

MEASURING TAKEOVER PREMIUMS IN CROSS-BORDER M&As: INSIGHTS FROM TURKEY

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Abstract

We investigate whether the merger announcement dates provided in a popular Mergers and Acquisitions (M&A) database, SDC, serve as accurate event dates for estimating the wealth effects of mergers on target firms located in Turkey. We find that 74% of SDC's merger announcement dates are preceded by merger-related events such as merger rumors, target firms' search for potential acquirers, and early stage merger negotiation announcements. Target cumulative abnormal return (CAR) estimates around these early dates are almost twice as large as the CAR estimates around SDC's merger announcement dates. We argue that our findings have implications for the recently flourishing cross-border M&A literature.

Keywords: cross-border M&As; event study; target abnormal returns; bid premiums; merger rumors

JEL codes: G34, G14

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1. Introduction

The empirical Mergers & Acquisitions (M&A) literature has been enriched in the past few years by a growing number of studies analyzing the takeover mechanisms in cross-border transactions.¹ One of the reasons behind the growing popularity of international M&A research is the abundant and available transaction level data in commercial M&A databases. The literature survey in Mulherin and Simsir (2014) reveal that the majority of the studies in the literature rely on Thomson Reuters' Securities Data Corporation (SDC) database to gather their samples. SDC's convenient access to a wealth of data items through online search bypasses the time-consuming data collection stage in typical empirical research projects. Therefore, with the help of SDC, researchers are now able to work with increasingly larger datasets, where the number of data points can easily reach tens of thousands.

The advantages of using datasets from SDC come with caveats, however. Netter, Stegemoller and Wintoki (2011) warn researchers that SDC's M&A coverage becomes more complete only after the early 1990s. The authors also demonstrate that SDC has vague definitions of merger types and missing observations in the "deal value" field, which are important data sources for researchers. Boone and Mulherin (2007) show that the biased termination provision data in SDC produce incorrect analysis and conclusions on the relationship between termination provisions and toeholds, deal size and judicial decisions. Officer (2007) indicates that the acquisition multiple data provided by SDC (e.g., deal value to EBITDA, price to earnings per share) are missing and inaccurate for many deals in his sample.

¹ Cakici, Hessel and Tandon (1996) study the merger outcomes in foreign acquisitions of US target firms. Rossi and Volpin (2004) investigate the determinants of international M&As by focusing on the differences in laws and regulation across countries. Moeller and Schlingemann (2005) analyze the returns to US acquirers in cross-border deals. Bris and Cabolis (2008) examine the interaction between takeover outcomes and shareholder protection and accounting standards in the acquirer firms' countries. Mantecon (2009) discusses the alternative risk management tools that the merging firms could employ in cross-border acquisitions. Chari, Ouimet and Tesar (2009) show that acquirers are better off when they acquire targets that are located in the emerging markets. Ferreira, Massa and Matos (2010) study the role of institutional investors in cross-border M&As. Bhagat, Malhotra and Zhu (2011) investigate whether the cross-border mergers undertaken by acquirers from the emerging economies create value. Erel, Liao and Weisbach (2012) analyze the determinants of cross-border M&As, such as accounting standards, geography, bilateral trade between the merging firms' countries and the recent changes in the valuations of the target firms' stock markets. Finally, Makaew (2012) demonstrates that the cross-border M&A volume displays a wave pattern, following the trends in the business cycle.

In this paper, we investigate whether the deal announcement dates provided in SDC are accurate for Turkish transactions. Announcement dates are frequently used by researchers to measure the wealth effects of announced mergers, typically through event studies. Therefore, the accuracy of event dates is essential in event studies for achieving unbiased abnormal return estimates. For a sample of US transactions, Mulherin and Simsir (2014) show, for example, that about 24% of the deal announcement dates provided in SDC are preceded by merger rumors, failed transactions, and unsolicited offers made by bidders to the target firms. The authors show that there are significant market reactions around these events, and ignoring them - as many of the papers in the literature do - leads to biased target abnormal returns estimates in event studies. Following a similar methodology, we examine the frequency of such early merger-related events in Turkish transactions and the potential biases arising from their exclusion from event studies.

We download from SDC a sample of completed deals in which target firms are Turkish and the deal announcement dates are between January 1st, 2005 and December 31st, 2011. Our search results in 105 transactions. We then search the Borsa Istanbul (BIST), Capital Markets Board of Turkey (CMBT) Bulletins, and national newspapers to determine whether the target firms are involved in merger-related activities within the two year period before formal merger announcement dates that are provided in SDC. We find 78 deals where the target firms experience merger-related events, such as merger rumors and search for buyer type of announcements. Because SDC records some of these early events in their “Original Date Announced” field, we refer to these events as “ODA events”. The formal merger announcement dates are recorded in SDC’s “Date Announced” field; hence, we identify the regular merger announcements as “DA events”. After identifying ODA and DA events and dates for each deal, we run event studies around these dates to see whether markets react to the released events. We find that the mean target Cumulative Abnormal Returns (CAR) estimated five trading days before and after ODA is 6.7%, while the mean target CARs around DA over the same event window is only 3.3%. Therefore, for Turkish transactions, ignoring the merger-related events released at ODA leads to severe biases in target CAR estimates. We ascribe the significant market reactions around ODA to the fact that M&A transactions in Turkey are publicized much more often than in other markets, leading to frequent but small reactions in the stock market. Therefore, any study that attempts to calculate target CARs using a single event date, such as

DA, is severely flawed. Following Mulherin and Simsir (2014), we correct this bias by accumulating target abnormal returns over the entire period between ODA and DA. When such a correction is made, the mean target CAR figure readjusts to 9.6%.

One of the potential remedies to capture the market reactions to the merger-related events taking place before the formal announcement dates is to extend the event window in the pre-announcement period. Many researchers start accumulating target abnormal returns 63 or 126 trading days before the announcement dates (Schwert (1996)). As we show in the next section, the median of the number of calendar days between the ODA and the DA is 182, which corresponds to 125 trading days. Hence, the event windows that start 63 or 126 trading days before the merger announcement dates fail to capture a significant portion of the market reactions around the early events.

