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Is the value effect due to M&A deals? Evidence from the Italian stock market

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Abstract

This paper empirically characterises the value effect detected in the Italian stock market for the sample period 2000–2018 based on the value premium offered for the acquisition of a value stock. Bids on value stock (as opposed to bids on growth stocks) generate a large and statistically significant average return on the holding of the target in the deal window. Returns on target stocks for a bid make up to two-thirds of the average return on the long side of the Fama and French high book-to-market minus low book-to-market (HML) portfolio. The other significant component of the average return of HML is due to short-selling small-growth stocks. As evidenced in previous literature, this is often difficult to implement from a practical point of view.

KEYWORDS
Fama–French model, merger arbitrage, value effect

1 | INTRODUCTION

The Fama and French three-factor model (FF model; Fama & French, 1993, 1996) centres on the role of two managed portfolios in accounting for both time series and average stock returns. The first portfolio contains small stocks on the long side and big stocks on the short side (SMB). The second contains high book-to-market stocks on the long side and low book-to-market stocks on the short side (HML). The SMB and HML factors rationalise anomalies in empirical returns that are not explained by the Capital Asset Pricing Model. Average returns earned by these two factors are commonly referred to as the *value* and *size effects*. Despite the empirical success of the FF model, its theoretical basis remains a subject of debate. Both Heaton and Lucas (1996) and Zhang (2005) attempt to

construct a theoretical justification in the context of neoclassical general equilibrium models. Shleifer and Vishny (1997) propose an alternative view that sees the value effect as an example of mispricing and market inefficiency. Ali et al. (2003), Doukas and Li (2009) and Doukas et al. (2010) tie the persistence of high average returns on value stocks to their higher idiosyncratic risk, which deters arbitrageurs from exploiting the anomaly.

Empirically, the average return on the HML and (at least until the 1990s) SMB is considerable. The empirical literature has extensively examined the properties of SMB and especially HML returns, in search of alternative factors[1] that can provide a better fit or to point out specific stylised facts as the basis for the value and size effects. In terms of the latter, Loughran (1997) argues that the positive premium on HML is due to the poor performance of low book-to-market ("growth") stocks included in the HML portfolio. In practice, these would be nearly impossible to short sell to earn the value premium. Evidence of seasonality and tax deferral trading before 31 December of each year (a US-specific feature) is also reported. According to Loughran (1997), these findings could potentially explain why fund managers pursuing a value strategy have a hard time beating the stock market index.

The Italian stock market is an interesting test case because of the number of small stocks listed. A high-value premium can be computed in this market over the past 20 years. This contrasts with the overall very poor performance of the stock market as a whole. Empirical considerations on the incidence of small-growth stocks explaining the value effect provided by Loughran (1997) also apply to the Italian stock market. The number of listed stocks is also limited, which allows for consideration of all stocks without worrying about backfilling the database, survivorship bias or delisting bias.

This paper explains how, in addition to the impact of small-growth stocks on the value premium, the value effect arises from the fact that value stocks are targets of more profitable takeovers than growth stocks. Research has already documented a positive association between a high book-to-market ratio and the probability of a takeover. Book-to-market is an explanatory variable for any model aimed at predicting likely targets, as in Palepu (1986), Brar et al. (2009), Cremers et al. (2009) and Li and Zhou (2019). Notably, Cremers et al. (2009) propose a predictive model for takeover targets that establishes book-to-market as a highly significant variable for identifying such targets ex ante. Their takeover factor (defined as stocks more likely acquired on the long side and stocks less likely acquired on the short side) closely correlates with HML, assuming its explanatory power in accounting for cross-sectional differences in returns for a variety of sorted portfolios.

However, I also document a marked difference in the average returns for shareholders of takeover targets as a function of book-to-market when the number of high and low book-to-market targets is not dissimilar. This difference influences the average return of the HML portfolio, providing an additional explanation for the value effect on the Italian stock market. The analysis can thus shed some light on the connection between the value premium and the takeover factor. I devise a specific methodology to identify returns that are both affected by takeover activity and simultaneously part of the HML portfolio. The results are consistent with the idea that high book-to-market may anticipate a takeover, and that firms exposed to takeovers earn a higher rate of return (as evidenced by Cremers et al., 2009). The evidence is compatible with the arbitrage risk explanation for a high average return on value stocks proposed by Ali et al. (2003), Doukas and Li (2009) and Doukas et al. (2010). But if the value anomaly persists after a public offer is formally announced on a value stock, the arbitrage risk explanation could be phrased in terms of the probability for the failure of the deal. Following the literature on merger arbitrage (e.g., Cao et al., 2016; Wang & Branch, 2009), failure depends on a number of qualitative and quantitative variables, such as antitrust rulings, shareholder composition and the likelihood of significant blocks being delivered to the offer. The present study thus bridges the literature on the value effect and merger arbitrage.

Strategies to exploit the takeovers premium are commonly referred to as the merger arbitrage (or risk arbitrage) position. They involve investing ("being long") in the target stock for acquisition and possibly in paper deals, wherein bidder shares are offered in exchange for target shares. This short sells ("being short")

[1]These include the momentum factor Carhart (1997), Novy-Marx (2013) asset profitability factor and Foye et al. (2013) cash flow factor to replace book-to-market.

the bidder stock,[2] which typically depreciates as a result of these trades. The literature highlights the high returns of such strategies, which have very little unconditional correlation with stock market return (Mitchell & Pulvino, 2001). However, the strategies have some conditional correlation with returns when the market goes down. Hence, the paper analyses the extent to which the return on HML can be associated with deal returns.[3] Target stocks that enter the long (value) side of HML have substantially higher returns than both the market return and the return on low book-to-market target stocks on the short (growth) side of HML—at least for a period of time. Overall, this generates an extra return for the HML portfolio.

Merger arbitrage is correctly characterised by setting up postannouncement long positions on the target stock to earn the spread between the announced takeover price and the market price at the time of the announcement. However, returns on correctly guessing the acquisition of a target stock before it is officially announced are typically much larger. An increase in the price of a target stock before the official announcement is a feature well known to traders and regulators. Abnormal cumulative preannouncement returns are well documented in the academic literature; it has been widely known since Asquith (1983) that abnormal returns on target stocks occur well before the deal is announced. Furthermore, this pattern is common to stock markets all over the world (for Asian markets, see Ma et al., 2009; for European markets, see Borges & Garifo, 2013). The question of whether abnormal preannouncement returns are due to insider trading (Jarrel & Poulsen, 1989; Keown & Pinkerton, 1981) or the inability of stock market regulators to curb the phenomenon is much debated.

