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Big Moves, Small Gains: Unpacking the Size Effect in Takeovers and Other Corporate Deals

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ABSTRACT

This study explores the size effect in financial markets, focusing on how mergers, acquisitions, and other corporate transactions influence the returns of small versus large stocks. Employing a comprehensive dataset of U.S.-listed companies from 1992 to 2021, which includes 51,780 events, this research improves upon previous methodologies by integrating detailed timing information on deal announcements and completions with stock size and return data. Our analysis shows that small stocks are often the targets of transactions that significantly enhance their returns, not limited to takeovers. We find that pre-announcement returns are consistently larger for small stocks, likely due to less analyst coverage, resulting in largely unanticipated deal news. The study deepens our understanding of the size effect, suggesting that deal-related dynamics are essential for analyzing performance variations across different stock sizes and contributing to discussions on market efficiency and the valuation effects of corporate actions.

Keywords: : takeovers, size effect, Fama-French, SMB factor

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1. Introduction on the size effect

The size effect anomaly highlighted by [Banz (1981)], whereby listed firms with low market capitalization (small firms) tend to earn higher returns not explained by their market beta, is part of the rationale for multifactor models such as [Fama and French (1993)] and [Fama and French (1996)] where the difference between the return of small firms and big firms is commonly used as a factor in explaining equity returns, namely the SMB (small minus big) factor. However, the size premium has exhibited some instability over time, with extended periods in the 1980s and 1990s when it was no longer detectable.

More recent analyses of the size effect have identified it after correcting for the additional effect of a number of factors rather than simple market beta. Analysing the SMB factor [Asness et al. (2018)] tried to dig behind the mere notion of size correcting it for the "quality" risk implicit in the firm. [Penman and Reggiani (2022)] emphasize the role the earning growth risk of small firms related to the outcome of R&D expenses in determining expected return. [1] They argue that potential growth of a firm, associated with R&D, advertising, and other expenses that may generate goodwill, is at risk of not being realized, and the risk associated with this potential needs to be compensated by extra return. To support their argument, [Penman and Reggiani (2022)] correlate firm size with the ex-post earnings growth over the subsequent two accounting years. However this exercise is affected by survivorship bias as it does not capture the realization of value brought about by the acquisition of the firm through a takeover, which is precisely the object of this study.

The implication of these studies is that it is not the size of the firm that generates return, but some underlying risk which happens to be more concentrated among small firms.

From this perspective, investigating the underlying explanation of the size effect, [Goldie (2014)] highlighted that takeover premia on small firms compared to big firms account for most of the size effect in the sample between 1963 and 2008. The methodology employed by [Goldie (2014)] consists simply in removing from the calculation of the return on portfolios of small and big firms a fixed number of returns which precede on average the delisting of the firm motivated by its acquisition. The target stocks are identified by the CRSP

[1] [Penman and Reggiani (2022)] find that Research and Development (R&D) and Advertising expenses on the firm's profit and loss account rather than firm size explain the premium. These expenses impact more heavily the Profit and Loss of small firms due to the lack of scale when they are expensed according to accounting principles, and reduce current profit, but have the potential to generate future profit. See however also [Micalizzi (2003)].

delisting code 200-399 and employs a ten-month window prior to delisting[2] to represent the period between the takeover announcement and its completion, aiming to capture the impact of takeovers on stock returns throughout the entire takeover process. [Goldie (2014)] demonstrates that when controlling for the effects of takeovers, the size effect diminishes by 40% over the entire sample period. This suggests that the premium associated with the size effect is heavily influenced by the takeover premium as firms within small capitalization portfolios are also more likely to be acquired compared to those in large capitalization portfolios. This approach represents a first approximation in the identification of the returns related to an acquisition as it does not consider the specific information relating to effects at the time of the deal announcement and the effect of failed deals. Furthermore, as [Goldie (2014)] points out, this methodology does not account for completed deals which does not result in 100% ownership by the acquiring firm since the target is never delisted. It also overlooks all the announcements which do not occur in the chosen fixed period, as well as multiple bids which may occur during the period. Nevertheless the results in [Goldie (2014)] point to an additional direction in the investigation of the size effect. The analysis we implement overcomes the problems in [Goldie (2014)] by merging precise information on the announcement and completion of Merger and Acquisition (M&A) deals with the sorting of target stocks according to size.

Similar to the one of [Goldie (2014)] is the analysis carried out by [Esterwood et al. (2023)] in the first part of their paper. In this case the sample comprises all mergers and acquisitions, of any value, that occurred between January 1, 1990, and December 31, 2020 (with an extension to January 1, 1980, included in robustness checks). The transactions selected are those in which the acquiror purchased at least 50% of the target company's shares, having held between 0% and 49% ownership in the same company during the six months prior to the announcement. The focus is on domestic transactions involving either a U.S. acquiror or target, and only those deals that reached completion are included in the analysis. Using an event window around the announcement day of -/+ 1 day for the acquiror and -30/+1 day for the target and analyzing pre-announcement daily returns for small stocks netted of the market index return, they find these are larger (roughly double if decile 1 is compared to decile 10) than the pre announcement

[2]The ten-month window used by [Goldie (2014)] is based on the analysis of the data from the SDC mergers and acquisitions database from 1981 to 2008 to determine the average length of time between takeover announcements and deal completion. See [Goldie (2014)], p.56.

abnormal return on large stocks. As these abnormal returns are pervasive in the small cap portfolios (a very high percentage of acquisition occur in the small stock space) these will influence the excess return of small stocks over big stocks and explain the size premium as previously noted by [Goldie (2014)]. However, [Esterwood et al. (2023)] do not address (nor does [Goldie (2014)]) the issue of the portion of the pre-announcement return that accrues to the same size portfolio when an acquisition occurs across the portfolio's rebalancing date. This oversight is particularly relevant when the acquired stock, due to its increased price and market capitalization, transitions to a different size portfolio. Additionally, they do not consider the post-announcement return, which, when focusing on deals that are safely completed and ex post selected[3], resembles a fixed-income return. Finally, pre-anouncement abnormal returns are common to a larger class of deals (not just takeovers) which impact overwhelmingly small stocks, like the acquisition of minority interests, and buyback of own shares (both excluded in [Goldie (2014)] and [Esterwood et al. (2023)] studies) which also exibit a significantly higher average return when the underlying asset is a small stock compared to when it is a large stock. This paper extends the analysis of [Esterwood et al. (2023)] to deals of all forms while accounting for the rebalancing of the small stocks portfolio.

One possible explanation of the higher deal returns around the announcement for small stocks is that they are not well covered by sell and buy side analysts and the acquisition of small stocks is not anticipated by the market, resulting in a more sudden jump in the value of the stock. [Bennet and Dam (2021)] show that under rational expectation the value of any stock should include a component related to the probability of becoming the target of an acquisition at a premium over the prevailing market price. They show that the more information about the acquisition is in the market the smaller the premium paid by the bidder upon the announcement, as the stock valuation has already incorporated a portion of the upside. An alternative is that the holding of a small stock are more concentrated and the bidder must pay a higher premium to convince a single entrepreneur to give up control. Many acquisitions are related to industry structure, concentration of R&D in small firms, and potential gains arising from the synergies after acquisitions ([Cremers et al. (2009)]).

