbank von großen Fusionen, in denen die relevanten Wettbewerber der fusionierenden Unternehmen von Experten der Europäischen Kommission identifiziert worden sind, und Mithilfe einer Ereignisstudienmethode, bestätigen wir empirisch, dass Wettbewerber durchschnittlich positive abnormale Gewinne bei der Ankündigung eines Zusammenschlusses erzielen. Darüber hinaus stellen wir fest, dass die Reaktion der Aktienkurse von Konkurrenten bei der Ankündigung eines Zusammenschlusses nicht anfällig für Fusionswellen ist, und dass die abnormalen Gewinne nicht von der "künftigen Firmenübernahmewahrscheinlichkeit" getrieben sind. Schließlich wird in der Studie ein konzeptioneller Rahmen entwickelt, der die Auswirkungen der Fusion sowohl auf die fusionierenden Unternehmen und als auch auf die Wettbewerber zusammenfasst, um die Art des Zusammenschlusses besser identifizieren zu können.

## INTRODUCTION

Management scholarship has extensively studied a number of dimensions to merger and acquisition (M&A) activity: motives, relatedness, R&D expenditures, top-management turnover, acquirer and target stock returns, and more. With regard to acquirer and target stock returns, event studies find target firms to capture the majority – if not all – of the benefits from M&As (see Andrade et al., 2001; Datta et al., 1992; King et al., 2004; Sirower, 1997; and Weidenbaum and Vogt, 1987, for reviews of the extensive literature). Hence, the evidence clearly indicates that M&A activity does not equate to increasing an acquiring firm's value: most deals simply pay the cost-of-capital (i.e., break-even) but, more worryingly, many deals actually destroy value. The sobering evidence regarding acquirer performance has led to a number of prescriptive statements by management scholars suggesting that executives approach the activity with extreme caution (e.g., Lubatkin et al., 1997; Lubatkin and Lane, 1996; Sirower, 1997).

While the above positive (acquisitions break-even at best and often destroy value) and normative (managers should approach mergers with caution) findings regarding acquiring firms are well-established, we have very few priors in management on what a merger represents for non-merging firms: i.e., the outsiders or rivals to a particular merger. First, the literature has not focused on what merger events mean to non-merging firms. Chatterjee's (1986, 1992) early work represents the only management scholarship considering the impact of acquisitions on rivals. Second – and related to the above – we lack prescriptions regarding how rivals might best react to mergers. Only the field of competitive dynamics takes up the subject, but in a more general manner: where all competitive actions (price changes, entry/exits, product improvements, etc.) are considered alongside mergers for rival reactions (e.g., Chen and MacMillan, 1992; D'Aveni, 1994). Moreover, Hoskisson et al. (1999) observe that the competitive dynamics literature assumes throughout that reacting in some fashion is optimal for rivals.

In the absence of any prescriptive studies regarding optimal strategy when ones competitors merge, firms appear to rely upon their competitive instincts by generally considering such events to be unwelcome; i.e., they assume hypercompetition is at play. Brito (2003, p. 1614) states that “real world decisions illustrate that firms react to the announcement of mergers in their market, trying to prevent these from happening or trying to become insiders in a number of ways”. Akdogu (2003) provides some examples of this dynamic: Chevron Texaco announcing intent to bid for Conoco or Phillips to block the merger of the two companies; Norfolk Southern launching a hostile bid once it realised that its competitor, CSX, had agreed to a friendly acquisition of Conrail; Carnival attempting to dissolve a merger between its competitors (Royal Caribbean and P&O Princess).<sup>1</sup> Hence, it is popularly perceived that being an outsider to a merger represents a competitive threat to non-merging firms (Akdogu, 2003; Brito, 2003; Molnar, 2007). Akdogu sums this observation up well when she states that there exists the “intuition that losing a target to a competitor is costly” (2003, p. 6).

We would like to contend the ‘received wisdom’ that the consummation of a merger between two firms represents a competitive threat to non-merging firms, and instead argue that rivals are more likely to experience gains when competitors merge. We identify two paths via which rival firms may benefit from a competitors’ merger: 1) the more mergers reduce competitive rivalry, the more pricing power for all firms – including rivals – in a market; 2) the more destructive the merger for insider firms, the more rival firms may actually gain – not lose – from the realisation of the merger. Accordingly, the main contention here is that non-merging firms are more likely to experience gains than losses when competitors merge: i.e., mergers that increase rival profitability tend to prevail.

In order to test our main contention, we employ data based on 165 large M&A transactions of a horizontal nature that both occurred within the 1990-2002 period and generated

competitive implications in European product markets. We use the standard event study methodology to elicit the impact of merger events on acquirer, target and rival profitability. Thus, abnormal returns to stock prices around merger announcements are deemed to capture changes in the future profit stream of firms. The empirical tests support the contention that merger events generally result in positive gains (cumulative abnormal returns) to rival firms. Put more cautiously, merger events do not tend to represent a threat to rival firms. Furthermore, we find the abnormal returns of rival firms to be insensitive to the merger wave (suggesting that information effects in the form of ‘future acquisition probability’ do not drive the positive abnormal returns of rivals) and robust to heterogeneity in merger and rival characteristics.

We draw from varied literatures (strategic management, strategy/industrial organization, finance, and organizational ecology) to support our aim of reversing the ‘received wisdom’ that being left outside a merger is necessarily a ‘bad’ thing. While drawing from such disparate literatures risks a lack of coherency in the conceptual backing, the advantage of an interdisciplinary approach resides in a comprehensive theoretical analysis from multiple perspectives. Furthermore, the invoking of different frameworks in our case is driven by the need to consider the relevant phenomenon in a logically consistent manner. First, the pre-existing literature on the impact of merger events on rival firms – which resides in the greater strategic management, strategy/industrial organization and finance fields – forms the basis of our main theoretical contention concerning the profitability of rival firms. Second, the finance literature (and recent work in management) on merger waves and information effects is imperative to theoretically explore whether the wave-like nature of merger events impacts rival firm value (i.e., whether rival gains are actually driven by competitive effects and not by information effects contained in merger waves). Third, the organizational ecology perspective – where trait variation



is appreciated – is essential to theoretically consider whether rival gains are robust to heterogeneity in merger and rival characteristics.

We accordingly structure the remainder of the paper as follows. First, we analyse the previous literature on the impact of merger events on rival firms to generate our main theoretical contention. Second, we consider whether the wave-like nature of merger events may impact rivals and generate the second theoretical contention. Third, we take into account whether heterogeneity in merger characteristics may impact rivals and generate a third theoretical contention. Fourth, we take into account whether heterogeneity in rival characteristics may impact rivals and generate a fourth set of theoretical contentions. Fifth, we describe the dataset of large horizontal mergers. Sixth, we outline the appropriate methodology. Seventh, we discuss the empirical results. Eighth, we discuss the limitations and implications of the research. Finally, we conclude.

## **EFFECTS OF MERGERS ON RIVALS**

The extensive M&A literature has largely focused on how merger events affect acquirer and target firm performance, but has paid less heed to the impact of mergers on rival firms. Yet, a small and latent cross-disciplinary literature exists that analyses rival firm effects. Stigler (1950) first realised that it might be advantageous for firms to reside outside a merger, as rival firms can free-ride on the efforts made by merger insiders to reduce competition in a market: in this case, one can think of the merger as a sort of collective good to industry competitors. This free-riding effect was also manifest in the influential theoretical work by Salant et al. (1983) and Deneckere and Davidson (1985), where they respectively find under Cournot and Bertrand competition – the two ‘stock’ industrial organization (IO) models – that in most circumstances it

is more profitable to be an outsider than an insider to a merger. Furthermore, the management and IO literatures have identified two dynamics that conceivably generate benefits for rivals.

First, a principal benefit of horizontal merger activity is the reduction of competition and facilitation of reduced rivalry (i.e., tacit collusion) amongst the remaining competitors (Porter, 1985; Stigler, 1964). Here, the actions by merger insiders to increase prices and/or reduce output push up overall prices in a market; thus, merger transactions are beneficial to insiders (acquirers and targets) and outsiders (rivals) alike. In short, the interests of merging firms and rivals are entwined, as reduced competition leads to increased market power which in turn enhances the future profit expectations of rival firms. Note that the market-power elements concerning horizontal mergers have been deemed an important synergy source that is unique to related mergers and thus one of the reasons why unrelated mergers should under-perform when compared to related mergers (Chatterjee and Lubatkin, 1990; Lubatkin, 1983; Seth, 1990). Accordingly, the collusive or rivalry-reducing elements of horizontal merger activity yields higher profit opportunities that should generate positive abnormal returns for rivals.

Second, the meta-analysis studies by Datta et al. (1992) and King et al. (2004) corroborate the observation by many M&A scholars (e.g., Lubatkin et al., 1997; Lubatkin and Lane, 1996; Sirower, 1997) that merger activity very often leads to failure for merging firms. Whether M&A performance is measured via short-term or long-term event windows while employing stock price data or whether accounting-based measures of profitability are employed, merging firms frequently do not deliver the intended synergies. In short, merging firms often experience value losses. While a number of explanations for the existence of such mergers have been posited (see Barkema and Schijven (2008) for a discussion on why acquisitions are often unsuccessful<sup>2</sup>), the point here is that unsuccessful mergers represent a competitive opportunity for non-merging rivals. If the merger does not involve the sufficient joining of resources and

capabilities, then the merged firm has no advantage vis-à-vis rival firms. In particular, the substantial integration challenges of M&A activity (Birkinshaw et al., 2000; Larsson and Finkelstein, 1999; Larsson and Lubatkin, 2001; Vaara, 2003) may handicap the merged entity with respect to rival firms, as the rival firms will not be encumbered by substantial integration costs. In this vein, Chatterjee (1986, p. 122) notes that “the relative wealth gain/loss of the rival firms should be inversely related to that of the merging firms”. Accordingly, the value-destroying nature of some mergers may create competitive opportunities for rival firms – opportunities that generate positive abnormal returns for rivals.

