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Abstract

One of the more highly researched topics in the financial economics literature has been to analyze the gains made by shareholders of companies that participate in a merger and acquisition transaction. This paper surveys the evidence for which acquirer characteristic or merger transaction type generates non-positive or positive abnormal returns for the acquirer's shareholders. In doing so, I describe a comprehensive set of hypotheses that has been built on existing theory, which has been tested using proxies variables in a regression specification. The paper then explains a number of new hypotheses have yet to be examined. Finally, the paper describes outstanding empirical issues in much of the existing literature.

The market for corporate control: Survey of the empirical evidence, estimation issues, and potential areas for future research

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1. INTRODUCTION

One of the more highly researched topics in the financial economics literature has been to analyze the gains made by shareholders of companies that participate in a merger and acquisition transaction. The studies have been of two types: event studies and case studies. Most of the studies have been of the first type, namely, event studies. In an event study, abnormal returns over the market returns are calculated for a few days before and after the merger announcement. Case studies examine rationales for why mergers took place and if they resulted in higher productivity or operating profits (for examples, see Muscarella and Vetsuypens (1990), Smith (1990), and Kaplan (2000)).

Early surveys of the event study literature (Jensen and Ruback (1983), Jarrell, Brickley and Netter (1988), Andrade, Mitchell and Stafford (2001), and Bruner (2002)) show that mergers and acquisitions generate value gains (proxied by the abnormal returns) for the combined firm, with most of the gains going to the target firm (who earn abnormal returns ranging from 20%-35%). However, especially in the post-1980s period, shareholders of acquirers earned zero or mostly negative abnormal returns. Accordingly, this paper does the following:

- 1) Surveys the recent evidence for which acquirer characteristic or merger transaction type generates non-positive or positive abnormal returns for the acquirer's shareholders. In doing so, I describe a comprehensive set of hypotheses that has been built on existing theory, which can then be tested using proxies or independent variables in a regression specification.
- 2) Explains estimation issues in much of the existing studies. These include testing a comprehensive regression specification of independent variables, including interaction terms between the independent variables, endogenizing where necessary an independent variable, controlling for which merger wave the transaction occurred in, correcting for the change in the beta and standard error in the event period, and proper definition of a diversifying and focused mergers.
- 3) Explains potential outstanding issues for future research. These include correcting for the information in the bidder's stock price before the merger announcement is made, and testing whether antitakeover charter amendments and CEO age and tenure are related to bidder returns.

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2. SOURCES OF VALUE FOR BIDDER SHAREHOLDERS

I begin by examining which type of merger and acquisition transactions and/or bidder-target characteristics generate higher abnormal returns for the shareholders of the bidding firm. This comprehensive list should help the empirical researcher to examine any new issue(s) in the merger and acquisition market by specifying the control variables that should be included in their regression model(s). After each explanation I give a testable hypothesis.

Medium of exchange: A merger and acquisition transaction can be financed by cash, stock or a mix of both cash and stock. Let us first examine the concept theoretically in a simple set up. More advanced models (see Hansen (1987), Fishman (1989), Eckbo, Giammarino, and Heinkel (1990), and Berkovitch and Narayanan (1990)) have been proposed, but the intuition of this simple model still remains prevalent in these papers. In an asymmetric information world, the bidder's managers know the exact value of their firm's synergy with the proposed target firm. But external capital market investors do not know this private information. What they know is that the synergy value could be high or low (often called information-types in game theoretic models). Given that external capital market investors do not know the bidder's type, they will base their revision of the bidder's stock price on the medium of exchange offered by the bidder. In other words, if the bidding firm's managers are better informed than outside investors about the value of their firm, they will prefer stock financing of an acquisition because they believe their stock to be overvalued (Myers and Majluf (1984)). However, investors expect this and will therefore drive down the value of firms that issue new equity. Cash financing of acquisitions will therefore be preferred for merger and acquisition transactions with high synergies. Hansen (1987) argues that, if target shareholders are better informed than outsiders about the value of their firm prior to acquisition (the true valuation being revealed after acquisition), equity offers will be preferred to cash offers when target equity is believed to be undervalued. In this case, target shareholders prefer to retain an equity position in the merged entity in order to participate in the gains from the post-merger revelation of the target's undervaluation. Fishman (1989) argues that when the fixed costs of collecting information about the target are high, cash financing is more likely than stock financing to be used as a means to signal high valuation in order to deter competing offers for the target firm. Eckbo, Giammarino, and Heinkel (1990) suggest that bidder values are higher when the bid is increasing in the fraction of cash financing used in the medium of exchange. Berkovitch and Narayanan (1990) derive a similar result but the gains to target firms increase with the degree of competition.