The plan of the paper is as follows: Section 2 describes takeovers and other deals; Section 3 describes the data and methods; Section 4 looks at decile portfolios sorted by size and analyses

[3]While an ex ante stock selection is possible, most results in both [Cremers et al. (2009)] and [Esterwood et al. (2023)] are obtained in sample, that is with full knowledge of the occurrence and outcome of the deal.

the return of target stocks of different market cap; Section 5 looks into the impact of takeovers and other deals on the SMB factor; Section 6 contains the conclusions.

2. Takeovers and other deals

While previous authors focused on a specific type of deal, e.g. a takeover aimed at merging the target or at acquiring control of the company, we recognize that other type of deals may impact significantly on stocks return. An incremental interest may be acquired at a premium without the target company being delisted or merged. Another very common deal on listed stock is the buyback of own shares by the company. The rationale is to offer shareholders some consideration, often in lieu of dividend. For this reason, buybacks are very often carried out at a premium over current market price. Sometimes a company may offer a deal simply to change and optimize its capital structure (e.g. offer new securities with different rights in exchange for existing stock).

Takeovers and buybacks are the most studied deals. Takeovers, whether aimed at delisting the target firm, or partial bids aimed at increasing the bidder stake in the target firm, imply a premium over the market price of the target stock in order to convince the holders to deliver to the tender. The consideration may be paid in cash, or by exchanging the target stock with the bidder stock, or more rarely other securities combinations including cash. Tender offers imply a regulatory process and an official announcement of the bid. Offers are usually anticipated by the market though, and major increases in the target stock price are observed before the official announcement, whether because of intentions disclosed by the bidder or target, or because of information leaks and insider trading (see [Jarrel and Poulsen (1989)], [Asquith (1983)], [Keown and Pinkerton (1981)]). After the announcement, merger arbitrage (or risk arbitrage) strategies aim at cashing the premium offered by the bidder by acquiring the target stock and, where necessary, short selling the securities offered in exchange. If the deal succeeds the market price of the target stock converges to the offered price (or the spread against the securities offered in exchange goes to zero). However, with some small probability, the deal may be unsuccessful resulting in a loss on the holding of the target stock. There is a vast literature on the profitability of risk arbitrage strategies associated with a bid on a listed stock, as well as on the impact of the bid on the acquairor share price, which is usually of a lesser order of magnitude (see among

others, [Mitchell and Pulvino (2001)] [4], [Baker and Savasoglu (2002)], [Cornelli and Li (2002)], [Van Tassel (2016)]). It is much more difficult to implement risk arbitrage strategies on partial tenders, as the quantity ultimately purchased by the bidder may be unknown [Gomez (2024)].

Compared to a takeover, which is a transaction with a regulated structure, a buyback is generally resolved by the board of directors of the company and executed privately in the market. The terms of the buyback, i.e. the number of shares to be purchased and the term over which it will be done may be more varied. In many cases the number of shares may be known but not the timing over which the transaction will be fully completed. The literature on buybacks has highlighted that, similarly to other bids, the announcement of a buyback has on average a positive impact on the company share price ([Ikenberry et al. (1995)], [Chan et al. (2004)], [Grullon and Michaely (2004)], [Manconi et al. (2018)]). The motivations for a higher return on buybacks include signals on the undervaluation of the stock and tax based motives. Still the transaction may be anticipated by the market resulting in pre announcement abnormal returns.

3. Data and methodology

We onsider deals announced between July 1992 and June 2022. We analyze the impact of different types of deals by exploiting the information on the different forms of M&A deals contained in the LSEG (formerly Refinitiv) database which cathegorizes deals as follows:

(1) Acquisition of Partial Interest: deals in which the acquiror holds less than 50% and is seeking to acquire less than 50%, or the acquiror holds over 50% and is seeking less than 100% of the target company's stock.
(2) Acquisition of Remaining Interest: deals in which the acquiror holds over 50% and is seeking to acquire 100% of the target company's stock.
(3) Acquisition of Majority Interest: the acquiror must have held less than 50% and be seeking to acquire 50% or more, but less than 100% of the target company's stock.
(4) Acquisition of Assets: deals in which sources state that 'certain assets' of a company, subsidiary, or division are acquired.
(5) Merger: A combination of business takes place or 100% of the stock of a public or private

[4] [Mitchell and Pulvino (2001)] show that risk arbitrage strategies have low unconditional correlation with the market index, but the correlation increases when the market goes down.

company is acquired.

(6) Buyback: deals in which the company buys back its equity securities or securities convertible into equity, either on the open market, through privately negotiated transactions, or through a tender offer. Board authorized repurchases are included.

(7) Exchange Offer: deals in which a company offers to exchange new securities for its equity securities outstanding, securities convertible into equity, or non-convertible debt securities. Also includes deals in which an existing loan is replaced with a new facility during a debt restructuring.

Few instances of other cases (e.g. recapitalization or acquisition of a split company) show up in the databases and are collectively treated as uncategorized. Deal types (1)-(2)-(3) and (5) fall within the tender offer scheme.

The information considered for each deal in the database are:

- Target CUSIP
- Announcement Date
- Effective Date
- Form of the deal
- Deal Status

The Status of a deal provides additional information. An announced deal may be labeled as "Intended" before it is launched. Multiple entries may occur for the same acquisition. Entries include when the deal was first mentioned ("Rumored") when the deal was formally announced, when the offer price was modified, and when a residual bid was launched. When an acquisition was successful, the deal status is labeled as "Completed" and the final date for which it was effective is reported. Other types of deals may be labeled as "Completed", e.g. share buybacks, when there is a final date. Other entries for the deal status include "Seeking Buyer", and "Pending" while the bid is in progress. Flags "Withdrawn" and "Intent Withdrawn" indicate the end of the bid or potential bid. Undefined news appear with the label "Status Unknown". All of this information will potentially affect the target stock return, whether positively or negatively. So the return of the stocks included in the different portfolios analyzed are considered affected by a deal from the first month information is reported to the month of the last information available on the same deal (e.g. completion of the deal).

Data on deals announced during the sample period in which the target was a US listed company are considered, for a total of 51,780 events. Table 1 describes the number of deals of each form and, in the second column, reports the subset with deal status equal to "Completed".

Deals are identified in the database by a unique deal number, and for each entry the target is identified by the 6-digit CUSIP code, which identifies the listed company. In order to link deal data with monthly securities returns, the CUSIP codes from the deals database are matched with the first 6 digits of the CRSP-Compustat 8-digit CUSIP security codes, with the implication that a deal on a listed company is assumed to apply to all of the securities of the same company.

3.1. *Assessing the Impact of takeovers and other deals*

Takeovers and other transactions impact the return of small and big stocks differently.

To assess the impact of these transactions on the size premium it is necessary to consider returns which can be attributed to a deal. These include (i) the post announcement return, which is typically exploited by risk arbitrageurs, and (ii) the pre announcement return which arises from news, or information leaks, on the impending bid which cause the stock price to increase prior to the official announcement.

Post announcement returns are easily identified as they occur between the official announcement date and the date the bid closes or it is withdrawn. Pre-announcement returns instead occur in a varying time window before the official announcement during which abnormal positive returns are typically observed. An assessment of the return on a stock which becomes the target of a bid must take into consideration the two components.

