

Disclosure of mergers without regulatory restrictions: Comparing insider-trading in the year 1908 and 2000 in Germany

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Who gains from mergers? I concentrate on insiders and outsiders by investigating the adaptation process of stock prices around public merger announcements. The way of disclosure is essential. If firms hide information, they will hurt outsiders. Hiding information does not yield higher cumulated abnormal returns – but the higher the expected gains from mergers the higher the incentive to hide information. Hence, it should be worthwhile to restrict insider trading by forcing firms to uncover mergers. In contrast to the year 1908, pre-merger gains in the year 2000 are due to irrational speculation and not to insider-trading.

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For the year 1908 in the German case, the merger paradox that stock prices of acquiring firms decline considerably after the merger is made public was rejected²– but one central question is still unanswered: Which shareholders gained from increases in market values? Focusing on two types, namely insiders and outsiders, this paper tries to answer this question; thereby, the so called run-ups serve as a measure for insider gains. Run-ups are changes in stock prices triggered by an impending merger announcement. Because the merger is not yet public information, significant changes prior to the public announcement are a hint for insider-trading. If market participants have only access to public information like newspapers, they belong to the group of outsiders. In contrast, insiders hold private information; hence, they already know that a firm will engage in merger activities. This superior knowledge leads to trading activities of insiders before newspapers make mergers public. Through this insider trading, the private information is conveyed; thus, the market price is significantly influenced already before the public announcement. Keown and Pinkerton (1981) used this pre-adjustments to uncover insider activities around revealed mergers occurring in a four year period starting 1975. Banerjee and Eckhard (2001) provided evidence for insider-trading in the period from 1896 to 1903, which is known as the first merger wave. Both studies concentrate on the US case. In contrast to Keown and Pinkerton (1981), Banerjee and Eckhard (2001) used weekly returns which can cause problems with regard to the power of event-study methods. They collected 56 companies from which 37 announced their willingness to merge in time and 19 tried to hide information. Unfortunately, using weekly instead of daily returns makes it more difficult to detect abnormal stock price movements caused by an announcement. The longer the chosen sampling interval the more cross-sectional units are needed to maintain a high power of the test statistics. Morse (1984) presented a precise analysis on the usage of daily versus weekly respectively monthly returns.

² In my former paper (see Kling (2003)), I showed that the market values of merging firms increased in the year 1908.

Therefore, I collected daily returns for the sample of the year 1908 and 2000. In addition, this enables to compare the scale of insider-trading between two distinct time periods reliably because both studies are based on the same frequency of data. Of course, using intra-daily returns like recommended by Barclay and Litzenberger (1988) would further improve the power of event-studies – but is impossible for historical time periods.

Lacking regulatory restrictions are responsible for the appearance of two different forms of disclosure. Some firms announce mergers after these mergers have already been executed, and others declare their desire to merge before the transfer of assets. This firm behavior is only observable in the sample of the year 1908 before the legal framework comes into force that does not allow to wait for disclosing mergers.

Thus, one consideration is to assess whether the way of disclosure influences the gains respectively losses of insiders and outsiders. This should help to understand why some firms choose to disclose new information and others try to hide it. Are there incentives to disclose information? I test the hypothesis that revealing information facilitates to raise up money. If emitting new shares finances the merger, the firm needs to keep trustworthy to attract outsiders as a source of financing. In addition, drawing a sample of merger announcements occurring in the year 2000 in Germany makes a comparison of the gains of insiders between time periods with or without regulation possible. Maybe, this sheds some light on the impact of regulations on insider activities and the ability of legislative restrictions to protect outsiders from insider trading.

If regulation can reduce insider activities, is it desirable from a normative point of view to impose these restrictions? The two most important theoretical contributions are Leland (1992), Easley and O'Hara (1992). The following pros and cons of insider trading are often discussed in the literature. Brudney (1979) and others argued that insider trading is unfair – but it is an open question what the expression unfair means. Especially, if becoming an insider is costly, we should expect that holding private information yields to extraordinary

profits to compensate for the costs of being better informed.³ If outsiders regard insider trading as unfair, their incentives to invest are lower. Moreover, the liquidity declines in the presence of insider trading⁴ and current stock prices are more volatile. Less liquidity and higher volatility hurt outsiders who initiate trades because of an urgent demand for liquidity.⁵ But insider trading increases the velocity with which new information is reflected in current market prices. Hence, the market works with a higher degree of informational efficiency. Consequently, from a normative point of view, it remains unclear whether insider trading should be prohibited. Is it possible to obtain an empirical justification for the need of regulation?

I try to give answers to these questions by organizing my paper as follows. First, I describe the legislative framework in Germany. Second, the method of sampling is presented followed by a brief discussion of the event-study approach; thereby, I refer to my former results thoroughly discussed in Kling (2003). Third, I discuss my empirical findings whether insider-trading leads to a redistribution of total efficiency gains from mergers from less informed to better informed traders. Fourth, the differences regarding insider-trading after 92 year of regulation are highlighted. Fifth, to obtain a clear normative statement, I exclude the possibility that hiding information influences the success of a merger as measured by the total cumulated abnormal return.

³ See also the discussion about the so called Grossman – Stiglitz (1980) paradox.

⁴ See Kling (2002) in which I detected decreasing liquidity around earnings announcements that stems from an increase in information asymmetry on the market.

⁵ Obviously, this argumentation rules out the possibility of noise trading as discussed in Black (1986). Thereby, an incentive to trade is imposed by irrational trading signals.

This cumulated abnormal return serves as a measure of the efficiency gains from mergers.⁶ So I end up with the distributive effect of undisclosed mergers, which enables to favor regulations like the ad-hoc-publication requirement. Sixth, I try to figure out whether there are incentives to disclose voluntarily. Unfortunately, I found that greed for money is the only motive that prevents a management from revealing information. The way of disclosure is not linked to the way of financing a merger. Some concluding remarks underline the main results and outline further research topics for the future.

I. Historical Background – Insider Regulation in 1908 and 2000

A. Legal Framework in the year 1908 in Germany

The exchange law of 1896⁷ provided the legal framework for the time period 1896 to 1914, when the first world war started. Note that the exchange law was slightly modified, and, thus, a new version was established at April 8th 1908 – but the main features of the law of the year 1896 remained unaffected. How was insider trading treated under this law? Consider that the term insider did not exist at that time – but contemporary reports of the committee (BEK)⁸ that discussed the exchange law pointed out that there was a fear of unregulated speculation that could destabilize the exchange. This fear was caused by the experiences of the crisis in 1873 called “Gruenderkrise” for which a general increase in speculation – among other factors – was made responsible for the pronounced decline in asset prices. What was

⁶ In the literature, there exists one controversial position called redistribution theory. These theory suggests that shareholders gain from mergers by an higher stock prices and, thus, higher cumulated abnormal returns, whereas other stakeholders like bondholders loose from mergers. Hence, the cumulated abnormal return is not an appropriate measure of the efficiency gains from mergers. An empirical evidence of this theory is lacking up to this point. Jerrel et al. (1988) provided a discussion of this issue.

⁷ How the exchange law of 1896 affected different lines of business, for instance, the banking industry (see Fohlin(2002)) is still an issue of current research.

⁸ See Weber (2000) for a precise discussion of the reports provided by the Börsen Enquete Kommission (BEK).

regarded as speculation? Every transaction motivated by a future increase in the market value of the respective stock was seen as speculation. Thereby, the BEK distinguished between justified and unjustified speculation. A speculation is unjustified if speculators act like gamblers and do not base their decision on the evaluation of the company's economic situation⁹. This definition has obviously nothing to do with our imagination of insider trading. Unjustified speculation is closer to the definition of noise-traders who buy or sell stocks motivated by pseudo-information. They act irrational and are responsible for an additional and not diversifiable stock price risk.¹⁰ Furthermore, the BEK thought that speculators are responsible for the deviation of the current market price of a stock from its justified fundamental value. This excessive over- or underreaction, for instance due to the release of new information, is considered as main source of additional risk and, hence, higher stock price volatility.¹¹ To reduce the influence of speculation on stock prices, the exchange law prohibited¹² respectively restricted the trade of forward dealings because these financial instruments were seen as a device mostly used by speculators. For instance, future contracts on crops were traded with high volumes at the Berlin stock exchange. These future contracts on crops were completely forbidden, whereas the trading of futures with other underlyings like stocks was - under special requirements - possible. Hence, it was required that a company must have more than 20 million nominal capital and did not belong to the mining or manufacturing industry. In general, since the introduction of the exchange law of 1896, the futures market regained its former importance as measured by the liquidity and trading

⁹ Even contemporary economists like Bachmann (1898) had problems to precisely distinguish between justified and unjustified speculation.

¹⁰ For a detailed description of noise-trading behavior see Black (1986).

¹¹ If the exchange law of 1896 really influenced the observable excess volatility is still debating (see, for instance, Wetzel (1996)).

¹² See exchange law (BörsG) §§48-69.

volume of the market not before the 1970s. However, insider trading by buying or selling stocks on the spot market was not taken into account.