In addition to the formative theoretical work on how rivals might gain from a competitor’s merger, a relatively more extensive finance-based literature exists that considers the impact of mergers on rivals using event studies of stock-market returns. Eckbo (1983) first considered the impact of merger events on non-merging firms, and found rival shareholders to earn above normal returns. Aside from Chatterjee’s (1986, 1992) studies, for a long time Eckbo’s approach to consider rival returns was usually employed as a secondary method for industry-based studies with additional non-stock-based data (e.g., Hosken and Simpson, 2001; Singal, 1996). Yet, a spate of recent literature – mostly, but not only, in finance – has re-embraced the approach to consider rival effects while taking a pan-industry perspective (Banerjee and Eckard, 1998; Duso et al., 2007; Fee and Thomas, 2004; Molnar, 2007; Shahrur, 2005; Song and Walkling, 2000). Moreover, the above studies generally support rival firms benefiting from a merger event.

In sum, both formative theoretical work and existing event studies support the idea that non-merging rival firms benefit from competitor mergers. It should be stressed, however, that the above represents more of a census than a sample of the literature considering rival firm effects. In light of the vast size of the literature in strategic management, strategy/industrial organization

and finance that focuses on merger performance, the sub-literature on rival firm effects cannot be considered extensive. Nevertheless, from the above foundations, we can generate a simple contention concerning large horizontal mergers that helps clarify our argument and motivate empirical testing:

*Hypothesis 1:* Non-merging rival firms generally gain when competitor firms engage in mergers; i.e., rivals are more likely to gain – than to lose – from merger events.

## **RIVAL EFFECTS AND MERGER WAVES**

In order to bring some empirical evidence to bear on the impact of mergers on rival profitability, we employ the stock-price event-study methodology. In doing so, we would like to interpret the stock reactions of rivals (and merging firms) as uniquely reflecting the merger's competitive effects in the product market. Yet, both Eckbo (1983) and Chatterjee (1986) note that stock prices impound information effects as well as competitive effects. This early research treated information effects vaguely by not identifying what exactly is revealed by a merger event; instead, simply positing that mergers signal positive information about an industry's value, and/or potential synergies between rivals and subsequent bidders. Kim and Singal note that Eckbo's information effect has largely been interpreted as signals that "rival firms are now more likely to be takeover targets" (1993: 551). Accordingly, more recent scholarship (e.g., Molnar, 2007; Song and Walkling, 2000) has concentrated on how mergers can convey whether rivals are more or less likely to be targets – a lucrative event for shareholders – in the future.

Researchers have also recently come to better appreciate Gort's (1969) observation that mergers come in waves. In particular, the field of finance has made efforts to understand merger activity as manifesting within a wave-like context, as a number of recent studies (e.g., Andrade and Stafford, 2004; Akdogu et al., 2005; Bernile et al., 2006; ) have attempted to uncover the

properties that drive merger waves. Yet, the idea to consider merger activity in its proper wave-like context has begun to spread beyond finance. For instance, the McNamara et al. (2008) study examines how merger waves impact acquiring firm value.

It stands to reason then that a merger's information effect with respect to 'future acquisition probability' will be moderated by where on the wave the event takes place. Mergers occurring in the pre-crest period (from trough to crest) conceivably indicate a higher probability of future acquisition for rivals (i.e., a larger information effect) than do mergers occurring in the post-crest period (from crest to trough). This is due to the increased merger activity levels associated with the pre-crest period enhancing the probability of rivals being a future target, while the lowered merger activity levels characteristic of the post-crest period reduce the probability of rivals being a future target. In support of such conjecture, Floegel et al. (2005) present evidence that rivals' pre-crest abnormal returns are positive (0.31%) and post-crest abnormal returns are negative (-0.12%) on average; but also find acquirers' abnormal returns to be far more sensitive to the wave (1.55% and -1.11% in the respective pre-crest and post-crest periods). Furthermore, other scholars (e.g., Jarrell and Bradley, 1980; Song and Walkling, 2000) focus on merger announcements that are early in the pre-crest period as involving the greatest information effect. In this vein, Chatterjee (1992: 270) states that when "the rivals can also benefit from [a] similar combination then the takeover offer by the first bidder may lead to a merger wave".

In sum, future acquisition probability has been deemed in the pre-existing literature to enhance the abnormal returns of rival firms, and this information effect has been posited to vary over the merger wave. Accordingly, from the theoretical foundations outlined above, we can generate a simple contention concerning large horizontal mergers that helps clarify the argument and motivate our empirical testing:

*Hypothesis 2:* The profitability of rival firms is sensitive to merger waves; i.e., the merger wave affects the abnormal returns of rival firms.

Note, that in order to be confident that any positive abnormal returns for rivals in our sample are largely driven by competitive effects, the empirical results should be robust over the length of the merger wave. In other words, rival returns should actually be insensitive to any wave-like trends in merger behaviour. Hence, evidence rejecting the second hypothesis will allow stronger inferences with regard to the dynamics behind the first hypothesis.

## **HETEROGENEITY IN MERGER CHARACTERISTICS**

The above hypotheses are appropriate for exploring average tendencies in non-merging rival firm profitability; yet without doubt, there exists a significant amount of heterogeneity in merger characteristics (e.g., Gugler et al., 2003). Accordingly, it behoves us to consider variation in the geographic and product-space nature of merger transactions in order to better identify the source of merger tendencies and in order to elicit confident inferences on the generalisability of rival firm profitability. In other words, we must consider whether any positive abnormal return elicited for rival firms might break down over the sizable heterogeneity manifested in merger transactions.

In terms of geographic heterogeneity, Gugler et al. (2003) find some evidence that merger activity varies in the cross-national context. In particular, the impact of mergers on the sales of merging firms varies significantly across nations. This dynamic suggests that mergers in one specific context (e.g., inside Europe) might differ from mergers in other geographic contexts (e.g., outside Europe). Furthermore, it stands to reason that cross-border mergers might exhibit less market-power elements (which are beneficial to rival firms), as the number of competitors in a market often remains stable with these types of mergers since the foreign acquirer uses the

merger as a means to enter the local market for the first time. Put simply, in a cross-border merger a local competitor is often replaced by a foreign competitor, thus the number of competitors does not change. Hence, the rivals of cross-border mergers – and the rivals of mergers from different geographic contexts – might be less likely to gain (and more likely to lose) from the merger of competitor firms.

In terms of product-market heterogeneity, Gugler et al. (2003) find strong evidence in support of merger activity varying across industries. In particular, mergers in the manufacturing sector tend to be less profitable than mergers in the service sector. Andrade and Stafford's (2004) insight that mergers help both expand (when capacity is tight) and contract (when capacity is in excess) an industry helps shed light on the finding that manufacturing mergers exhibit less profitability. Manufacturing industries in developed nations have faced substantial challenges over the last three decades due to rising import competition and other factors; hence, they certainly represent declining industries where capacity must be reduced. Further, Molnar (2007) points out that a merger announcement can convey the information that an industry is in a declining state, thus decreasing the abnormal returns of both merger insiders and outsiders. Hence, the rivals of manufacturing mergers might be less likely to gain (and more likely to lose) from the merger of competitor firms than would the rivals of service industry mergers.

In sum, substantial heterogeneity exists in the characteristics of merger activity – heterogeneity that may lead to some classes of mergers manifesting a general negative impact on rival firms. In particular, rival firm profitability might be negative for cross-border and manufacturing mergers. Accordingly, from the foundations outlined above, we can generate a simple contention concerning large horizontal mergers that helps clarify the argument and motivate our empirical testing:

*Hypothesis 3:* The profitability of rival firms is sensitive to the heterogeneity of merger characteristics; i.e., the abnormal returns of rival firms are negative in some geographic and product market contexts for merger activity.

## **HETEROGENEITY IN RIVAL CHARACTERISTICS**

In addition to the above heterogeneity in merger characteristics, heterogeneity in rival firm characteristics also exists. Organizational ecologists, for instance, have considered the ability of rivals to differ over a number of different dimensions. This heterogeneity may then translate into some types of rivals manifesting negative profitability (i.e., negative abnormal returns) in response to merger activity by competitor firms. In this vein, Winter (1990: 286) notes that intra-population variance exists in “that some members of the organizational populations under study may simply be better than others”. Accordingly, it also behoves us to consider variation in rival types in order to elicit confident inferences on the generalisability of rival firms gaining from merger activity. Thus, we will focus here on the ability of rivals to differ over three dimensions: size, population density, and proximity.

