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THE IMPACT OF HORIZONTAL MERGERS ON RIVALS: GAINS TO BEING LEFT OUTSIDE A MERGER

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Abstract: 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.

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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 the stock returns of acquirers and targets, 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; Jensen and Ruback, 1983; Krishnan et al., 2007; Sirower, 1997; and Weidenbaum and Vogt, 1987, for reviews of the extensive literature). Accordingly, the scientific evidence clearly indicates that purchasing the assets of other firms does not automatically equate to increasing an acquiring firm's value: most deals simply pay the cost-of-capital (i.e., they 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 this 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 management literature has not focused on what merger events mean to firms left outside the merger. Chatterjee (1986, 1992) represents the only management scholarship considering the impact of acquisitions on rivals; yet, Chatterjee (1986) terms this to be exploratory work and calls for a more rigorous conceptual framework to handle the implications of both merging and rival firm effects. Second – and related to the above – we lack managerial prescriptions regarding how rivals might best react to mergers. Only the field of competitive dynamics seems to treat 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 strategically is optimal for rival firms.

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 realized that its competitor, CSX, had agreed to a friendly acquisition of Conrail; Carnival attempting to dissolve a merger between its competitors (Royal Carribean and P&O Princess).[1] 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 realization of the merger. These two paths can be generalized into two classes of

mergers (market-power and non-synergistic respectively), though do not represent the full set of merger types. Yet, the contention here is that non-merging firms are more likely to experience higher profits than lower profits when competitors merge.

In order to test our 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. The great advantage in this dataset is that rivals are identified by European Commission experts; thus, unlike the pre-existing finance literature (e.g., Song and Walkling, 2000; Fee and Thomas, 2004), we do not assume that all other firms in a specific industry classification represent rivals. Chatterjee (1992: 273) notes that "SICs are not the most reliable in terms of identifying rivals even though they have been used in the past". Accordingly, our expert-assessment of rival identity allows drawing stronger inferences on rival effects. In order to elicit the impact of merger events on acquirers, targets and rivals profitability, we use the standard event study methodology. Hence, 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 generally appear 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.

We follow up the empirical tests with a discussion concerning the importance of considering the impact of mergers on rival firms. Considering rival effects – in combination with the management literature's traditional focus on acquirer and target returns – gives more information on the types of mergers being proposed. For instance, the researcher can distinguish between market-power and synergistic mergers when rival effects are considered. The reaction

of rival firms' stock prices to merger events (in combination with the effects on merging firms' stock prices) yields then critical information on the nature of the proposed transaction. As Chatterjee (1992: 269) surmised, "if we simultaneously consider the stock price reactions of the rival and [merging firms] then we can uniquely determine the capital market's expectations about the motive behind the original takeover". Accordingly, by responding to the early call by Chatterjee (1986) to build a conceptual framework that encompasses the impact of merger events on both merging and non-merging firms, we generate a schematic for future research that helps better distinguish between different merger types.

In order to support our twin aims – reverse the 'received wisdom' that being left outside a merger is necessarily a 'bad' thing, and provide a framework to factor the impact of horizontal merger events on both merging and rival firms – we structure the remainder of the paper as follows. First, we analyze the previous theoretical and empirical literature on the impact of merger events on rival firms and generate our main contention. Second, we consider rival effects in the proper wave-like nature of merger events in order to generate the contention that rival returns are relatively immune to wave influences. Third, we describe the dataset of large horizontal mergers. Fourth, we outline the appropriate methodology. Fifth, we discuss the empirical results. Sixth, we present a taxonomy of four merger types based on the varied effects of mergers on both merging and non-merging firms that can be used as a schematic by future researchers to discern merger types. 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 it has paid less heed to the impact of mergers on rival firms. Yet, a small and latent cross-disciplinary literature exists that analyzes rival firm effects. Stigler

(1950) first realized 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 it is more profitable to be an outsider than an insider to a merger in most circumstances. Furthermore, the management and IO literatures have identified two merger types that conceivably generate benefits for rivals.