The disclosure of information as a mean to reduce the information asymmetry on the exchange was improved by imposing requirements that must be fulfilled if the company issued new shares. Hence, the company must reveal publicly all relevant information that could affect the credit risk of the firm.¹³ Lacking requirements for the disclosure of other price-sensitive information like a merger announcement is responsible for the observed firm-behavior that some companies delay the declaration of an impending merger. This legal loophole enables to analyze firm-behavior without regulatory restrictions.

B. Ad-hoc-publication and insider trading in the year 2000

Up to the year 1994, there was a voluntary self-regulation regarding insider-trading. Nowadays, there are several legislative requirements that make insider trading more difficult and costly if trading motivated by an illegal access to private information is detected by the federal financial supervisory authority (BaFin)¹⁴. The Securities Trading Act (WpHG)¹⁵ defines market participants as insiders if they are members of the management or supervisory board respectively large shareholders of the company. Hence, they have access to unpublished information of the company. Being a financial analyst is also seen as a potential source of insider activities. Every unpublished firm specific information that could have a significant impact on the market value after its public declaration is insider information. Trades based on this information are illegal. However, there is one exception with regard to the work of analysts as long as their analyses are derived from public information. Note that the

¹³ See exchange law (BörsG) §36. However, a violation of these requirements did not trigger remarkable legal consequences.

¹⁴ Since 1st May 2002 the BAWe (security supervisory) is embedded into the BaFin.

¹⁵ I refer to the announced version on 9th September 1998. Insider trading is regulated in §12 to §20.

theoretical model of Kim and Verrechia (1994) states that one kind of insider trading stems from above-average skills in analyzing public information.

Besides the disallowance of insider trading, the ad-hoc-publication requirement¹⁶ guarantees that small shareholders (outsiders) can keep pace with better informed market participants. Price-sensitive new information like an impending merger or takeover bid must be announced in a supra-regional stock exchange gazette¹⁷. The daily newspaper “Handelsblatt” belongs to this group and, hence, I use this source to determine the announcement day.

To discuss the economic impact of a legislative framework on the scale of insider trading, it is worthwhile to assess whether the written laws are really executed. Using the data provided by the BAWe (security supervisory agency),¹⁸ one can argue that the number of investigated insider activities increased between 1995 to 2000 from 24 to 51. After reaching its peak in the year 2001 with 55 cases, the number declined considerably to only 15 cases for the first two quarters in the year 2002. These figures give the impression that insider trading is effectively prohibited – but in the period 1995 to 2000 only in sixteen cases out of 337 initiated investigations the insider activity had legal consequences. Thus, there remain doubts whether the legal framework works as an obstacle to gain extraordinary profits from using insider information.

¹⁶ See WpHG §15.

¹⁷ Nowadays, seven daily newspapers fulfill the legal requirements being an official stock exchange gazette. It is also allowed to disclose new information in an electronic system like vwd (see www.vwd.de).

¹⁸ Issues for the year 2000 and the first two quarters of 2002 are available on the homepage (http://www.bafin.de/frame_bawe.htm).

II. Method of Sampling

A. Determination of the event day

As more thoroughly discussed in Kling (2003), the day of the announcement of a merger is regarded as event day around which I construct the event window. For the sample of the year 1908, merger announcements published in the daily newspaper “Berliner Boersenzeitung” between January to June 1908 are considered. To restrict myself to the first half year helps to reduce the working time that is inherent reading historical newspapers. The “Berliner Boersenzeitung” was the leading newspaper for investors; thus, one can regard this released mergers as public information. For the year 1908, I detect 101 mergers of which 46 are included in my sample because not all companies are listed on the stock exchange. Moreover, thirteen firms decided to hide an impending merger. In contrast to my study, Banerjee and Eckhard (2001) collected 56 mergers of which nineteen firms did not disclose the merger; thereby, the so called first merger wave 1897-1903 is their investigation period. Furthermore, Banerjee and Eckhard (2001) worked on a weekly level,¹⁹ whereas I use daily returns and determine the exact event-day. In the year 1908, the engaged firms themselves publicly declared impending merger, whereas rumors appeared only seldom in the daily newspaper. One exception was the rumor that an acquirer started buying the stocks of the mining company “Donnersmarksche Huette”. In this case of a hidden merger, it is reasonable to use the day of the publication of the rumor as event day. Because by reading the newspaper, even uninformed investors can update their information regarding the probability of a tenure offer.

¹⁹ They relied on information provided by the weekly newspaper “The Commercial and Financial Chronicle”.

For the sample of the year 2000, I use the same methodology and collect 61 mergers by reading the daily newspaper “Handelsblatt” and by working with online archives²⁰. The included mergers were released between January and June 2000. Note that only merger activities in which at least one participating firm is owned by mostly German stock holders are considered. A further requirement is that all stocks have to be listed on German stock exchanges; thereby, the overwhelming part of the included stocks were traded on the Frankfurt stock exchange. In contrast to the historical time period, rumors were very common in the year 2000 and even worse many rumors were false. In this case, false means that the rumor is not followed by concrete negotiations. The sense of these rumors – often spread by the management of the affected firms – is to influence the market value of the firm respectively to confuse competitors. These false rumors are excluded from the sample. Therefore, the event day is the day of the public declaration of an official announcement or a rumor that is followed by negotiations.

B. Should one include unsuccessful mergers?

In the year 1908, only a few mergers were not successful in the sense that the proposed mergers failed to achieve the necessary majority in the shareholder gathering or legal restrictions prevented the merger. One of the two exceptions was the merger among three shipyard companies “Neptun”, “Howaldswerke”, and “Koch Werft”. In this case, the city of Rostock intervened caused by the fear of losing an important local tax payer. In addition, the shareholders were not convinced by the “big deal”.

In the year 2000, a remarkable number (22 out of 61) of the announced mergers were not executed later. The merger between “Deutsche Bank” and “Dresdner Bank” was among

²⁰ Nowadays, the BaFin provides excellent data on ad-hoc announcements – but these official source neglects rumors that can also affect stock prices tremendously. Hence, one should add the information spread by newspapers to get a detailed impression with regard to the public information.

these failures. Why should one include these unaccepted mergers? As shown in Kling (2003), the dummy variable that takes the value one if the merger gets the approval of the shareholders does not affect the cumulated abnormal return of the acquiring or target firm. Especially in the year 2000, the legal process to accept a merger took several months; hence, the day of the announcement and the confirmation that the merger was in line with the legal framework were timely far away. This means that the market responds to the merger announcement building expectation regarding the acceptance by the monopolies commission, the behavior of the shareholders and so on. Thus, I include declared mergers that are not executed later – but I control for this problem by using a dummy variable or by defining subgroups.

C. Determination of the event and estimation period

The event window starts fifteen days before the public announcement and ends fifteen days afterwards. During this predetermined event period, I try to identify the economic impact of a merger by observing the deviation of daily return from the normal stock price movement. Note that the normal return is estimated for the sample of the year 2000 during an estimation period starting at July 1st 2000;²¹ thereby, I collect 50 daily returns for each stock and calculate the normal return. For the year 1908, I start at January 1st 1907 to collect 50 daily returns of every stock in my sample. Note that the estimation period should be timely sufficiently far away from the event period to avoid that a merger can influence the estimated normal stock price behavior. Any significant deviation from this normal stock price movement serves as a hint that the merger possesses an economic impact on the firms market

²¹ Because many firms in the year 2000 were not listed before July 2000, I decide to start the estimation period later in comparison to my former sample of the year 1908. This problem is of special interest, when mergers among young companies listed on the “Neuer Markt” (a segment for the so called new economy) are taken into consideration.

value. These deviations are called abnormal returns. The choice of the event period can be justified by calculating the average p-values of the abnormal returns of the whole sample (see figure one). Indicating a high level of stock price movements caused by the merger announcement, the average p-value reaches its minimum around the event day ($t=16$).²²

III. Event-study analysis

A. *Introducing the basic concept*

The aim of event-studies is to detect abnormal returns caused by events like merger announcements. Thereby, abnormal returns are the deviations of current returns observed during the event period from normal returns. As mentioned above, the normal returns are estimated based on observations collected during an estimation window. Unfortunately, there are six different ways to calculate these normal stock price movements and several additional modifications of these basic concepts are possible²³.

As discussed in Kling (2003), a simple mean reverting process of returns is appropriate for the historical time period. This assumption leads to the constant mean return model (CMR) and enables to calculate normal returns without using a market index. Because the sample drawn in the year 1908 should be compared to the sample of the year 2000, the calculation of normal returns is based on the CMR model for both samples. Of course, the argument that a trustworthy market index on a daily basis is not available in the year 1908 cannot be used for the later time period. However, if one wants to compare the adaptation process of stock prices due to a merger between these two time periods, it is reasonable to use the same model to determine normal returns. This procedure avoids that the chosen model to estimate normal returns is responsible for detected differences with regard to the abnormal returns around the announcement. Thus, I stick to the simple CMR model and refer to my

²² The picture is similar for the year 1908 as shown in Kling (2003).

²³ Armitage (1995) provided an excellent overview of the different ways to estimate normal returns.

previous results²⁴. Besides the comparability of two different time periods, one should keep in mind that the CMR model and the more sophisticated stochastic market model lead to very similar results as shown in figure two. Thereby, the portfolio weighted abnormal returns of the whole sample of the year 2000 are obtained using the CMR respectively the market model. Hence, relying on the CMR does not lead to remarkable losses in accuracy of estimating the impact of events.