However, most abnormal preannouncement returns occur in the days just ahead of the announcement of the deal. As the HML portfolio is typically constructed using monthly returns, preannouncement returns are absorbed into the return for the month in which the announcement is made (although there may be cases where expectations for the deal are already included in marked months before the announcement). When monthly returns are used, it is not possible to distinguish between pre- and postannouncement returns for that month. When the monthly return for a stock is computed during the month in which a deal announcement occurs, it includes abnormal preannouncement returns. These returns characterise the return on high book-to-market stocks. The preannouncement anticipatory component of monthly stock returns affected by a deal can be excluded using daily data to compute returns starting from the announcement of the offer. When computed in this way, returns are generally lower. Nevertheless, there is still evidence of a marked difference in return as a function of the target book-to-market ratio.

The paper is structured as follows. Section 2 describes the Italian stock market and the data used for this study. It presents an initial assessment of the positive relationship between book-to-market and deal returns by considering arbitrage spreads on the day of the announcement of an offer alongside preannouncement returns. It also computes a merger arbitrage return index for value and growth stocks that exclude preannouncement returns. Within the index for value and growth stocks, there is a marked difference in returns on high and low book-to-market stocks. Section 3 highlights the relationship between deal returns and the return on the HML portfolio. It then presents the methodology used to extract monthly stock returns that are both included in the HML portfolio and related to acquisition news. The section also contains empirical evidence for the superior performance of value stocks (that are the target of an acquisition) over growth stocks. Section 4 addresses the impact of deal returns on the value premium of the Italian stock market. It compares the methodology used here to the simpler rule of excluding all stocks that are the target of a deal from HML calculation. Finally, Section 5 concludes with remarks on the origin of the value effect and the possibility to exploit it in practice.

[2]In fully hedged trades, long and short positions are in the proportion of the paper swap ratio according to which bidders are offered in exchange for target shares.

[3]Mitchell and Pulvino (2001) argue that the merger arbitrage position of taking on whatever deal is available in the market generates payoffs akin to the strategy of selling uncovered (naked) put options on the stock market. Active merger arbitrage managers indeed endeavour to avoid such a situation by screening deals that will likely be successful (see Cao et al., 2016). The same conditional correlation—high when the market goes down and low when the market goes up—characterises HML, as pointed out by Lettau and Ludvigson (2001).

2 | DEAL RETURNS FOR VALUE AND GROWTH STOCKS IN THE ITALIAN STOCK MARKET

A number of scholars have identified a value effect in the Italian stock market, including Aleati et al. (2000), Alesii (2006), Brighi and D'Addona (2008), Rossi (2012) and Pirogova and Roma (2020). The empirical investigation focuses on the contribution of deal returns to the value premium observed in the Italian stock market for the sample period 2000–2018. According to Pirogova and Roma (2020), the annualised value premium for those years was over 4%. The performance of value stocks over growth stocks is perhaps to some extent due to the higher frequency of large, positive returns on value stocks compared with growth stocks. Large returns are typical of stock market events, such as announced or rumoured cash and paper bids on listed companies. In the following, I analyse stock returns in high and low book-to-market portfolios that define the HML value factor to determine which returns included in HML can be attributed to a bid on a target stock.

For calculation of the value premium, the sample of listed stocks is the same as the one used by Pirogova and Roma (2020). This sample includes stocks traded in the period from the end of June 2000 to the end of June 2018. The source for data on returns is Thompson Reuters Datastream.[4] Monthly stock returns are computed from adjusted month-end prices. There are 499 stocks in the sample; the number of stocks listed and processed each year is between 224 and 301. The HML factor is computed as in FF, using both equally weighted and value-weighted returns. HML is the difference between the return on a value portfolio (containing small and big high book-to-market stocks) and a growth portfolio (containing small and big low book-to-market stocks), as determined for each year at the end of June. The number of stocks included each year in the value and growth portfolios is between 67 and 90. This is comprised of stocks falling within the 30% top and bottom percentiles of the book-to-market sorting. Daily unadjusted prices and dividends paid from the same source were also used to compute the spread between the bid price and market price once an acquisition was formally announced, as well as the subsequent return on the position.

The source for data on deals is Thompson Reuters. I consider deals announced during the sample period 2000–2018 in which the target was an Italian stock exchange-listed company, for a total of 1518 events. This database contains not only data on formal bid announcements but also documented news or company statements on the possibility of a deal. Multiple entries occur for the same acquisition. Entries include when the deal was first mentioned, when the deal was formally announced, when the offer price was modified and when a residual bid (or squeeze out) was launched following the acquisition of more than 90% or 95% of outstanding shares. When an acquisition was successful, the final date for which it was effective was reported. Figure 1 shows the volume and number of completed merger and acquisition deals in the Italian stock market for the sample period. Total volume decreased after the 2008 crisis more than the number of completed deals did. Paper deals were also considered; however, very few occurred in the sample period and (as discussed in Section 2.1) they did not alter the results. These deals were thus excluded.

2.1 | Arbitrage spreads

As a starting point, some evidence on merger arbitrage spreads is provided. Setting aside transaction costs, the potential gross return on a merger arbitrage position is the spread between the bid price and the prevailing market price for the target. This is measured on the announcement date. Because formal bids are normally announced when the market is closed, the reference price for computing the spread is the price from the following day when the market opens. In the case of formal bids, supplementary information on the terms of the offer was manually

[4]Pirogova and Roma (2020) report that data on stock returns were checked against Bloomberg data and that an accurate source for book-to-market data, Mediobanca (also used in the present study) is preferable to Datastream.