The second method of estimating the wealth effects of mergers on target firm shareholders is to calculate bid premiums. Bid premiums do not make use of the stock market data around announcement dates; it involves comparing the offer price with target's stock price (called the "benchmark price") before the merger announcement date. Because SDC does not consistently record offer price data, especially for small transactions, using SDC to estimate bid premiums is not always feasible. The lack of offer price data in SDC is a more severe problem for Turkish transactions: the information available in SDC enables us to estimate bid premiums for only 21 deals. We thus hand-collect offer price data for the remaining deals and estimate bid premiums for a total of 56 deals. Hence, our approach enables us to more than double the number of bid premium observations in our sample. We then estimate bid premiums using benchmark prices that are defined with respect to DA and ODA. The mean bid premiums that are estimated using benchmark prices before DA is 18.4% while the mean bid premiums that are estimated using benchmark prices before ODA is 28.4%. Hence, the benchmark price in bid premium estimates should be selected using ODA as the event date rather than DA.

Our findings have implications to the cross-border M&A literature, where a significant number of papers have investigated the wealth effects of mergers and estimated target CARs and bid premiums using the announcement dates provided in SDC. Given that the sample sizes in

cross-border M&A studies are quite large, hand-collecting the event dates from national news sources is very costly. In addition, researchers may lack multi-lingual skills or knowledge of the local business environments to perform news searches in the country of interest. For instance, Rossi and Volpin (2004) study the determinants of bid premiums using a sample of 4,007 takeovers that span 35 countries (Table 7, page 294). Bris and Cabolis (2008) estimate matching-acquisition-adjusted target CARs for a sample of 241 deals from 31 countries (Table 5, page 629). Ferreira, Massa and Matos (2010) calculate target CARs for 176 deals from at least 26 countries (Table 12, page 639). If the M&A markets in the other emerging markets have similar characteristics to that of in Turkey, ignoring the possibility of ODA events could lead to biased estimates of the wealth effects of announced mergers. Despite its costs, researchers should take extra caution in identifying the event dates while running event studies in emerging countries.

The wealth effects of mergers on target firm shareholders are considerably larger in developed countries than in emerging countries. In the US, the mean target CARs are in the vicinity of 25-30% while bid premiums range from 40-50% (Eckbo (2009)). In Europe, the samples are more heterogeneous than those in the US, due to the fact that the Euro area consists of countries with differing M&A regulations, but the target CAR estimates vary between 10% - 20% (Campa and Hernando (2004), Goergen and Renneboog (2004), Martynova and Renneboog (2011), Craninckx and Huyghebaert (2011) and Geranio and Zanotti (2012)).² In emerging countries, target CARs and bid premium estimates are much lower. Sehgal, Banerjee and Deisting (2012) analyze the mergers in BRICS countries (Brasil, Russia, India, China, and South Africa) and find that the average target CARs over the (-1,+1) event period relative to the merger announcement date are 1.95%. Song et al (2011) report that the mean CARs experienced by target firms in Malaysia, Thailand, and Indonesia over the (-1,+1) event window is 2.69% (calculated from Table 4). Wong and Cheung (2009) estimate CARs for targets in Hong Kong, China, Taiwan, Singapore, Japan, and South Korea and find that the mean target CARs over the (-1,0) period is -0.24%. The authors studying the wealth effects of mergers on target firm shareholders in emerging economies usually cite the problem of information leakage before formal announcement dates (Pop (2006)). The studies argue that the change in stock prices of

² The average target CAR estimates for the European Leveraged Buyout (LBO) deals are around 25-30% (Renneboog, Simons and Wright (2007) and Andres, Betzer and Weir (2007)).

target firms at the formal merger announcement dates does not reflect the true effects of mergers on target firm shareholders due to the significant runups in the pre-announcement period. Our suspicion is that the low takeover premiums estimated in emerging economies could partially be explained by the aforementioned estimation problem rather than the commonly cited structural factors.

Our findings, taken together with those presented in Mulherin and Simsir (2014), provide further evidence on the structural differences between the takeover markets in developed and emerging economies. The first major distinction is that the incidence of merger-related events in the pre-announcement period is much higher in Turkey (74%) than in the US (24%). One of the possible explanations for the significantly higher frequency of ODA events in Turkey is that the insider trading laws in the emerging economies tend to be more lenient than the developed economies (Bhattacharya et.al (2000) and Griffin, Hirschey and Kelly (2011)). Lenient trading regulations allow insiders to trade on their private information, leading to a slow diffusion of their private information in the stock market. In the case of mergers, when the volume of the private information trading reaches a critical point, merger-related events start to materialize either through merger rumors or target firms' own revelation of the ongoing merger negotiations. The second difference between the US and Turkish markets is the relative magnitude of the market reactions around the ODA events. In the US, target firm stocks appreciate an average of 18.6% on the merger-related early date and another 13.8% on the final merger announcement date. In contrast, the average increase in the stock prices of Turkish target firms is 6.7% on the initial merger-related event date and 3.3% on the eventual formal merger announcement date. While the price reactions to target stocks around the two event dates are of comparable magnitude in the US, the average market reaction around the initial merger-related events in Turkish markets is about twice as large as the market reaction at the final announcement dates. As we show in the next section, the majority of the early events in Turkish markets (51%) are announced by target firms to disclose the early stage merger negotiations with bidders. In the US, the frequency of these events is only 13%. Hence, the large market reactions at the ODA events in Turkey are due to merging firms' voluntary or involuntary (e.g., as a response to excessive trading in the stock market) disclosure of the merger plans to the public.³

³ We wish to note that the M&A activity in emerging markets has recently drawn considerable interest from academic researchers. The range of topics in this field include the determinants of M&A activity (Agarwal and