B. Results of the estimation period in the year 2000

In comparison to the results of the year 1908 (see Kling (2003)), some estimated daily mean returns differ significantly from zero. In general, one can observe a positive drift component of the suggested random walk of daily stock prices. Figure three plots the 95% confidence interval of the estimated mean returns obtained from the estimation period of the year 1999.

C. Abnormal returns and cumulated abnormal returns in the year 2000

Using the test statistics derived in Kling (2003) as well as the necessary assumptions, I calculate the abnormal returns for each stock and the portfolio weighted average abnormal return for the whole sample and test for significance. Figure four and table I show the portfolio weighted abnormal return for each day of the event window and the cumulated portfolio weighted abnormal return; thereby, the time interval over which the daily abnormal returns are added up increases till the whole event period is covered. This cumulated return measures the total change in the market value of the firms triggered by the merger announcement. Figure four also indicates using gray boxes if the abnormal or cumulated abnormal return is significant on the 10% level of significance. The whole sample consisting of 61 stocks exhibits a decline in stock prices by 3.60% (p-value 0.11) over the whole period

²⁴ See Kling (2003).

of 31 days. However, about three days ($t=13$) before the announcement day ($t=16$) the abnormal returns are positive and significantly different from zero. Moreover, distinguishing between executed and prevented mergers enables to assess the knowledge of the market regarding the probability that the declared merger is executed later.

D. Does the market know if a merger fails to overcome the hurdles?

A large portion of announced mergers that fail to achieve the necessary majority in shareholder gatherings respectively were rejected by the advisory boards could be observed in the year 2000. In addition, restrictive antitrust laws prevented many mergers. In my sample, 22 out of 61 announced mergers were not executed later. The legal framework was completely different to the situation in the year 1908 and, hence, was responsible for the high scale of failed mergers as well as the time intensive process till a merger was accepted by antitrust authorities. Did the market anticipate the failure of mergers? To answer this question, I build up two categories. The first group contains all announced mergers that are later executed, whereas unsuccessful mergers belong to the second group. Then the cumulated abnormal return is calculated for both subgroups; figure five shows the results. The adaptation process is very similar between the two subgroups; this empirical finding stresses that the market did not perfectly know whether the merger was later executed. Note that the time span between the declaration of the willingness to merge and the transfer of assets was several months. So to assess if the market reacts to a failed merger, one should use an additional sample constructed around the public announcement of the failure. Note that this declaration is in turn public information. In general, failed mergers were more successful than really executed mergers.

E. The way of disclosure in the year 1908

In the year 1908, thirteen firms decided to hide information and postponed the public declaration of their willingness to merge, whereas 33 firms revealed their intentions. This firm behavior affects the adaptation pattern of stock prices before and after the event day. Before comparing both groups, the portfolio weighted abnormal return and the cumulated portfolio weighted abnormal returns are calculated. Table II contains the results for firms that hide information and table III shows the measures for well-informing firms. Figure six plots the cumulated effect for both subgroups to evaluate whether the time paths differ.

The stock prices of firms that hide information exhibit a remarkable upsurge over the whole period of 31 days by 5.60% (p-value 0.000), whereas the market values of firms that disclose mergers increase only by 1.63% (p-value 0.027). This in general does not mean that the strategy of hiding influences the success of a merger as measured by the cumulated abnormal return positively. I concentrate on this issue in section V. It is also likely that important announcements, which possess the capability to change the market value after its declaration tremendously, are hidden by the management of the firms to use this self-created time lag for insider-trading. This impression is confirmed by analyzing the pre-merger gains. These so called run-ups are the cumulated abnormal returns over the pre-event period ($t=1,2,\dots,15$). Note that $t=16$ is the event day. Following the definition of Banerjee and Eckard (2001) as well as Keown and Pinkerton (1981) that significant price adjustments prior to the public release of a merger are due to insider trading, I compare the pre-event gains between the two ways of disclosure. Table IV contains these run-ups for hidden and disclosed information. If the merger is correctly made public, the cumulated abnormal return prior to the event day adds up to 0.73% (p-value 0.152) and is insignificant. On the event day, the average market value goes up by 0.40% (p-value 0.032); thus, the announced willingness to merger has a relative strong impact on the stock prices on the event day. After its revelation, the adaptation process of stock prices is not yet finished, and the cumulated significant effect

reaches 0.89% (p-value 0.091). Therefore, it is possible for outsiders by reading the daily newspaper to make profits by buying the stocks of companies engaged in merger activities. In contrast, hiding information hurts outsiders because a pronounced upsurge in stock prices by 4.79% (p-value 0.000) occurs during the fifteen days before the merger becomes public information. After outsiders update their information, profits by buying stocks of merging companies shrivel up. Note that the event day has nearly no impact on market values; the abnormal return is very close to zero. Moreover, a considerable part of 85.49% of the whole price impact of a merger is already reflected in the market prices before the release takes place. There is also anticipation of the impending merger if firms do not misbehave – but only 45.07% of the total effect flows into the market prices prior to the announcement.

F. Was the regulation of insider trading successful during the last 92 years?

Looking at the figures four, five, and six gives the impression that nowadays it is only possible making profits by buying in advance of a public announcement. After the event day, the cumulated abnormal returns decline sharply regardless which subgroup is considered. Table V contains the pre-event respectively after-event changes in market values; thereby, I distinguish among the subgroups: targets, acquiring companies, executed, and prevented mergers. In the two groups of acquiring companies and prevented mergers, remarkable pre-event profits are possible. This gains reach 5.85% (p-value 0.000) in the case of acquiring firms respectively 5.96% (p-value 0.000) if the merger is not undertaken after its declaration. Both aggregated values are highly significant. On the day of the newspaper announcement, acquiring firms loose -1.20% (p-value 0.003) of their market values, whereas prevented mergers show a decrease in stock prices by -1.30% (p-value 0.003). After the event day, both categories exhibit a sharp fall in stock prices by -9.09% (p-value 0.000) and -8.52% (p-value 0.000). So gains from announced mergers are only possible before the newspaper prints the announcement or rumor.

The two other subgroups, targets and executed mergers, show a different behavior. Pre-merger gains are relatively weak and insignificant; especially, target firms' market values remain nearly unaffected (0.37% with a p-value of 0.813). However, the event day has a strong negative significant impact; hence, targets go down by -0.98% (p-value 0.015) and executed mergers by -0.99% (p-value 0.010). Thereafter, a considerable decline in stock prices takes place. The negative impact of the event day and after-event losses are common features shared by all stocks in the year 2000 – but in some cases pre-event gains are possible. Are these positive cumulated abnormal returns before the official announcement a hint for insider trading as they are in my sample of the year 1908?

If this positive cumulated effect is seen as a result of trading motivated by private information, one have to conclude that 92 years of regulation are worthless in prohibiting insider-trading. If I stick to the argumentation of Banerjee and Eckhard (2001) respectively Keown and Pinkerton (1981), these uncovered positive run-ups stem from insider activities. But, out of my point of view, there is an obvious difference between the run-ups of the year 1908 and the ones of the year 2000. The run-ups in the historical period correctly anticipate the whole economic impact of the merger, whereas the pre-event adaptation nowadays goes in the opposite direction regarding the total effect of the merger. If one keeps closely to the concept of insider-trading and its influence on the information content of market prices²⁵, run-ups that point in the false direction do not convey privately held superior knowledge. Moreover, insider buying stocks of affected companies prior to the public release should make profits in the sense that the market responds during a specific time interval as predicted by insiders. This is not the case in the year 2000 because on the event day all stocks loose on

²⁵ Keyle (1985) provided the theoretical foundations of insider-trading and showed that insiders loose parts of their private information by their trades. This loss in their superiority is taken into account when deciding about the order size. This explains the strategic trading behavior of insiders like the splitting of orders, which is also confirmed by empirical studies.

average, despite the positive reaction during the three days before the announcement. Putting this in other words, it states that observing the considerable increase before the event does not help to improve the expectations regarding the whole change in market values triggered by the merger. Therefore, this observed stock price behavior in the year 2000 is due to speculation driven by pseudo-information or irrational trading rules like buy on rumors and sell on facts. Zivney et al. (1996) provided evidence that rumors about impending takeover bids cause a speculative overreaction of the market. Furthermore, Pound and Zeckhauser (1990) found that rumors are followed by strong price reactions – but about half of the published rumors were false in the sense that a merger is not announced later. Note that I excluded false rumors from my sample, maybe taking also false rumors into consideration would provide interesting insights into overreactions of the market. This is a possible extension of my analysis. In addition, I include rumors that are followed by negotiations and a public announcement of a merger. This means that in these cases even before a rumor appears in the newspaper, it spreads and influences the market prices.