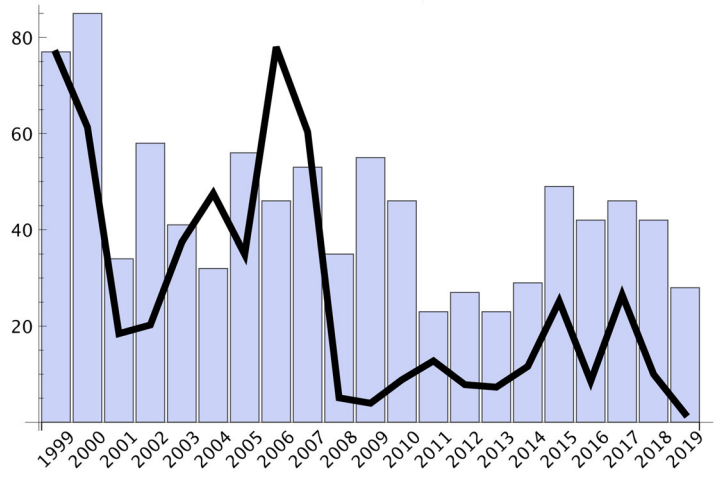

FIGURE 1 Public bids on the Italian stock market in the period 2000–2018. *Note*: In the figure, the solid line represents the total value of acquisitions on the Italian stock market (in billion euro). The bar chart shows the number of deals. The data source is Thompson Reuters. Through the deal screener function deals (where the target is an Italian listed company) were selected for the sample period

collected from filings with the market regulator Commissione Nazionale per le Società e la Borsa (CONSOB). Filing information generally includes bid price and its modifications. Since 2008, some filings contain more detailed reporting by the bidder on the outcome of the bid. For the preceding years, this information was collected from other sources. When there are contingent components of the bid price, calculation of the spread is a detailed exercise (e.g., an earnout linked to future events must be evaluated by the market). It was possible to reconstruct the spread for 372 bids launched in the 2000–2018 period. Of these, 70 were on stocks included in the value portfolio at the time of the bid and 67 were on stocks in the growth portfolio at the time of the bid.

Table 1 reports the average spread for cash bids on the first day after a bid is officially announced (Panel a), the return on the target stock from the previous day (Panel b) and the return for the 20 working days preceding the announcement (Panel c). The table also shows the average spread for target stocks that, at the end of the preceding year, were in the upper and lower 30% percentile for book-to-market. The spread in Panel (a) approximates the profit captured by an arbitrageur; in reality, this depends on price behaviour and volume over the course of the day. As previously documented in the literature, the average preannouncement percentage profits on all deals (reported in the first column of Panels b and c as 9.4% and 12.9%, respectively) are significantly larger than the average spread available right after the announcement reported in Panel (a) of 3.7%. When all deals are considered, spreads are always statistically greater than zero.

In terms of the smaller samples of value and growth stocks, the second and third columns show that potential returns are larger for value stocks compared with growth stocks for all panels. From Panel (a), the spread for value stock (1.5%) is lower than the spread computed using the entire sample and it is not statistically significant. The same spread for growth stocks is slightly negative, possibly due to a lack of precision in estimation given a single data point for the day. When the spreads that include 1- and 20-day preannouncement returns in Panels (b) and (c) are considered, the return on value stocks is significantly larger than the return on growth stocks. This is statistically different from zero for value stocks but not for growth stocks. The average spread that includes the 20-day preannouncement return on value stocks is 14.4% with a t statistic of 4.7. This is significantly larger than the corresponding return on growth stocks, which is 3.3% with a t statistic of 0.7. The average spread that includes the 20-day preannouncement return on value stocks is larger than the analogous return for the entire sample. These spreads affect the return on value and growth portfolios in HML. They further indicate that value stocks benefit

TABLE 1 Spread between the bid price and the market price

	All deals	Value	Growth
Panel (a): First trading day after the announcement			
No. obs.	372	70	67
Mean spread (%)	3.7	1.5	−2.6
Standard deviation	0.306	0.11	0.306
Standard error	0.016	0.013	0.037
t stat	2.34*	1.12	−0.71
Panel (b): Trading day before the announcement			
No. obs.	372	70	67
Mean spread (%)	9.4	8.0	−1.0
Standard deviation	0.348	0.184	0.329
Standard error	0.018	0.022	0.04
t stat	5.20*	3.65*	−0.24
Panel (c): 20-day lagged price			
No. obs.	372	70	67
Mean spread (%)	12.9	14.4	3.3
Standard deviation	0.37	0.252	0.347
Standard error	0.019	0.03	0.042
t stat	6.72*	4.79*	0.78

Note: For the sample period 2000–2018, the table above reports the following: the average spread between the bid price and market price at the time of the announcement of an acquisition, for stocks targeted for acquisition; and a separate average spread for those stocks classified as Value or Growth. Panel (a) reports the spread on the first trading day after the announcement. Panel (b) reports the spread with respect to the trading price on the last day before the announcement. Panel (c) reports the spread computed in the 20-day preannouncement period. This is the average return from day $t - 20$ to the day of the acquisition announcement, t. The t stat is testing the hypothesis that the mean spread is equal to zero. Data were manually collected from CONSOB filings.

Abbreviation: CONSOB, Commissione Nazionale per le Società e la Borsa.

*Statistically significant at the 1% level.

more from bids than growth stocks. When a bid announcement occurs within a month, the month of the announcement includes a number of preannouncement daily returns that increase the monthly return.

2.2 | Merger arbitrage return index

The anticipatory component present in monthly returns included in HML and computed across a deal announcement occurring sometime during the same month prevents implementation of an ex ante trading strategy based on such returns (unless we can reliably predict targets, or we hypothesise a strategy based on information leaks and possible insider trading). A tradable strategy on merger arbitrage deals would begin on the announcement date and end when the deal completes. As proposed by Mitchell and Pulvino (2001) and Baker and Savasoglu (2002), an index of diversified merger arbitrage returns may be computed using daily data. Monthly returns for the tradable strategy are computed from daily data as

TABLE 2 Average monthly return on diversified merger arbitrage positions

	All deals	Value	Growth
(a)			
Mean return (%)	1.17	1.64	0.58
Standard deviation	0.0501	0.0690	0.0922
t stat	3.45*	3.49*	0.93
(b)			
Mean return (%)	0.80	1.07	0.73
Standard deviation	0.0511	0.0764	0.0917
t stat	2.43*	2.06*	1.18

Note: For the sample period 2000–2018 the table above describes the average return on a diversified portfolio of merger arbitrage positions. "All deals" refers to a portfolio that includes every cash deal launched. "Value" and "Growth" refer to a strategy restricted to targets that, at the time of the offer, are part of the Value or Growth portfolio. Panel (a) reports the result for equally weighted average monthly returns, while Panel (b) reports the result for value-weighted monthly returns.
*Statistically significant at the 1% level.

$$R_j = \sum_{i=1}^{N_j} \frac{V_i\left[\prod_{t=m}^{M}(1 + R_{it}) - 1\right]}{\sum_{i=1}^{N_j} V_i}, \tag{1}$$

where j indicates the months in the sample period, N_j is the number of active deals in month j, $(1 + R_{it})$ is the dividend-adjusted daily return on day t for stock i, m and M are the initial and final day, respectively, for calculation of the return within the month and V_i is the stock market capitalisation. The calculation starts on a date m within the month at least equal to the announcement date. It ends on a date M that is not beyond the completion date. The weighting of deal returns according to stock market capitalisation could plausibly give a larger weight to big stock that may be more liquid. However, setting V_i to 1 yields equally weighted returns.