First, organizational ecologists (e.g., Hannan and Freeman, 1984) expect large firms to be less vulnerable to competitive pressures, as large organisations are less subject to the risk of failure. Furthermore, small firms entail a liability of smallness, as they find it more difficult to raise capital, recruit skilled staff, and comply with government regulations (Baum and Shipilov, 2006). Hence, absolutely-small rivals might be less likely to gain (and more likely to lose) from the merger of competitor firms than would absolutely-large rivals. Yet, Baum and Korn (1996: 259-260) note that “firms of similar sizes compete more intensely (have larger negative influences on each other’s growth and survival) because they use similar strategies and thus depend on similar mixes of resources”. Accordingly, the actions of similar size competitors



represent a greater negative threat to a focal firm than do the actions of competitors with a different size – a relative size argument as opposed to the previous absolute size argument. Hence, rivals that are relatively similar in size to the acquiring firm in a transaction might be less likely to gain (and more likely to lose) from the merger than would rivals that are relatively smaller or relatively larger to the acquiring firm. In sum, rival profitability might be negative when rival firms are absolutely small or when rival firms are relatively similar in size to the acquiring firm. Accordingly, from the foundations outlined above, we can generate a simple contention concerning large horizontal mergers that helps clarify the argument and motivate our empirical testing:

*Hypothesis 4a:* The profitability of rival firms is sensitive to heterogeneity in rival size characteristics; i.e., the abnormal returns of rival firms are negative when rivals are absolutely small and relatively similar to acquiring firms.

Second, ecological models – as well as strategic and economic models – hold that more firms in a population mean greater competition for scarce resources and thus higher failure rates (Aldrich, 1979; Hannan and Freeman, 1977; Porter, 1980; Baum and Korn, 1996). Accordingly, an increased population density leads to heightened competition and greater losses for firms competing in an environment. This dynamic can also be grounded in our present context when one considers that the market-power effects of a merger transaction (which are beneficial for rivals) are likely to be greatest when few competitors are in a market (Tirole, 1988). Hence, when many rivals (i.e., competitors) exist for a particular merger transaction, then a particular rival would be less likely to gain (and more likely to lose) from the merger than would be the case if there were few rivals for the merger. In sum, rival firm profitability might be negative when rivals are situated in a densely populated environment with many competitors. Accordingly

from the foundations outlined above, we can generate a simple contention concerning large horizontal mergers that helps clarify the argument and motivate our empirical testing:

*Hypothesis 4b:* The profitability of rival firms is sensitive to heterogeneity in population density characteristics; i.e., the abnormal returns of rival firms are negative when they compete in densely populated environments with many competitors.

Third, beginning with Zucker (1989) cognitive-based studies of rivalry have explored the role of geographic space with local competitors involving more intense rivalry than far-away competitors. Boari et al. (2006) note that this is due to managers tending to identify nearby – as opposed to far-away – competitors as rivals; thus, proximity seems to matter. Hence, whether rivals hail from the same – or a different – region as compared to the merging firms may impact rivals. In particular, same-region rivals might be less likely to gain (and more likely to lose) from the merger than would be the case if the rival hailed from a different region to that of the merging firms. In sum, rival firm profitability might be negative when rivals are based in the same region as merging firms. Accordingly, from the foundations outlined above, we can generate a simple contention concerning large horizontal mergers that helps clarify the argument and motivate our empirical testing:

*Hypothesis 4c:* The profitability of rival firms is sensitive to heterogeneity in rival proximity characteristics; i.e., the abnormal returns of rival firms are negative when they hail from the same region as the merging firms.

## **DATA**

In order to gather empirical evidence on the general impact of mergers on acquirer, target and rival firms, we require a sample of merger events. Our sample derives from 165 large M&A

transactions of a horizontal nature that both occurred within the 1990-2002 period and affected European product markets. See Appendix A for details on the mergers that make up the sample. From these transactions, we were able to identify and obtain the relevant usable data for 134 acquirers, 142 targets, and 577 rivals (clearly, many mergers involved multiple rivals) for a total of 853 firm-level observations around merger events. Furthermore, several firms were involved in more than one merger event (e.g., an acquirer in one merger, but a rival in another) as reflected by our having 544 total firms in the sample. Note that we cleaned the data of any firms experiencing multiple merger events (as acquirer, target or rival) around the same period—i.e., those observations were dropped. Two properties of the sample stand out: it consists of large horizontal transactions, and the observed M&As involve significant European implications. Both properties are due to these mergers being drawn from those transactions automatically analysed by the European Commission for antitrust implications.<sup>3</sup>

First, European Union (EU) merger regulations mandate notification when the combined aggregate worldwide turnover of the merging parties exceeds five billion Euros or when the combined aggregate EU-wide turnover of the merging parties exceeds 250 million Euros. Therefore, all of these M&As have undergone a mandatory investigation by the European Commission (EC)—an investigation automatically triggered because the merger size exceeded the notification thresholds. In short, our sample represents the big horizontal transactions: the ones that make business press headlines, incur the interest of pundits and industry analysts, and inevitably require at least a cursory review by government officials.

Second, drawing merger observations from those transactions analysed by the EC clearly leads to European firms being well-represented in the sample. Yet Clougherty (2005) noted that managers are uncertain over the source (home-nation or foreign-nation) of antitrust holdup for domestic mergers. Accordingly, EU antitrust officials vet many different types of mergers with

firms originating from both EU and non-EU nations. Our sample also reflects this diversity as sixty percent of the firms are listed in European nations, twenty-five percent are listed in either the US or Canada, and fifteen percent – including 5.5% for Japan – come from the rest of the world. In short, our sample is weighted toward European mergers but is also representative of the global environment for M&As since many selected mergers involved non-European firms making acquisitions that significantly impact world markets.

The great advantage in drawing our merger database from those transactions analysed by EC officials is that Commission experts have made a careful market definition. The first order of business for any antitrust review is defining the merger's relevant market in terms of product and geographical space and identifying the relevant competitors. Hence, the EC files yield an accurate assessment of rival identity. The expert assessment of rival identity is a novelty and a particular strength of this merger sample. The pre-existing finance literature on rival effects (e.g., Song and Walkling, 2000; Fee and Thomas, 2004) customarily defines rivals as consisting of all firms in the same industry classification. While some firms in the same industry will certainly be rivals, other firms are likely to be customers and/or suppliers to the merging firms, and still others may have no relation to merging parties. To the degree that a rival sample is composed of firms with no-relation to merging firms, empirical results would be biased towards finding zero abnormal returns for rivals because such firms would be unaffected by the merger. Even more troubling would be considering customer firms to be rivals; for example, synergistic mergers should lead to lower profits for rivals but higher profits for customers due to lower prices, thus including customer-firms along with rival-firms would bias the abnormal-return results upward. Inappropriately considering supplier firms to be rivals would also bias results. Since sharing the same industry does not equate to being real competitors in a product market, the expert

assessment of rival-identity allows us to assess the effect of mergers on rivals much more precisely than previous work.

To complement the data from the EC files, we determined the first day each merger case appeared in the international press. This announcement date was found by using ‘Dow Jones Interactive’: a customisable business news and research product that integrates content from newspapers, newswires, journals, research reports, and web sites. Furthermore, stock market data for the period around the announcement date was obtained from ‘Datastream’. In particular, we collected daily data on the stock returns ( $R_{i,t}$ ) and market values ( $MV_{it}$ ) for all merging and rival firms; and we collected information about a market return ( $R_{m,t}$ ) for each firms’ industry sector (where  $i$  refers to the firm,  $m$  to the specific sector, and  $t$  to time).

## METHODOLOGY

We use an event-study methodology to measure the impact of mergers on acquirer, target and rival firms’ profitability. The observed stock return for a firm at time  $t$  ( $R_{i,t}$ ) – which represents the discounted future value of the firm at this point in time – is compared to a hypothetical counterfactual for the scenario where the merger would not have been announced. We use the market model to calculate the counterfactual: under the assumptions of efficient markets and rational expectations, the market model predicts that firm  $i$ ’s stock return at time  $t$  ( $R_{i,t}$ ) is proportional to a market return ( $R_{m,t}$ ):

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t}$$

and  $\varepsilon_{i,t}$  is an i.i.d. normally distributed error term. To study the stock price reaction to a merger announcement, we first estimate the ‘normal return’ for each firm by estimating the previous equation over a 240-day trading period (ending 60 days prior to the announcement date) using the Scholes-Williams (1977) method. We obtain estimated values for the model’s parameters  $\alpha$

and  $\beta$ , which then predict firm  $i$ 's stock price for the counterfactual scenario; i.e., we estimate a stock price for the event where the merger would not have been announced ( $\hat{R}_{i,t}$ ). We then calculate the abnormal return around the mergers' announcement day  $t$  ( $AR_{i,t}$ ) as follows:

$$AR_{i,t} = R_{it} - \hat{R}_{it} = R_{it} - (\hat{\alpha}_i + \hat{\beta}_i R_{m,t}).$$

Since there might be information leakages – which influence firm  $i$ 's return before (or after) the merger announcement – we define the total firm valuation effect of the merger (the cumulative abnormal return or CAR) as being the sum of the daily abnormal returns within an event window spanning from  $\tau_1$  days before the event to  $\tau_2$  days after the event:

$$CAR_{i,\tau_1,\tau_2} = \sum_{t=\tau_1}^{\tau_2} AR_{i,t}$$

We calculate these measures for all merging firms (acquirer and target) and rivals.