The volume of M&A transactions in Turkey has been increasing since the early 2000s, mostly due to political stabilization, high economic growth, and increased Foreign Direct Investment (FDI). Parallel to the developments in the M&A market, academic M&A research has seen an increasing number of studies on corporate takeovers in the past decade, on topics such as the overall M&A activity in Turkey (Ertaş (1998), Jensen (2010), Akdoğu (2011) and Akdoğu (2012)), the effects of mergers on the financial performances of merging firms (Erkan (2003), Mandacı (2005), Akın and Kılıç (2008) and Akben-Selçuk (2008)), and detailed case studies on specific mergers (Arslan (2007), Bumin and Cengiz (2009) and Yıldız-Tulum and Aytekin (2009)). Our study relates closely to the set of papers that examine the wealth effects of mergers on acquirer and target firm shareholders. Mandacı (2004) analyzes 12 BIST-listed target firms that experienced a takeover between 1999 and 2003. The author finds that the mean target CARs over the (-5,+5) event window is 9.6%. Çukur and Eryiğit (2006) investigate mergers in the banking sector in 2004 and 2005. The number of observations in their sample (five) does not allow for an in-depth analysis of target CARs, though the authors show that target firms experience positive CARs around the merger announcement or merger initiation dates. Tanyeri (2008) analyzes 19 mergers in the banking industry over the 2004-2006 period and finds that the mean target CARs over the five-day period around the announcement date is 5.57%. Oelger and Schiereck (2011) examine the wealth effects of mergers on acquiring firm shareholders using 119 deals over the period of 1992 and 2010 and find that the mean acquirer CARs over the (-10,+10) event window around the merger announcement dates is 3.35%. Finally, Hekimoğlu and Tanyeri (2011) analyze full and partial acquisitions of non-financial Turkish firms between 1991 and 2009. The authors download their sample from SDC and end up with 142 observations that conform to the above criteria. The mean target CARs over the (-1,+1) event window is 8.56% in full acquisitions and 2.25% in partial sales.

The plan of the paper is as follows. In Section 2, we describe the data formation steps, and the variables that we use in our analysis. Section 3 shows our empirical results, basically the

Bhattacharjea (2006)), the effect of investor protection on merger outcomes (Pan et.al (2010)), performance and characteristics of acquiring firms (Lin and Lee (2010), Chi, Sun and Young (2011) and Yen, Chou and Andre (2013)) and target firms (Zhu and Jog (2012)).

target CAR and the bid premium estimates. In Section 4, we test whether our findings in the univariate analysis hold in a multivariate setting. Section 5 concludes the paper.

2. The Data

We use SDC's "Non-US Mergers and Acquisitions" database to create our sample. We download from SDC the deals that satisfy the following criteria: (i) deal announcement dates are between 1 January 2005 and 31 December 2011, (ii) targets are publicly listed Turkish firms and (iii) the announced deals are eventually completed. We do not impose any filter for the acquirer firms. Our initial search results in 118 transactions. We eliminate duplicate observations where target firms appear in SDC more than once within five calendar days of the deal announcement dates. The resulting sample consists of 105 transactions. We use Stockground, a local financial database specializing in Turkish securities, to gather the accounting and the stock price information of the target firms in our sample.^{4 5}

The distinguishing element of our study is the investigation of merger-related events before the merger announcement dates reported in SDC. For the 105 deals in our sample, we obtain merger-related information from news sources such as national newspapers (through the search engine in Stockground), BIST, CMBT Bulletins, and Public Disclosure Platform (PDP) starting two years before the announcement dates of the transactions.⁶ BIST and CMBT Bulletins aim to disseminate new and material information regarding the operations and financials of the public companies to the investors as quickly as possible. PDP is a search platform that combines the announcements located in the two databases. Hence, M&A types of

⁴ We considered DataStream for gathering the financials of the target firms. DataStream does not keep the financials of the target firms that are delisted from the BIST after they are acquired, and it lacks some of the key financials of the not-delisting target firms. These problems with DataStream lead us to use Stockground as our primary data source.

⁵ We should note that we did not verify from alternative sources the completeness of the coverage of the SDC database for Turkish mergers. We are also unable to comment on the accuracy of the key deal characteristics (e.g., percent-owned after transaction) that are provided by the SDC. Our study focuses solely on the proper use of the merger announcement dates for the deals that appear in the SDC database.

⁶ Except for one deal, all merger-related events appear within one calendar year of the merger announcement dates. Hence, the two year pre-announcement window is practically equivalent to a one-year window.

corporate announcements, including early stage merger-related events, are expected to appear in these databases.⁷

In Table 1, we summarize the frequency and content of the merger-related news appearing prior to SDC's announcement dates. In 78 deals, we are able to find a merger-related event that the target firms are involved in before DA. In 40 of them, target firms announce early stage merger negotiations with the bidders. In the majority of the cases, the merging parties state that the negotiations between the two parties have begun but a definitive agreement is not yet reached. In the remaining cases, the merging firms announce that they reached an agreement for the merger, meaning that the DA provided in SDC is incorrect. The second most common merger-related event occurring before DA is merger rumors. In 19 of the deals, target firms are rumored to be takeover candidates in the national press. The merging firms typically do not confirm these rumors and notify PDP, stating that no material information exists which they could share at that point with the public. The third most common corporate event in the pre-DA period is the search-for-buyer type of announcements by target firms. 17 of the target firms in our sample publicly express their willingness to negotiate takeovers with the potential bidders. In some cases, they retain investment banks to start the auction process and notify PDP about their intentions of a sale.

The second part of Table 1 summarizes the number of calendar days between the ODA and the DA with respect to the types of ODA events. For merger rumors, the average number of calendar days between the two dates is 235, while for search for buyer types of announcements the average is 223 calendar days. Compared to these two event types, early stage merger announcements are observed shortly before the DA, with a mean value of 145 calendar days.

[Table 1]

Table 2 summarizes the key deal and target firm characteristics of our sample. As Panel A shows, only 7.6% of the observations in our sample are tender offer deals (as defined in SDC).

⁷ When our search results in multiple events for the same target firm, we record the first event as our primary merger-related event. Therefore, at most one merger-related event is associated with each deal.