In order to form size-based portfolios, a stock is assigned every year to a portfolio according to its market capitalization at the end of June. Then a second filter is applied to determine whether they belong also to the deal window. This will happen under certain conditions: if a deal is announced while the target stock is part of the portfolio; if the deal is announced when the stock is no longer included but returns within a reasonable pre-announcement period are included in the portfolio; or if the deal is announced before the stock is included in the portfolio but the deal completes (or fails) after the stock is included in the portfolio. The deal window is defined as starting before the deal announcement and ending, for completed deals, on the month of the effective date, or, if earlier, on the last month the stock is in the portfolio. The effective date of a completed deal may be the same as the month of the announcement date. For

deals that were not completed, there is no effective date. The deal window ends the same month of the announcement date. Unless other ways stated, results are presented starting from the month of the announcement[5]. The methodology according to which the return on a target stock subject to a deal is identified and eventually eliminated from a portfolio which is rebalanced on a periodical basis is taken from [Roma (2022)]. When using monthly returns, a pre-announcement return component will necessarily be included for the month in which the bid is announced. For monthly returns therefore both the pre- and post-announcement element of return will be present.

4. Decile portfolios sorted by size

In order to analyze the effect of takeovers on the size effect, stocks are sorted into ten portfolios according to size using the break points of the univariate sort by size provided by Kenneth French[6]. The re-balancing occurs at the end of June each year from 1992 to 2022. Then the return series for the securities entering the portfolio are intersected with the deals on the same stocks reported by LSEG in the period.

Table 2 reports the number of deals of each form on stocks which belong to each size sorted decile in the sample period. We include deals with status different from "Completed", e.g. failed acquisitions or share repurchase programs for which no ending period is specified, in order to consider deals of all forms. Table 2 presents key descriptive statistics of the returns that, for each decile portfolio, are in the deal window for different forms of deals.

Average returns on deals are significantly different from zero. The average return in the deal window is higher – for all deals – for stocks in the first size decile, with the only exception of the return of the acquisition of assets which yields a negative return for almost all deciles portfolios. Returns on takeovers are higher for small stocks, in line with the findings of [Goldie (2014)]. The average monthly return on mergers involving first decile stocks as a target is 9.2% with a t-stat of 40. Surprisingly the most numerous deals are buybacks. Those on stocks that are in

[5]Increasing the pre-announcement window by starting n months before the announcement slightly increases the number of deals alongside the number of returns (by a maximum of n times the number of deals) for consideration. Also, assuming deal announcement are uniformly distributed during the month, starting from the month of the announcement includes on average a pre-announcement period of 10 trading days.
As in [Esterwood et al. (2023)], when multiple news occur on a stock in the same period a choice must be made on the deal window. We use the deal window resulting from joining the window of the different news/deals.

[6]Kenneth French Data Library, https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

first decile at the time of the announcement have an average monthly return of 2.7% (t-stat 17.3), double that of buybacks on stocks in the 10th decile.

If deals of all forms are considered, Table 3 reports the descriptive statistics of returns due to a deal on stocks belonging to the ten portfolios sorted by size at the time of the announcement. Returns are computed from the month of the first news available on a deal. Deal returns are much larger for small stocks than for big stocks on average. The monthly average return on a small stock subject to a deal belonging to the first decile portfolio is 6.6% against 1.5% on average in the case of big stocks in the 10th decile[7]. The number of returns that can be attributed to a deal decreases with the size of the target firm. This larger return does not imply these stocks are more likely to be taken over. In percentage, deal returns represent only 2.6% of the number of returns used to construct the first decile portfolio, while they represent about 10% of the returns in the 10th decile portfolio. Moreover, while the size premium has been volatile over the years, the difference between the average return in the deal window on small and big stocks has been a regular feature in every year of our sample. Table 12 hows that, with two exceptions, in every year of the 1992-2022 sample the average return on deals on small stocks has been significantly higher than the return on deals on big stock.

Most of the return occur in the month of the announcement. However stocks of different sizes are followed with different attention. It is interesting that, in the case of deals on large stocks, takeovers are preceded by corporate news and often some other deal on the stock. Official announcement of a completed deal on big stocks (which are mainly successful takeovers) are preceded by news of other deals about 50% of the times, against 25% for small stocks, see Table 4. Big and small stocks are subject by different coverage by sell side and buy side analysts and the press. Deals on large stocks are anticipated by a richer news flow, both in terms of of the average number of entries in the database anticipating the launch of the bid, and the median number of anticipatory entries is four against one for small stocks. News occur over 30 days prior to the official announcement in almost all the cases. The percentage of deals which are withdrawn is instead similar across sizes. As takeovers on big stocks are anticipated to a larger extent by corporate activity, following [Bennet and Dam (2021)] a plausible conjecture is that the effect in the month of the official announcement is then smaller.

[7]For transparency the data presented are unwinsorized. Winsorization at 1% however does not significantly affect the results.

4.1. *The size effect excluding deals*

If we test for a statistically significant alpha coefficient on the excess returns of the decile portfolios, no significance is detected by using a single factor market model. When a FF 3 factor model [Fama and French (1993)] - Table 5 - or a FF 5 factor model [Fama and French (2015)] is adopted - Table 7 - instead, a significant alpha coefficient appears only for the first decile portfolio, which would be evidence of a size effect.
When the deal returns are removed from the construction of the decile portfolios, the statistically significant intercept of the FF 3 factor model disappears - Table 6 - while the intercept for the FF 5 factor model decreases from 0.48% to 0.35% with borderline significance - Table 8 - as a result of removing the small number of returns (2.6%) attributed to a deal.

A different picture emerges when a 5 factor model including the 3 FF factors and the Quality and Momentum variables proposed by [Asness et al. (2018)] are employed. In this case not only the intercept of excess returns on the first decile portfolio but also the intercept of excess on the big stocks portfolios are significant - Table 9- . When deal returns are removed, the significance of the intercept on the first decile portfolio is still strong - Table 10 - .[8][Asness et al. (2018)] concern is to detect an abnormal return on the SMB factor. We turn to this in the next Section.

5. Bivariate sort

5.1. *Return on target stocks in the SMB portfolio*

The size effect is also measured in terms of the average return of the SMB (small minus big) factor. In the definition of SMB the stocks are sorted by size and then by their book-to-market (BTM) ratio into Growth, Neutral and Value according to the 30% and 70% percentiles. Then SMB is computed as the average of Small Growth, Small Neutral, and Small value minus the average of Big Growth, Big Neutral, and Big Value. This procedure eliminates those stocks for

[8]The "quality" factor QMJ is highly negatively correlated with the market index and has in the sample a mean of 0.457% on a monthly basis. Hence a portfolio of the leveraged market index and QMJ produces a very high and significant alpha, about 14% annualized,as evidenced by the regression:

$$\text{mkt-rf}=1.162 \;-\; 0.988\ \text{QMJ} + \epsilon$$

$$(\text{t}=6.39) \quad (\text{t}=-11.8)$$

R^2=0.374

which the BTM ratio is not available. The differential impact of takeovers on stocks of different size will impact the return of the SMB factor and its average (the size premium).

From Table 11 it is evident that returns on small stocks in the SMB portfolio which are subject to a deal have an average which is almost double that returns on large stocks which are subject to a deal. If instead returns are selected from the month following the announcement date, the pre-announcement period is completely excluded, and the return does not even include the few pre-announcement days that physiologically occur within the month in which the announcement takes place. Once the pre-announcement returns are totally removed, for completed deals the average return on the deal is very similar for small and large stocks, Table 13. So the difference in deal returns on big and small stocks seems to be due to the pre-announcement returns. Figures 1, 2, and 3 show the average return in the months preceding and following the announcement for completed deals on small and big stocks. It is evident that in the month of the official announcement the average return on small targets is visibly higher than in the case of large targets, and it is double (over 12% agains 6%) for value stocks. Also in the case of large targets the average return in the six months preceding the official announcement seems to be higher, which could be consistent with the idea that the deals have been to a larger extent anticipated by the market.