IV. Cross-sectional analysis

A. Are undisclosed mergers more successful?

In this section, I study both potential directions of impact. First, how the way of disclosure influences the total change in market values. Second, how the success of a merger or the expected increase in stock prices affects the decision of a management to uncover information. The results of section III. E. suggest that companies that decide to postpone a merger announcement exhibit a stronger upsurge in their market values over the whole event period than do others. To assess whether the requirement to reveal information quickly should be made, I have to take this extraordinary increase in stock prices of undisclosed mergers into consideration. Thereby, my scope is to figure out whether the way of disclosure influences the success of a merger as measured by the total cumulated abnormal return. If I detected that

hiding information yielded extraordinary cumulated abnormal returns, these efficiency gains would be more valuable than the distribution of these efficiency gains between the two groups, namely insiders and outsiders. Note that the detected losses of outsider are the gains of insiders. These distribution of wealth is without interest if I concentrate on efficiency argumentations – but hurting outsiders can be important for welfare economists. The task is to estimate the partial effect of disclosure on the cumulated abnormal return of a stock during the whole event period by controlling for other stock characteristics. Thereby, I refer to my model specified in Kling (2003)²⁶ and extent the set of explanatory variables by including a dummy variable that takes the value one if a firm decides to uncover information. The system of equations looks as follows.

$$\hat{C}_i = \beta_0 + \beta_1 \log(\text{cap}_i) + \beta_2 \text{Success}_i + \beta_3 \text{Change}_i + \beta_4 \text{Cash}_i + \beta_5 \text{DivGrowth}_i + \quad (1)$$

$$\beta_6 \text{Bank}_i + \beta_7 \text{Mining}_i + \beta_8 \text{Mean}_i + \beta_9 \text{T arg et}_i + \beta_{10} \text{Disclose}_i + u_i$$

$$\text{Mean}_i = \gamma_0 + \gamma_1 \log(\text{cap}_i) + \gamma_2 \log(\text{age}_i) + \gamma_3 \text{Success}_i + \gamma_4 \text{Change}_i + \gamma_5 \text{Cash}_i + \quad (2)$$

$$\gamma_6 \text{DivGrowth}_i + \gamma_7 \text{Bank}_i + \gamma_8 \text{Mining}_i + \gamma_9 \text{Mean}_i + \gamma_{10} \text{T arg et}_i + \gamma_{11} \text{Disclose}_i + v_i$$

Where: β_0 ... intercept

$\log(\text{cap}_i)$... logarithm of the market capitalization as a measure of firm size of firm i

$\log(\text{age}_i)$... Age of firm i

Success_i ... dummy that takes value one if the merger is executed

Change_i ... dummy that takes value one if the management is replaced

Cash_i ... dummy that takes value one if the merger is financed by cash.

DivGrowth_i ... annual growth rate of dividend payments (1906 to 1908)

Bank_i ... dummy that takes value one if firm i belongs to the banking industry

²⁶ The discussed endogeneity and causality problem that arise using a cross-sectional model and the possible solution through a simultaneous equation model also apply to this paper. Therefore, for a detailed argumentation see Kling (2003).

Mining_i... dummy that takes value one if firm i belongs to the mining industry

Target_i... dummy that takes value one if firm i is the target of a merger

Disclose_i... dummy that takes value one if firm i reveals information

u_i and v_i ... are disturbance terms

The intuition of this model is straightforward. Including the estimated mean, the normal return, into the first equation incorporates the influence of the normal return on the abnormal return. This impact stems from the definition of abnormal returns, which are the difference between observed daily returns and normal returns. The estimated mean serves as dependent variable of the second equation; thereby, the second equation is a reduced form. This procedure allows to distinguish between the direct impact of an exogenous explanatory variable on the success of a merger as measured by the cumulated abnormal return and, by using the second equation, the indirect impact of an exogenous explanatory variable on the estimated normal return. Consider that, for instance, firm size has a significant impact on the estimated normal return, and the normal return in turn influences by definition the abnormal return – but firm size has no direct effect on the abnormal return. Applying this system of equation solves this problem and overcomes one pitfall of event-studies. Hence, I avoid the problem that exogenous factors that affect the estimation period are falsely regarded as important factors that explain the success of a merger.

Carrying out this system of equations by using a three-stage-least-squares procedure²⁷ yields remarkable results that appear in table VI. In addition, the set of variables can be reduced further. Thereby, the F-test statistic for the used restrictions reaches 0.67 with p-value 0.71, and the log-likelihood specification test points in the same direction . Note that the number of firms is 46, thus $i \in \{1, 2, \dots, 46\}$. To identify this system of equations, I have to

²⁷ I use a correction of the estimated standard errors for small samples. Furthermore, using system OLS yields to biased estimated caused by the endogeneity of the estimated mean; thus, a three-stage-least squares estimation should be applied.

exclude one exogenous variable from the first equation²⁸. Besides the already in Kling (2003) detected influential factors like belonging to the banking industry, the dummy variable $disclose_i$ has no direct impact on the success of a merger – but an indirect impact, which is unimportant caused by the lack in causality. Consequently, I conclude that the way of disclosure is not responsible for more profitable mergers. Hence, hiding information does not lead to higher efficiency gains from mergers.

But when one regresses the same set of explanatory variables only on the pre-announcement gains as captured in the cumulated abnormal return up to time $t=15$, the impression changes. Table VII presents the outcomes for the run-ups. Obviously, the way of disclosure affects the pre-announcement stock price movement. Within the next section, I discuss the factors that could motivate the manager to hide information.

B. If managers expect profitable mergers, they will hide information

I should stress that it is unknown at which point in time the management of a company decides to overtake a competitor as well as the scale of the time lag between the decision to merge and the public announcement of a merger. Thus, my logit models that try to explain at which point in time the decision to disclose or hide ought to be made is only an attempt to detect unobserved decision processes within a company. However, this stylized model helps to shed some light on this issue – but it should not be over-interpreted. The influence of the cumulated abnormal return respectively of its expected value on the way of disclosure is now at the core of my analysis. Now, the disclosure is the dependent variable, whereas the cumulated abnormal return serves, besides the above used set of variables, as additional influential factor.

²⁸ Regardless which exogenous variable is excluded, the results are hardly affected.

$$Disclose_i = \beta_0 + \beta_1 \log(cap_i) + \beta_2 Success_i + \beta_3 Change_i + \beta_4 Cash_i + \quad (3)$$

$$\beta_5 DivGrowth_i + \beta_6 Bank_i + \beta_7 Mining_i + \beta_8 Mean_i + \beta_9 \hat{C}_i + u_i$$

Before estimating this equation applying a logit regression, one should specify the degree of knowledge regarding the total cumulated abnormal return. Does the manager of a company know how large the whole economic impact of a merger is? Taking the results presented in table IV, one can argue that a large part (85.49%) of the total cumulated effect is already anticipated before the merger is made public. Thus, it seems to be plausible to assume that a manager can anticipate a relatively large part of the change in market. To consider different levels of the manager's knowledge, I run regression (3) with different specifications of the cumulated abnormal return. Hence, table VIII contains five alternative outcomes of equation (3); thereby, the degree of knowledge is reduced starting from knowing the cumulated abnormal return for sure in $t=31$ to observing the cumulated abnormal return four days before the announcement $t=12$. Note that the dummies $change_i$ and $success_i$ are dropped from equation (3) because all executed mergers after which the management was replaced disclosed their willingness to merge. Thus, including these variable enables one to make a perfect prediction about the possibility of disclosure. This would prevent the likelihood optimization technique to uncover the influence of other explanatory variables; thus, these two dummies are excluded.

Of course, it is impossible to state that the manager knows with confidence the total effect of a merger announcement on the market value. So the results for the information set at $t=31$ are based on the assumption of a perfect anticipation. Besides this problem, the outcomes underlines that the higher the cumulated abnormal return in $t=31$ the smaller the probability that the merger is disclosed. Despite my doubts about the highest level of anticipatory power, I stress that the event-day is not determined by the management. In contrast, a published rumor forces the management to nail their colors to the mast. So it seems

to be possible that managers trade shares on the open market using their superior information that they will not disclose the merger. To avoid that their insider-trading yields to too pronounced price reactions, they act cautiously and split up their desired trading volumes into small pieces²⁹. Now a rumor about their trading activities is published and makes their superior knowledge worthless. Thus, it seems to be likely that managers anticipate higher cumulated abnormal returns than the pre-event gains might suggest because their cautious trading prevents the market price to reflect the full degree of their private information.

Even if one rejects this assumption and refers to the information set at $t=15$ and carries out the regression (3) using only the pre-event gains, the results stays nearly unchanged. If the stock prices exhibit a strong increase during the last fifteen days, the probability of disclosure is diminished. In addition, the larger the company as measured by the market capitalization the smaller the desire to uncover information. Companies that are targets of a takeover have in general weaker incentives to disclose, whereas mining and banking companies reveal information. This negative impact on the possibility to disclose of the cumulated abnormal return is observable till three days before the event day ($t=13$). For days that are further away the effect of the cumulated abnormal return disappears. Moreover, the explanatory power indicated by the pseudo R^2 and the Chi^2 statistic is reduced the lower the assumed level of knowledge.

Note that anticipating the cumulated abnormal return three days before the public declaration have not to be a real anticipation. If the decision to disclose respectively hide the merger is made only three days before it becomes public, managers can observe the cumulated effect till $t=13$. Based on their observations, they can decide to postpone the announcement to use their information to earn extraordinary profits.