The empirical studies generally show that transactions in which the bidder offers only stock earn negative abnormal returns (for examples, see Travlos (1987), Amihud, Lev and Travlos (1990)), whereas cash acquisitions earn positive but statistically insignificant abnormal returns. However, Eckbo, Giammarino, and Heinkel (1990) find such stock acquisitions to earn positive abnormal returns, and acquisitions whose medium of exchange involve both stock and cash, often called mixed offers, earn the highest positive abnormal returns. Houston and Ryngaert (1997) study bank mergers and find that the abnormal returns to the bidder are greater when a greater proportion of cash is used to pay for the target. Moeller et al. (2007) find that

the abnormal returns to acquirers of public firms paid for with equity are negatively related to the extent of information asymmetry characterizing the acquirer. Officer et al. (2009) find that acquirers obtain higher announcement returns when using stock to acquire targets that are difficult to value (especially private targets). They suggest that the use of stock as a method of payment helps a publicly traded acquirer share the risk of a target's overvaluation with the target's owners.

The above empirical papers take the medium of exchange as exogenous and not optimized by the bidder's managers. In a sample of US mergers, Martin (1996) finds the likelihood of using stock in an acquisition to be higher in the acquirer's growth opportunities and in the acquiring firm stock returns. Acquirer managerial ownership is not related to the probability of stock financing over small and large ranges of ownership, but is negatively related over a middle range. Martin (1996) also finds that likelihood of stock financing decreases with an acquirer's cash availability, institutional shareholdings and block holdings. Examining European mergers, Faccio and Masulis (2005) find that corporate control incentives to choose cash are strong when a bidder's controlling shareholder has an intermediate level of voting power in the range of 20-60%. Furthermore, Faccio and Masulis (2005) also find bidders to prefer cash financing when the voting control of their dominant shareholders is threatened. This is particularly the case when target shareholdings are highly concentrated. Finally, they find that European bidders choose stock financing with greater frequency as measures of their financial condition weaken.

Hypothesis: Bidder returns are related to the fraction of the medium of exchange that is in cash. In doing this, the empirical researcher has to validly endogenize for the bidder's managers choosing the fraction of the medium of exchange that is in cash.

Merger of equals: Some papers have suggested that a merger of equals between equal size firms is easier to successfully integrate into a combined firm. Complementarities might exist between employees, managers, capital, and culture between firms of a more similar size. Accordingly, Asquith, Brunner and Mullins (1983) find bidder returns to be significantly higher when firms are closer in size as proxied by their pre-event market capitalization of equity. Moeller, Schlingemann and Stulz (2004) find that bidding firm shareholders lose considerably when they make a large acquisition. Bayazitova, Kahl and Valkanov (2012) find that only the largest of the transactions destroy value, whereas the others increase value. Bargeron, Smith and Lehn (2012) find that bidder returns are less than the corresponding returns for other acquirers when bidding firms with strong cultures announce relatively large acquisitions.

Hypothesis: Bidder returns are related to the pre-merger relative size of the merging firms.

Past performance: Beginning with Berle and Means (1932) the manager-shareholder conflict has generated considerable debate. Rather than maximizing shareholder wealth, managers may maximize their own utility, through either the consumption of perquisites such as club membership, corporate jets or effort avoidance (Jensen and Meckling (1976)) or in the

selection of less-risky investment projects (Amihud and Lev (1981)). The replacement of inefficient managers by a merger or acquisition is value enhancing for the firm. Accordingly, Jensen (1986) suggests that takeovers mitigate such managerial agency conflicts that are especially severe in firms that generate cash flow in excess of what is necessary to finance positive return investment projects, which he calls free cash flow. Lang, Stulz, and Walkling (1991) find that bidder abnormal returns are negatively related to free cash flow for low-value bidders (as measured by Tobin's Q which is defined as the market value of the firm divided by the replacement value of assets), but not for high-value bidders. This result is consistent with low-value bidding firms destroying firm value by taking over firms. Lehn and Poulsen (1989) find that firms that go private have significantly greater undistributed free cash flow than similar firms that have not gone private. In addition, they find that free cash flow is an important determinant of premiums paid in going private.