5.2. *Effect of target returns on SMB*

The returns on small targets are larger than those on large targets. This difference should have a positive impact on the return of SMB as well.

To assess the impact, value weighted SMB factor was reconstructed starting from the CRSP - Compustat monthly returns and double sorting of stocks according to size and BTM. The resulting replicated SMB factor (SMBR) has a correlation with the SMB factor of the Kenneth French Data Library of 0.96 and explains it with an adjusted R^2 equal to 0.92.

Over the period 1992-2021 the average of the replicated SMBR factor is equal to 1.47% (t=15.3), but it decreases to 0.91% (t=9.5) once returns related to completed deals are removed.

5.3. *Regression results*

[Asness et al. (2018)] assess the size effect through the statistical significance of the intercept of a specific factor model applied to SMB. In particular, they add to the FF 3 factor model a "quality factor" and a version of the momentum factor. The SMB factor becomes the dependent variable, and they show that a significant positive intercept can be detected on the SMB return after accounting for other factors. If the [Fama and French (2015)] RMW (robust minus weak) factor is used instead of the quality factor results are less strong.

We carried out the same analysis using as dependent variable the replicated SMB factor (SMBR) and the same explanatory variables used by [Asness et al. (2018)] (the market and HML factor from the Kenneth French Data Library together with the quality and momentum factors from [Asness et al. (2018)]), and obtained essentially the same result, that is the presence of a size anomaly evidenced by a positive and statistically significant intercept, column 1 of Table 15 . Then we recomputed the SMB factor excluding returns associated with a deal on the stocks that are part of the SMB portfolio. Columns 2 and 3 of Table 15 present results for two different versions of SMB without deal returns SMBNO, which exclude returns on all deals starting with the month of the announcement, and SMBNOC3 which excludes returns on completed deals only, starting 3 months before the announcement.

Excluding deal returns from the SMB factor does not make much difference using the [Asness et al. (2018)] regressors, as we still get a positive and statistically significant intercept although smaller. If however the specific Quality and Momentum factors used by [Asness et al. (2018)] are substituted by the RMW and CMA variables of the 5 factors FF model, Table 14 shows that no significant intercept is detected. We then constructed excess returns over the risk free rate on the long and short component of SMBR, and tested separately whether a significant positive intercept can be detected after accounting for other factors. Similarly to the findings for decile sorted portfolios, using the quality factor results in a statistically significant positive intercept for the excess return on both small and big stocks, see also Table 9. We then removed deal returns and checked for any difference in the regression results. Table 16 shows that the alpha of the return of the small stocks portfolio in excess of the risk free rate is no longer significant when deal returns are removed, even using the [Asness et al. (2018)] factors.

6. Conclusion

This study shows that small stocks are often the targets of various deals that significantly boost their returns. Differently from previous research we consider deals of all forms, not just takeovers aimed at acquiring control and merging the target company. We show that all forms of deal have a different impact on stocks of different market capitalization. Using data for the same sample period analysed by Easterwood et al. (2023), our research significantly advances Goldie's (2014) methodology by meticulously merging detailed information on deal announcements and closings with size and return data. Moreover, with the benefit of hindsight, we can attribute specific returns to these deals. It is critical to consider the possibility that stocks move to a different size category when affected by price-enhancing deals. Our results also highlight the crucial role of pre-announcement returns, which are consistently larger for small stocks and may contribute to the sudden jump in value, particularly because these stocks receive less analyst coverage, making deal news largely unanticipated. When deal-specific returns are isolated and we compute the returns of size-sorted portfolios without these deal returns, it becomes difficult to detect a size effect, and only by including a quality factor does the size effect become apparent. This finding deepens our understanding of the size effect and demonstrates that deal-related dynamics are integral to understanding performance variation across stock sizes contributing to the broader discourse on market efficiency and the valuation effects of corporate transactions

Table 1.: Number of deals by deal form and deal status

Cathegory	All deals	Completed
Acq. Part. Int.	9072	7128
Acq. Rem. Int.	653	485
Acq. Maj. Int.	2002	1464
Acq. of Assets	669	425
Merger	14026	10169
Buyback	24868	4233
Exchange Offer	354	230
Uncategorized	136	95
Total	51780	24229

The Table describes the number of deals of each cathegory on US listed targets in the sample period 1992-2022 and, in the second column, reports the subset with deal status equal to "Completed".

Table 2.: The Table breaks down by size decile the deals reported in the period 1992-2022 and shows their return

Categ.	Acq. Part. Int.	Acq. Rem. Int.	Acq. Maj. Int.	Acq. of Assets	Merger	Buyback	Exchange Offer
Decile 1							
N. of deals	2898	213	560	100	4840	5871	98
perc. in Dec	48.3	43.4	66.0	59.2	44.2	29.1	34.0
Mean return	0.072	0.066	0.081	-0.063	0.091	0.027	0.075
t-stat	14.7	9.9	3.7	-2.4	40.4	17.3	1.9
Decile 2							
N. of deals	965	67	89	20	1627	2560	45
perc. in Dec	16.1	13.6	10.5	11.8	14.9	12.7	15.6
Mean return	0.048	0.046	0.052	0.089	0.080	0.013	-0.007
t-stat	7.1	4.9	2.2	0.7	26.0	6.3	-0.3
Decile 3							
N. of deals	588	48	62	9	1036	1826	23
perc. in Dec	9.8	9.8	7.3	5.3	9.5	9.0	8.0
Mean return	0.032	0.043	0.042	-0.055	0.069	0.010	-0.026
t-stat	4.9	4.5	2.0	-0.4	21.7	4.0	-1.5
Decile 4							
N. of deals	372	46	25	6	810	1607	23
perc. in Dec	6.2	9.4	2.9	3.6	7.4	8.0	8.0
Mean return	0.024	0.075	0.095	-0.008	0.072	0.011	-0.076
t-stat	2.9	4.7	1.8	-0.2	18.4	4.6	-2.3
Decile 5							
N. of deals	298	34	29	10	653	1489	19
perc. in Dec	5.0	6.9	3.4	5.9	6.0	7.4	6.6
Mean return	0.032	0.066	0.044	-0.011	0.067	0.009	0.133
t-stat	3.4	4.6	3.3	-0.4	17.2	3.9	1.4
Decile 6							
N. of deals	220	27	18	10	555	1335	17
perc. in Dec	3.7	5.5	2.1	5.9	5.1	6.6	5.9
Mean return	0.034	0.031	0.061	0.012	0.063	0.010	-0.047
t-stat	3.1	3.4	2.2	0.2	16.5	4.3	-1.5
Decile 7							
N. of deals	178	31	26	5	485	1322	11
perc. in Dec	3.0	6.3	3.1	3.0	4.4	6.5	3.8
Mean return	0.012	0.036	0.025	-0.063	0.048	0.014	0.032
t-stat	1.2	3.8	1.7	-0.7	14.6	7.0	2.1
Decile 8							
N. of deals	172	11	20	2	399	1324	16
perc. in Dec	2.9	2.2	2.4	1.2	3.6	6.6	5.6
Mean return	0.030	0.100	0.002	-0.103	0.048	0.015	0.026
t-stat	2.7	2.9	0.1	-4.0	12.8	7.4	1.8
Decile 9							
N. of deals	169	7	14	3	318	1436	12
perc. in Dec	2.8	1.4	1.6	1.8	2.9	7.1	4.2
Mean return	0.020	0.021	-0.029	0.054	0.042	0.016	0.140
t-stat	2.4	1.4	-1.6	0.9	11.2	10.2	1.9
Decile 10							
N. of deals	141	7	6	4	232	1437	24
perc. in Dec	2.3	1.4	0.7	2.4	2.1	7.1	8.3
Mean return	0.000	0.044	-0.005	0.085	0.032	0.013	0.029
t-stat	0.0	2.0	-0.0	1.3	8.1	12.6	3.8
Tot N. of de	6001	491	849	169	10955	20207	288