²⁹ The splitting of trading volumes by insiders follows the logic of the Kyle model (1985) and can be observed in empirical research (see, for instance, Chan and Lakonishok (1995)).

My hypotheses that the way of disclosure is closely linked to the way of financing a merger is not confirmed by these results (see table VIII) regardless which level of knowledge one suggests. The dummy variable $cash_i$ is always insignificant and the coefficients are positive.

V. Conclusion

I uncover that hiding information hurts outsiders and is responsible for the strong anticipation of the whole economic impact of a merger. This is reflected in the current market prices on the event day. I attribute the detected run-ups in the year 1908 to insider-trading because this pre-event adaptation of stock prices points in the correct direction in comparison to the whole economic impact of a merger. Thus, a large part of the change in market values is already anticipated prior to the public release. This means that by the trading of better informed market participants new information about the true underlying fundamental value of the company, after announcing the merger, is reflected in the current stock prices. Thus, the order stream of insiders conveys information. This is in line with the theoretical model constructed by Kyle (1985).

In contrast, the run-ups in the year 2000 point in the false direction regardless which group of stocks is considered. Pre-event gains are followed by pronounced declines in stock prices starting on the event-day. Because the stock prices prior to the event-day do not reflect private information regarding the future losses, I consider this pre-event movements as speculative over-reaction. This stock price behavior may be driven by trading rules like buy on rumors and sell on facts.

Using cross-sectional models, the direction of influence between the cumulated abnormal return and the way of disclosure is analyzed. To reveal an impending merger does not lead to higher cumulated abnormal returns, when one controls for other stock

characteristics. Consequently, hiding information yields no additional efficiency gains from mergers.

Therefore, I can concentrate on the distributive effect of hiding mergers on insider and outsider gains. This finding enables me to make a clear statement that forcing companies to uncover new information protects outsiders and does not affect the efficiency of takeovers.

Depending on the level of knowledge, the cumulated abnormal return has a negative impact on the probability that a merger is made public in advance. The stronger the expected market response triggered by a merger the larger the incentives to hide information. In addition, a mechanism of self-regulation is not confirmed by my data. Voluntary disclosure that facilitates to raise up money for the expansion of a firm cannot be observed. Hence, intervention of the state is necessary. Obviously, dividing between cash payment and financing a merger by emitting new shares is very crude. Thus, using more precise variables that indicate the dependence on outsiders, as financiers, seems to be worthwhile for further research.

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Law text

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Table I: Abnormal and cumulated abnormal return for the sample of the year 2000

Table I contains the portfolio weighted abnormal return $\bar{\varepsilon}_t^*$ at each event day t ; the third column shows the p-value of $\bar{\varepsilon}_t^*$. The aggregation over different time intervals $\bar{C}(1; \tau_n)$ is listed and the significance is assessed, using p-values that appear in the fifth column. The event day is $t=16$.

$\tau_n = t$	$\bar{\varepsilon}_t^*$	p-value	$\bar{C}(1; \tau_n)$	p-value	$\tau_n = t$	$\bar{\varepsilon}_t^*$	p-value	$\bar{C}(1; \tau_n)$	p-value
1	-0.3391	0.402	-0.3391	0.402	17	-0.1940	0.631	2.1288	0.202
2	-0.2369	0.558	-0.5761	0.314	18	-1.4778	0.000	0.6510	0.704
3	0.1329	0.743	-0.4435	0.527	19	-0.2992	0.459	0.3518	0.842
4	-0.2393	0.554	-0.6828	0.399	20	-0.2315	0.567	0.1203	0.947
5	0.4429	0.274	-0.2400	0.791	21	-0.4389	0.278	-0.3187	0.864
6	-0.0178	0.965	-0.2577	0.795	22	-0.4555	0.260	-0.7741	0.683
7	0.0227	0.955	-0.2351	0.826	23	-0.6674	0.099	-1.4415	0.457
8	0.1752	0.665	-0.0599	0.958	24	0.1377	0.733	-1.3038	0.511
9	-0.2040	0.614	-0.2639	0.828	25	-0.1230	0.761	-1.4268	0.481
10	-0.3806	0.347	-0.6445	0.614	26	-0.6022	0.137	-2.0290	0.325
11	-0.5667	0.161	-1.2113	0.367	27	0.2595	0.521	-1.7695	0.400
12	0.3815	0.346	-0.8297	0.554	28	-0.6779	0.094	-2.4473	0.253
13	1.4954	0.000	0.6656	0.648	29	-0.0336	0.934	-2.4809	0.255
14	2.7458	0.000	3.4115	0.024	30	-0.9147	0.024	-3.3957	0.125
15	0.0124	0.975	3.4239	0.029	31	-0.2006	0.620	-3.5963	0.110
16	-1.1011	0.006	2.3228	0.151					

Table II: Abnormal and cumulated abnormal return for firms that hide mergers

Table II contains the portfolio weighted abnormal return $\bar{\varepsilon}_t^*$ at each event day t ; the third column shows the p-value of $\bar{\varepsilon}_t^*$. The aggregation over different time intervals $\bar{C}(1; \tau_n)$ is listed and the significance is assessed, using p-values that appear in the fifth column. The event day is $t=16$.

$\tau_n = t$	$\bar{\varepsilon}_t^*$	p-value	$\bar{C}(1; \tau_n)$	p-value	$\tau_n = t$	$\bar{\varepsilon}_t^*$	p-value	$\bar{C}(1; \tau_n)$	p-value
1	0.1268	0.338	0.1268	0.338	17	0.3929	0.003	5.1725	0.000
2	0.1223	0.355	0.2492	0.183	18	0.1676	0.205	5.3400	0.000
3	0.3979	0.003	0.6470	0.005	19	0.4523	0.001	5.7923	0.000
4	0.1701	0.199	0.8171	0.002	20	-0.0464	0.726	5.7459	0.000
5	0.0616	0.641	0.8787	0.003	21	0.1633	0.217	5.9091	0.000
6	0.2175	0.100	1.0962	0.001	22	0.1818	0.170	6.0909	0.000
7	-0.0423	0.749	1.0539	0.003	23	0.5500	0.000	6.6409	0.000
8	-0.1307	0.323	0.9232	0.014	24	-0.0619	0.640	6.5790	0.000
9	0.1757	0.184	1.0989	0.006	25	-0.0556	0.674	6.5234	0.000
10	0.3001	0.023	1.3990	0.001	26	0.0698	0.598	6.5932	0.000
11	-0.2897	0.029	1.1093	0.011	27	-0.3789	0.004	6.2143	0.000
12	0.8108	0.000	1.9200	0.000	28	-0.2874	0.030	5.9269	0.000
13	2.3959	0.000	4.3159	0.000	29	-0.1946	0.141	5.7322	0.000
14	0.1533	0.246	4.4692	0.000	30	-0.0090	0.946	5.7232	0.000
15	0.3182	0.016	4.7875	0.000	31	-0.1230	0.353	5.6002	0.000
16	-0.0079	0.952	4.7796	0.000					

Table III: Abnormal and cumulated abnormal return for firms that disclose mergers

Table III contains the portfolio weighted abnormal return $\bar{\varepsilon}_t^*$ at each event day t ; the third column shows the p-value of $\bar{\varepsilon}_t^*$. The aggregation over different time intervals $\bar{C}(1; \tau_n)$ is listed and the significance is assessed, using p-values that appear in the fifth column. The event day is $t=16$.

$\tau_n = t$	$\bar{\varepsilon}_t^*$	p-value	$\bar{C}(1; \tau_n)$	p-value	$\tau_n = t$	$\bar{\varepsilon}_t^*$	p-value	$\bar{C}(1; \tau_n)$	p-value
1	0.0894	0.499	0.0894	0.499	17	0.0874	0.509	1.2247	0.025
2	-0.0985	0.457	-0.0091	0.961	18	0.3351	0.011	1.5598	0.005
3	0.2384	0.072	0.2293	0.317	19	0.0147	0.912	1.5745	0.006
4	-0.1059	0.424	0.1235	0.641	20	-0.0357	0.787	1.5387	0.009
5	0.0163	0.902	0.1397	0.637	21	-0.0310	0.815	1.5077	0.013
6	0.1989	0.133	0.3386	0.296	22	-0.0192	0.885	1.4885	0.016
7	0.0194	0.883	0.3580	0.306	23	-0.1868	0.158	1.3018	0.040
8	0.2578	0.051	0.6158	0.100	24	-0.0490	0.711	1.2528	0.053
9	0.3476	0.009	0.9634	0.015	25	0.0961	0.468	1.3488	0.041
10	0.1493	0.259	1.1127	0.008	26	0.0295	0.824	1.3783	0.041
11	-0.0704	0.595	1.0424	0.018	27	0.0160	0.904	1.3943	0.043
12	-0.0646	0.626	0.9778	0.033	28	-0.0035	0.979	1.3908	0.047
13	0.0709	0.592	1.0488	0.028	29	0.3089	0.020	1.6998	0.017
14	-0.2359	0.075	0.8128	0.101	30	-0.0748	0.572	1.6249	0.025
15	-0.0793	0.549	0.7335	0.152	31	0.0026	0.984	1.6275	0.027
16	0.4037	0.002	1.1372	0.032					

Table IV: Measuring the run-ups for different types of disclosure

Note that p-values appear in parentheses.