In our methodological set-up, we were conscious of the recommendations given by McWilliams and Siegel (1997) for employing event studies in management research. First, as already mentioned, we clean the data of any observations with confounding merger events near the event window; plus, the large mergers from this sample likely dwarf the impact of any smaller events. Second, it bears stressing that we have a relatively big sample – none of the 29 management event studies surveyed by McWilliams and Siegel employed more than our 853 observations – thus the outlier (which we checked for) and robustness-of-significance problems are mitigated. Third, we take a conservative approach to ensure that other events are not driving abnormal returns by focusing on a short 3-day window (-1, 1), despite it standing to reason that a relatively longer window would allow rival effects to be more fully impounded in stock prices. For example, both Song and Walkling (2000) and Shahrur (2005) find the CARs of rival firms to significantly increase when the event window increases to eleven days (-5, 5). Accordingly, we

will also employ the 11-day window in our reported estimations to ensure robustness of the 3-day results and allow capturing full rival effects.

Note that our main empirical contention – (H1) rivals generally gain from a merger event – does not necessarily attempt to define the source of rival gains. Nevertheless, we can use multivariate regression analysis to test this assertion. First, we construct simple dummy variables capturing whether a firm is a target (T), acquirer (A) or rival (R) respectively; thus, allowing the testing of whether the CARs of the three firm types are positive on average and statistically significant. Accordingly, our baseline regression model (regression specification 1) takes the following form:

$$CAR_i = b_1 T_i + b_2 A_i + b_3 R_i + \varepsilon_i \quad (1)$$

where  $i$  indexes the 853 firm-level observations, and  $\varepsilon_i$  represents an error term. Because targets, acquirers and rivals from a given merger all react to the same event, we need to correct for the potential intra-merger correlation among observations. We therefore cluster the standard errors at the merger level. We also use a Hubert-White estimator for robust standard errors to account for potential heteroskedasticity in the error term. Notice that, because we estimate equation (1) without a constant term, the  $b$ -coefficients represent the average CAR for each firm-type, while the error term captures the deviations from these means.

Second, to test the relevance of the second empirical contention – (H2) rival firm gains are sensitive to merger waves – we construct an individual time trend for targets, acquirers and rivals by interacting the three firm-identity variables (T, A & R) with a relatively fine trend variable: the number given to the merger event by the EC. Beginning with merger number 1 in 1990, each subsequent merger notification received a progressively increasing identification number (the EC merger numbers for our sample mergers are reported in Appendix A). Hence, for a given merger, its identification number represents the cumulative number of mergers

notified until that point in time. This variable should well represent the merger wave, as the number of notifications increased more than proportionally over time during the sample period reflecting the increased merger activity taking place in the 1990s. Employing this trend measure represents an improvement over using an annual trend (where a merger in January is considered trend-identical to a merger in December), as it allows a more fine-grained representation of the merger wave. Moreover, introducing these *individual* trend variables allows detecting whether the merger wave differently affects the abnormal stock returns of our three firm types; i.e., whether target, acquirer and rival CARs around a merger event are significantly, and differently, affected by where the event takes place along the merger wave. The second model (regression specification 2) that we run is therefore:

$$CAR_i = b_1 T_i + b_2 A_i + b_3 R_i + c_1 T - trend_i + c_2 A - trend_i + c_3 R - trend_i + \varepsilon_i$$

Adding the trend variable does, however, make the interpretation of the *b*-coefficients less obvious. They now measure the average effect for that particular firm-type when the trend is equal to zero, i.e. the average effect for the very first merger in the wave (e.g., a hypothetical merger 0). Yet, the *c*-coefficients for the firm-type-specific trends (T-trend, A-trend, R-trend) represent the average increase due to time elapsing. As our sample period roughly corresponds to the entire pre-crest period of a merger wave, a positive and significant trend coefficient would indicate that CARs are wave sensitive. Concerning the overall firm-specific average effects, these can now be recovered by calculating the sum between the two coefficients evaluated at the mean value of the trend (e.g., for the target:  $b_1 + c_1 * \overline{T - trend}$ ).

The above methods are appropriate for detecting average tendencies in our sample; yet as captured in the reasoning behind hypothesis 3, the cross-national and cross-industry environments exhibit a significant amount of heterogeneity in merger activity that may impact our results. Accordingly in additional regression models, we break down regression specification



1 by the geographic and product-space nature of the transaction to better identify the source of merger tendencies. In particular, we consider mergers where the acquirer and target both hail from Europe (Intra-European mergers), where the acquirer and target both hail from outside Europe (Extra-European mergers), and where only the acquirer or the target hails from Europe and the other merging firm comes from outside Europe (Cross-Euro-Border mergers).

Furthermore, we have observations on mergers from the manufacturing and service industries; hence we also break down merger activity into manufacturing-mergers and service-mergers.

Accordingly, regression specifications' 3 and 4 respectively consider the geographic and product-space heterogeneity for merger transactions in our sample and allow jointly testing hypothesis 3.

In addition to potential heterogeneity in merger transactions, hypothesis 4a, 4b and 4c were founded on the importance of rival heterogeneity over three dimensions: size, population density, and proximity. Regarding size, regression specification 5 breaks down regression specification 1 by absolute rival size: Large-Rivals representing the top 50% of the size distribution of rivals in terms of market value for a given merger; Small-Rivals representing the bottom 50% of the same distribution. Further, regression specification 6 breaks down regression specification 1 by the relative size of the rivals with respect to the acquiring firms: Relatively-Small-Rivals representing those rivals that have a market-value less than half that of the acquirer; Relatively-Large-Rivals representing those rivals that have a market-value greater than 150% of the acquirer; Relatively-Similar-Rivals representing those rivals of a size in between the above two categories. Second regarding population density, regression specification 7 breaks down regression specification 1 by the number of rivals for the merger transaction: Many-Rivals representing when the merger transaction has more rivals than the median number of rivals for our sample (equal to seven rivals); Few-Rivals representing when the merger transaction has

fewer rivals than the median number of rivals for our sample. Third regarding the proximity of rivals relative to merging firms, regression specification 8 breaks down regression specification 1 by whether the rivals hail from the same region (Europe, Asia, and North America) as the merging firms: Same-Region-Rival representing when the rival comes from the same region as either the acquirer or the target; Different-Region-Rival representing when the rival comes from a different region to that of both the acquirer and the target. Accordingly, regression specifications' 5, 6, 7 and 8 consider rival firm heterogeneity with regard to absolute size, relative size, population density and proximity in the merger transactions from our sample, and collectively allow testing hypotheses 4a, 4b and 4c.

## RESULTS

Table I reports the results for regression specifications' 1 and 2 that respectively test the first two hypotheses. The results from regression specification 1 are very much in line with the established empirical literature on merging firm performance: acquirers have very small positive CARs on average that are not significantly different from zero; and targets on average have positive and significant CARs of 3.6% with the 3-day window and 4.2% with the 11-day window. Of particular interest are the CARs for rival firms which are also positive and statistically significant (0.37% for the 3-day and 0.90% for the 11-day window); hence, rivals tend to win in our sample. Notice also that rivals consistently perform better than acquirers but worse than targets. Hence, it is still best to be a target (in line with the previous empirical literature), but it is certainly better to be a rival than an acquirer. In short, the results support hypothesis 1 and indicate that, on average, rivals experience positive abnormal returns; put more cautiously, by no means does a penalty appear to generally exist for being left outside a merger.

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Insert Table I about here

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Regression specification 2 (concerning H2) presents the empirical results from a model that allows the abnormal returns for the three different firm types (target, acquirer and rival) to individually vary over the merger wave. Recall that coefficient estimates for the firm-identity variables now have a fundamentally different meaning, as they represent the abnormal returns for the first merger in the wave. However, the acquirer-trend, target-trend and rival-trend variables provide evidence as to whether merger waves impact CARs. We see that the CARs of both rivals and acquirers do not appear to be affected by the merger wave: i.e., their abnormal returns do not significantly vary over the merger wave. Yet, the abnormal returns of targets vary significantly over the merger wave: the CARs of target firms being positively influenced by the merger wave. Furthermore, we can recover from the regression specification the average CARs for the three types of firms: with rivals on average exhibiting significant abnormal returns of 0.37% with a 3-day and 0.90% with an 11-day window; targets on average exhibiting significant abnormal returns of 3.7% with a 3-day and 4.2% with an 11-day window; and acquirers exhibiting slightly positive but insignificant abnormal returns. Accordingly, the empirical results from regression specification 2 reject hypothesis 2; thus, suggesting that the generally positive effects for rivals are not simply driven by the information effects of the merger event. In particular, if the rival effects were driven by the merger event signalling a higher ‘future acquisition probability’, then rival abnormal returns would be sensitive to the merger wave. Hence, the insensitivity of rival firm stock prices to the merger wave suggests that we can interpret the positive abnormal returns of rivals in our sample as being largely driven by competitive effects.