While the volume of M&A transactions in Turkey has been increasing since the early 2000s, the frequency of tender offers and hostile transactions has been quite low. Yurtoğlu (2003) examines the ownership structures of publicly listed firms in Turkey and reports that gaining the control of target firms through hostile takeover bids is almost impossible due to large and controlling block holders in Turkish firms. Turkish deals are quite homogenous with respect to the method of payment as well. We have only one case where the target firm receives the stock of the acquirer as a payment. All remaining deals are cash deals. These two findings are consistent with those of Rossi and Volpin (2004) who find that no hostile takeover bids exist in Turkey and acquisitions are paid entirely in cash.

We classify deals as intra-industry if the 2-digit SIC codes of the merging firms (as defined in SDC) match. The potential synergies between the merging parties are expected to be higher when the merging firms are in the same industry, or their assets are related with each other. In 38.1% of the deals in our sample, the assets of the merging firms are related to each other. Another potentially interesting deal characteristic is the “percent owned after transaction” variable, which is the percent ownership of the acquirer in the target firm after the transaction. A median post-merger equity ownership by acquirers of 51% means that the frequency of majority and minority acquisitions is nearly the same. The wealth effects of majority and minority acquisitions are quite different from each other as the latter may not let the acquirers use the potential gains arising due to the inefficient management of the assets of target firms. We create an indicator variable, “privatization dummy”, to capture the deals that involve privatization of the target firms. Our sample contains three privatization deals (Eregli Demir Celik, Tupras and Petkim) in which the Turkish government sold their stakes in these publicly traded companies. Finally, we categorize acquirer firms with respect to their nationalities and their public statuses. 39% of the acquirers are public firms; 44.8%, non-Turkish.

Another point we wish to make at this point relates to the nature of the transactions in Turkey. In developed economies, especially in the US, the wealth effects of mergers on target shareholders are typically examined through cases where the acquirers gain the majority control of the target firms. Acquirers could decide to squeeze out the dissenting shareholders once control of the target firms is achieved in the first step transaction. In Turkey, a significant portion

of the deals are equity sales. For instance, a blockholder in the target firm may sell his or her shares to a third party through private negotiations. When the deal is announced to the public, the reaction in the stock market is partially due to the expectation that the acquirer will acquire all of the outstanding shares of the target firm, and partially due to a revaluation effect. That is, the transaction price provides a new signal to the market about the post-merger stand alone value of the target firms.

Panel B in Table 2 shows several financial characteristics of the target firms in our sample. The balance sheets and the income statements of the target firms are standardized with respect to the International Financial Reporting Standards (IFRS). Because merger-related events and agreements could alter the financial statements and the market valuations of target firms, we use the data from their most recent financial statements that are filed before the merger announcement dates. The financial ratios that we consider in our study include target firm liquidity (quick ratio), operating profitability (EBITDA margin), market valuation (Price/Earnings ratio), size (book value of total assets) and capital structure (book leverage). Because financial firms structurally differ from non-financials, we exclude financial targets from our analysis in Panel B. We inflation-adjust all of the items in the financial statements of the target firms. The construction of the financial variables is explained in Table 2.

[Table 2]

We are able to calculate the financial ratios of 70 target firms in our sample. The mean and median quick ratios of 1.65 and 0.135, respectively, suggest that financial distress could be a serious problem for a portion of the target firms in our sample. The distribution of the operating profit margins of target firms is left skewed, with a median of 8.4% and a mean of zero. The median (book) value of target firms' assets is 285 million Turkish Lira (202 million USD). The largest target firm in our sample has a (book) value of assets worth 43.4 billion Turkish Lira (32.1 billion USD).

3. Measuring Wealth Effects of Acquisitions

We consider two methods for measuring the wealth effects of announced mergers on target firm shareholders. The first one involves running event studies to estimate the abnormal returns experienced by target firms around the merger announcement dates. The second one compares the offer price with the stock price of the target firm before the announcement date of the merger. We discuss each method in the following two subsections.

3.1. Event Studies

To estimate the abnormal returns experienced by target firm shareholders around the announcement of mergers, we run a one-factor model for each target firm in our sample. That is, we estimate the parameters of the one-factor model in the estimation window:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_t \quad (1)$$

where R_{it} is the security return and R_{mt} is the BIST-100 market return at time t . We run the one-factor regression using an estimation window of (-819,-315) trading days relative to DA. We do not run the one-factor model if the number of observations in the estimation window is less than 250. After estimating $\hat{\alpha}$ and $\hat{\beta}$ using the daily returns in the estimation window, we calculate the expected (or normal) returns in the event period. The abnormal returns are then defined as realized returns minus expected returns. To show the sensitivity of our results with respect to the choice of the event windows, we accumulate abnormal returns over (-1,+1), (-5,+5), (-126,+5) and (-126,+126). To assess the statistical significance of our abnormal return estimates, we employ the standardized cross-sectional test that incorporates a correction for serial dependence (see Boehmer et.al (1991) for the original version of this test). As discussed in Campbell et.al (2010), this test performs quite well when the distribution of abnormal returns is non-normal. Because abnormal stock returns tend to be non-normal in non-US countries (Campbell et.al (2010)), the standardized cross-sectional test with serial dependence correction becomes more relevant for our sample of Turkish firms.

We also perform event studies around the original announcement dates. The procedure is the same as previously stated except that the estimation window is (-567,-63) trading days relative to the ODA. We wish to note here that the estimation window for calculating the parameters of the one-factor model around DA is chosen so that it does not overlap with the ODA dates. The maximum number of days between DA and ODA is 437 calendar days, corresponding to about 302 trading days. Therefore, ODA events do not appear in the (-819,-315) estimation window and thus bias the parameter estimations. Because earlier merger-related events are not an issue for estimating abnormal returns around ODA, we shift the estimation window to (-567,-63). Note that both estimation windows contain 504 trading days.