First, a long-standing rationale behind horizontal mergers is the elimination of competitors and facilitation of collusion amongst the remaining firms (e.g., Porter, 1985; Stigler, 1964). The core dynamic behind these mergers is that the actions by merger insiders to increase prices and/or reduce output push up the overall prices in the market. Hence, market-power driven transactions are beneficial to merger insiders (acquirers and targets), but also to outsiders (rivals) alike – though such mergers come at the expense of suppliers and customers. Here, merging firms and rivals are competitive complements: the competition reduction leads to increased market power which enhances the future profit expectations of rival firms, and thus generates a stock price premium. As an aside, the market-power (or collusive) elements of horizontal mergers were considered by many scholars (e.g., Chatterjee and Lubatkin, 1990; Lubatkin, 1983; Seth, 1990) to be a unique source of synergy (along with operational) for related mergers, and thus one of the reasons why related mergers should outperform unrelated mergers. Accordingly, the collusive or rivalry-reducing nature of market power mergers yields higher profit opportunities for rival firms – opportunities that generate positive abnormal returns for rivals.

Second, it is well understood that targets reap the majority of the stock market gains with merger announcements while acquirers usually break-even but often experience value losses;

moreover, sometimes acquirer losses are so substantial that the net effect on the merging firms represents a loss. Here, we highlight the existence of mergers that could be termed non-synergistic (indicated by a net-negative abnormal return for merging firms). A number of explanations for the existence of such mergers have been posited: e.g., empire-building – managerial incentives to grow the company at the expense of shareholders (Mueller, 1969; Walsh, 1988; Weidenbaum and Vogt, 1987); managerial-hubris – managerial expectations are systematically upward biased (Jemison and Sitkin, 1986; Roll, 1986); as well as information processing constraints in the Simon (1957) tradition, and internal political games in the Pettigrew (1977) tradition.[2] Most importantly, when firms compete as competitive substitutes, non-synergistic mergers represent a competitive opportunity to non-merging rivals. Here, the acquisition does not involve the sufficient joining of resources and capabilities, thus the merged firm has no advantage vis-à-vis rival firms. In fact, the internal integration challenges of such a merger (Birkinshaw et al., 2000; Larsson and Finkelstein, 1999; Larsson and Lubatkin, 2001; Vaara, 2003) may encumber this firm in strategic competition (managerial time and cognition come in limited quantities) to the advantage of rivals. 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 a non-synergistic merger 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 only 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. 2007a, 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 management, finance and industrial organization literature 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 our 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 relative frequency of different merger types, 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, by uncovering the properties of merger waves (e.g., Andrade and Stafford, 2004). It stands to reason 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. 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 order to be confident that the rival returns in our sample are largely driven by competitive effects, the empirical results should indeed be robust over the length of the merger

wave period. In other words, rival returns should be insensitive to any wave-like trends in merger behavior. Future acquisition probability, however, has been posited to enhance the abnormal returns of rival firms (the information effect of a merger event). Yet, the evidence to date suggests that the information effect on rival firm stock prices is relatively moderate: i.e., not very sensitive to the merger wave. From the foundations outlined above, we can generate a simple contention concerning large horizontal mergers that helps clarify our argument and motivate our empirical testing:

> *Hypothesis 2*: Any positive impact of merger-events on rival firms is insensitive to merger waves; i.e., the merger wave does not affect the abnormal returns of rival firms.

DATA

In order to bring some empirical evidence to bear 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 owe to these mergers being drawn from those transactions automatically analyzed by the European Commission for antitrust implications.[3]

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 analyzed 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 analyzed 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 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 customizable 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. To calculate the counterfactual, we use the Sharpe-and-Lintner market model: 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 α and β, 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:

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

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 τ_1 days before the event to τ_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).

Note that our two main empirical contentions – rivals generally gain from a merger event, and this gain is insensitive to the merger wave – do not necessarily attempt to define the source of rival gains. Nevertheless, we can use multivariate regression analysis to test these assertions. 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 basic regression equation (regression 1) takes the following form:

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

where i indexes the 853 firm-level observations, and ε_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 merger wave argument, 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 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 different 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 regression (regression 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) do

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 without doubt, the cross-national and cross-industry environments for merger activity exhibit a significant amount of heterogeneity in merger transactions. Accordingly in additional regressions, we break down regression 1 by the geographic and product-space nature of the transaction in order 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, regressions 3 & 4 respectively consider the geographic and product-space heterogeneity in the merger transactions from our sample.