Table II reports the results for regression specifications' 3 and 4 which jointly test the third hypothesis – (H3) rival firm gains are sensitive to heterogeneity in merger characteristics. In particular, regression specification 3 breaks down the three firm types (target, acquirer, and rival) into three different geographic contexts under which mergers may fall: Intra-European, Extra-European, and Cross-Euro-Border. In terms of the positive abnormal returns to targets detected in the first two regressions, this effect seems to be statistically robust across the different geographic contexts for mergers: targets in intra-European mergers on average exhibit significant CARs of 3.0% with a 3-day and 3.1% with an 11-day window; targets in extra-European mergers on average exhibit significant CARs of 8.1% with a 3-day and 8.8% with an 11-day window; and targets in cross-euro-border mergers exhibit significant CARs of 2.1% and 3.7% respectively. In terms of the non-significant effect found for acquiring firms in the first two regression specifications, this effect is also manifest across the different geographical contexts for mergers – with the exception of acquirers for Extra-European mergers manifesting a statistically significant negative CAR for the 11-day window. In terms of the positive abnormal returns to rivals detected in the first two regressions, this effect is statistically robust in two geographic contexts: rivals in Intra-European mergers on average exhibit significant CARs of 0.34% in the 3-day and 0.91% in the 11-day window; and rivals in Extra-European mergers exhibit significant CARs of 0.81% and 0.75% respectively. However, the rivals in cross-euro-border mergers exhibit positive but insignificant CARs on average for both windows; thus, conforming to the idea that cross-border mergers involve less market-power elements, though it is important to stress that the average abnormal return is still positive with these merger types. Accordingly, Intra-European mergers result in positive rival effects, Cross-Euro-Border mergers do not significantly affect rivals, and Extra-European mergers generate substantial rival gains.

Most importantly, we do not find evidence of negative abnormal returns for rival firms in any geographic context, thus rejecting the geographic heterogeneity elements of hypothesis 3.

Regression specification 4 breaks down the three firm types (target, acquirer, and rival) into the different product contexts under which mergers may fall: manufacturing and service industry mergers. In terms of the positive abnormal returns to targets detected in the first two regressions, this effect seems to be statistically robust across the different product-market contexts for mergers: targets in manufacturing mergers on average exhibit significant CARs of 3.4% with a 3-day and 4.2% with an 11-day window; and targets in service-industry mergers exhibit significant CARs of 4.0% for both event windows. In terms of the general non-significant effect found for acquiring firms in regression specifications' 1 and 2, this non-effect is also consistent across the different product-market contexts for mergers as it is insignificant in both sectors for both event windows. In terms of the positive abnormal returns for rivals detected in regression specifications' 1 and 2, this effect is statistically robust over both event windows for service-industry mergers: where rivals on average exhibit significant abnormal returns of 0.7% for the 3-day and 1.7% for the 11-day window. The abnormal return for rivals is also positive over both windows for manufacturing mergers (0.22% for the 3-day and 1.22% for the 11-day window), but is only statistically significant with the 11-day window. Moreover, we again do not find any evidence of negative abnormal returns for rivals in either of the two product market contexts for merger activity, thus rejecting the product market heterogeneity elements of hypothesis 3.

Table III reports the results for regression specifications' 5 and 6 which jointly test hypothesis 4a. To allow concentration on rival heterogeneity effects and for purposes of brevity, we note that in both specifications and both event windows the coefficient estimates for targets and acquirers are consistent with those reported in regression specification 1.

Regression specification 5 suggests that both absolutely large and absolutely small rivals gain from merger events, as the coefficient estimates are positive and generally significant for both event windows. It should be pointed out that the small-rival coefficient estimate – when employing the 3-day window – does not indicate formal significance; yet its p-value is actually 0.11, thus indicating marginal significance. Further, an additional t-test of the difference between the coefficient estimates for small and large rivals clearly cannot reject the null-hypothesis that the CARs of large rivals are equal to the CARs of small rivals (p-value of 0.770 for the tests on the 3-day window and 0.419 for the tests on the 11-day window coefficient estimates). Hence, the empirical evidence does not suggest that absolutely small rivals are harmed by merger events (counter to hypothesis 4a); if anything, the evidence suggests that absolutely small rivals gain more than large rivals.

Regression specification 6 moves beyond absolute size to consider the relative size of rivals with respect to acquiring firms; here, both relatively small (0.61% for the 3-day and 1.2% for the 11-day CAR) and relatively similar (0.74% for the 3-day and 1.5% for the 11-day CAR) rivals tend to gain equally when competitors engage in mergers. However, rivals that are relatively larger than the acquiring firm tend to have a small – but insignificant – positive CAR. This result is somewhat surprising as organizational ecologists tend to think that relatively large firms are more immune to threats from the competitive environment; yet our evidence suggests that relatively large firms are also more immune to the opportunities (like the merger of a competitor) provided in the competitive environment. Further, we find no evidence that relatively similar rivals experience negative effects; in fact – if anything – they experience the largest CARs. Accordingly, we do not find any evidence in regression specification 5 and 6 of negative abnormal returns for rivals in any size (absolute and relative) context, thus rejecting the contentions embedded in hypothesis 4a.

Table IV reports the results for regression specifications' 7 and 8 – which respectively test the impact of population density heterogeneity (H4b) and rival proximity heterogeneity (H4c) – on our sample of large horizontal mergers. We again suppress discussion of the coefficient estimates for targets and acquirers as they are also consistent with previous regression models.

Regression specification 7 suggests no difference whatsoever for rival CARs when one compares a context of high population density (many rivals) with a context of low population density (few rivals). The coefficient estimates for many-rivals and few-rivals are consistently positive for both event windows: a 0.36% (1.08%) average CAR for the many rivals category and a 0.38% (0.72%) average CAR for the few rivals category when using the 3-day (11-day) window. While statistical significance is only manifest for few-rivals when a 3-day window is employed and for many-rivals when an 11-day window is employed, we can again do a t-test of the difference between the coefficient estimates for many and few rivals. These tests suggest no significant difference between rivals in a high density context (many rivals) as compared to rivals in a low density context (few rivals): p-values of 0.358 for the 3-day and 0.448 for the 11-day window. Hence, the empirical evidence does not suggest that rivals in a high density environment are harmed by merger events (counter to hypothesis 4b); if anything, the evidence suggests that rivals in high density environments gain a bit more than do rivals in a low density environment.

Regression specification 8 suggests that positive and statistically significant CARs hold for both when rivals hail – and don't hail – from the same region as one of the merging firms. Employing the familiar 3-day (11-day) event window: same-region-rivals indicate a 0.38% (0.74%) average CAR, and different-region-rivals indicate a 0.50% (1.3%) average CAR. Hence, this finding – that rivals from other regions gain a bit more than rivals from inside the region of

the merger – is partly in line with the received wisdom in organizational ecology that nearby competitors represent greater threats; yet akin to the previous results, we should stress that nearby competitors still very much gain from the merger event. Accordingly, the evidence in regression specifications’ 7 and 8 suggests no contexts (regarding population density or rival proximity) where rival abnormal returns are negative, thus respectively rejecting hypothesis 4b and 4c.

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Insert Table II about here  
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In sum, the eight regression specifications provide a good amount of evidence in support of rival firms generally benefiting from merger events. Regression specification 1 suggests that rivals gain on average from merger events; these gains are not as large as targets, but they are significantly different from zero. Hence, the empirical evidence supports the first hypothesis. Regression specification 2 suggests that rival CARs are not influenced by the merger wave, as positive rival CARs do not appear to be a function of a higher ‘future acquisition probability’. Hence, the evidence rejects the second hypothesis and allows stronger inferences with regard to the competitive effects – not information effects – driving the positive CARs of rivals. Regression specification 3 finds that rival CARs are positive across the three different geographical contexts for merger activity, though insignificant for cross-euro-border mergers. Regression specification 4 finds that rivals CARs are positive for manufacturing and service industries. Hence, regression specifications’ 3 and 4 collectively reject the third hypothesis regarding rival gains breaking down under heterogeneity in merger transactions.

Furthermore, regression specification 5 through 8 also support that rivals generally benefit from merger events, as the positive CAR for rival firms appears to hold up when we



consider absolute size differences in rivals (regression specification 5), relative size differences in rivals (regression specification 6), the population density in the environment (regression specification 7), and the proximity of rivals to merging firms (regression specification 8). It should be stressed that in none of the heterogeneous contexts for rivals (regression specifications 5 – 8) do we find rival effects to be negative on average; hence, the evidence collectively rejects hypotheses 4a, 4b and 4c. Yet, the fact that these positive rival effects are significant only in the majority – so not all – contexts for merger transactions suggests that we temper our interpretations and state that the evidence weakly supports that rival firms generally gain from merger events. Moreover, our evidence certainly strongly rejects the idea that merger events generally represent a threat to non-merging rival firms.

#### **LIMITATIONS, FUTURE RESEARCH AND MANAGERIAL IMPLICATIONS**

This research involves a number of limitations that should be acknowledged: a sample where small horizontal mergers are under-represented; an inability to consider managerial cognitions regarding a merger event; and a lack of consideration for the drivers of rival profitability (though we do consider the conditions supporting rival abnormal returns). These limitations – as well as some strengths of the manuscript – potentially point to future avenues of management research. Beyond the potential for future management research, the empirical results yield very clear prescriptions for managerial practice regarding M&A activity.

First, the most obvious area for additional research resides in the realm of further empirical testing on different M&A samples. While our sample is particularly strong regarding the accuracy of rival-identity, it is also characterised by large horizontal transactions. Hence, samples that involve relatively smaller horizontal mergers may involve different properties. Further, the exploratory tests considering heterogeneity in the rival context yielded some

interesting findings that seem counter-intuitive to organizational ecology insights: both absolutely and relatively large firms appear to do no better – actually, if anything, worse – than small firms in reaping the benefits of a competitor's merger; the number of competitors in the environment (population density) does not appear to significantly affect rival returns; and nearby firms appear to – if anything – reap positive benefits from the actions of their competitors. These empirical irregularities should be further studied; and if held up, they suggest that the qualities which make firms resilient to competitive pressures in an environment also reduce the organisation's ability to reap beneficial opportunities in the same environment.