	Revelation of information	Hidden information
Pre-announcement gains $t \in \{1, 2, \dots, 15\}$	0.7335 (0.152)	4.7875 (0.000)
Gains on the event day $t=16$	0.4037 (0.032)	-0.0079 (0.952)
After-announcement gains $t \in \{16, 17, \dots, 31\}$	0.8940 (0.091)	0.8128 (0.125)
Total change in market value over the 31 days	1.6275 (0.027)	5.6002 (0.000)
Pre-announcement gains in per cent of total change	45.07%	85.49%

Table V: Pre-event and after-event changes in market values of different subgroups in the year 2000

Note that p-values are set in parentheses.

	Target firms	Acquiring firms	Executed mergers	Prevented mergers
Pre-announcement gains $t \in \{1, 2, \dots, 15\}$	0.3684 (0.813)	5.8504 (0.000)	1.9928 (0.179)	5.9609 (0.000)
Gains on the event day $t=16$	-0.9796 (0.015)	-1.1976 (0.003)	-0.9894 (0.010)	-1.2991 (0.003)
After-announcement gains $t \in \{16, 17, \dots, 31\}$	-4.4135 (0.006)	-9.0902 (0.000)	-6.1721 (0.000)	-8.5237 (0.000)
Total change in market value over the 31 days	-4.0451 (0.070)	-3.2398 (0.153)	-4.1793 (0.050)	-2.5628 (0.296)

Table VI: Estimating the impact of disclosure on the total change in market values

Consider that the p-values are set in parentheses.

Three-stage-least
squares

	Equation 1: CAR _i	Equation 2: Mean _i	Equation 1: CAR _i	Equation 2: Mean _i
Constant	4.2274 (0.457)	-0.5564 (0.000)	3.1380 (0.232)	-0.3332 (0.000)
Log(cap _i)	-1.0961 (0.152)	0.0228 (0.139)	-1.1085 (0.121)	0.0137 (0.386)
Log(age _i)	-	0.0997 (0.000)	-	0.0836 (0.004)
Success _i	-2.0515 (0.632)	0.1344 (0.172)	-	-
Change _i	-0.5771 (0.841)	0.0044 (0.948)	-	-
Cash _i	1.4990 (0.396)	-0.0593 (0.146)	-	-
DivGrowth _i	-0.1720 (0.946)	-0.0787 (0.168)	-	-
Bank _i	4.5502 (0.045)	-0.0629 (0.228)	4.2344 (0.040)	-0.0203 (0.691)
Mining _i	3.5539 (0.341)	-0.1990 (0.003)	3.8883 (0.271)	-0.1515 (0.023)
Mean _i	-53.2898 (0.000)	-	-50.7940 (0.000)	-
Target _i	0.1928 (0.925)	0.0726 (0.123)	-	-
Disclose _i	-2.8665 (0.235)	0.1084 (0.032)	-2.7630 (0.158)	0.0468 (0.311)
“Adjusted R ² ”	0.78	0.43	0.77	0.32
F-test (p-value)	7.74 (0.000)	3.46 (0.001)	11.05 (0.000)	4.36 (0.002)
Observations	46	46	46	46
Specification test: Log-likelihood ratio	8.58 (0.572)			

Table VII: Estimating the impact of disclosure on the pre-announcement gains

Consider that the p-values are set in parentheses.

Three-stage-least
squares

	Equation 1: CAR _i	Equation 2: Mean _i	Equation 1: CAR _i	Equation 2: Mean _i
Constant	4.0801 (0.196)	-0.5564 (0.000)	4.2014 (0.102)	-0.4574 (0.002)
Log(cap _i)	-0.0432 (0.918)	0.0228 (0.139)	-	-
Log(age _i)	-	0.0997 (0.000)	-	0.0983 (0.001)
Success _i	-4.6132 (0.055)	0.1344 (0.172)	-4.5643 (0.047)	0.0931 (0.368)
Change _i	-0.2701 (0.865)	0.0044 (0.948)	-	-
Cash _i	0.3231 (0.741)	-0.0593 (0.146)	-	-
DivGrowth _i	-0.5296 (0.705)	-0.0787 (0.168)	-	-
Bank _i	2.1994 (0.079)	-0.0629 (0.228)	2.0806 (0.043)	-0.0196 (0.682)
Mining _i	1.6917 (0.412)	-0.1990 (0.003)	1.7288 (0.300)	-0.1558 (0.018)
Mean _i	-42.7989 (0.000)	-	-42.7364 (0.000)	-
Target _i	2.1881 (0.058)	0.0726 (0.123)	2.1516 (0.036)	0.0458 (0.337)
Disclose _i	-2.1111 (0.115)	0.1084 (0.032)	-2.1699 (0.053)	0.0662 (0.190)
“Adjusted R ² ”	0.86	0.43	0.86	0.33
F-test (p-value)	15.08 (0.000)	3.46 (0.001)	20.60 (0.000)	3.80 (0.002)
Observations	46	46	46	46
Specification test: Log-likelihood ratio	7.65 (0.468)			

Table VIII: What influences the decision to uncover the willingness to merge?

Robust p-values appear in parenthesis. The estimates are coefficients not odds ratios. CAR is the abbreviation for cumulated abnormal return. To calculate the number of correctly classified firms, I use 0.5 as cutoff rate.

	Manager anticipates CAR in t=31 perfectly		Manager anticipates CAR in t=15 perfectly		Manager anticipates CAR in t=14 perfectly		Manager observes CAR in t=13 perfectly		Manager observes CAR in t=12 perfectly	
Constant	4.9313	(0.025)	5.4373	(0.013)	5.1220	(0.017)	4.9390	(0.026)	3.3051	(0.097)
CAR for different t	-0.0805	(0.010)	-0.1325	(0.013)	-0.1130	(0.021)	-0.1028	(0.052)	-0.0663	(0.460)
Log(cap)	-0.7302	(0.015)	-0.6716	(0.018)	-0.6424	(0.019)	-0.6428	(0.019)	-0.5626	(0.038)
Log(age)	-0.7394	(0.196)	-0.9568	(0.109)	-0.8766	(0.135)	-0.8001	(0.188)	-0.3056	(0.592)
Cash	0.4263	(0.664)	0.3374	(0.741)	0.2846	(0.774)	0.2193	(0.822)	0.0016	(0.999)
Target	-2.8119	(0.013)	-2.6004	(0.027)	-2.5769	(0.024)	-2.5898	(0.026)	-2.4971	(0.019)
DivGrowth	2.4850	(0.131)	2.5771	(0.124)	2.5488	(0.128)	2.5220	(0.132)	2.1004	(0.158)
Bank	3.0104	(0.011)	2.9107	(0.022)	2.8882	(0.017)	2.8260	(0.020)	2.5640	(0.018)
Mining	3.0252	(0.059)	3.2524	(0.092)	2.8761	(0.101)	2.7258	(0.110)	1.9037	(0.125)
Pseudo R ²	0.34		0.35		0.34		0.32		0.28	
Wald Chi ² (p-value)	15.50	(0.050)	13.64	(0.092)	12.88	(0.116)	11.30	(0.186)	10.83	(0.211)
Observations	46		46		46		46		46	
Per cent of correctly classified firms	82.16%		82.61%		82.61%		82.61%		80.43%	

Figure 1: Determining the correct event period

We plot the average p-value of the abnormal returns (AR) to justify the chosen event period.