In addition to potential heterogeneity in merger transactions, there might also be rival heterogeneity. Winter (1990) questions whether all rivals are the same; hence, we consider here the ability of rivals to differ over four dimensions. First, organizational ecologists expect large firms to be less vulnerable to competitive pressures, while small firms entail a liability of smallness (Hannan and Freeman, 1984). Accordingly in regression 5, we break down regression 1 by the size of the rivals: 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. Second, Baum and Korn (1996) support that 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 (thus a relative size argument as opposed to the previous absolute size argument). Accordingly in regression 6, we break down regression 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. Third, ecological models – as well as strategic and economic models – all hold that more firms in a population mean greater competition for scarce resources and thus higher failure rates (Baum and Korn, 1996). Accordingly in regression 7, we break down regression 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. Fourth, 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). Accordingly in regression 8, we break down regression 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.

RESULTS

Table I reports the results for the first four regression specifications. First off, the results from regression 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 have positive and significant CARs of 3.6% on average. Of particular interest are the abnormal returns of rival firms. Rivals' CARs are also positive and statistically significant (0.37%); hence, rivals tend to win in our sample. Notice also that rivals consistently perform better than acquirers – the order of magnitude of the average CAR is 10 times larger – but worse than targets. Hence, it is still best to be a target (in line with the previous literature), but it is certainly better to be a rival than an acquirer. In short, the results indicate that rivals on average experience positive abnormal returns; put more cautiously, by no means does a penalty appear to exist for being left outside a merger.

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Insert Table I about here

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Regression 2 presents the empirical results from a regression specification that allows the abnormal returns for the three different types of firms (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 exhibiting significant abnormal returns of 0.37% on average; targets exhibiting significant abnormal returns of 3.7% on average; and acquirers exhibiting slightly positive but insignificant abnormal returns. Accordingly, the empirical results from regression 2 suggest 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 signaling a higher 'future acquisition probability', then rival abnormal returns would be sensitive to the merger wave.

Regression 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 exhibit significant CARs of 3.0% on average; targets in extra-European mergers exhibit significant CARs of 8.1% on average; and targets in cross-euro-border mergers exhibit significant CARs of 2.1%. In terms of the non-significant positive effect found for acquiring firms in the first two regressions, this effect is also manifest across the different geographical contexts for mergers. 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 exhibit significant CARs of 0.34% on average; and rivals in Extra-European mergers exhibit significant CARs of 0.81%. However, the rivals in cross-euro-border mergers exhibit positive but insignificant CARs on average. 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.

Regression 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 exhibit significant CARs of 3.4% on average; and targets in service-industry mergers exhibit significant CARs of 4.0%. In terms of the non-significant effect found for acquiring firms in regressions' 1 & 2, this non-effect is also consistent across the different product-market contexts for mergers as it is insignificant in both sectors. In terms of the positive abnormal returns to rivals detected in the first two regressions, this effect is statistically robust in service-industry mergers (where rivals exhibit significant abnormal returns of 0.7% on average), and positive in the manufacturing sector at 0.22% on average but statistically insignificant. Accordingly, the positive impact of merger events on rivals appears to hold for both manufacturing and service industry mergers, but only in the service industry does this hold up statistically.