The Table reports the number of deals of each cathegory on US listed stocks targets which belong to each size-sorted decile in the sample period 1992-2022. The row labeled "perc. in Dec" reports the percentage of [returns??] attributed to the deals

Table 3.: Descriptive statistics of monthly deal returns included in the decile portfolios - all announcements

decile	mean	median	variance	s.d.	N	%
1	0.066	0.015	0.078	0.279	30473	2.6%
2	0.046	0.014	0.039	0.198	11331	3.3%
3	0.038	0.012	0.028	0.168	7432	3.4%
4	0.037	0.013	0.028	0.168	5781	3.6%
5	0.032	0.014	0.025	0.158	5436	4.3%
6	0.031	0.014	0.021	0.144	4887	4.6%
7	0.025	0.013	0.016	0.125	5217	5.5%
8	0.026	0.015	0.015	0.124	4320	4.9%
9	0.021	0.016	0.012	0.107	4704	6.0%
10	0.015	0.015	0.008	0.091	6824	10.1%

The table reports the descriptive statistics of returns on stocks which belong to the 10 decile portfolios sorted by size, denoted p1-p10, and which are the target of a deal within the deal window from the month of the announcement to the month of deal completion or the last month in which they are in the size portfolio, whichever com first. The last column reports the percentage of the returns affected by a deal over the total number of returns which are included in the return of the portfolio indicated in the column N.

Table 4.: News before a deal is officially announced

decile	n. deals	n. compl.	perc. antic.	antic. by 1-30 dd	news per deal	median	n. withdr.
1	14592	7911	0.25	0.01	1.8	1	1188
2	5379	2775	0.18	0.01	1.6	1	297
3	3597	1836	0.18	0.01	1.4	1	196
4	2892	1305	0.17	0.01	1.6	1	153
5	2542	1109	0.22	0.02	1.5	2	159
6	2185	907	0.21	0.02	1.6	1	124
7	2059	830	0.24	0.01	1.8	1	114
8	1946	644	0.28	0.01	2.0	2	142
9	1961	602	0.36	0.01	2.2	1	152
10	1854	540	0.48	0.02	2.6	4	160

The table reports, for deals in a decile portfolio, the number of deal news reported in the database, the number of completed deals, the fraction of completed deals for which news on the corporate activity of the company were available at least one day prior to the official announcement, the fraction of completed deals for which news were available between 30 days and one day prior to the announcement, the average number of news on anticipared deals reported in the database, the median number of news, the number of deals withdrawn.

Table 5.: Regression of the 10 decile portfolio excess returns on the FF 3 factors - 1992-2022

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
mktrf	0.810***	0.961***	1.006***	1.025***	1.061***	1.030***	1.059***	1.061***	1.027***	1.032***
	(20.18)	(35.82)	(34.71)	(35.44)	(31.72)	(29.55)	(31.78)	(32.73)	(29.95)	(39.44)
smb	0.781***	0.776***	0.696***	0.647***	0.544***	0.405***	0.295***	0.211***	0.0450	-0.173***
	(11.54)	(13.56)	(11.61)	(11.83)	(9.87)	(7.17)	(5.31)	(4.29)	(1.11)	(-5.22)
hml	0.156*	0.245***	0.256***	0.265***	0.240***	0.179***	0.204***	0.131**	0.150***	0.0632
	(2.40)	(5.73)	(5.58)	(5.89)	(4.08)	(3.69)	(4.52)	(3.18)	(3.54)	(1.81)
_cons	0.323*	-0.0525	-0.0756	-0.0893	-0.00935	0.0297	0.0284	0.00332	0.0619	-0.0224
	(2.08)	(-0.55)	(-0.80)	(-0.95)	(-0.09)	(0.28)	(0.29)	(0.03)	(0.65)	(-0.30)
N	360	360	360	360	360	360	360	360	360	360
adj. R^2	0.729	0.902	0.910	0.910	0.883	0.881	0.890	0.892	0.881	0.927

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In the Table the dependent variables are the excess percentage return over the risk free rate of the 10 portfolios sorted by size; the explanatory variables are the factors of the Fama French (1993) model; mktrf is the excess return of the market index over the risk free rate, smb is the small-minus-big variable, hml is the high-minus-low variable, cons denotes the constant; t-statistics are computed with robust standard errors.

Table 6.: Regression of the 10 decile portfolio excess returns excluding deals on the FF 3 factors - 1992-2022

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
mktrf	0.812***	0.962***	1.011***	1.026***	1.060***	1.035***	1.065***	1.061***	1.029***	1.034***
	(19.94)	(35.45)	(34.52)	(35.27)	(31.94)	(29.48)	(31.71)	(32.30)	(29.97)	(38.96)
smb	0.784***	0.776***	0.699***	0.649***	0.546***	0.402***	0.299***	0.213***	0.0489	-0.172***
	(11.50)	(13.85)	(11.33)	(11.88)	(10.16)	(7.17)	(5.42)	(4.29)	(1.24)	(-5.24)
hml	0.159*	0.243***	0.261***	0.266***	0.239***	0.180***	0.200***	0.134**	0.151***	0.0511
	(2.45)	(5.64)	(5.69)	(5.88)	(4.07)	(3.70)	(4.41)	(3.21)	(3.61)	(1.43)
_cons	0.188	-0.172	-0.178	-0.190*	-0.101	-0.0701	-0.0622	-0.0747	-0.00662	-0.0811
	(1.20)	(-1.78)	(-1.85)	(-2.01)	(-0.93)	(-0.65)	(-0.63)	(-0.77)	(-0.07)	(-1.07)
N	360	360	360	360	360	360	360	360	360	360
adj. R^2	0.728	0.900	0.908	0.910	0.883	0.880	0.889	0.889	0.881	0.924

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In the Table the dependent variables are the excess percentage return over the risk free rate of portfolios sorted by size, computed excluding returns which can be attributed to a deal; the explanatory variables are the factors of the Fama French (1993) model; mktrf is the excess return of the market index over the risk free rate, smb is the small-minus-big variable, hml is the high-minus-low variable, cons denotes the constant; t-statistics are computed with robust standard errors.