Second, Boari et al. (2006) note that studies of rivalry tend to consist of two separate approaches: a rational-economic model, or a cognitive-managerial model. While we have made some exploratory tests with regard to how rival size, rival proximity, and competition (i.e., population density) affect our results, there is no doubt that our analysis can largely be characterised as falling in the rational-economic approach. To the degree then that managers continue to indicate non-rational behaviour when competitor firms engage in mergers, research concerning the cognitive concepts of managerial perceptions could be quite valuable. For instance, Vaara (2003) considers post-acquisition integration from a sensemaking perspective with the attendant analysis of integration processes and decision-making. Such research clearly calls for a more case-based approach – with fine-grained data on managerial perceptions – than that employed here.

Third, while we have taken some initial steps to consider the conditions under which non-merging rival firms are more likely to gain from a merger of competitors (i.e., mergers that are intra-European, extra-European, and service-industry; and rivals that are similarly-sized, small-sized, nearby, and far-away), the question of what drives the abnormal returns of rival firms is one that could be more fully addressed. For instance, Oxley et al. (2007) examine the

determinants of rival firms' abnormal returns when competitor firms announce strategic alliances; in particular, they find non-horizontal and cross-border alliances to negatively affect the abnormal returns of rivals. Further research in this vein regarding M&A activity is certainly merited.

In addition to the future research avenues opened up by the limitations of this study, we also hope to spur future research that would employ our implicit approach (focusing on rivals) to identifying merger types. The impact of a merger event on both the stock prices of rivals and merging firms may allow differentiating between merger types. Mergers that generate net-positive abnormal returns to merging firms (acquirers and targets) and a positive abnormal return to a rival firm could be considered market-power enhancing mergers. While mergers that generate a net-negative abnormal return to merging firms (acquirers and targets) and a positive abnormal return to a rival firm could be considered non-synergistic mergers. One of the chief challenges in management research on M&As has been the inability to hold constant the different motives and competitive effects behind merger activity. For instance, Chatterjee (1986) excluded horizontal mergers from his study in order to sidestep the issue of collusive synergy and focus more on operational synergy. Considering the impact of a merger event on both merging and non-merging firms provides a means to begin to differentiate and classify different horizontal mergers by their effect on the stock prices of insider and outsider firms. Accordingly, the ability to identify merger type can be of practical use in future management studies of M&A activity. In short, we in the management literature have neglected Chatterjee's (1986) early call to consider rival effects for far too long.

Taken as a whole, our evidence strongly rejects the notion that mergers generally represent a threat to non-merging firms. It appears that the non-synergistic and market-power elements of merger activity (which generate a net-positive return to rival firms) are dominant in

our sample of large horizontal mergers. Accordingly, a clear managerial implication of this research is that managers should not generally attempt to counter a merger between their competitors, as more often than not a merger represents a boon – not a threat – to the underlining profitability of rivals.

## **CONCLUSION**

Motivated by the scarcity of management research on what it means to be a non-merging rival firm left outside a merger of competitors, this paper consists of three main endeavours. First, employing a sample of large horizontal M&A transactions with expert assessment of rival identity and the stock-price event-study methodology, we present empirical evidence in support of our contention that rivals generally gain when competitors engage in merger activity. Second, we ensure that these positive rival-effects are not simply driven by the information effects embedded in merger waves; i.e., ‘future acquisition probability’ does not fundamentally determine the abnormal returns of rivals. More precisely, we find the positive abnormal returns of rivals to be insensitive to the merger wave. Third, we provide empirical evidence in support of the fact that the positive effects for non-merging rival firms are generally robust to heterogeneity in merger and rival characteristics. Hence, akin to the well-documented normative prescriptions for managers concerning the inadvisability of automatically engaging in acquisition behaviour, it is also inadvisable for managers to automatically assume that a competitor’s merger imperils rival firms.

## NOTES

<sup>1</sup> Akdogu (2003) describes another interesting case of firms desiring not to be left outside a merger: Northwest Airline's marketing agreement with Continental Airlines gave Northwest veto power over any possible acquisitions of Continental (the recent acquisition of Northwest by Delta negates this provision, and many pundits note that this suggests that Continental will now be in play as a target). See Brito (2003) and Molnar (2007) for many more examples of firms taking action to prevent competitors from merging.

<sup>2</sup> See Parvinen and Tikkanen (2007) for a theoretical initiative that encompasses many of these merger-failure-explanations under the rubric of 'incentive asymmetries'.

<sup>3</sup> Merger information is derived from the EC files that are freely downloadable from the EC webpage. Our sample includes almost all mergers during the 1990-2002 period that went through an in-depth antitrust investigation (the so-called phase II) by the EC, plus, the sample includes a randomly matched selection of less problematic (phase I) mergers.

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TABLE I  
Regression Results for Rival Profitability (H1) and Merger Wave (H2) Tests

Regression Specification #	(1)		(2)	
Regression Model	Baseline		Merger Wave Time-Trend	
<i>Event Window</i>	<i>3-Day CAR</i>	<i>11-Day CAR</i>	<i>3-Day CAR</i>	<i>11-Day CAR</i>
Target	0.0361 *** (0.0099)	0.0417 *** (0.0099)	-0.0053 (0.0109)	0.0093 (0.0131)
Acquirer	0.0006 (0.0063)	0.0002 (0.0063)	0.0000 (0.0060)	-0.0000 (0.0091)
Rival	0.0037 ** (0.0037)	0.0090 *** (0.0037)	0.0007 (0.0025)	0.0006 (0.0048)
Target-Trend			0.0323 ** (0.0126)	0.0253 ** (0.0124)
Acquirer-Trend			0.0005 (0.0057)	0.0002 (0.075)
Rival-Trend			0.0021 (0.0018)	0.0059 (0.0042)
Average Effect Target			0.0369 ***	0.0423 ***
Average Effect Acquirer			0.0006	0.0002
Average Effect Rival			0.0037 **	0.0090 **
N	853	853	853	853
R-squared	0.0656	0.0656	0.0994	0.0726

- The dependent variable is the CAR (3-day & 11-day) for the firm observation.
- Hubert-White robust standard errors clustered by merger in parentheses.
- The symbols \*, \*\*, and \*\*\* represent significance at the 10%, 5%, and 1% level respectively.

TABLE II  
Regression Results for Merger Heterogeneity (H3) Tests

Regression Specification #	(3)		(4)	
Regression Model	Geographic Heterogeneity		Product-Market Heterogeneity	
<i>Event Window</i>	<i>3-Day CAR</i>	<i>11-Day CAR</i>	<i>3-Day CAR</i>	<i>11-Day CAR</i>
Target Intra-European	0.0296 *** (0.0110)	0.0312 *** (0.0124)		
Target Extra-European	0.0807 *** (0.0289)	0.0883 *** (0.0289)		
Target Cross-Euro-Border	0.0213 ** (0.0107)	0.0367 ** (0.0169)		
Acquirer Intra-European	0.0051 (0.0074)	0.0074 (0.0095)		
Acquirer Extra-European	-0.0146 (0.0110)	-0.0318 ** (0.0123)		
Acquirer Cross-Euro-Border	0.0013 (0.0062)	0.0067 (0.0088)		
Rival Intra-European	0.0034 * (0.0019)	0.0091 * (0.0048)		
Rival Extra-European	0.0081 ** (0.0037)	0.0075 * (0.0039)		
Rival Cross-Euro-Border	0.0006 (0.0045)	0.0098 (0.0067)		
Target Manufacturing			0.0344 *** (0.0105)	0.0423 *** (0.0121)
Target Service			0.0397 ** (0.0157)	0.0404 ** (0.0172)
Acquirer Manufacturing			-0.0002 (0.0069)	0.0049 (0.0081)
Acquirer Service			0.0021 (0.0057)	0.0027 (0.0098)
Rival Manufacturing			0.0022 (0.0020)	0.0122 ** (0.0049)
Rival Service			0.0071 *** (0.0026)	0.0169 *** (0.0041)
N	853	853	853	853
R-squared	0.0882	0.0706	0.0669	0.0574

- The dependent variable is the CAR (3-day & 11-day) for the firm observation.
- Hubert-White robust standard errors clustered by merger in parentheses.
- The symbols \*, \*\*, and \*\*\* represent significance at the 10%, 5%, and 1% level respectively.