Table II reports the results for the last four regression specifications: regressions' 5 through 8. For brevity, we note that in all four specifications the coefficient estimates for targets and acquirers are consistent with those reported in regression 1, and now concentrate on the rival heterogeneity effects. Regression 5 suggests no difference between large and small rivals, as both coefficient estimates are positive and partially statistically significant (p-values of 0.09 and 0.11 respectively). Further, an additional t-test of the difference of the two coefficients clearly cannot reject the null-hypothesis that the average gains from a merger event for large rivals are equal to those of small rivals (p-value 0.770). Regression 6 moves beyond absolute size to consider the relative size of rivals with respect to acquiring firms; here, both relatively small (0.61% CAR) and relatively similar (0.74% CAR) rivals tend to equally gain 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. Regression 7 suggests no difference whatsoever between merger events that have many or few rivals: a 0.36% average CAR for the many rivals category, and a 0.38% average CAR for the few rivals category. Regression 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. The Same-Region-Rival category indicates a 0.38% average CAR for rivals, while the Different-Region-Rival category indicates a 0.50% average CAR for rivals. Hence, this finding – that rivals from other regions gain a bit more than rivals from inside the region of the merger – is again somewhat surprising when you consider that organizational ecologists tend to think that nearby competitors represent greater threats; yet here, nearby competitors seem to not reap the positive effects from a merger event that far-away competitors can reap (though we stress, nearby competitors still very much gain from the merger event).

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Insert Table II about here

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In sum, the eight regression equations provide a good amount of evidence in support of rival firms generally benefiting from merger events. Regression 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. Regression 2 suggests that rival CARs are not influenced by the merger wave, hence the positive CARs that we detect are not a function of a higher 'future acquisition probability'. Regression 3 finds that rival CARs are positive across the three different geographical contexts for merger activity, though insignificant for Cross-Euro-Border mergers.

Regression 4 finds that rivals CARs are positive for manufacturing and service industries, though the positive effect is insignificant for manufacturing industries. Furthermore, regression 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 5), relative size differences in rivals (regression 6), the scope for competition in the environment (regression 7), and the geographic spacing of rivals (regression 8). It should be stressed that in none of the heterogeneous contexts for mergers and rivals (regression 3 – 8) do we find rival effects to be negative on average. Yet, the lack of significance for positive rival effects in manufacturing and Cross-Euro-Border mergers 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 notion that merger events generally represent a threat to non-merging rival firms.

IMPLICATIONS OF RIVAL EFFECTS ON MERGER TYPES

The consideration of rival effects yields implications beyond the fact that non-merging rival firms generally do not suffer from the completion of a merger by competitors, as the impact of a merger event on rivals provides salient information on the nature of the proposed transaction. Recall the two types of mergers – market-power and non-synergistic – that were considered to be beneficial for rival firms; the impact of a merger event on the stock prices of rival and merging firms allows differentiating between these two merger types. Mergers that generate net-positive abnormal returns to merging firms (acquirers and targets) and a positive abnormal return to a rival firm can 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 can be considered non-synergistic mergers. Notice

that we consider the abnormal returns of merging firms (the acquirer plus the target) in order to side-step the whole issue as to which of these two firms captures the majority of the transaction value (Singh and Montgomery, 1987; Barney, 1988; Sirower, 1997).

Yet as already noted, market-power and non-synergistic mergers (where rivals gain) do not represent the full set of potential merger types when one considers the varied effects possible on both rival and merging firms. In particular, there are indeed mergers that will result in rivals experiencing negative abnormal returns. Our empirical analysis above suggests that these merger types are less likely to occur, but they certainly do exist. Namely, synergistic (where merging firms gain but rivals lose) and preemptive (where both merging firms and rivals lose) also represent potential merger event outcomes.

First, the most widely cited rationale behind horizontal mergers is the search for synergies (Walter and Barney, 1990). While the concept of synergy is used in different ways by different scholars, we employ the Hitt et al. (2001: 58) definition where the "creation of synergy – results in a competitive advantage for the firm" and is pursued via scale and scope economies as well as skill and resource sharing; hence, collusive (i.e., market-power) is not a synergy in this analysis. Accordingly, mergers that reduce costs for merging firms by any metric – scope, scale, or buyer-power – are synergistic mergers. Based on the work conceptualizing industries as being characterized by a degree of resource heterogeneity and immobility (Barney, 1991), management research has moved beyond a focus on cost-based synergies to embrace a richer consideration of merger synergies with acquisitions representing a means to purchase resources that could not otherwise be accessed (Barney, 1986; Dierickx and Cool, 1989; Peteraf, 1993). More specifically, acquisitions provide bidders with new products, assets, and skills which may be used to serve both new and pre-existing customers. For instance, Capron (1999) considers how resource redeployment post-acquisition can enhance merger performance. In this vein, Hitt et al.