Calculation of the return index for all stocks subject to a deal during the sample period 2000–2018 yields the results in Table 2. The sample predominantly contains completed deals with very few instances of failed deals. For the sample period, the average yield from investing in all merger arbitrage deals at the time of the announcement (on the first day the market is open) and holding the position until the final date of the offer was 1.17% on a monthly basis. This result is in line with that reported for other countries. If the strategy is restricted to positions where the target is part of the value or growth portfolio at the time of the announcement, the average return is again higher for value stocks and significantly lower for growth stocks. Due to the lower volume of deals with a target in the value or growth portfolio, a few months in the sample period have no available active deals. When the target is a value stock, Panel (a) shows an average monthly return of 1.64% with a *t* statistic of 3.49 over the sample period. In the case of growth stocks, the average return is 0.58% with a *t* statistic of 0.93. In terms of value-weighted returns, Panel (b) shows average returns are still considerably higher for targets in the value portfolio. These show an average monthly return of 1.07% with a *t* statistic of 2.06 against an average of 0.73% for growth stocks with a *t* statistic of 1.18. This again highlights the marked difference between deal returns as a function of the target book-to-market ratio.

3 | DEAL RETURNS AND THE HML PORTFOLIO

The relationship between deal return and book-to-market impacts the return on the HML portfolio. The value premium includes returns that can be attributed to bids on the stocks included in the HML portfolio, henceforth deal returns. A possible way to assess the impact of deal returns on the value premium is to simply exclude from the

definition of the HML portfolio any high or low book-to-market stock for which a deal was announced. Then, recompute the value premium. Following the evidence of abnormal preannouncement returns surveyed in Section 1, deal returns occur within a limited deal window that starts before the announcement and ends on the date of deal completion (henceforth effective date) or withdrawal. A stock that was, at some point in time, the target of a deal could potentially be included in the HML portfolio outside this time window. Such inclusion could occur, for example, long before the deal is even rumoured, after the effective date (for partial bids) or in the context of deal withdrawal. In such cases, excluding the stock from the HML tout court would unduly exclude returns and fail to indicate the effect of deal returns on HML.

Therefore, it is essential to determine the overlap between returns included in the HML portfolio and returns on stocks that are both the target of a deal and fall within the deal window. This makes it necessary to define, for each stock return included in the HML portfolio, which time segment of the return falls within the deal window. The definition then enables recomputing HML with deal returns excluded. According to the FF model, stocks are classified as high or low book-to-market at the end of June. They stay in the HML portfolio for the 12 months that follow. Returns on the high or low book-to-market stocks selected in this way fall within the deal window under certain conditions: if a bid is announced while the target stock is part of HML; if the bid is announced when the stock is no longer included but returns within a reasonable preannouncement period are included in the HML portfolio; or if the bid is announced before the stock is included in the HML portfolio but the deal completes (or fails) after the stock is included in HML. The proposed methodology selects only the monthly stock returns in the deal windows, which are affected by a deal. Simply excluding the stock eliminates the stock returns for the entire 12-month period from 1 July to 30 June of the following year, as well as from any other (i.e., previous or subsequent) year in which the stock is present in the HML portfolio.

Figure 2 shows these possibilities as well as returns that would be unduly excluded under the naive approach of excluding any stock on which a bid was launched from HML. As the HML return is obtained using monthly data, the announcement and effective dates are approximated at the beginning or end of the month in which the announcement or completion occurs, respectively. The announcement date does not coincide with the official filing of the public offer with marked authorities (CONSOB in the present case).[5] This is because news may already be in the market beforehand, as in the case of mandatory offers triggered by the acquisition of a 30% stake in the target. For the analysis here, there is no need to study the entire deal; the time when the target stock is included in a value or growth portfolio and contributes to the return on HML suffices for use as an observation window. Nevertheless, deal announcements are correctly indicated at the earliest time the information is available.

I filter the subsample of stocks issued by the target company in the high or low book-to-market portfolios within the relevant time window. The window is defined as starting n months before the deal announcement and ending in the month of either the announcement or the effective date. The latter applies if the effective date of a completed deal is different from the month of the announcement date. For deals that were not completed, there is no effective date. Increasing the number of months in the preannouncement window slightly increases the number of deals alongside the number of returns (by a maximum of n times the number of deals) for consideration. Not all categories of stocks issued by the target company are the target of the acquisition. Partial tenders aim at reinforcing control through the acquisition of common stocks only, for example, or in the buyback of a specific stock category. But because Thompson Reuters provides only the (cusip) company code, all company stocks listed at the time of the bid were considered on the assumption of a high correlation between returns on stocks from the same company.[6] The appendix details the methodology used to select stock returns in the deal window as pertains to HML. The methodology does not define ex ante strategies that could be implemented to earn a return premium. Rather, it analyses the source of component returns in HML ex post.

[5]Mulherin and Simsir (2015) analyse the differences in measured takeover performance when the announcement date is correctly specified and take into account the time when the news is actually in the market.

[6]Individual stocks were associated with companies by way of ticker, and in some cases, manually.