**TABLE III**  
**Regression Results for Heterogeneity in Rival Size (H4a) Tests**

<b>Regression Specification #</b>	<b>(5)</b>				<b>(6)</b>			
<b>Regression Model</b>	<b>Absolute Rival Size</b>				<b>Relative Rival Size</b>			
<i>Event Window</i>	<i>3-Day CAR</i>		<i>11-Day CAR</i>		<i>3-Day CAR</i>		<i>11-Day CAR</i>	
Target	0.0361 (0.0087)	***	0.0417 (0.0098)	***	0.0347 (0.0092)	***	0.0417 (0.0098)	***
Acquirer	0.0006 (0.0049)		0.0002 (0.0063)		0.0006 (0.0049)		0.0002 (0.0063)	
Large-Rivals	0.0032 (0.0020)	*	0.0078 (0.0042)	*				
Small-Rivals	0.0042 (0.0026)		0.0104 (0.0043)	**				
Relatively-Small-Rivals					0.0061 (0.0027)	**	0.0120 (0.0067)	*
Relatively-Similar-Rivals					0.0074 (0.0041)	*	0.0147 (0.0061)	**
Relatively-Large-Rivals					0.0011 (0.0021)		0.0087 (0.0058)	
N	853		853		722 <sup>a</sup>		722 <sup>a</sup>	
R-squared	0.0656		0.0656		0.0636		0.0568	

- The dependent variable is the CAR (3-day & 11-day) for the firm observation.
- Hubert-White robust standard errors clustered by merger in parentheses.
- The symbols \*, \*\*, and \*\*\* represent significance at the 10%, 5%, and 1% level respectively.
- <sup>a</sup> The number of observations drops due to matching rivals with the corresponding acquiring firm data.

TABLE IV  
Regression Results for Heterogeneity in Population Density (H4b) and Proximity (H4c) Tests

Regression Specification #	(7)				(8)			
Regression Model	Population Density				Proximity			
<i>Event Window</i>	<i>3-Day CAR</i>		<i>11-Day CAR</i>		<i>3-Day CAR</i>		<i>11-Day CAR</i>	
Target	0.0361	***	0.0417	***	0.0361	***	0.0417	***
	(0.0087)		(0.0098)		(0.0087)		(0.0098)	
Acquirer	0.0006		0.0002		0.0006		0.0002	
	(0.0049)		(0.0063)		(0.0049)		(0.0063)	
Many-Rivals	0.0036		0.0108	**				
	(0.0023)		(0.0055)					
Few-Rivals	0.0038	*	0.0072					
	(0.0022)		(0.0046)					
Same-Region-Rivals					0.0038	*	0.0074	**
					(0.0020)		(0.0035)	
Different-Region-Rivals					0.0050	*	0.0132	**
					(0.0026)		(0.0067)	
N	853		853		853		853	
R-squared	0.0656		0.0569		0.0662		0.0569	

- The dependent variable is the CAR (3-day & 11-day) for the firm observation.
- Hubert-White robust standard errors clustered by merger in parentheses.
- The symbols \*, \*\*, and \*\*\* represent significance at the 10%, 5%, and 1% level respectively.
- <sup>a</sup> The number of observations drops due to matching rivals with the corresponding acquiring firm data.

APPENDIX A  
Description of Sample Mergers

Notif. Year	Merger No. (Trend)	Acquirer	Target	Actual No. of Rivals	No. of Rivals with Data	Industry	Merger Type
1990	4	Renault	Volvo	4	4	Manufacturing	Intra-European
1990	12	Varta	Bosch	3	3	Manufacturing	Intra-European
1990	24	Mitsubishi Corp.	Union Carbide Corp.	2	2	Manufacturing	Cross-Euro-Border
1990	42	Alcatel	Fiat	2	2	Manufacturing	Intra-European
1990	43	Fiat	Alcatel	1	1	Manufacturing	Intra-European
1990	50	At&T	Ncr Corporation	5	4	Manufacturing	Extra-European
1991	53	Boeing	Alenia	3	2	Manufacturing	Cross-Euro-Border
1991	57	Digital Equipment Int.	Mannesmann	2	2	Manufacturing	Cross-Euro-Border
1991	68	Tetrapak I	Alfa-Laval	2	1	Manufacturing	Intra-European
1991	81	Viag	Continental Can	9	3	Manufacturing	Intra-European
1991	121	Ingersoll Rand Co.	Dresser Inc.	5	3	Manufacturing	Extra-European
1991	126	Accor	Wagons-Lits	6	3	Service	Intra-European
1991	129	Digital Equipment Corp.	Philips Electronics	7	6	Service	Cross-Euro-Border
1991	141	Uap	Transatlantic HDG.	2	2	Service	Intra-European
1991	165	Alcatel Cable S.A.	Aeg Kabel	4	2	Manufacturing	Intra-European
1992	184	Gran Metropolitan	Cinzano S.A.	1	1	Manufacturing	Intra-European
1992	190	Nestle'	Eaux Vittel	2	1	Manufacturing	Intra-European
1992	214	Du Pont	Imperial Chemical Ind.	3	3	Manufacturing	Cross-Euro-Border
1992	221	Asea Brown Boveri	Trafalgar Hse	6	4	Manufacturing	Intra-European
1992	222	Mannesmann	Hoesch	1	1	Manufacturing	Intra-European
1992	236	Ericsson	Ascom	6	3	Manufacturing	Intra-European
1992	253	Btr	Pirelli	5	2	Manufacturing	Intra-European
1993	269	Shell	Montedison	14	7	Manufacturing	Intra-European
1993	286	Zuerich Insurance	Municipal Mutual Ins.	3	2	Service	Intra-European
1993	291	Knp	Buehrmann Tetterode	2	3	Manufacturing	Intra-European
1993	315	Mannesmann	Vlourec Dalmine	3	1	Manufacturing	Intra-European
1993	331	Fletcher Challenge	Methanex	6	3	Manufacturing	Extra-European
1993	354	Cyanamid	Shell	6	5	Manufacturing	Cross-Euro-Border
1993	358	Pilkington	Societa' Italiana Vetro	4	3	Manufacturing	Intra-European
1994	430	Procter & Gamble	Vp Schickedanz	4	2	Manufacturing	Cross-Euro-Border
1994	437	Matra Marconi Space	British Aerospace	16	6	Manufacturing	Intra-European
1994	447	Schneider Electric S.A.	AEG A.G.	6	5	Manufacturing	Intra-European
1994	466	Tractebel	Synatom	1	0	Manufacturing	Intra-European
1994	468	Siemens	Italtel	5	4	Manufacturing	Intra-European
1994	469	Bertelsmann	Deutsche Bundespost	2	1	Service	Intra-European
1994	477	Daimler Benz	Kässbohrer	6	3	Manufacturing	Intra-European
1994	479	Man	Ingersoll Rand	4	1	Manufacturing	Intra-European
1994	484	Thyssen Stahl	Acciai Speciali Asti	5	4	Manufacturing	Intra-European
1994	498	Commercial Union	Suez	5	3	Service	Intra-European
1994	508	CCF	BHF	12	7	Service	Intra-European
1995	550	Union Carbide	Enichem S.P.A.	14	8	Manufacturing	Intra-European
1995	582	Orkla As	Volvo	4	3	Manufacturing	Intra-European
1995	603	Crown Cork & Seal	Carnaudmetalbox Sa	4	2	Manufacturing	Cross-Euro-Border
1995	619	Gencor	Lonmin	2	1	Manufacturing	Cross-Euro-Border
1995	623	Kimberly-Clark	Scott Paper	6	2	Manufacturing	Extra-European
1995	632	Rhône Poulenc Rorer	Fisons Plc.)	12	5	Manufacturing	Intra-European
1996	685	Siemens	Lagardere	7	6	Manufacturing	Intra-European
1996	689	Singapore Telecom	Belgacom	4	2	Service	Cross-Euro-Border
1996	706	Alcatel	Aeg	5	3	Manufacturing	Cross-Euro-Border
1996	731	Kvaerner A.S.	Trafalgar House Plc	3	1	Service	Intra-European
1996	737	Ciba-Geigy	Sandoz	26	12	Manufacturing	Intra-European
1996	754	Anglo American Corp.	Lonmin	2	1	Manufacturing	Cross-Euro-Border