argue that the joining of resources that are different but mutually supportive is critical to achieving synergy: “complementary resources between an acquiring and acquired firm can create synergies that, in turn, generate a competitive advantage for the firm over its competitors” (2001: 82). As they allude to, the fundamental difference between synergistic mergers and market-power mergers is that merging firms and rivals indicate inversely related profit-effects. Here, merging firms and rivals are competitive substitutes: the acquisition involves the joining of resources and capabilities that gives merging firms an advantage vis-à-vis rivals, thus the merger represents a competitive threat to non-merging rivals. Accordingly, mergers that generate net-positive abnormal returns to merging firms (acquirers and targets) and a negative abnormal return to a rival firm can be considered synergistic mergers.

Second, some non-synergistic mergers actually generate competitive losses for both merging and non-merging rival firms. In this class of mergers, the merging firms and rivals can be considered competitive complements; i.e., the merger is value-destroying for both parties. Such ‘destructive’ mergers were traditionally difficult to explain; though, recent research on the nature of preemptive mergers (e.g., Akdogu, 2003; Brito, 2003; Molnar, 2007) helps shed light on the dynamics behind some of these mergers. Essentially, if losing a target to a competitor means you would experience a substantial competitive loss, then it may make sense to over-bid and receive a negative return: i.e., acquiring firm losses are not as large as they would have been had they been an outsider to the merger. These preemptive mergers provide a logic as to why rational shareholder-valuing managers might pursue value-decreasing mergers. Furthermore, Molnar (2007) notes that when submitting a bid reveals negative news about an industry (e.g., the presence of cost or demand shocks), preemption results in a decreased aggregate value for the merging firms. It should be pointed out that many mergers here (those where the acquiring firms experience larger losses than the rival firms) do not conform to the preemption hypothesis;

instead, these mergers must simply be considered value-destroying. Nevertheless, mergers that generate net-negative abnormal returns to merging firms (acquirers and targets) and a negative abnormal return to a rival firm will be labeled as preemptive mergers even though that does not cover all the transaction types embedded in this category.

The merger types – market-power, synergistic, non-synergistic, and preemptive – can be represented in a simple taxonomy: Table III illustrates that taxonomy of four merger types with respect to their varied effects on merging and rival firms.[4] Most importantly, variation in the stock-market reaction to merger events by both merging firms and rivals provides an indication of the true nature of the proposed transaction. It bears stating, that specific mergers will potentially involve elements of different merger types: e.g., many mergers involve both synergies and market-power elements (Kim and Singal, 1993). Yet, the sign of the abnormal return indicates which element dominates (the net effect): for example, a merger where the merging-firms elicit a positive CAR may involve some market-power elements, but if rivals elicit a negative CAR then the synergistic elements dominate the market-power elements of the merger.

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Insert Table III about here

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Accordingly, we begin here to address Chatterjee's (1986) call for a more rigorous conceptual framework that embraces the full implications of merger events: i.e., the impact on both merging firms and non-merging rival firms. Moreover, the different competitive effects of M&A transactions on merging firms and rivals drives the identification of the different merger types (market-power, synergistic, non-synergistic and preemptive) in our conceptual framework. In particular, rival effects help us differentiate between market-power mergers (where the motive

is generally softer rivalry in a market) and synergistic mergers (where the motive is generally competitive in nature). In addition, rival effects help us differentiate between non-synergistic mergers (where the motive is often hubris or empire-building in nature) and preemptive mergers (where the motive is rational and shareholder-valuing). Without considering rival effects, we simply could not make these distinctions.