In Table 3, we examine the behavior of target abnormal returns around ODA and DA. In Panel A, we list the average abnormal returns to target firms starting five trading days before DA and ending five trading days after. The average abnormal returns in the pre-DA period are generally positive, though the statistical significance starts to appear on trading day -1. The mean abnormal returns on trading days -1 and 0 are 1.1% and 1.2% respectively. The abnormal returns on trading day +1 are not statistically different than zero, but the average abnormal returns on trading day +2 is a statistically significant -0.8%. In the bottom five rows of Panel A, we show the average CARs accumulated over different event windows. The mean target CARs over the (-1,+1) and (-5,+5) windows are 2.5% and 3.3%, respectively. While these estimates are statistically significant at the 1% and 5% levels, respectively, the median values are not. This shows the importance of reporting the mean and median values of the abnormal return distributions. The remaining event windows specifications aim to capture the market reactions in the pre-announcement period by accumulating the abnormal returns 126 trading days before the DA. The mean CARs over the (-126,-5) event window is 9.8%, which is significant at the 1% level. Hence, an event window that does not even capture the stock market reaction at the merger announcement date yields statistically positive and sizable abnormal returns. When the event windows are extended to include the market reactions in the announcement and post-announcement periods, the CAR estimates grow larger. The mean CARs over the (-126,+5) event window is 12.8%, while the mean CARs over the (-126,+126) event window is 17.4%.

[Table 3]

Compared to the other studies in the literature, the market reactions immediately around DA seem quite small. Panel B provides the evidence as to why this is the case. As discussed earlier, in 78 of the deals in our sample, the possibility of a merger is released to the stock market in the pre-DA period. For these target firms, the mean abnormal returns are positive and statistically significant starting five trading days before the ODA. The mean abnormal returns to the target firms on trading days -2, -1 and 0 are 1%, 2% and 2.8%, respectively. The median abnormal returns on these dates are also statistically positive. The resulting CARs estimated around (-1,+1) and (-5,+5) are 5.5% and 6.7%, respectively. Even for this subsample, where the merger-related information is supposed to be released to the stock market the first time at ODA, the abnormal returns in the pre-ODA period are significantly positive: the mean target CARs around the (-63,-5) period is 8.5%. There could be potential reasons behind the run-up in the pre-ODA period, though market anticipation and private information trading are the most possible explanations.⁸

We should note that the CAR estimates in Panel B are higher than are the CAR estimates in Panel A. We therefore infer that performing event studies around only DA yields biased results because it ignores market reactions to the merger-related events released prior to DA. In other words, the stock market incorporates the information released at ODA into the stock prices of target firms, and as a result, the merger announcements at DA do not come as a surprise to the market. Following Mulherin and Simsir (2014), we incorporate the market reactions around ODA and DA by using event windows that include both dates. In Panel C, we report target CAR estimates over four different event windows. The first one accumulates target abnormal returns starting one trading day before ODA and ending one trading day after DA. The mean CARs over this event window is 8.1%, which is fairly close to the summation of the individual market reactions around ODA and DA. The second event window uses five trading days as cutoff points. The mean target CARs over this event window is 9.6%. The next two event windows

⁸ The anticipation of mergers by investors is another factor that affects the stock prices of merging firms before the formal merger announcement dates (Cremers, Nair and John (2009), Cornett, Tanyeri, Tehranian (2011), Edmans, Goldstein and Jiang (2012) and Betton, Eckbo, Thompson, Thorburn (2013)). Some of the merger related events that appear in our sample may have materialized as a result of traders' merger anticipation efforts. For instance, the excessive trading activity of the anticipating investors could help spread merger rumors about the possibility of a deal. While analyzing the interaction between merger anticipation and the existence of merger-related events before the formal announcement dates is interesting, we do not undertake this endeavor in this paper.

extend to the post-DA period to capture the market reactions after the merger announcement is made public at DA. The mean CARs measured starting five trading days before ODA to 126 trading days after DA is 12.5%. Including the pre-ODA period to the above event window results in larger abnormal return estimates: the target CARs accumulated starting 63 trading days before ODA to 126 trading days after DA has a mean of 17.7%. The median values for all of the four CAR measures are significantly lower than their mean values, implying that the distribution of abnormal returns is positively skewed.⁹

3.2. Bid Premiums

The second method of measuring the wealth effects of mergers is estimating bid premiums, which is calculated as offer price minus benchmark price divided by the benchmark price. Benchmark price is target firms' stock price before the merger announcement date, when target firms' stock prices do not reflect the merger-related information. The typical choices for the benchmark date are 42 or 63 trading days before the merger announcement date.¹⁰

We estimate bid premiums using three different methods. First, we calculate bid premiums using the offer price data available in SDC. Second, we hand-collect the offer price data from news articles, BIST and CMBT bulletins. In both cases, the benchmark price is target firms' stock price 4 weeks (21 trading days) before the DA. Our objective in estimating bid premiums using SDC and hand-collected offer prices is to investigate the extent to which the use of SDC as the primary source of information would lead to a comprehensive analysis of bid premiums. The third and final method of estimating bid premiums is identical to the second one except that the benchmark date is set as target firms' stock price 4 weeks before ODA. Our objective in estimating bid premiums around ODA is to investigate whether estimating bid premiums around DA and around ODA would yield similar results.

⁹ We compare corrected target CARs across subsamples that are defined with respect to deal characteristics, such as financial versus non-financial targets, minority versus majority acquisitions, large versus small targets, and foreign versus domestic acquirers. These results are omitted from the paper due to space constraints, though interested readers may request them from the corresponding author.

¹⁰ In contrast with target CARs, bid premiums measure the ex-post wealth effects of the announced mergers. Eckbo (2009) discusses the differences between CARs and bid premiums as estimates of the wealth effects of mergers.

Panel D of Table 3 shows the three alternative bid premium measures. The use of offer price data from SDC yields 21 bid premium estimates, which is less than half of what we get from collecting the offer price data on our own. The mean value for the bid premiums estimated from SDC is 19.3%, which is very close to the mean bid premium estimates for the hand-collected sample (18.4%). However, the median values significantly differ from each other. The third bid premium measure, which is estimated using a benchmark price relative to ODA, has a mean of 28.4%. The median value for this bid premium measure is 11.9%. These values are in contrast with the bid premium estimates that are calculated using DA as the event date. Taken together, our findings suggest that (i) estimating bid premiums using SDC data results in missing observations and (ii) bid premiums are estimated more accurately when the benchmark prices are based on ODA rather than DA.