Mitchell and Lehn (1990) find that firms that make bad acquisitions by overpaying for targets are more likely to become targets themselves. Morck, Shleifer and Vishny (1990) find that the bidder abnormal returns are lower (higher) when their stock returns prior to the merger announcement are lower (higher). Lang, Stulz, and Walkling (1991) find that bidder returns are higher when well-managed bidders (those with a higher Tobin's Q prior to the merger announcement) takeover poorly managed target firms (those with a lower Tobin's Q prior to the merger announcement).

Hypothesis: Bidder returns are related to the pre-merger performance and free cash flow of the bidder and target firms.

Insider ownership: Under standard managerial agency theory, managers will be willing to trade off some of the gains of sub-optimal underinvestment in risky projects due to their human capital, or in perquisite consumption, or in effort avoidance, for the financial gains of their share ownership in the firm. Consistent with this argument, Lewellen, Loderer and Rosenfeld (1985) and You et. al (1986) find that the bidder abnormal returns are higher when their managers own a higher percentage of the firm's shares before the merger. However, Morck, Shleifer and Vishny (1988) suggest that firm value can also be adversely affected at high levels of managerial ownership as managers are entrenched and free from the discipline of their shareholders. Consistent with the entrenchment hypothesis, Hubbard and Palia (1995) find a non-monotonic relationship between insider ownership levels and the bidder's abnormal returns. More specifically they find that bidder abnormal returns increase from zero to five percent of insider ownership and then decrease thereafter.

Hypothesis: Bidder returns are related either monotonically or non-monotonically to the bidder's insider ownership percentage.

Time period and merger waves: There have been five distinct merger waves in the post-1960s period. The incidence and peaks of these merger waves generally coincided with booming or high stock market returns.

Hypothesis: Analysis of bidder returns should vary across the five subsample time periods.

The first is the conglomerate merger wave period that started around 1960 had a peak around 1967 to 1969, and came to an end in 1973 with the stock market collapse and economic recession. During this period, large firms like ITT and Textron undertook many unrelated diversified mergers. Matsusaka (1993) examines mergers and acquisitions in the 1960s, and finds that bidder abnormal returns were higher in diversifying acquisitions, which implies that diversification was not driven by managerial risk-reducing objectives. He also finds that the market responded positively to bidders who retained the management of target companies and negatively to bidders who replaced target management. This is consistent with the argument that the market favored acquisitions intended to exploit managerial synergies and disliked acquisitions that were motivated to discipline target management. Hubbard and Palia (1999) also find that diversifying acquisitions were rewarded with higher abnormal returns for bidders during this period. Additionally, they find that bidder returns are higher when an unconstrained bidder takes over a financially constrained target firm. They interpret this as evidence that external capital markets were not very well-developed in the 1960s, and investors expected mergers and acquisitions that formed internal capital markets to be value-maximizing as they reduced the target firm's financial constraints.

Hypothesis: Bidder returns are related to whether the merger was a diversifying or focused merger.

The second post-1960s merger wave started around 1978 and lasted through 1989. During this period, many industries were deregulated. Natural gas, banking, telephones, trucking, utilities, railroads and airlines underwent deregulation of some or all political constraints. Such large changes in the firm's operating environment resulted in an evolving managerial and organization structure. For example, Palia (2000) finds that utilities attract CEOs with lower-quality of education (based on the ranking of the educational institution at which the CEO got her degree) than a sample of manufacturing firm CEOs. Additionally, he finds that the quality of CEO education increases in airlines after they were deregulated. Joskow, Rose and Shepard (1993) finds that CEO pay levels and sensitivities are lower in regulated industries than in the unregulated manufacturing sector. Hubbard and Palia (1995) finds that CEO pay-performance sensitivities increased after interstate branching deregulation for U.S. commercial banks. They also find an increase in CEO turnover in the post-deregulation period.

Additionally, many of the conglomerate firms that were formed in the first merger wave started to divest their assets during the second merger wave. Many of the acquisitions were hostile transactions. Comment and Jarrell (1995) find that during this period, diversified firms were relatively more active in the market for corporate control than focused firms. They also

find that shareholder value increases as the firm has greater corporate focus. John and Ofek (1995) find that asset sales due to divestitures increase the bidder's abnormal returns. Berchtold, Loderer and Waelchli (2014) find that mature firms that increase (decrease) their dividend payout (their capital expenditures) after the divestiture increase their abnormal returns. In contrast, young firms that increase their research and development expenditure increase their abnormal returns.