The above point regarding the importance of rival effects in differentiating between merger types can be born out when we consider the traditional management literature on M&As. That literature generally focuses on the impact of a merger event on merging firms (i.e., the acquirer and target) and neglects the impact of the event on rival firms – Chatterjee (1986, 1992) represent the exceptions. Hence, synergistic mergers are simply those mergers that lead to a net positive gain in the stock prices of merging firms (Michel and Shaked, 1985; Weidenbaum and Vogt, 1987). Yet as already noted, this approach does not allow us to tease apart market-power mergers from synergistic mergers: both types positively impact the stock price of merging firms, but only synergistic mergers negatively influence the stock price of rival firms. Consider, for instance, how the managerial challenges involved with these two types of mergers are quite different: market-power mergers simply require the killing off of a competitor and the subsequent reaping of gains from reduced rivalry, while synergistic mergers require sophisticated integration of resource bundles a la Barney (1986) and Capron (1999) – integration so successful that rival firms find themselves at a disadvantage with regard to the merged entity. Accordingly, by defining merger types in this fashion we gain insight on the potential primary motivation behind the merger, and we gain insight on the managerial challenges involved with the transaction.

Furthermore, mergers resulting in a negative abnormal stock return for merging firms are often considered failures on the part of management due to empire-building, managerial-hubris

or information-processing problems (Lubatkin, 1983). Hence, mergers that generate a negative CAR for merging firms have traditionally been lumped into the non-synergistic merger category and considered the result of managerial failure. Yet preemptive mergers are fundamentally different from non-synergistic mergers. Preemptive mergers actually do involve shareholder valuing management, but in this case management must allow the stock price of the firm to fall in order to protect shareholders from what would be a greater loss. Taking rival effects into account also allows differentiating between these two fundamentally different merger types.

The significance of being able to differentiate between market-power and synergistic mergers, and between non-synergistic and preemptive mergers can also be manifested by grafting our data on large horizontal merger transactions on to the proposed conceptual framework. Using our 3-day CARs for merger events, we classify mergers – according to their effect on rivals and merging firms – into the four merger types illustrated in Table III. For the current tests, each observation represents a pairing between a rival and the merging parties. Furthermore, we create the abnormal return for the combined merged entity by taking the weighted average of the merging firms' CARs using their market value as a weight. We also enlarge the proposed taxonomy to include an extra category labeled 'no effect': cases where the estimated abnormal returns are not significantly different from zero (CARs within two standard errors of zero are termed 'no-effect').

Using the above procedures allows building tables that illustrate the importance of factoring the rival effects from a merger event. First, Table IV presents the merger taxonomy based on the Intra-European sub-sample of mergers; hence, it includes all mergers in which both the acquirer and target hail from a European nation. Reflecting the importance of the proposed conceptual framework, Table IV illustrates the non-negligible presence of all kinds of mergers in the sample: i.e., market-power (21.83% of the sample), synergistic (16.22% of the sample), non-

synergistic (15.34%) and preemptive (15.63%) all exist. Note that market-power and non-synergistic mergers (where rivals gain) are more frequent events than synergistic and preemptive mergers (where rivals lose): 37.17% versus 31.85% of the sample. Furthermore, 43.07% of the rival observations experience a significant positive CAR, whereas 41.59% experience a significant negative CAR. Another way to interpret the results is to note that in 58.41% of the cases, rivals do not experience a significant loss from the event.

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Insert Table IV about here

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Moreover, we would like to compare this sample of Intra-European mergers with another sample of mergers in order to illustrate the relevance of considering rival effects. Table V then presents the merger taxonomy based on a sub-sample where either the acquirer or the target firm hails from the UK; hence, this sub-sample includes both intra-UK mergers and mergers where the UK firm is either the buyer or target of a foreign firm. The two sub-samples will have some overlap in that observations where the UK firm is either the buyer or target of another European firm will be in both samples, yet this is not crucial as the tables are generated for illustrative purposes.

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Insert Table V about here

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Notice that the Intra-European and UK samples yield very similar results with regard to how often merging firms' experience a significant positive CAR: 43.95% for the European sample, and 42.86% for the UK sample. If we were to have no additional information on rival observations – akin to the traditional approach in the management M&A literature – then we

would argue that the transactions in these two samples were equal in terms of synergistic tendencies. Yet factoring the impact of these merger events on rival observations tells us quite a bit more. We see that market-power mergers represent 21.83% of the European sample, but only 13.39% of the UK sample; further, synergistic mergers represent 16.22% of the European sample, and 16.07% of the UK sample. In short, the UK mergers appear to be relatively more synergistic than the European mergers; i.e., the UK mergers are likely to be less motivated by market-power rationales and to involve more substantial managerial challenges.