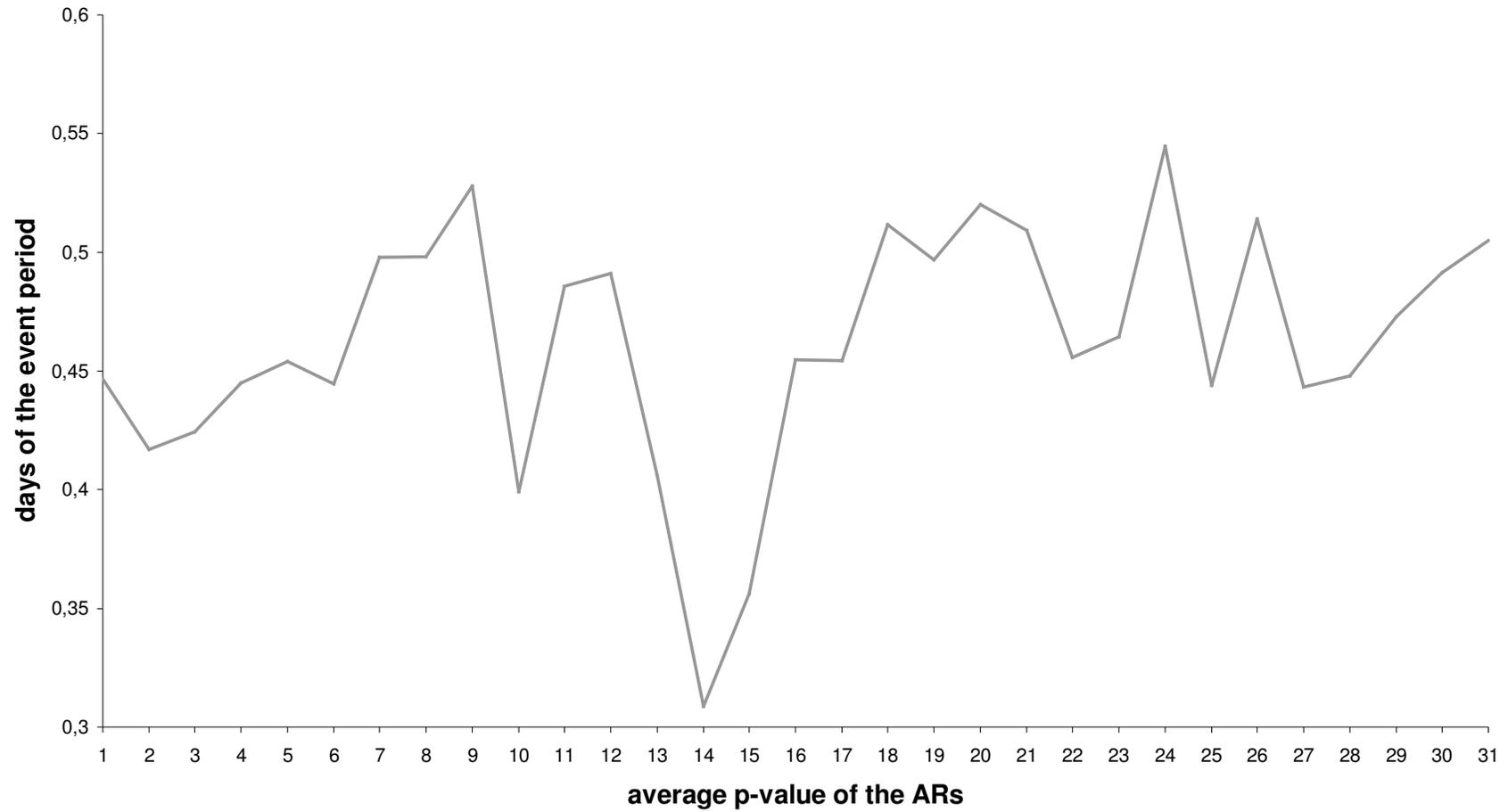


Figure 2: Comparing abnormal returns based on CMR and MM

To evaluate which model outperforms the other, portfolio weighted abnormal returns are calculated based on the CMR or the MM

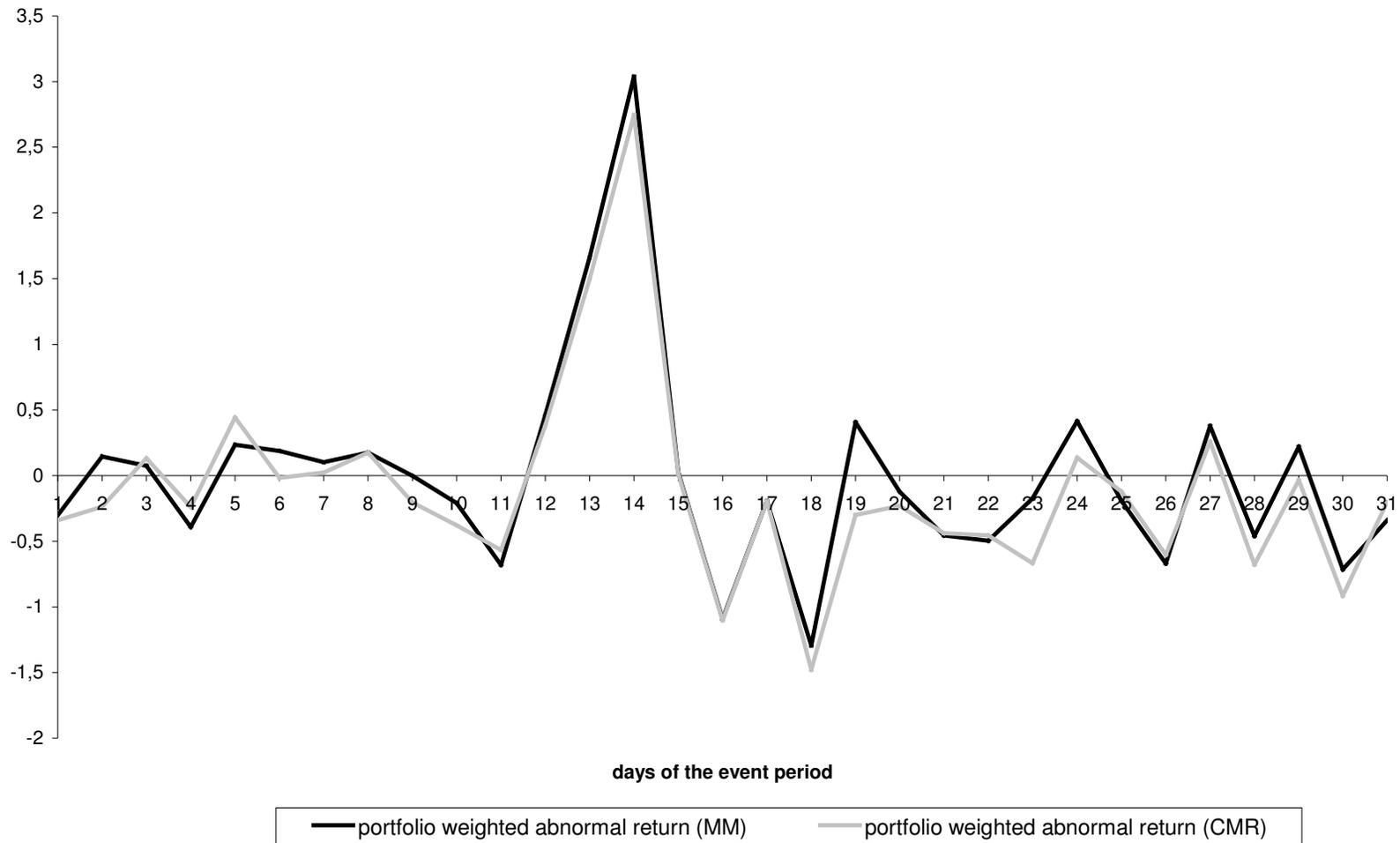


Figure 3: Estimated mean returns and confidence intervals for the year 2000 of individual stocks

Results from the estimation period contain the upper- and lower-bound of the constructed 95% confidence interval of the estimated mean returns.

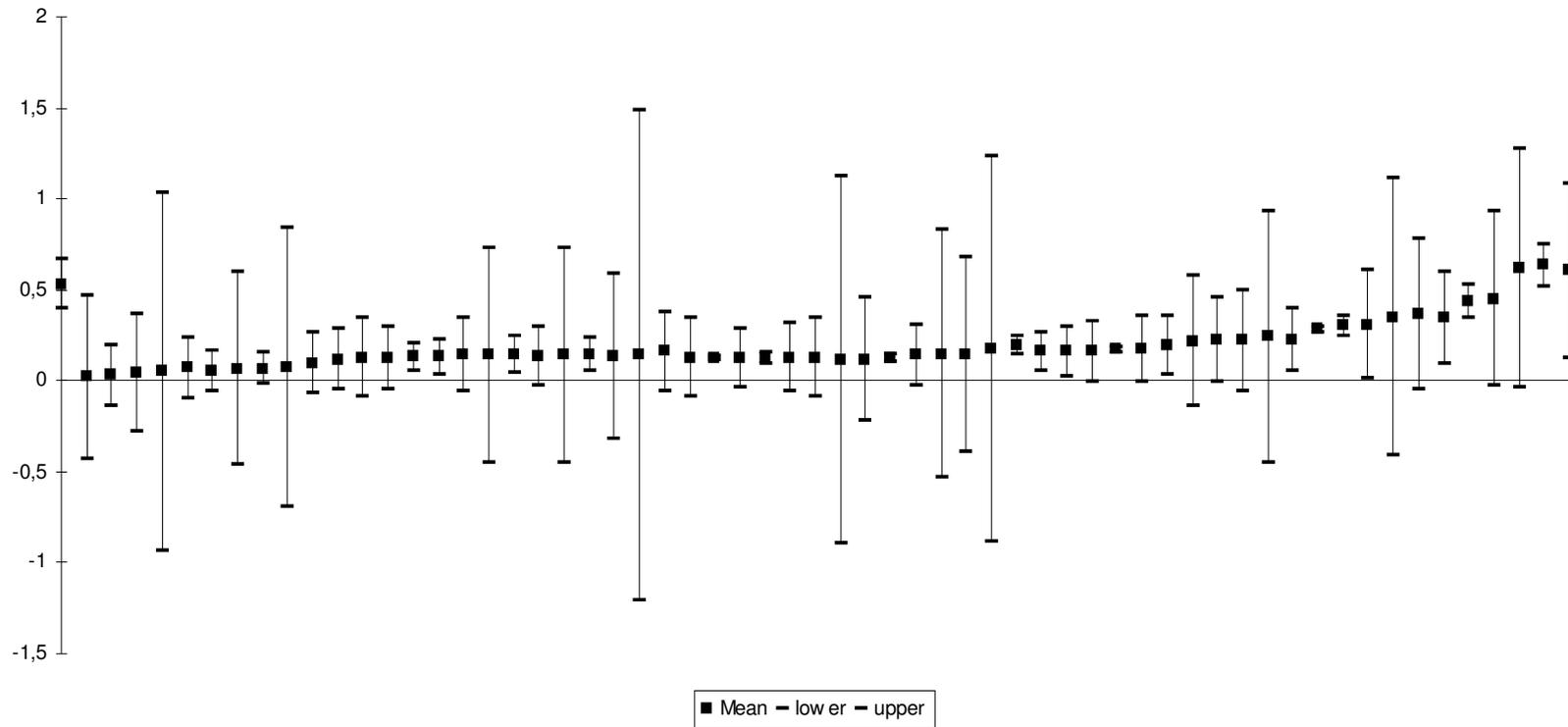


Figure 4: Abnormal return and cumulated abnormal return of the whole sample in the year 2000

Figure 4 contains the portfolio weighted abnormal returns $\bar{\varepsilon}_t^*$ for each day $t \in \{1, 2, \dots, 31\}$ of the event window and the aggregation over increasing time intervals $\bar{C}(1; \tau_n)$. Gray boxes indicate significance on the 90% confidence level.