Hypothesis: Bidder returns are related to whether the transaction was a divestiture or not.

The third merger wave started in the early 1990s and ended in 2000. During this period, leveraged buyouts (LBOs) increased significantly and the deals were more friendly than hostile. With the rapid rise of the internet, many new firms and old technology firms looked to gain economies of scale and scope in order to gain market share and build large network externalities. The large deal of Time-Warner taking over internet firm AOL is one of the more destructive shareholder deals of that era.

Hypothesis: Bidder returns are related to whether the transaction was hostile or friendly.

Hypothesis: Bidder returns are related to whether the transaction was a LBO or not.

The fourth merger wave started in 2003 and ended with the financial crisis in 2007. During this period, there was an abundant availability of liquidity, and there were more international acquirers than ever before. Acquirers were less overvalued relative to targets and merger proposals comprised higher cash elements. Moreover, the market for corporate control was less competitive, acquirers were less acquisitive and displayed less over-optimism, and offers involved significantly lower premiums, indicating more cautious and rational acquisition decisions. However, Alexandridis et. al (2011) find that transactions during this period destroyed at least as much bidder value as those in the 1990s.

Hypothesis: Bidder returns are related to periods of higher liquidity.

The fifth post-1960s merger wave started around 2010 and is still ongoing. The high stock market valuations primarily caused by the easy macroeconomic policy provided by the Federal Reserve and improving firm prospects are often reasons cited for this wave. There has also been a large growth of activist hedge fund investors. Coffee and Palia (2014) shows the exponential growth in hedge fund activism and survey the empirical evidence for their efficacy in generating higher firm value. They describe the mixed evidence in support of the argument that hedge fund activism is value maximizing for shareholders of the target firms.

Hypothesis: Bidder returns are related to whether there was an activist investor involved in the transaction or not.

There have been two general strands of literature that have tried to explain merger waves. The first suggests that merger waves occur as responses to industry shocks such as

technological innovations and deregulation. Such large scale reallocation of assets results in a merger wave when there is sufficient capital liquidity in terms of high stock market valuations that can propagate the shock to a wave (Mitchell and Mulherin (1996), Mulherin and Boone (2000), Andrade, Mitchell and Stafford (2001) and Harford, (2005)). The second are behavioral theories that show that bidders rationally use their overpriced stock to take over a target firm. Shleifer and Vishny (2003) suggest that managers of bidding firms know that their stock is overvalued in stock market booms and are able to exchange their stock for a target's real assets before external capital markets realize that the stock is overvalued. Target managers are assumed to have short-term time horizons and therefore gain by cashing-in their stakes in the target firm. Rhodes-Kropf and Viswanathan (2004) suggest that targets have overestimated the synergy which happens to be correlated with the overvaluation errors in the overall stock market. Harford (2005) find evidence in support for the industry shock hypothesis whereas Rhodes-Kropf and Viswanathan (2007) find evidence in support of the misvaluation hypothesis.

Hypothesis: Bidder returns are related to when the stock market is overvalued.

Innovation: It is well known that small firms in certain industries such as pharmaceuticals are more innovative and research savvy than large firms. This is because small firms can organize their efforts by being focused, disciplined and financially constrained whereas large firms are more bureaucratic and less disciplined. Accordingly, Phillips and Zhdanov (2012) find that small firms optimally choose to invest in research and development as they can sell out to large firms. Therefore large firms do not invest as much in research and development. Bena and Li (2014) find that companies with large patent portfolios and low R&D expenses are acquirers, while companies with high R&D expenses and slow growth in patent output are targets. Further, technological overlap between firm pairs has a positive effect on transaction incidence, and this effect is reduced for firm pairs that overlap in product markets. These results suggest that combining innovation capabilities are important drivers of acquisitions.

Hypothesis: Bidder returns are related to when the target firm is innovative.

3. ESTIMATION ISSUES

In this section, I describe below some of the empirical estimation issues associated with the extant literature.

- 1) *Complete model:* As described above, there are a large number of independent variables that might be related to bidder abnormal returns in a regression. All the studies have only included a subset of this comprehensive list of variables. It would be optimal to examine which variables and hypotheses remain statistically significant under the complete model.