Year Notif.	Merger No. (Trend)	Acquirer	Target	Actual No. of Rivals	No. of Rivals with Data	Industry	Merger Type
1996	774	Saint Gobain	Hoechst Wacker	2	1	Manufacturing	Intra-European
1996	794	Coca-Cola Enterprises	Cadbury Schweppes	5	2	Manufacturing	Cross-Euro-Border
1996	798	General Electric	Compunet Computer	5	2	Service	Cross-Euro-Border
1996	818	Cardo	Thyssen	6	6	Manufacturing	Intra-European
1997	833	Coca Cola Company	Carslberg A/S	2	2	Manufacturing	Cross-Euro-Border
1997	850	Fortis	Abn-Amro Bank	2	2	Service	Intra-European
1997	856	British Telecom	Mci (Ii)	5	4	Service	Cross-Euro-Border
1997	877	Boeing	Mcdonnell Douglas	1	1	Manufacturing	Extra-European
1997	913	Siemens	Elektrowatt	12	4	Manufacturing	Intra-European
1997	938	Guinness	Grand Metropolitan	4	3	Manufacturing	Intra-European
1997	942	Veba	Degusta	15	7	Manufacturing	Intra-European
1997	950	Roche	Boehringer Mannheim	5	5	Manufacturing	Intra-European
1997	954	Bain Capital Inc.	Hoechst Ag	8	5	Manufacturing	Intra-European
1997	967	Klm	Air UK	2	1	Service	Intra-European
1997	970	Thyssen Krupp Stahl	Itw Signode	12	2	Manufacturing	Cross-Euro-Border
1997	986	Bayer Group	Du Pont I De Nemours	5	3	Manufacturing	Cross-Euro-Border
1997	993	Bertelsmann	Taurus Entertainment	1	1	Service	Intra-European
1997	1027	Deutsche Telekom	Bertelsmann	1	1	Service	Intra-European
1997	1042	Eastman Kodak	Dainippon Ink	3	3	Manufacturing	Extra-European
1997	1069	Worldcom	Mci	2	2	Service	Extra-European
1997	1081	Dow Jones	General Electric	1	0	Service	Extra-European
1997	1094	Caterpillar	Lucas Varity	7	7	Manufacturing	Cross-Euro-Border
1998	1142	Commercial Union Plc	General Accident Plc	8	4	Service	Intra-European
1998	1221	Rewe	Meinl	4	1	Service	Intra-European
1998	1225	Enso Oyj	Stora	6	4	Manufacturing	Intra-European
1998	1232	Ingram	Tech Data	4	2	Service	Cross-Euro-Border
1998	1252	At&T	TCI	4	3	Service	Extra-European
1998	1258	General Electric	Finmeccanica	3	2	Manufacturing	Cross-Euro-Border
1998	1265	Chs Electronics Inc.	Metro Ag	4	2	Service	Cross-Euro-Border
1998	1332	Thomson-CSF	Lucas Varity Plc	4	1	Manufacturing	Intra-European
1999	1363	Du Pont De Nemours	Hoechst AG	4	4	Manufacturing	Cross-Euro-Border
1999	1383	Exxon Corporation	Mobil Corporation	34	11	Service	Extra-European
1999	1403	Astra	Zeneca	13	6	Manufacturing	Intra-European
1999	1405	Tnt Post Group N.V.	Jet Services Sa	7	2	Service	Intra-European
1999	1439	Telia AB	Telenor	6	2	Service	Intra-European
1999	1476	Adecco S.A.	Delphi	2	2	Service	Intra-European
1999	1484	ALSTOM	ABB	13	6	Manufacturing	Intra-European
1999	1524	Airtours	First Choice	6	1	Service	Intra-European
1999	1532	Bp Amoco Plc.	Atlantic Richfield	11	5	Service	Cross-Euro-Border
1999	1539	CVC European Equity II	Groupe DANONE	6	2	Manufacturing	Intra-European
1999	1551	AT&T Corp.	MediaOne Group	1	1	Service	Extra-European
1999	1561	Getronics N.V.	Wang Laboratories	3	2	Service	Cross-Euro-Border
1999	1578	Sanitec	Konink. Sphinx	27	3	Manufacturing	Intra-European
1999	1596	ACCOR S.A.	The BLACKSTONE	4	2	Service	Intra-European
1999	1628	Total Fina	Elf Aquitaine	15	4	Manufacturing	Intra-European
1999	1630	L'Air Liquide S.A.	The BOC Group plc.	7	3	Service	Intra-European
1999	1636	Matra Marconi Space	Astrium	15	4	Manufacturing	Intra-European
1999	1641	Linde AG	AGA AB	5	5	Service	Intra-European
1999	1650	ACEA S.P.A.	Telefonica	1	1	Service	Intra-European
1999	1663	Alcan Aluminium Ltd.	Aluisse - Lonza	13	4	Manufacturing	Cross-Euro-Border
1999	1671	Dow Chemical	Union Carbide	12	5	Manufacturing	Extra-European
1999	1672	Ab Volvo	Scania Ab	5	3	Manufacturing	Intra-European
1999	1673	Veba Ag	Viag Ag	16	9	Service	Intra-European
1999	1682	Ashland	Superfos	1	4	Manufacturing	Cross-Euro-Border
1999	1687	Adecco SA	Olsten	3	3	Service	Cross-Euro-Border
1999	1693	Alcoa Inc.	Reynolds Metals	18	5	Manufacturing	Extra-European



Year Notif.	Merger No. (Trend)	Acquirer	Target	Actual No. of Rivals	No. of Rivals with Data	Industry	Merger Type
1999	1694	Emc	Data General	4	1	Manufacturing	Extra-European
1999	1741	MCI WorldCom	Sprint	25	12	Service	Extra-European
1999	1789	INA Holding	LuK Group	11	5	Manufacturing	Intra-European
2000	1797	Bae Systems+ Investor	Celsius AB	12	3	Manufacturing	Intra-European
2000	1806	Novartis AG	AstraZeneca Plc.	18	6	Manufacturing	Intra-European
2000	1813	Industri Kapital (Nordkem)	Dyno	18	5	Manufacturing	Intra-European
2000	1845	AOL	Time Warner	13	5	Service	Extra-European
2000	1853	Electricite De France	EnBW	8	4	Service	Intra-European
2000	1879	The Boeing Company	Hughes Electronics	13	2	Manufacturing	Extra-European
2000	1882	Pirelli Cavi e Sistemi	BICC General	24	6	Manufacturing	Intra-European
2000	1892	Sara Lee	Courtaulds Textiles	1	3	Manufacturing	Cross-Euro-Border
2000	1915	The Post Office	TPG	11	1	Service	Cross-Euro-Border
2000	1940	Framatome	Siemens	24	7	Service	Intra-European
2000	1956	Ford Motor Company	Autonova AB	4	5	Manufacturing	Cross-Euro-Border
2000	1982	Telia AB	Oracle Corporation	3	2	Service	Cross-Euro-Border
2000	1990	Unilever PLC	Bestfood	29	5	Manufacturing	Cross-Euro-Border
2000	2020	Metsä-Serla Corporation	Modo	9	5	Manufacturing	Intra-European
2000	2033	Svedala Industri AB	Metso Corporation	1	1	Manufacturing	Intra-European
2000	2041	United Airlines	US Airways Group Inc.	4	3	Service	Extra-European
2000	2050	Vivendi S.A.	Canal+ S.A.	4	4	Service	Intra-European
2000	2059	Siemens AG	Dematic	22	10	Manufacturing	Intra-European
2000	2060	Robert Bosch GmbH	Mannesmann Rexroth	11	5	Manufacturing	Intra-European
2000	2097	SCA Mölnlycke Holding	Metsä Tissue Corp.	7	2	Manufacturing	Intra-European
2000	2139	Bombardier	Adtranz	11	3	Manufacturing	Cross-Euro-Border
2001	2201	Man	Auwaerter	5	4	Manufacturing	Intra-European
2001	2202	Stinnes AG (E.ON AG)	Holland Chemical	5	2	Service	Intra-European
2001	2220	General Electric Corp.	Honeywell	22	13	Manufacturing	Extra-European
2001	2283	Schneider	Legrand	4	4	Manufacturing	Intra-European
2001	2302	H.J. Heinz Company	CSM NV	14	3	Manufacturing	Cross-Euro-Border
2001	2333	Riverbank	Sofidiv UK Ltd.	3	1	Service	Intra-European
2001	2389	Deutsche Shell GmbH	RWE AG	16	7	Manufacturing	Intra-European
2001	2396	Industri Kapital (Nordkem)	Perstorp	14	4	Manufacturing	Intra-European
2001	2416	Tetra Laval, S.A.	Sidel, S.A.	14	5	Manufacturing	Intra-European
2001	2420	Mitsui	CVRD	3	3	Service	Extra-European
2001	2421	UMG-Beteiligungs- GmbH	Temic Telefunken	15	11	Manufacturing	Intra-European
2001	2447	Fabricom	GTI	3	2	Manufacturing	Intra-European
2001	2485	Verbund	Estag	9	2	Service	Intra-European
2001	2498	UPM-Kymmene	Haindl	17	4	Manufacturing	Intra-European
2001	2499	Norske Skog	Parengo	17	4	Manufacturing	Intra-European
2001	2504	Cadbury Schweppes	Pernod	9	6	Manufacturing	Intra-European
2001	2510	Cendant Corporation	Galileo International	2	2	Service	Extra-European
2001	2513	RWE	Kaertner Energie	4	3	Service	Intra-European
2001	2530	Südzucker	Saint Louis	5	2	Manufacturing	Intra-European
2001	2533	British Petrol plc (BP)	Veba Oil GmbH	17	8	Manufacturing	Intra-European
2001	2577	GE Capital Corporation	Heller Financial, Inc	11	7	Service	Extra-European
2001	2598	TDC Mobile International	CMG	5	5	Service	Intra-European
2001	2602	Gerling-Konzern	NCM	6	3	Service	Intra-European
2001	2608	INA Holding Schaeffler	FAG	5	4	Manufacturing	Intra-European
2001	2629	Flextronics International	Xerox Corporation	5	4	Manufacturing	Extra-European
2001	2659	Fortum Oyj	Birka Energi AB	10	4	Service	Intra-European
2001	2679	Electricité de France	TXU EUROPE	3	2	Service	Cross-Euro-Border
2002	2693	ADM	Alfred C.	1	1	Service	Cross-Euro-Border
2002	2705	EnerSys	Energy Storage	5	3	Manufacturing	Cross-Euro-Border

Year Notif.	Merger No. (Trend)	Acquirer	Target	Actual No. of Rivals	No. of Rivals with Data	Industry	Merger Type
2002	2726	Koninklijke KPN N.V.	E-Plus	3	2	Service	Intra-European
2002	2738	General Electric Company	Unison Industries Inc.	7	3	Manufacturing	Extra-European
2002	2796	Siemens AG	Aerolas GmbH	5	4	Manufacturing	Intra-European
2002	2804	Vendex KBB Nederland	Brico Belgium S.A.	7	1	Service	Intra-European

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