4. Multivariate Analysis of Target CARs and Bid Premiums

One of the important focal points of the empirical M&A literature is the cross-sectional determinants of target CARs and bid premiums. These cross sectional determinants are typically the deal, target, and acquiring firm characteristics, such as the method of payment (Travlos (1987), Chang (1998), Faccio and Masulis (2005)), form of acquisition (Jensen and Ruback (1983), Huang and Walkling (1987)), asset relatedness (Morck, Shleifer, and Vishny (1990)), hostility (Schwert (2000)), competition (Bradley, Desai, and Kim (1988), Boone and Mulherin (2007)), relative size (Asquith, Bruner, and Mullins (1983)), toehold (Betton and Eckbo (2000)), termination fees (Officer (2003)), target and acquirer Tobin's Q (Lang, Stulz, and Walkling (1991) and Servaes (1991)), target leverage (Maloney, McCormick, and Mitchell (1993)), acquirer cash flow (Lang, Stulz, and Walkling (1989)), acquirer cash holdings (Harford (1999)), and acquirer size (Moeller, Schlingemann, and Stulz (2004)). Our objective in this section is to investigate the determinants of target CARs and bid premiums in Turkish transactions, in conjunction with the measurement error issue discussed in Section 3. Unfortunately, the majority of the deal characteristics that are used in developed M&A markets are not available as control variables in Turkish transactions. For instance, stock payments, termination fees and hostile deals rarely happen in Turkey. M&A markets in Turkey are at their infancy; the players are not completely aware of the tools commonly used in developed M&A markets, and most

importantly, the use of these tools are hindered by the fact that Turkish firms are not diffusely held by the public.

We aim to explain the cross-sectional variation in target CARs and bid premiums using five control variables: percent owned after transaction, privatization indicator, asset relatedness, EBITDA/Sales ratio and $\ln(\text{Total Assets})$.¹¹ The construction of these variables is explained in the Table 2. We also include in the regressions broadly defined industry and year indicators. We limit the number of control variables to five because the number of observations in our dataset shrinks considerably when financial targets are excluded from the analysis. The operations of financial firms, hence their balance sheets, structurally differ than those of non-financial firms. The usual handling of this heterogeneity in the sample completely excludes financial firms from the analysis. We also do not include acquirer financial characteristics to the regressions due to data limitations. Restricting our analysis to public acquirers reduces the number of observations to less than 15 in regressions (4) to (6), as only 39% of the acquirers are public.

Table 4 shows the regression results. In the first two columns of Table 4, the dependent variable is the CAR estimates based on DA. Researchers unaware of information events related at ODA would have run the econometric model shown in the first column. We then add the ODA dummy to the regression to investigate whether the coefficient of the ODA dummy would have a negative sign and whether the coefficients of the other control variables would change after the addition of the ODA dummy. We find that the coefficient of the ODA dummy variable is -0.0684, meaning that the target firm CARs measured in the (-5,+5) period is 6.8 percentage points lower for the group of deals having ODA values. This result is consistent with our findings in Section 3, where we show that ignoring the market reaction to the merger-related news released at ODA yields smaller CAR estimates measured around DA. In the third column, we attempt to correct CAR estimates by taking an event window that starts 5 trading days before ODA and ends 5 trading days after DA. Under this model, target size has a significantly negative

¹¹ The existence of blockholders in target firms could potentially affect the premiums paid to target firms. The float rate, defined as the number of shares trading in the stock market divided by the number of shares outstanding, is therefore a potentially interesting variable that should be added as a control variable in our regressions. However, CMBT required public firms and BIST to report standardized float rate measures after the end of 2010, which corresponds to the end of our data period. The float rate data before the end of 2010 is not reliable; hence we do not use the float rate variable in our estimations.

coefficient of -0.041, meaning that larger targets experience lower CARs during the event period, compared with smaller targets. This finding is consistent with the size effect discussed in the extant literature.

[Table 4]

We repeat the above procedure using the bid premium measures as the dependent variables. Because the use of bid premiums reduces the sample size to 38 observations, we exclude “percent owned after transaction” and “privatization dummy” variables from the regressions. We also do not include industry and year indicators. These variables do not turn out significant in alternative specifications of the econometric model. The regression output in the fourth column, where the dependent variable is the bid premiums estimated using the hand-collected data, shows that the significant determinants of bid premiums are asset relatedness and target firm profitability. When the merging firms are in the same industry, the bid premiums are 33.7 percentage points lower than when they are in different industries. The existing studies in the literature tend to associate asset relatedness with the synergies created from mergers. Our evidence suggests that the potential synergies, if exist, are not reaped by Turkish target firms during merger negotiations. Profitable target firms receive higher bid premiums than do others: a 10 percentage point increase in profitability results in 2.4 percentage points increase in bid premiums. In the fifth column, we keep the econometric model the same as in the fourth column, except that we add the ODA indicator. The coefficient of the ODA indicator do not turn out to be significant, and the coefficients of the other control variables are similar to the coefficients in the fourth column. In the sixth column, we measure bid premiums using ODA as the event date and re-run the regression in the fourth column. The coefficients of asset relatedness indicator and target firm profitability measure change slightly but the regressions results are very similar to the one in the fourth column otherwise.

5. Conclusion

We investigate whether the deal announcement dates provided in SDC are accurate for Turkish M&A transactions. Because announcement dates are essential elements in event studies, using

correct event dates are necessary for achieving unbiased abnormal returns estimates. Following a similar methodology discussed in Mulherin and Simsir (2014), we examine the frequency of early merger-related events in Turkish M&A transactions and the potential biases that come with the exclusion of such events. 74.3% of the target firms in our sample are involved in merger-related events before the formal announcement dates provided in SDC. The market reacts significantly to the events released around ODA. In fact, the average market reaction around ODA is greater than the market reaction around DA, SDC's formal merger announcement dates. Our evidence suggests that merger-related events taking place at ODA increase the likelihood of subsequent merger announcements and therefore result in significant market reactions when released. Therefore, the formal agreement announcement at DA does not come as a surprise to the stock market.