Table 7.: Regression of the 10 decile portfolio excess returns on the FF 5 factors - 1992-2022

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
mktrf	0.760***	0.933***	0.975***	0.993***	1.029***	1.000***	1.037***	1.040***	1.012***	1.010***
	(17.19)	(30.12)	(30.18)	(30.76)	(27.23)	(27.35)	(29.92)	(29.58)	(28.73)	(36.20)
smb	0.654***	0.750***	0.698***	0.652***	0.545***	0.421***	0.302***	0.214***	0.0483	-0.186***
	(9.65)	(14.91)	(14.09)	(14.03)	(9.79)	(8.77)	(6.17)	(4.66)	(1.18)	(-5.60)
hml	0.218**	0.307***	0.343***	0.358***	0.330***	0.275***	0.268***	0.192***	0.194***	0.117***
	(2.67)	(6.63)	(6.87)	(8.02)	(5.74)	(6.22)	(5.33)	(4.42)	(4.58)	(3.95)
RMW	-0.336***	-0.0832	-0.0198	-0.0129	-0.0225	0.0145	-0.000884	-0.00979	-0.00410	-0.0486
	(-4.43)	(-1.35)	(-0.31)	(-0.22)	(-0.32)	(0.26)	(-0.02)	(-0.19)	(-0.09)	(-1.16)
CMA	0.00777	-0.113	-0.205*	-0.223*	-0.212*	-0.243*	-0.158	-0.147	-0.107	-0.110
	(0.05)	(-1.17)	(-2.26)	(-2.45)	(-2.19)	(-2.56)	(-1.80)	(-1.64)	(-1.46)	(-1.65)
_cons	0.481**	0.0186	-0.00910	-0.0212	0.0601	0.0903	0.0727	0.0488	0.0935	0.0315
	(2.75)	(0.16)	(-0.08)	(-0.19)	(0.48)	(0.79)	(0.69)	(0.47)	(0.94)	(0.39)
N	360	360	360	360	360	360	360	360	360	360
adj. R^2	0.744	0.903	0.912	0.913	0.886	0.886	0.892	0.894	0.882	0.928

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In the Table the dependent variables are the excess percentage return over the risk free rate of portfolios sorted by size, computed excluding returns which can be attributed to a deal; the explanatory variables are the 5 factors of the Fama French (2015) model; mktrf is the excess return of the market index over the risk free rate, smb is the small-minus-big variable, hml is the high-minus-low variable; RMW is the robust minus weak factor; CMA is the conservative minus aggressive investment factor; cons denotes the constant; t-statistics are computed with robust standard errors.

Table 8.: Regression of the 10 decile portfolio excess returns excluding deals (all announcements) on the FF 5 factors - 1992-2021

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
mktrf	0.762***	0.933***	0.980***	0.993***	1.027***	1.003***	1.043***	1.041***	1.014***	1.010***
	(17.04)	(29.85)	(29.93)	(30.50)	(27.36)	(27.19)	(29.61)	(29.38)	(28.85)	(35.87)
smb	0.656***	0.748***	0.702***	0.652***	0.543***	0.417***	0.303***	0.217***	0.0497	-0.190***
	(9.64)	(14.91)	(13.91)	(13.92)	(9.85)	(8.70)	(6.20)	(4.67)	(1.22)	(-5.61)
hml	0.222**	0.307***	0.348***	0.360***	0.329***	0.279***	0.264***	0.192***	0.193***	0.107***
	(2.71)	(6.56)	(7.06)	(8.09)	(5.77)	(6.33)	(5.27)	(4.29)	(4.63)	(3.48)
RMW	-0.339***	-0.0881	-0.0153	-0.0183	-0.0330	0.00885	-0.00628	-0.00598	-0.0100	-0.0627
	(-4.46)	(-1.45)	(-0.24)	(-0.30)	(-0.47)	(0.16)	(-0.12)	(-0.12)	(-0.21)	(-1.49)
CMA	0.00684	-0.117	-0.207*	-0.225*	-0.207*	-0.249**	-0.155	-0.141	-0.0992	-0.109
	(0.05)	(-1.21)	(-2.25)	(-2.46)	(-2.15)	(-2.63)	(-1.77)	(-1.54)	(-1.35)	(-1.63)
_cons	0.349*	-0.0970	-0.113	-0.119	-0.0273	-0.00517	-0.0161	-0.0328	0.0257	-0.0208
	(1.98)	(-0.83)	(-0.99)	(-1.09)	(-0.22)	(-0.04)	(-0.15)	(-0.31)	(0.26)	(-0.25)
N	360	360	360	360	360	360	360	360	360	360
adj. R^2	0.742	0.902	0.910	0.913	0.886	0.885	0.890	0.890	0.881	0.926

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In the Table the dependent variables are the excess percentage return over the risk free rate of portfolios sorted by size; the explanatory variables are the 5 factors of the Fama French (2015) model; mktrf is the excess return of the market index over the risk free rate, smb is the small-minus-big variable, hml is the high-minus-low variable; RMW is the robust minus weak factor; CMA is the conservative minus aggressive invetment factor; t-statistics are computed with robust standard errors.

Table 9.: Regression of the 10 decile portfolio excess returns on the FF 3 factors and quality factor - 1992-2022

	(1) d1evrf	(2) d2evrf	(3) d3evrf	(4) d4evrf	(5) d5evrf	(6) d6evrf	(7) d7evrf	(8) d8evrf	(9) d9evrf	(10) d10evrf
mktrf	0.558***	0.826***	0.887***	0.924***	0.952***	0.938***	0.953***	0.965***	0.939***	0.959***
	(10.48)	(24.15)	(27.81)	(28.87)	(28.52)	(27.29)	(28.68)	(31.52)	(30.55)	(42.96)
smb	0.606***	0.719***	0.665***	0.623***	0.524***	0.383***	0.253***	0.179***	0.0140	-0.193***
	(10.28)	(16.61)	(15.52)	(15.33)	(12.90)	(8.18)	(5.11)	(4.14)	(0.40)	(-7.12)
hml	0.0840	0.178***	0.183***	0.201***	0.165**	0.121*	0.150***	0.0772	0.101*	0.0191
	(1.13)	(3.77)	(4.03)	(4.38)	(2.98)	(2.51)	(3.40)	(1.94)	(2.54)	(0.59)
qmj	-0.588***	-0.204***	-0.125**	-0.0989*	-0.0880	-0.0900	-0.153**	-0.122**	-0.116*	-0.0810*
	(-7.87)	(-4.49)	(-2.77)	(-2.07)	(-1.59)	(-1.69)	(-3.25)	(-2.92)	(-2.59)	(-2.10)
umd	-0.157*	-0.181***	-0.207***	-0.183***	-0.214***	-0.167***	-0.147***	-0.149***	-0.133***	-0.124***
	(-2.38)	(-3.81)	(-5.51)	(-4.83)	(-5.93)	(-5.31)	(-5.37)	(-5.80)	(-4.27)	(-6.42)
_cons	0.878***	0.245*	0.186	0.134	0.231*	0.233*	0.261**	0.215*	0.256**	0.139*
	(5.03)	(2.19)	(1.90)	(1.35)	(2.11)	(2.33)	(2.74)	(2.40)	(2.77)	(2.08)
N	360	360	360	360	360	360	360	360	360	360
adj. R^2	0.801	0.932	0.942	0.934	0.914	0.904	0.912	0.914	0.900	0.944

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In the Table the dependent variables are the excess percentage return over the risk free rate of portfolios sorted by size; the explanatory variables are the factors of the Fama French (1993) model plus the quality and momentum factors; mktrf is the excess return of the market index over the risk free rate, smb is the small-minus-big variable, hml is the high-minus-low variable, qmj is the quality minus junk factor and umd is the up minus down factor; cons denotes the constant; t-statistics are computed with robust standard errors.