Comparing the UK and European samples for the non-synergistic/preemptive distinction in merger types also proves to be illustrative. First, 36.58% of the merging firms for the European mergers experience a significant negative CAR, whereas only 30.36% of the merging firms for UK mergers experience a significant negative CAR. We also see that non-synergistic mergers represent 15.34% of the EU sample, but only 8.04% of the UK sample; further, preemptive mergers represent 15.63% of the European sample, and 11.61% of the UK sample. This again yields evidence that the UK mergers appear to be more shareholder valuing than the European mergers. In fact, our results corroborate Ingham, Kran and Lovestam's (1992) survey in *JMS* that found UK mergers to substantially involve value-maximizing motivations.

SUMMARY, LIMITATIONS AND FUTURE RESEARCH

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 endeavors. 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. Thus, akin to the well-documented normative prescriptions concerning the inadvisability of

automatically engaging in acquisition behavior, it is also inadvisable to automatically assume that a competitor's merger imperils rival firms. 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 not be sensitive to the merger wave. Third, we build a conceptual framework that encompasses the impact of merger events on both merging and rival firms' abnormal returns in order to yield a schematic that elicits more information on merger type. In particular, by analyzing rival firm effects – in combination with the traditional focus on merging firm effects – we can differentiate between synergistic and market-power mergers, and between non-synergistic and preemptive mergers.

This research, nevertheless, involves a number of limitations that should be acknowledged – limitations that also point to future research avenues. 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 characterized 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 (and sometimes worse) than small firms in reaping the benefits of a competitor's merger; the number of competitors in the environment does not appear to affect rival returns; and nearby firms appear to – if anything – reap fewer benefits than far-away firms. 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 organization'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 location, and competition (i.e., population density) affect our results, there is no doubt that our analysis can largely be characterized as falling in the rational-economic approach. To the degree then that managers continue to indicate non-rational behavior 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., Intra-European, Extra-European, and service-industry mergers; and similarly-sized, small-sized, nearby, and far-away rivals), 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 firm 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 proposed schematic for identifying merger types. 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 side-step the issue of collusive synergy and focus more on operational synergy. Our method provides a means to differentiate and classify different horizontal mergers by their effect on the stock prices of merging and rival 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 early call to consider rival effects for far too long.

NOTES

[1] Akdogu (2003) describes another interesting case of firms desiring to not be left outside a merger: Northwest Airline's marketing agreement with Continental Airlines gives Northwest veto power over any possible acquisitions of Continental (the recently proposed 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.

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

[3] Merger specific information is derived from the EC files that are freely downloadable from its 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.

[4] For examples of somewhat similar merger taxonomies, see Gugler et al. (2003) and Duso et al. (2007b).

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TABLE I
Regression Results with CAR as Dependent Variable

Model	(1) Base		(2) Time-Trend		(3) Merger-Type		(4) Merger-Industry	
Target	0.0361	***	-0.0053					
	(0.0099)		(0.0109)					
Acquirer	0.0006		0.0000					
	(0.0063)		(0.0060)					
Rival	0.0037	**	0.0007					
	(0.0037)		(0.0025)					
Target-Trend			0.0323	**				
			(0.0126)					
Acquirer-Trend			0.0005					
			(0.0057)					
Rival-Trend			0.0021					
			(0.0018)					
Target Intra-European					0.0296	***		
					(0.0110)			
Target Extra-European					0.0807	***		
					(0.0289)			
Target Cross-Euro-Border					0.0213	**		
					(0.0107)			
Acquirer Intra-European					0.0051			
					(0.0074)			
Acquirer Extra-European					-0.0146			
					(0.0110)			
Acquirer Cross-Euro-Border					0.0013			
					(0.0062)			
Rival Intra-European					0.0034	*		
					(0.0019)			
Rival Extra-European					0.0081	**		
					(0.0037)			
Rival Cross-Euro-Border					0.0006			
					(0.0045)			
Target Manufacturing							0.0344	***
							(0.0105)	
Target Service							0.0397	**
							(0.0157)	
Acquirer Manufacturing							-0.0002	
							(0.0069)	
Acquirer Service							0.0021	
							(0.0057)	
Rival Manufacturing							0.0022	
							(0.0020)	
Rival Service							0.0071	***
							(0.0026)	
Average Effect Target			0.0369	***				
Average Effect Acquirer			0.0006					
Average Effect Rival			0.0037	**				
N	853		853		853		853	
R-squared	0.0656		0.0994		0.0882		0.0669	