The existing studies in the literature suggest that the wealth effects of mergers in emerging countries are lower than the wealth effects of mergers in developed markets. We infer from our findings that the difference between the estimates in these two subsamples may exist partially due to the frequency of the merger-related events taking place before the consummation of the mergers in emerging markets and SDC's coverage of these events in its dataset. When we use event windows in our event studies that capture the market reactions around ODA, we end up with significantly larger CAR estimates. Our findings also provide evidence that SDC is incomplete in terms of the bid premiums paid to target firms in Turkish M&A transactions. Bid premium estimates that are based on DA are significantly lower than the bid premium estimates based on ODA. We therefore suggest using ODA to choose benchmark prices when bid premiums are used to measure the wealth effects of mergers in Turkish transactions.

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Table 1. Types of merger-related information released at ODA

This table shows the types of merger-related news released before the formal announcement dates (DA). We filter through SDC the deals conforming to the following criterion: (i) Deals are announced between January 1st 2005 and December 31st 2011, (ii) Target firms are Turkish and public firms, (iii) The announced deals are eventually completed. If a firm appears in SDC as a target firm more than once within 5 days of the merger announcement date, we eliminate the duplicate observations. The resulting sample is searched in Stockground for their stock price data. For each deal in our sample, we search news sources such as newspapers, Istanbul Stock Exchange and Capital Markets Board of Turkey Bulletins for merger related news.

Content of merger related news at early dates	Number	Percent	Number of calendar days between ODA and DA	
			mean	median
Target announces early-stage merger negotiations	40	51.28%	145	119
Merger rumors are published in press	19	24.36%	235	261
Search for buyer is disclosed	17	21.79%	223	244
Other	2	2.56%	185	185
Total	78	100.00%		

Table 2. Data summary

This table summarizes the deal and merging firm characteristics of our sample. The sample formation steps are explained in Table 1. “Tender offer” takes a value of 1 if the deal is classified as tender offer in SDC, 0 otherwise. “Asset relatedness” takes a value of 1 if the two-digit SIC codes of the target firm and the acquirer firm matches, 0 otherwise (source: SDC). “ODA dummy” takes a value of 1 if an ODA value exists for the target firm, 0 otherwise. “Percent owned after transaction” is the percent of target firm shares that is owned by the acquirer firm after the transaction (SDC). “Privatization dummy” takes a value of 1 if the deal involves privatization of the target firm, 0 otherwise. “Public acquirer” takes a value of 1 if the acquirer is a public firm, 0 otherwise (SDC). “Foreign acquirer” takes a value of 1 if the acquirer is a non-Turkish firm, 0 otherwise (SDC). Target firm financial characteristics are shown in Panel B. The financial data are imported from Stockground and they are taken from the most recent financial statements of target firms before the merger announcement date. “Quick ratio” is (Cash & Bank Deposits + Marketable Securities) / Short-term liabilities. “P/E” ratio is the price-earnings ratio. “EBITDA/Sales” is EBITDA divided by the total sales of the target firm. “Total Assets” is the book value of assets of the target firm (in Turkish Lira). “Book leverage” is (Short-term liabilities + Long-term liabilities) / Total Assets of the target firm. “Non-financial industry” takes a value of 1 if the target firm is not in the financial industry, 0 otherwise (SDC).

Panel A. Deal characteristics	N	mean	median	min	max	standard deviation
Tender offer	105	0.076	0	0	1	0.267
Asset relatedness	105	0.381	0	0	1	0.488
ODA dummy	105	0.743	1	0	1	0.439
Percent owned after transaction	104	0.492	0.510	0.032	1	0.305
Privatization dummy	105	0.029	0	0	1	0.167
Public acquirer	105	0.390	0	0	1	0.490
Foreign acquirer	105	0.448	0	0	1	0.500
Panel B. Target characteristics						
Quick ratio	70	1.655	0.135	0.002	41.49	6.94
P/E ratio	69	19.702	8.309	-130.135	301.35	61.58
EBITDA/Sales	69	0.001	0.084	-3.936	0.941	0.718
Total Assets	70	2,010.00	285.00	13.40	43,400	5,520
Book leverage	70	0.519	0.506	0.008	1.292	0.311
Non-financial industry	105	0.724	1	0	1	0.449

Table 3. Target CARs and bid premiums around event dates

This table shows target firm abnormal returns around DA and ODA. The sample formation steps are explained in Table 1. We use a market model to estimate target CARs. In Panel A, the event date is DA. We estimate the parameters of the market model over (-819,-315). In Panel B, the event date is ODA. We estimate the parameters of the market model over (-567,-63). In both cases, we do not estimate market model parameters if the number of observations in the estimation window is less than 250. Using the parameters of the market model, we estimate the expected (or normal) returns in the event window. Abnormal returns (AR) are defined as realized returns minus expected returns. Target CARs are defined as the summation of the abnormal returns in the event window. In Panel C, the event windows are defined using both ODA and DA. For instance, CAR from ODA -1 to DA +1 accumulates abnormal returns one day before ODA to one trading day after DA. For deals not having ODA, we accumulate abnormal returns one day before DA to one day after DA. In Panel D, bid premiums are calculated as (offer price – benchmark price) / benchmark price. Bid premium (SDC) is the premium value provided in SDC. The benchmark price is based on target firm stock price 4 weeks before DA. We also use hand-collected data to calculate bid premiums. The benchmark date in bid premium (hand-collected) is 4 weeks before DA, while the benchmark date in Bid Premium based on ODA (hand-collected) is 4 weeks before ODA. Except for Panel D, t-values are based on the standardized cross-sectional test with serial dependence correction (as explained in Campbell et. al (2010)). z-values are based on Wilcoxon sign-rank tests. In both cases, the null hypothesis is that the mean or the median of the distribution is equal to zero. *** denotes significance level at the 1% level, ** for the 5% level and * for the 10% level.