Table 10.: Regression of the 10 decile portfolio excess returns on the FF 3 factors and quality factor excluding deals (all announcements) - 1992-2021

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
mktrf	0.559***	0.826***	0.890***	0.924***	0.949***	0.940***	0.957***	0.963***	0.938***	0.957***
	(10.44)	(23.86)	(27.89)	(28.76)	(28.44)	(27.31)	(28.81)	(31.12)	(30.38)	(42.20)
smb	0.608***	0.718***	0.667***	0.624***	0.523***	0.379***	0.255***	0.180***	0.0131	-0.197***
	(10.20)	(16.67)	(15.19)	(15.35)	(13.14)	(8.14)	(5.19)	(4.05)	(0.38)	(-7.13)
hml	0.0868	0.176***	0.186***	0.201***	0.165**	0.120*	0.145**	0.0798*	0.104**	0.00713
	(1.17)	(3.70)	(4.15)	(4.38)	(2.97)	(2.52)	(3.29)	(1.99)	(2.62)	(0.21)
qmj	-0.592***	-0.209***	-0.125**	-0.103*	-0.0972	-0.0942	-0.159***	-0.126**	-0.131**	-0.0963*
	(-7.87)	(-4.57)	(-2.75)	(-2.17)	(-1.77)	(-1.75)	(-3.35)	(-2.96)	(-2.94)	(-2.46)
umd	-0.158*	-0.179***	-0.212***	-0.184***	-0.211***	-0.170***	-0.148***	-0.149***	-0.127***	-0.121***
	(-2.41)	(-3.74)	(-5.58)	(-4.93)	(-5.90)	(-5.50)	(-5.34)	(-5.80)	(-4.24)	(-6.28)
_cons	0.747***	0.128	0.0881	0.0362	0.144	0.138	0.175	0.140	0.194*	0.0891
	(4.27)	(1.13)	(0.90)	(0.37)	(1.31)	(1.38)	(1.83)	(1.53)	(2.09)	(1.31)
N	360	360	360	360	360	360	360	360	360	360
adj. R^2	0.799	0.931	0.941	0.934	0.914	0.903	0.911	0.910	0.900	0.941

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In the Table the dependent variables are the excess percentage return over the risk free rate of portfolios sorted by size, computed excluding returns which can be attributed to a deal; the explanatory variables are the factors of the Fama French (1993) model plus the quality and momentum factors; mktrf is the excess return of the market index over the risk free rate, smb is the small-minus-big variable, hml is the high-minus-low variable, qmj is the quality minus junk factor and umd is the up minus down factor; cons denotes the constant; t-statistics are computed with robust standard errors.

Table 11.: Monthly deal returns included in the SMB portfolio - 1992-2022

	SV	SG	SN	BV	BG	BN
average	4.49%	5.98%	4.32%	2.21%	2.96%	2.79%
st dev	0.2216	0.3388	0.1877	0.1077	0.1434	0.2123
st err	0.0014	0.0032	0.0015	0.0015	0.0014	0.0023
tstat	32.70	18.43	28.05	14.65	21.36	11.90
n. returns	26097	10919	14829	5120	10736	8185
n. deals	12091	5645	7263	2024	3876	3308

The Table reports descriptive statistics on the returns attributed to a deal in the different portfolios comprised in the SMB (small minus big) factor: Small Value, Small Growth, Small Neutral, Big Value, Big Growth, and Big Nutral. Returns on all deals, whether completed or not, are considered.

Table 12.: Average monthly deal return by year on deals on Small and Big stocks - 1992-2022

Year	avg. return Small	avg. return Big	lower 95% Small	upper 95% Big
1	4.1%	1.4%	3.0%	1.7%
2	5.2%	3.0%	4.8%	3.1%
3	4.4%	0.9%	3.1%	1.0%
4	4.3%	3.5%	4.1%	3.6%
5	4.6%	3.3%	4.4%	3.4%
6	4%	3.3%	3.8%	3.4%
7	4.6%	3.5%	4.4%	3.6%
8(*)	4.5%	4.3%	4.0%	4.6%
9	4.7%	3.4%	4.2%	3.8%
10	10.5%	3.5%	9.3%	4.0%
11	5%	0.4%	4.4%	0.7%
12	9.4%	1.6%	8.3%	1.8%
13	4.7%	2.8%	4.5%	2.9%
14	3.4%	2.4%	3.2%	2.4%
15	4.9%	2.3%	4.7%	2.4%
16	5.2%	3.2%	5.0%	3.3%
17	1.5%	-0.2%	1.2%	-0.1%
18	3.2%	0.1%	2.0%	0.8%
19	6.7%	3.3%	6.1%	3.5%
20	5.9%	4.0%	5.6%	4.1%
21	3.9%	1.8%	3.5%	2.0%
22	5.8%	3.3%	5.4%	3.4%
23	4.2%	3.3%	3.8%	3.5%
24	3.5%	2.1%	3.1%	2.2%
25	3.8%	0.8%	3.4%	1.0%
26	5.6%	3.1%	5.2%	3.1%
27	3%	2.3%	2.7%	2.4%
28	3.4%	2.3%	2.9%	2.5%
29	3.7%	1.1%	2.6%	1.5%
30(*)	14.4%	12.8%	9.2%	26.9%

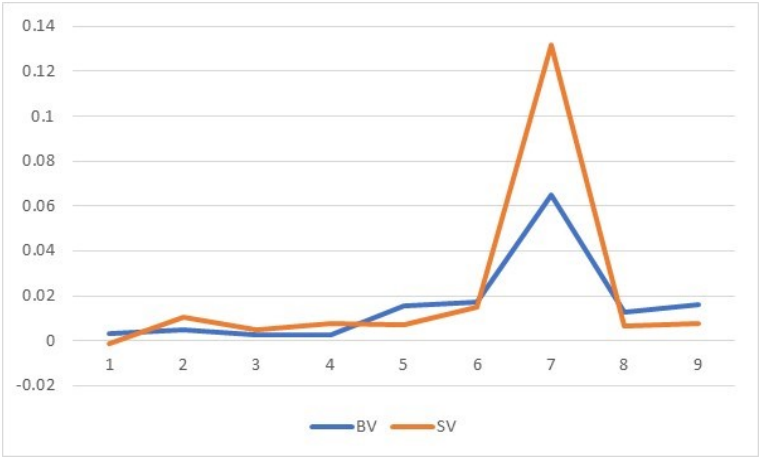
The first two coulmns of the table report the average monthly return on deals in each year of the sample for small stocks and big stocks respectively. The last two columns report the lower 95% confidence treshold for the average of small stock return and the upper 95% confidence treshold for the average return on big stock. These do not intersect exept in years marked by (*).