The dependent variable is the 3-day CAR. 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
Additional Regression Results with CAR as Dependent Variable

Model	(5) Size		(6) Relative Size		(7) Competition		(8) Geographic Region	
Target	0.0361	***	0.0347	***	0.0361	***	0.0361	***
	(0.0087)		(0.0092)		(0.0087)		(0.0087)	
Acquirer	0.0006		0.0006		0.0006		0.0006	
	(0.0049)		(0.0049)		(0.0049)		(0.0049)	
Large-Rivals	0.0032	*						
	(0.0020)							
Small-Rivals	0.0042							
	(0.0026)							
Relatively-Small-Rivals			0.0061	**				
			(0.0027)					
Relatively-Similar-Rivals			0.0074	*				
			(0.0041)					
Relatively-Large-Rivals			0.0011					
			(0.0021)					
Many-Rivals					0.0036			
					(0.0023)			
Few-Rivals					0.0038	*		
					(0.0022)			
Same-Region-Rivals							0.0038	*
							(0.0020)	
Different-Region-Rivals							0.0050	*
							(0.0026)	
N	853		722[a]		853		853	
R-squared	0.0656		0.0636		0.0656		0.0662	

The dependent variable is the 3-day CAR. Hubert-white robust standard errors clustered by merger in parentheses. The symbols *, ** , and *** represent significance at the 10%, 5%, and 1% level respectively.
[a] The number of observations drops due to the need to match rivals with the corresponding acquiring firm data.

TABLE III
Merger Taxonomy

	Merging Firms Gain	Merging Firms Lose
Rivals Gain	Market Power Mergers *(Competitive-Complements)*	Non-synergistic Mergers *(Competitive-Substitutes)*
Rivals Lose	Synergistic Mergers *(Competitive-Substitutes)*	Preemptive Mergers *(Competitive-Complements)*

TABLE IV
Merger Taxonomy for Intra-European Mergers

	Merging Firms Gain	Merging Firms No-Effect	Merging Firms Lose	Total
Rivals Gain	74 (21.83%) Market Power	20 (5.90%)	52 (15.34%) Non-synergistic	146 (43.07%)
Rivals No-Effect	20 (5.90%)	13 (3.83%)	19 (5.60%)	52 (15.34%)
Rivals Lose	55 (16.22%) Synergistic	33 (9.73%)	53 (15.63%) Preemptive	141 (41.59%)
Total	149 (43.95%)	66 (19.47%)	124 (36.58%)	339

We measure profitability by means of the 3-day CAR window. The first number in each cell reflects merger type observations, while the number in ‘ ( ) ‘ refers to what percentage of all observations the cell represents.

TABLE V
Merger Taxonomy for UK Mergers

	Merging Firms Gain	Merging Firms No-Effect	Merging Firms Lose	Total
Rivals Gain	15 (13.39%) Market Power	7 (6.25%)	9 (8.04%) Non-synergistic	31 (27.68%)
Rivals No-Effect	15 (13.39%)	10 (8.93%)	12 (10.71%)	37 (33.04%)
Rivals Lose	18 (16.07%) Synergistic	13 (11.61%)	13 (11.61%) Preemptive	44 (39.29%)
Total	48 (42.86%)	30 (26.79%)	34 (30.36%)	112

We measure profitability by means of the 3-day CAR window. The first number in each cell reflects merger type observations, while the number in ‘ ( ) ‘ refers to what percentage of all observations the cell represents.

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 1	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.	Alusuisse - 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	Parenco	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