Panel A. Target CARs around DA	N	mean	median	t-value	z-value
AR at trading day -5	101	0.002	0.000	1.12	0.44
AR at trading day -4	101	0.004*	0.000	1.67	0.42
AR at trading day -3	101	0.005	-0.001	1.46	0.35
AR at trading day -2	101	0.003	0.000	0.93	-0.31
AR at trading day -1	99	0.011**	0.002	2.19	0.95
AR at trading day 0	96	0.012**	0.005*	2.23	1.70
AR at trading day +1	94	0.004	-0.005	0.71	-0.22
AR at trading day +2	98	-0.008***	-0.009***	-3.15	-3.79
AR at trading day +3	99	-0.002	-0.005*	-1.19	-1.90
AR at trading day +4	100	0.001	-0.004	0.12	-0.88
AR at trading day +5	100	0.002	-0.003	0.74	-1.02
CAR over (-1,+1)	105	0.025***	0.002	2.73	1.57
CAR over (-5,+5)	105	0.033**	0.000	2.09	1.03
CAR over (-126,-5)	105	0.098***	0.056**	2.92	2.57
CAR over (-126,+5)	105	0.128***	0.082***	3.62	3.05
CAR over (-126,+126)	105	0.174***	0.084***	3.09	2.82

Panel B. Target CARs around ODA	N	mean	median	t-value	z-value
AR at trading day -5	76	0.006	-0.001	1.63	0.66
AR at trading day -4	76	0.009**	-0.001	2.40	0.25
AR at trading day -3	76	0.006	-0.003	1.41	0.06
AR at trading day -2	77	0.010**	0.003*	1.98	1.78
AR at trading day -1	77	0.020***	0.007***	3.44	3.51
AR at trading day 0	77	0.028***	0.010***	4.14	3.21
AR at trading day +1	77	0.008	-0.005	1.29	-0.24
AR at trading day +2	77	-0.001	-0.004	-0.46	-1.08
AR at trading day +3	77	0.000	-0.006	-0.35	-1.11
AR at trading day +4	77	-0.011***	-0.006***	-3.33	-3.02
AR at trading day +5	77	-0.005	-0.004	-0.85	-1.39
CAR over (-1,+1)	78	0.055***	0.024***	5.26	3.97
CAR over (-5,+5)	78	0.067***	0.037***	4.08	3.84
CAR over (-63,-5)	78	0.085***	0.042*	2.59	1.76
CAR over (-63,+5)	78	0.146***	0.083***	4.32	3.33
CAR over (-63,+126)	78	0.186***	0.053**	3.18	2.40
Panel C. Alternative event windows	N	mean	median	t-value	z-value
CAR from ODA -1 to DA +1	105	0.081***	0.028***	3.56	2.97
CAR from ODA -5 to DA +5	105	0.096***	0.020**	3.78	2.53
CAR from ODA -5 to DA +126	105	0.125***	0.009*	2.80	1.84
CAR from ODA -63 to DA +126	105	0.177***	0.060***	3.30	2.76
Panel D. Bid premiums	N	mean	median	t-value	z-value
Bid premium based on DA (SDC)	21	0.193	0.121*	1.45	1.755
Bid premium based on DA (hand-collected)	56	0.184**	0.024**	2.60	2.325
Bid premium based on ODA (hand-collected)	56	0.284***	0.119***	3.51	3.03

Table 4. OLS regressions

This table presents the OLS model explaining the CARs and bid premiums experienced by target firms. The sample formation steps are explained in Table 1. The estimation of target CARs are explained in Table 3. The estimation of bid premium measures is explained in Table 4. ODA dummy takes a value of 1 if the target firm has an ODA date. The remaining explanatory variables are explained in Table 2. “Target SIC; 0 or 1” equals 1 if the first digit of the target firm’s SIC code is either 0 or 1. The remaining industry dummies are defined similarly. “After 2009 dummy” takes a value of 1 for deals announced after (including) 2009. *** denotes significance level at the 1% level, ** for the 5% level and * for the 10% level.

	CAR over (-5,+5), relative to DA	CAR over (-5,+5), relative to DA	CAR from ODA -5 to DA +5	Bid premium (hand- collected), relative to DA	Bid premium (hand- collected), relative to DA	Bid premium (hand- collected), relative to ODA
ODA dummy		-0.0684* (-1.721)			0.273 (1.315)	
Percent owned after transaction	0.0957 (1.528)	0.0959 (1.558)	0.0299 (0.207)			
Privatization dummy	-0.0831 (-0.956)	-0.0673 (-0.783)	0.234 (1.167)			
Asset relatedness	0.0463 (1.206)	0.0386 (1.014)	-0.0836 (-0.945)	-0.337* (-1.824)	-0.310 (-1.689)	-0.399* (-1.731)
EBITDA/Sales	-0.00640 (-0.234)	-0.0172 (-0.625)	-0.00804 (-0.128)	0.239** (2.292)	0.283** (2.610)	0.250* (1.923)
ln(Total Assets)	-0.00153 (-0.142)	0.000354 (0.0331)	-0.0417* (-1.674)	-0.00183 (-0.0350)	-0.0173 (-0.326)	-0.0338 (-0.516)
After 2009 dummy	0.0360 (0.867)	0.0275 (0.669)	-0.0629 (-0.660)	0.291 (1.384)	0.334 (1.589)	0.318 (1.213)
Target SIC; 0 or 1	0.00167 (0.0273)	0.00890 (0.148)	0.110 (0.782)			
Target SIC; 2 or 3	0.0432 (0.589)	0.0406 (0.563)	0.306* (1.814)			
Target SIC; 4	0.0446 (0.454)	0.0669 (0.686)	0.307 (1.359)			
Target SIC; 5	0.0498 (0.603)	0.0622 (0.763)	0.316 (1.665)			
Constant	-0.0637 (-0.306)	-0.0485 (-0.237)	0.669 (1.396)	0.0790 (0.0729)	0.158 (0.147)	0.787 (0.582)
Observations	68	68	68	38	38	38
Adj. R-square	-0.003	0.030	-0.024	0.135	0.154	0.093