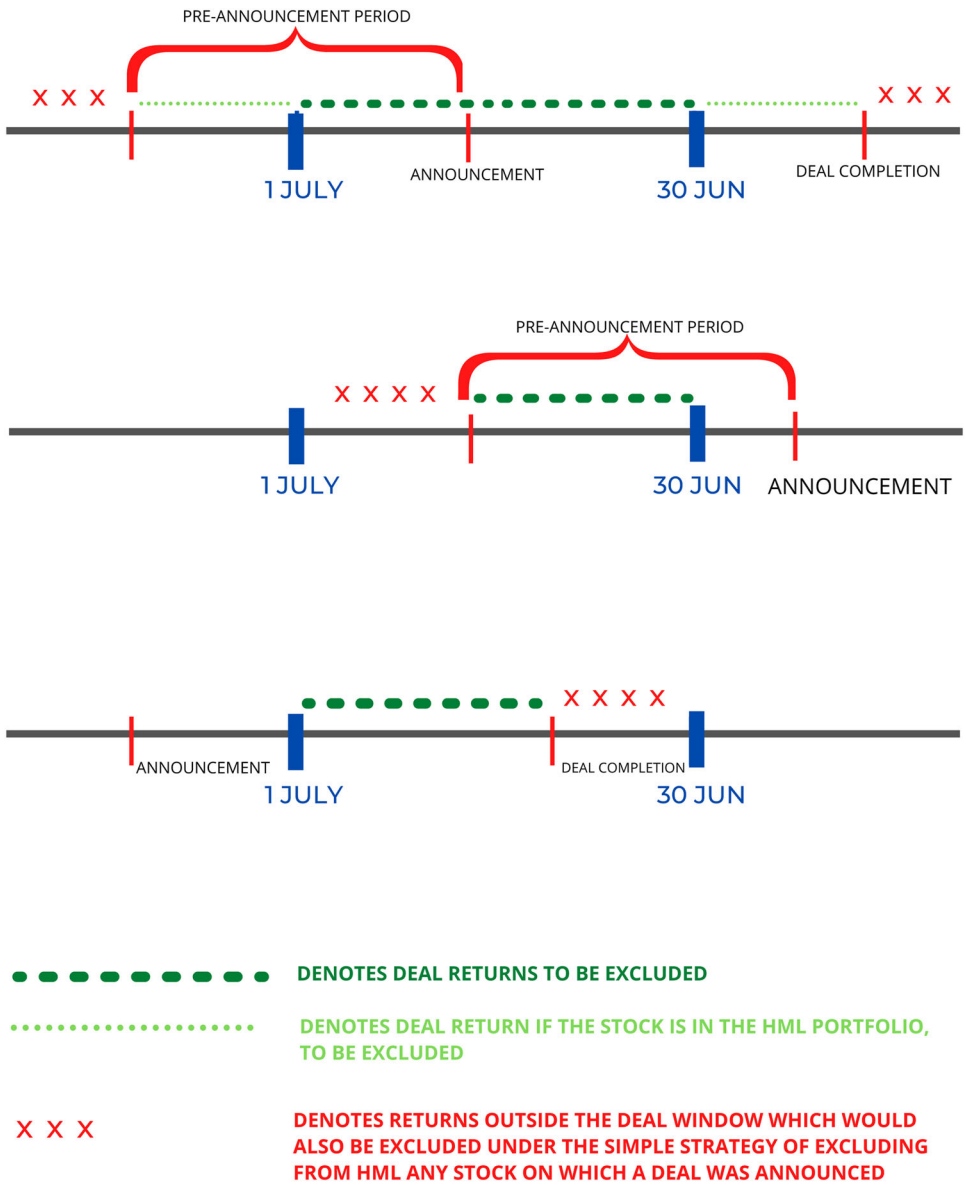

FIGURE 2 Overlap between deal returns and HML returns. *Note*: This figure shows the overlap between the deal return from the preannouncement period to the deal completion, compared with the 12-month period from 1 July to 30 June of the following period, where the stock is in the HML portfolio

As an indication, the number of deal announcements for $n = 2$ involving target companies with value stocks included in HML was 240. Of these, 90 involved small-value stocks and 150 involved big-value stocks. Value stocks that are the target of a bid have an average book-to-market ratio of 1.38 for big stocks (average size 4.4 billion euros) and 2.06 for small stocks (average size 65 million euros). When growth stocks are considered, the number of deal announcements involving growth stocks included in HML as the target of the acquisition was 210. Of these, 109 were small growth and 101 were big growth. Growth stocks that are the target of a bid have an average book-to-market ratio of 0.29 for big stocks (average size 10.3 billion euros), and 0.34 for small stocks (average size 93

million euros). By construction, the difference between the book-to-market ratio for value and growth stocks that are the target of a deal is substantial. Growth stocks also have higher market capitalisation, on average, than value stocks.[7]

3.1 | Analysis of deal returns on HML

Table 3 details the statistical properties of deal returns on HML. Following the evidence on arbitrage spreads and merger arbitrage returns reported in Section 2, the mean deal return is significantly higher when the target is a high book-to-market stock. The result is robust with respect to the inclusion of different preannouncement periods n = 0–3. The monthly average return on high book-to-market stocks subject to a deal is between 2.61% and 1.85%. This is about five times its standard error. The average monthly return on low book-to-market stocks subject to a deal is between 0.78% and 0.23%, which is not statistically significant. Considering a preannouncement window that includes 1–3 prior monthly returns results in a slight decrease of the mean return. This is consistent with evidence that preannouncement abnormal returns occur in the days just before the announcement, then become absorbed into the monthly return around the announcement date. The difference in the mean return for value and growth stocks subject to a deal is statistically significant at the 1% level, as evidenced by the t test. The increase in the number of return observations following the increase in the preannouncement period produces higher statistical significance, as evidenced by the decrease in p values for the difference in mean return between value and growth stocks subject to a deal.

The difference in mean return evidenced in Table 3 is characteristic of returns on target stocks with different book-to-market ratios. If the return on the entire deal (including monthly returns not in HML) is considered, the gap still exists—albeit smaller. This gap remains when considering only deals that were successfully completed. Independent of any analysis on whether selected stocks are takeover candidates, the inclusion of stock subject to a deal in the HML portfolio on the basis of the book-to-market ratio for the previous year forces the entry point in the merger arbitrage strategy. This occurs in such a way that, on average, the gap between deal returns on value and growth stocks becomes wider.

Overall, there is evidence of the potential for value stocks to provide significant returns if they become the target of an acquisition. This potential is not matched by growth stocks. Asymmetry between returns on growth and value stocks subject to a deal contributes to the high mean return on HML. Moreover, an extension of the preannouncement window to include previous months does not produce additional high returns.

The value premium in the Italian stock market for the sample period depends, to a certain extent, on the higher frequency of large returns on value stocks compared with growth stocks (as reported by Pirogova & Roma, 2020). The different frequencies of returns on value and growth stocks subject to a deal and included in HML emerge clearly from Figure 3. The left-hand side panel of Figure 3 shows small-value stocks subject to a deal displaying a frequency of monthly returns between 5% and 15% higher than corresponding growth stocks. The right-hand side panel of Figure 3 shows big-value stocks subject to a deal displaying a frequency of monthly returns between 10% and 25% higher than corresponding growth stocks. This matches the difference between the return distribution on value and growth stocks in Pirogova and Roma (2020).

[7]It is interesting to study stocks that remain in value portfolios for consecutive years. It turns out that value stocks subject to a deal are less likely to remain value stocks after the deal compared with value stocks at large. The transition probability that a stock included in the high book-to-market portfolio remains in the high book-to-market portfolio for one or two subsequent years is as follows: 0.66 and 0.55, respectively, for big-value stocks; and 0.65 and 0.51 for small-value stocks. When the same probabilities are computed for the subsample of value stocks targeted by a deal, they become 0.43 and 0.31 if a deal is announced on the issuer of a big-value stock. If a deal is announced on the issuer of a small-value stock, the probabilities are 0.59 and 0.38. That is, the target tends to appreciate in value while book-to-market decreases for the following years. The stock then exits the high book-to-market portfolio or is delisted.