Table 13.: Monthly deal returns included in the SMB portfolio after the annoucement month - 1992-2022 Post announcement returns only on compketed deals

	SV	SG	SN	BV	BG	BN
average	1.38%	1.56%	1.15%	1.48%	1.70%	1.79%
st dev	0.1786	0.1911	0.1292	0.0907	0.1155	0.2413
st err	0.0014	0.0024	0.0014	0.0015	0.0013	0.0033
tstat	9.73	6.39	8.29	9.56	12.76	5.46
n.returns	15878	6140	8637	3448	7496	5403
n. deals	5654	2995	3175	688	1228	1092

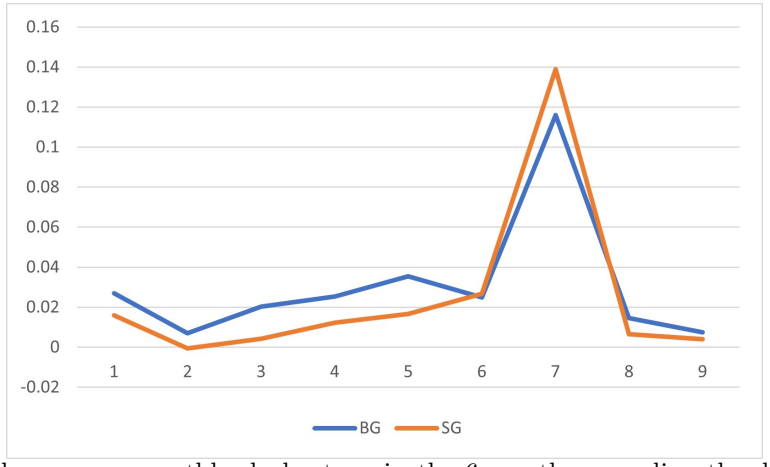
The Table reports descriptive statistics on the monthly returns attributed to a deal in the different portfolios comprised in the SMB (smma minus big) factor: Small Value, Small Growth, Small Neutral, Big Value, Big Growth, and Big Nutral. Only completed deals are considered and the average return is computed starting from the month following the month of the announcement in order to exclude pre-announcement returns.

Figure 1.: **Average return in the months preceding and following deal announcement**



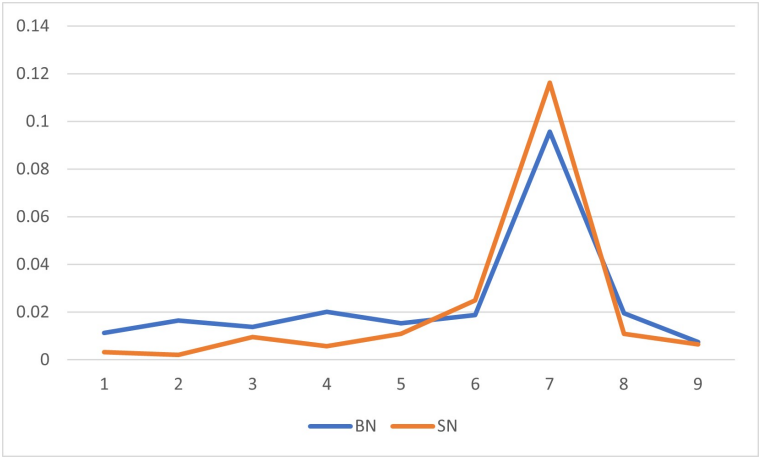
The figure shows the average monthly deal return in the 6 months preceding the deal announcement, in the month of the announcement - month 7 - and in the two following months for stocks in the Big Value (BV) and Small Value (SV) portfolios.

Figure 2.: **Average return in the months preceding and following deal announcement**



The figure shows the average monthly deal return in the 6 months preceding the deal announcement, in the month of the announcement - month 7 - and in the two following months for stocks in the Big Growth (BG) and Small Growth (SG) portfolios.

Figure 3.: **Average return in the months preceding and following deal announcement**



The figure shows the average monthly deal return in the 6 months preceding the deal announcement, in the month of the announcement - month 7 - and in the two following months for stocks in the Big Neutral (BN) and Small Neutral (SN) portfolios.

Table 14.: Regression of SMB on the FF 5 factors - Monthly data July 1992 - June 2022

	smbr	smbno	smbno3
mktrf	0.0812	0.0840	0.0882*
	(1.86)	(1.95)	(2.03)
mktrflag	0.0582	0.0554	0.0570
	(1.67)	(1.61)	(1.65)
hmlkf	0.0775	0.102	0.113
	(1.10)	(1.48)	(1.62)
RMW	-0.583***	-0.581***	-0.582***
	(-7.28)	(-7.12)	(-7.04)
CMA	-0.0379	-0.0520	-0.0578
	(-0.34)	(-0.47)	(-0.52)
_cons	0.246	0.196	0.176
	(1.66)	(1.32)	(1.18)
N	360	360	360
adj. R^2	0.308	0.305	0.304

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In the Table smbr is the replicated SMB factor, smbno is the factore excluding the returns of completed deals, smbno3c is the smb factor exluding the return of completed deals considering a 3-month pre-announcemente period. The explanatory factors are those of the 5 factors Fama French model excluding SMB itself and adding the lagged excess return on the market index.

Table 15.: Regression of SMB on the factors considered in Asness et al. (2018) Monthly data July 1992 - June 2022

	smbr	smbno	smbnoc3
mktrf	-0.0353	-0.0285	-0.0245
	(-0.72)	(-0.58)	(-0.49)
mktrflag	0.0114	0.00904	0.0105
	(0.33)	(0.27)	(0.31)
hmlkf	-0.0762	-0.0553	-0.0466
	(-1.28)	(-0.94)	(-0.79)
qmj	-0.636***	-0.633***	-0.635***
	(-6.70)	(-6.62)	(-6.59)
umd	-0.0194	-0.0147	-0.0157
	(-0.34)	(-0.26)	(-0.28)
cons	0.465**	0.406*	0.386*
	(2.70)	(2.36)	(2.23)
N	360	360	360
adj. R^2	0.308	0.304	0.305

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In the Table smbr is the replicated SMB factor to match Ken French series, smbno is the factore excluding the returns of completed deals, smbno3c is the smb factor excluding the return of completed deals considering a 3-month pre-announcement period. The explanatory factors are those in Assness et al. (2018).

Table 16.: Regression of the return in excess of the risk free rate of the small and big portfolios on all of the factors used in Asness et al. (2018) Monthly data July 1992 - June 2022

	(1) smallrf	(2) smallnorf	(3) bigrf	(4) bignorf
mktrf	0.954***	0.952***	0.960***	0.963***
	(33.46)	(32.65)	(40.52)	(40.61)
smbkf	0.518***	0.520***	0.163***	0.174***
	(14.38)	(14.20)	(5.31)	(5.62)
hmlkf	0.396***	0.391***	0.141***	0.137***
	(8.98)	(8.65)	(4.12)	(4.01)
qmj	-0.104*	-0.0957*	0.0727*	0.0663
	(-2.58)	(-2.39)	(2.07)	(1.88)
umd	-0.198***	-0.199***	-0.134***	-0.136***
	(-7.37)	(-7.54)	(-5.76)	(-5.98)
cons	0.184*	0.0899	0.217**	0.136*
	(2.24)	(1.08)	(3.20)	(1.99)
N	360	360	360	360
adj. R^2	0.947	0.946	0.945	0.945

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In model (1) the dependent variable smallrf is the return in excess of the risk free rate on the portfolio of small stocks. In model (2) the dependent variable smallnorf is the return in excess of the risk free rate on the portfolio of small stocks computed excluding deal returns from the first month the information on the deal is available. In model (3) the dependent variable bigrf is the return in excess of the risk free rate on the portfolio of big stocks. In model (4) the dependent variable bigrf is the return in excess of the risk free rate on the portfolio of big stocks computed excluding deal returns from the first month the information on the deal is available.

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