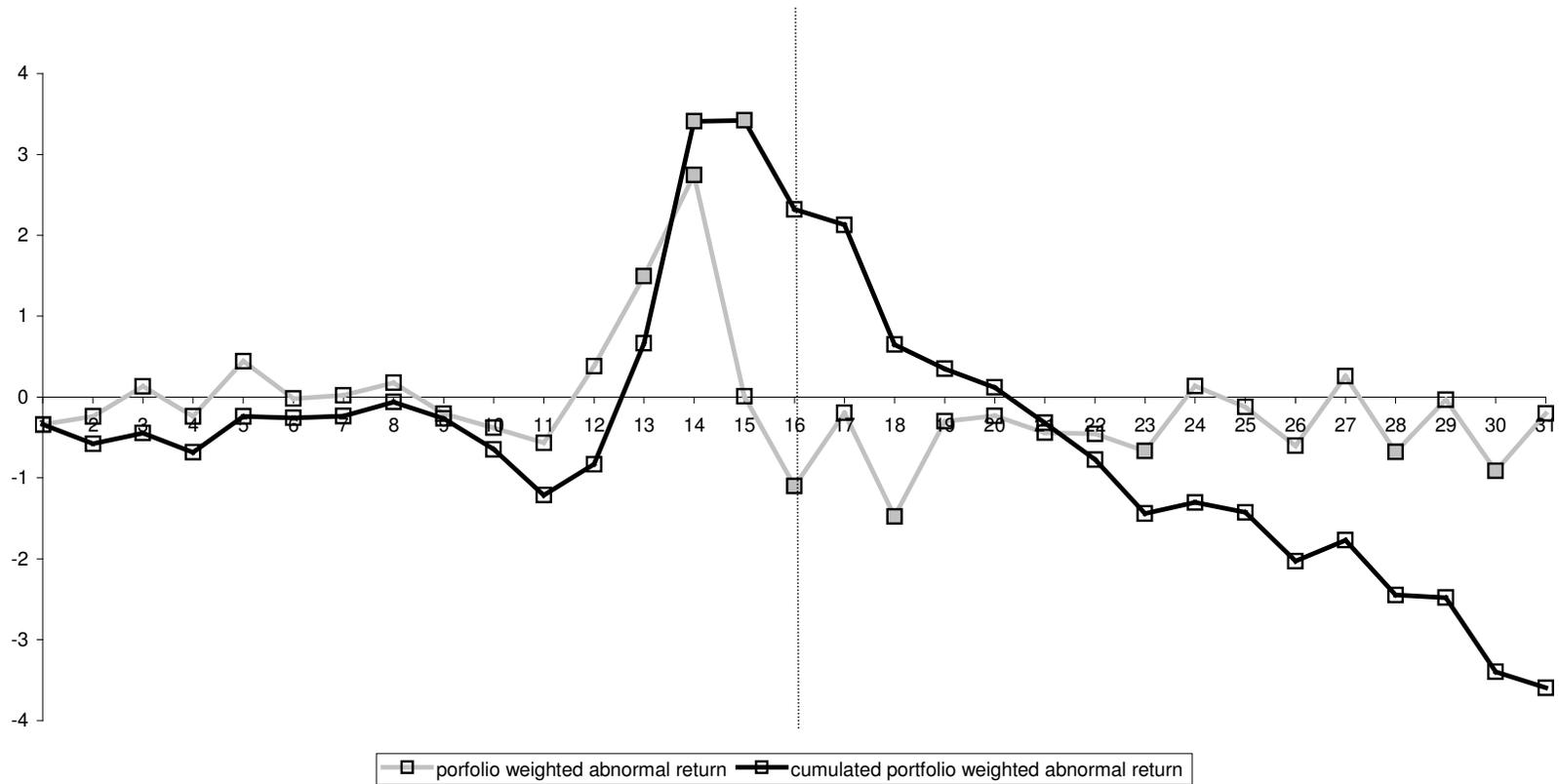


Figure 5: Cumulated abnormal return of failed and successful mergers in the year 2000

Figure 5 plots the aggregated cumulated abnormal return for increasing intervals starting at $t=1$ and ranging till $t=31$; thereby, we divide between mergers that are not executed (failed mergers) and successful ones.

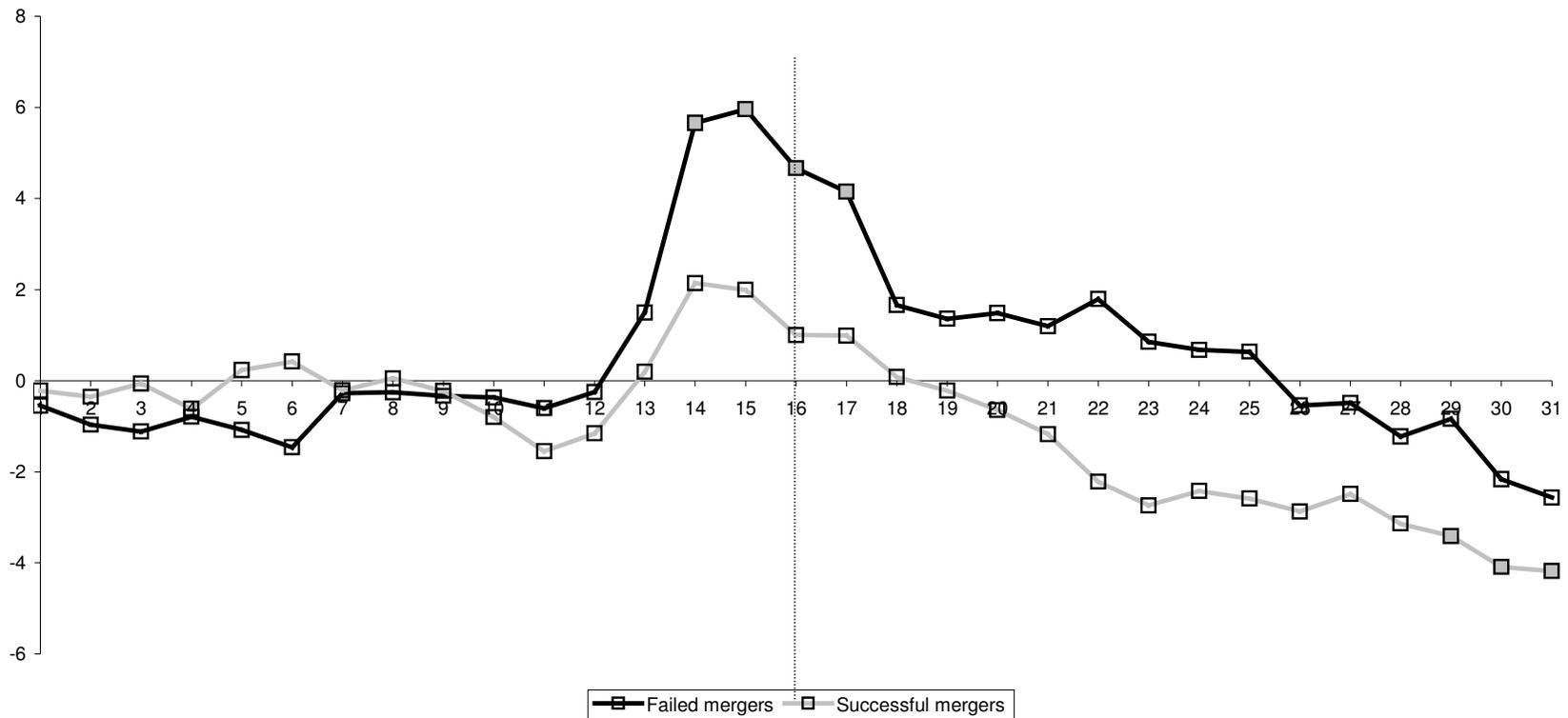


Figure 6: Cumulated abnormal return of firms that disclose respectively hide information in the year 1908

Figure 6 plots the aggregated cumulated abnormal return for increasing intervals starting at $t=1$ and ranging till $t=31$; thereby, I distinguish between firms that disclose an impending merger and firms that withhold new information from the public.