TABLE 3 Descriptive statistics for deal returns included in the value and growth portfolios in HML

	No pre-ann. window		1-Month pre-ann. window	
	Value	Growth	Value	Growth
No. obs.	630	516	820	688
Mean return (%)	2.61	0.78	2.42	0.57
Standard deviation	0.135	0.1303	0.1356	0.1447
Standard error of the mean	0.0054	0.0057	0.0047	0.0055
Skewness	1.919	0.6	1.681	0.857
Kurtosis	10.86	8.283	9.399	9.55
Mean/standard error	4.861*	1.355	5.111*	1.038
Min	−0.4186	−0.6108	−0.4389	−0.6108
Max	0.9507	0.8255	0.9507	0.9091
t test for equality of the means	**2.32**		**2.56**	
p value	**0.010**		**0.005**	
	2-Month pre-ann. window		3-Month pre-ann. window	
	Value	Growth	Value	Growth
No. obs.	1004	854	1179	1018
Mean return (%)	2.12	0.38	1.85	0.23
Standard deviation	0.1315	0.1303	0.1359	0.1307
Standard error of the mean	0.0042	0.0045	0.004	0.0041
Skewness	1.594	0.669	2.253	0.813
Kurtosis	9.009	8.259	16.678	8.53
Mean/standard error	5.096*	0.855	4.681*	0.552
Min	−0.4389	−0.6108	−0.4389	−0.6108
Max	0.9507	0.9091	1.444	0.9091
t test for equality of the means	**2.85**		**2.84**	
p value	**0.002**		**0.002**	

Note: For the sample period 2000–2018, the table above reports the descriptive statistics for monthly stock returns included in the value and growth portfolios that form the high book-to-market minus low book-to-market (HML) factor and also in the deal window for an acquisition. The deal window is defined by including a preannouncement window of a varying number of months. The *t* test tests the hypothesis that the mean return on Value stocks is greater than the mean return on Growth stocks. Values in bold indicate that the equality of the means is rejected at the 1% level.

*Statistically significant at the 1% level.

4 | THE IMPACT OF DEAL RETURNS ON HML

The impact of deal returns on the value premium can be assessed by recomputing the HML factor to exclude returns of value and growth stocks subject to a deal. Table 4 contains the main result of this recalculation. For the sample period 2000–2018, the annualised value premium is 4.9% for the equally weighted HML portfolio (Panel a)

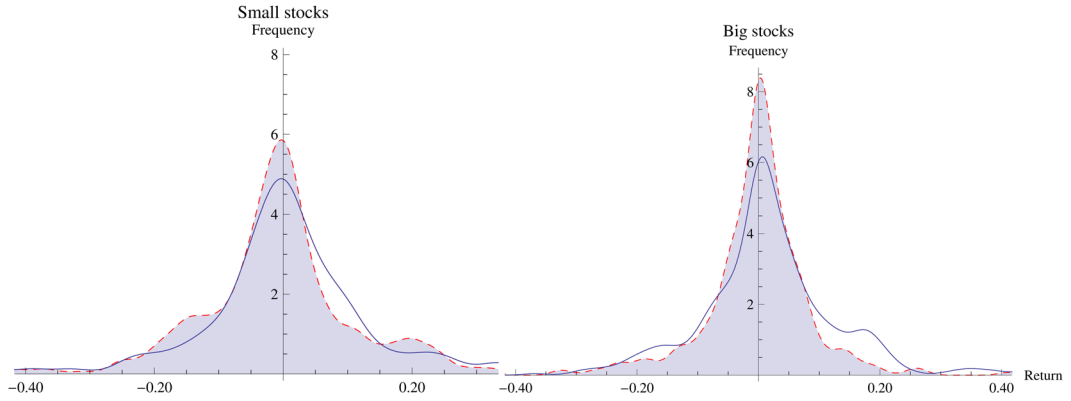

FIGURE 3 Frequency distribution of returns for Growth and Value stocks subject to a deal. *Note*: For the sample period 2000–2018, the dashed line, alongside the shaded area in the figure represents the frequency distribution of deal returns on Growth stocks. The solid line represents the frequency distribution of deal returns on Value stocks

TABLE 4 HML average return with and without deal returns

	HML (%)	Standard deviation	Standard error	Sharpe ratio	Alpha (%)	Excluding small growth (%)
Panel (a): Equally weighted						
All returns	4.90	0.381	0.026	0.081	3.19	3.75
ex target stocks	4.13	0.484	0.033	0.047	2.31	1.52
ex deals: $n = 0$	4.06	0.381	0.026	0.058	2.36	2.74
ex deals: $n = 1$	3.96	0.382	0.026	0.056	2.24	2.57
Panel (b): Value weighted						
All returns	3.19	0.409	0.028	0.033	2.03	0.98
ex target stocks	1.70	0.584	0.040	−0.002	−0.29	0.59
ex deals: $n = 0$	2.52	0.407	0.028	0.017	1.36	−0.26
ex deals: $n = 1$	2.45	0.409	0.028	0.015	1.25	−0.25

Note: For the sample period 2000–2018, the table above reports the average of high book-to-market minus low book-to-market (HML) factor, computed using equally weighted and value-weighted returns. "All returns" indicates the standard definition of HML; "ex target stocks" indicates that all stocks ever subject to a deal are removed from HML computation; "ex deals" indicates the HML return once returns that are in the deal window of acquisition are excluded given no preannouncement window ($n = 0$) or a 1-month preannouncement window ($n = 1$). The column "excluding small growth" reports different definitions for the value premium computed also by excluding the contribution of small-growth stocks.

and 3.19% for the value-weighted portfolio (Panel b). The equally weighted value premium is borderline significant, with a t statistic of 1.9. However, no trace of statistical significance remains once returns associated with a deal are removed. If stocks subject to a deal at any time are excluded, the value premium drops to 4.13% for the equally weighted HML portfolio and to 1.7% for the value-weighted portfolio (the "ex target stocks" row in both panels). The value-weighted premium decreases by more than 50%. As discussed in Section 3, this approach could be excluding returns unrelated to deals.

When just the returns falling within a deal window identified by the procedure described in Section 3 are excluded, the value premium drops to 4.06% for the equally weighted HML portfolio and to 2.52% for the value-weighted portfolio ("ex deals: $n = 0$" row of both panels). The $n = 0$ window narrows to a minimum the number of arbitrarily selected preannouncement returns.[8] When the deal window is extended to include an extra 1-month preannouncement period ("ex deals: $n = 1$" row of both panels), the results are very similar. According to this methodology, then, around 25%–30% of the value premium originates from takeover and merger activities. Simple, risk-adjusted measures of the value premium—the Jensen alpha and the Sharpe ratio—further decrease when deals are excluded from the composition of the HML portfolio. The Sharpe ratio of the equally weighted portfolio decreases by 30%–40% depending on the approach used to remove deal returns. When all target stocks are excluded, the Sharpe ratio of the value-weighted HML portfolio becomes negative; when just returns in the deal window are excluded, it decreases by almost 50%. the Jensen alpha drops from 3.19% to 2.31% for the equally weighted portfolio when all target stocks are excluded, and to 2.36% and 2.24% when just returns in the deal window are excluded. For the value-weighted portfolio, the alpha becomes negative when all deals are excluded. When just returns in the deal window are excluded, it drops from 2.03% to 1.36% and 1.25%.

When the stock of the target company is paid for through exchange with bidder stock (a paper deal), the merger arbitrage strategy involves buying target stock and shorting bidder stock. This is because bidder stock typically depreciates. One might expect companies with expensive low book-to-market stocks more likely to offer their paper in exchange for target stock in an acquisition. The Thompson Reuter database reports that between 2000 and 2018, there were 45 total instances of paper deals in the Italian market wherein the bidder was an Italian stock exchange-listed company. There were no cases in which the bidder was a high book-to-market company at the time of deal announcement. In nearly half of the cases, the bidder was part of the growth portfolio and indeed exchanging its low book-to-market stock for that of the target. Returns on the bidder stock, likely shorted in the market at the time, were few and their mean insignificantly different from zero. Given few returns for bidders entering the growth part of HML, this is not a significant component of the mean return of HML. In fact, the value premium remains essentially unchanged once these returns are removed. In any case, ignoring these observations makes the result more conservative because the short leg of paper bids further increases the value premium in principle.

4.1 | The impact of small-growth stocks

The last column of Table 4 reports the value premium after the removal of the remaining small-growth stocks not subject to a deal. When considering equally weighted returns, the value premium falls from 4.9% to 3.75% when small-growth stocks are removed. If deals and small-growth stocks are simultaneously removed, the mean return decreases to 1.52% when all stocks subject to a deal are removed. When returns in the deal window are removed, it falls to 2.74% and 2.57%. The impact of small-growth stocks and deals is more striking in the case of the value-weighted HML factor. Here, the value premium decreases from 3.19% to 0.59% when the average return on small-growth stocks is excluded. When deal returns are also excluded, the value premium becomes negative by a quarter of a percentage point.

Table 5 breaks down the average return of the HML portfolio into the average return of its value and growth components. When considering the equally weighted portfolio, the annualised average return on the long side ("Average Value" column) decreases from 5.68% to 3.42% when all stocks subject to a deal are removed and to 4.55% and 4.41% when returns in the deal window are excluded. The return on the short side ("Average Growth" column) is also positive as the shorting of big-growth stocks is detrimental to the portfolio return. Growth stocks on

[8]On average to 15 days.

TABLE 5 Breakdown of HML average return into its components

	HML (%)	Average value (%)	Average growth (%)
Panel (a): Equally weighted			
All returns	4.90	5.68	0.78
ex target stocks	4.13	3.42	−0.71
ex deals: $n = 0$	4.06	4.55	0.49
ex deals: $n = 1$	3.96	4.41	0.45
Panel (b): Value weighted			
All returns	3.19	1.73	−1.47
ex target stocks	1.70	1.86	0.16
ex deals: $n = 0$	2.52	1.14	−1.38
ex deals: $n = 1$	2.45	1.04	−1.41

Note: For the sample period 2000–2018, the table above details the components of the high book-to-market minus low book-to-market (HML) factor, computed using equally weighted and value-weighted returns. HML is given by the difference between the entries "Average value" and "Average growth" in the same row. In turn, "Average value" is the average return on small-value and big-value stocks; "Average growth" is the average return on small-growth and big-growth stocks. "ex target stocks" indicates that all stocks ever subject to a deal are removed from HML computation; "ex deals" indicates the HML return once returns in the deal window of acquisition are excluded, given no preannouncement window ($n = 0$) or a 1-month preannouncement window ($n = 1$).

average only increase the HML return when all stocks subject to a deal are removed (−0.71% for stocks on the short side turns into a positive return). When considering the value-weighted portfolio, the annualised average return on the long side drops from 1.73% to 1.14% and 1.04% when returns that are plausibly in the deal window are removed. This implies that deal returns increase the return on value stocks by 50%–66%.[9] The return on the growth side as a whole does not vary much if returns in the deal window are removed ("Average Growth" column). Only short positions on small-growth stocks contribute to the value premium as evidenced in the last column of Table 4.

The short position in small-growth stocks implied by the definition of HML accounts for a large portion of the value premium, both equally weighted and value weighted.[10] If this source of return is exploited on the Italian stock market in practice, the same arguments on the near impossibility of shorting very small stock would speak perfectly to the point for the market examined here. The average market capitalisation of small-growth stocks in the sample is around 60 million euros. Many stocks are as small as a few million or less. When the free float is considered, we are down to around 30 million euros on average. Moreover, many stocks have almost no volume of trade. These stocks may not be held by institutions that make their portfolio available to prime brokers for lending. When short selling these stocks (if at all feasible), stock-lending costs would have a nontrivial impact.[11] In the present analysis, stock selection is based on book-to-market and not on ex ante selection of likely takeover candidates. However, high book-to-market is associated with a higher likelihood of a public bid. The purchase of stocks subject to a bid in the value side of HML is a fundamental component of the value premium. To implement a proper portfolio trading

[9]The average risk-free rate is 1.83%. The standard deviation of the Value and Growth portfolio is about twice that of HML. Sharpe ratios substantially decrease or flip sign.

[10]Shorting big-growth stocks is actually detrimental to the value premium in this sample period. Significantly, the average returns on the shorting of small-growth stocks increase once deal returns are excluded from the computation of the value premium. Mechanically, shorting small stocks that are targets of a public offer ("going Chinese" in the market terminology) is an implausible systematic strategy, with a very costly and unprofitable exit in case of short squeeze where the deal is successful, or no exit if in a paper deal target shares are fully converted into the bidder's.

[11]Incidentally, for periods after the 2008 Lehman bankruptcy short selling was banned in the Italian stock market.

strategy, the target should clearly be chosen ex ante on the basis of the expectation of a takeover (if a pre-announcement strategy is followed) or upon deal announcement (in a postannouncement strategy). Nevertheless, the high book-to-market rule is effective for selecting profitable bids. The portion of the return of HML driven by the acquisition of target stocks that are part of it may well explain the high correlation between HML and the Cremers et al. (2009) takeover factor.

5 | CONCLUSIONS

The return earned on the merger arbitrage position for Italian stocks is positively associated with the book-to-market ratio of the target. This is evident from both the arbitrage spreads and the performance of a diversified portfolio of merger arbitrage positions. Stock selection based on book-to-market ratio is at the origin of the value effect. Higher book-to-market stocks are invested in the long side of the HML portfolio, earning a higher return compared with lower book-to-market stocks. To some extent, the difference between the return on these two categories of stocks is due to the economics of merger arbitrage activity. However, target stocks are part of the HML portfolio for specific annual periods. This may involve partial overlap with the deal window during which the deal is active (from the announcement, or when information is perceived by the market, to the day on which the deal is completed or withdrawn), providing an extra return. The definition of the deal window is not unique. There is ample evidence that stock prices react in advance of official deal announcements. The methodology presented attempts to identify returns that are affected by a merger arbitrage deal and, at the same time, influence the return of the HML portfolio. The robustness of the methodology is checked using different preannouncement windows; it is directly compared with the simple, but a less accurate, procedure of excluding from HML any stock subject to a deal at any point. A key determinant of the average return on the HML portfolio is the significant difference between the return on target stocks that happen to be value stocks and those that are growth stocks. The return on the HML portfolio holding of value stocks targeted by acquisition is, on average, 2.5% for big stocks and 3% for small stocks on a monthly basis. This is statistically significant. However, the return on the holding of growth stocks targeted by acquisition is not significantly different from zero. When these returns related to bids on target stock are excluded from the definition of HML, the equally weighted value premium decreases from 4.9% to about 4%; likewise, the value-weighted value premium decreases from 3.19% to about 2.5%. Risk-adjusted measures of the HML return decrease even further: the Sharpe ratio for the equally weighted portfolio decreases by 30%–40% while the Sharpe ratio for the value-weighted HML decreases by almost 50%. The Jensen alpha drops from 3.19% to about 2.3% for the equally weighted portfolio. For the value-weighted portfolio, the alpha drops from 2.03% to 1.36% and 1.25%. If the impact of deals on the average return of HML is assessed by simply excluding from the definition of HML any stocks subject to a deal at some point, the value premium decreases even further. The value-weighted HML return decreases from 3.19% to 1.7%, while the Sharpe ratio and Jensen's alpha become negative. The return premium generated by merger arbitrage activity on high book-to-market stocks included in the value portfolio does not entirely explain the value effect. Aside from merger arbitrage deals, different corporate events could explain the remaining part of the value premium. A company undervaluation may be corrected without a takeover bid in cases of turnaround associated with a new business plan or improved sector or market conditions. The evidence provided does not address the reasons for the general overperformance of value stocks compared with growth stocks. However, to the extent that the value premium is due to extra returns generated by merger arbitrage activity on value stocks, the same arguments and explanations that apply to abnormal merger arbitrage returns apply to the value premium. Hence, this analysis bridges the literature on merger arbitrage and the value effect. Previous findings for the US stock market show that the bulk of the value effect is due to short positions in small-growth stocks. For the Italian market, short positions in small-growth stocks significantly contribute to the HML average return. If both the deal return component and short positions in small-growth stocks are simultaneously excluded, the annualised value premium (as routinely computed from the value-weighted HML factor) goes

from 3.19% to ⁻0.25%. Small-growth stocks on the Italian stock market have an average market capitalisation of 60 million euros and, in some cases, less than a few million euros. They also have a free float that is, on average, 30 million euros (and in some cases, much less). Short-selling small-growth stocks may thus not be feasible and could be subject to high transaction costs. When implementing a value strategy in practice, short-selling small-growth stocks may be only somewhat feasible. The outcome of the value strategy, driven by extra return on the long side of HML, would then resemble a well-proven merger arbitrage strategy.

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APPENDIX A

Selection includes stocks that are in either a value or growth portfolio (collectively, the HML portfolio) between July and June of the following year, as well as subject to a deal. There are three such cases:

1. When the target stock is in the value or growth portfolio at the time of the announcement.
2. When the target stock is *not* in the value or growth portfolio at the time of the announcement but it *is* during a subsequent period when the deal is still active.
3. When the target stock is *not* in the value or growth portfolio at the time of the announcement but it *is* during a preceding period (if the effect of a preannouncement period with length *wn* is considered).

If *A* is the announcement date and *E* is the effective date, BEGIN is the month of July of the year and END is the month of June for the following year and *wn* is an *n*-month preannouncement window, then the start month for a selection of returns is as follows:

- If BEGIN ≤ *A* ≤ END
  Case 1: *A*-*wn* ≥ BEGIN ⟶ start extraction at *A*-*wn*.
  Case 2: *A*-*wn* < BEGIN the preannouncement windows starts before the HML portfolio window. Then there are two possibilities:
  Case 2.1:
  The stock was in the HML portfolio during the preceding year ⟶ start extraction at *A*-*wn*.
  Case 2.2:
  The stock was not in the HML portfolio during the preceding year ⟶ start extraction at BEGIN.
- If *A* < BEGIN and the stock was not in the HML portfolio during the preceding period
  Case 1: *E* ≥ BEGIN ⟶ start extraction at BEGIN.
  Case 2: no *E* or *E* < BEGIN ⟶ do not extract.
- *A* > END ≥ *A*-*wn* and the stock is not in the HML portfolio during the subsequent period; ⟶ start extraction at *A*-*wn*.

The end month for the selection of returns is as follows:

- $A \leq$ END and no $E \longrightarrow$ stop extraction at A,
- $A \leq E \leq$ END and E not zero $\longrightarrow$ stop extraction at E,
- $A \leq$ END $\leq E$:

  Case 1: Stock is in the HML portfolio during a subsequent period $\longrightarrow$ stop extraction at E.

  Case 2: Stock is not in the HML portfolio during a subsequent period $\longrightarrow$ stop extraction at END.
- A-$wm \leq$ END $< A$ and the stock is not in the HML portfolio during a subsequent period; $\longrightarrow$ stop extraction at END.