- 2) *Interaction effects*: In some hypotheses, the various proxy variables should be interacted with each other. For example, the misevaluation theory requires lower bidder returns when the medium of exchange has a lower fraction of cash.
- 3) *Endogenous variables*: Many hypotheses involve the endogenous choice of the merger partner. This suggests that each endogenous variables like the medium of exchange and hostile and friendly acquisitions requires a separate independent variable (called an instrumental variable in econometrics) for unbiased estimation. Such a method is often called a simultaneous equation model. Given the problem of finding valid instrumental variables for each endogenous choice variable, one could instead use methods like the dynamic Generalized Method of Moments estimator of Arellano and Bover (1995). In this method, lagged levels and first-differences uncorrelated with the first-differenced residuals are used as valid instrumental variables.
- 4) *Time periods*: The previous section clearly shows that acquisition motives and market expectations of value-increasing transactions differ across the five merger waves. Analysis of bidder returns should break up the sample into the five subsample time periods. Ideally, separate regressions should be undertaken for each sub-period as the corporate control motives for each sub-period are quite different. If this is not possible, at the very least, one should use an indicator variable for each time period.
- 5) *Calculation of beta and standard errors in the event period*: Most of the studies use the beta and sigma of the stock returns in the pre-event estimation period for the appropriate proxy for the beta and standard error in the event window. But the market's perceived risk of the firm might have changed (such as in a LBO wherein debt is substantially increased). The beta and standard error in the event window should therefore be modified reflecting this increased risk.
- 6) *Proper definition of diversifying and focused mergers*: All the studies showing that diversifying mergers are non-value maximizing for bidder shareholders in the post-1970s period have used SIC codes. However, Hoberg and Phillips (2010) using algorithms that analyze the description of the firm's product (or text-based analysis) for product complementarity show that the conglomerate discount of Lang and Stulz (1993) and Berger and Ofek (1995) disappears. One should check whether the bidder's abnormal returns is related to the text-based measure of product similarity and in what direction (positive or negative).

4. FUTURE RESEARCH ISSUES

In this section, I describe a few possible directions for future research.

Anticipation and revelation effect: The above research assumes that there was no prior information of the proposed merger in the bidder's stock price before the merger announcement. A growing literature, dating back to Eckbo et al.,(1990b), Grinblatt and Titman (2002) and Hietala et al. (2002), argues that acquirer's announcement returns can be a contaminated measure of their takeover gains. The critique builds on the notion of an anticipation effect and a revelation effect. Specifically, acquisitions may be partially anticipated and therefore their announcement returns only captures the unexpected component of the takeover gains (i.e., the anticipation effect), which

biases the estimate towards zero. More importantly, takeover announcements may reveal new information regarding acquirer's stand-alone value, which induces market reassessment that further confounds the estimate of acquirer's merger gains (i.e., the revelation effect). Masulis and Swan (2014) find that the average bidder stock returns for a stock bid in the 120 days before the merger announcement to be 5.4%, an event period announcement return of -2.2%, for a net return of 3.2%. No run-up of stock returns exists for cash bids. Therefore, the typical stock deal signals to the market prior price run-up, which on announcement reveals a negative price adjustment. Additionally, they find that in every sub-period of the merger and acquisition cycle -- the run-up, the bid announcement, and post bid announcement to success or failure on deal outcome news -- the market valuation of the bidder and target move together in the same direction. This is because both share in the expected synergistic gains if the bid is successful and also in the mutual loss of gains if the deal fails. Cai, Song and Walkling (2011) find that the first bidder after a minimum twelve-month dormant period in an industry experiences significantly positive (1.5%) abnormal returns. Moreover, industry rivals who announce bids in subsequent deals earn positive returns before they make a bid. Therefore information associated with an initial bid affects the price of bidders before they actually make a merger announcement.

Impact of antitakeover charter amendments: Many papers have suggested that managers of firms with many antitakeover amendments earn lower stock returns and Tobin's Q (see for example Gompers, Ishii & Metrick (2003), Bebchuk, Cohen, Ferrell (2009), and Bebchuk, Cohen & Wang (2013)). One could check whether the inclusion of these antitakeover provisions (namely, the 24 provisions of the Governance Index or the six provisions of the Entrenchment Index) is negatively related to the abnormal returns of the bidding firm.

Impact of CEO age and tenure: It seems reasonable that CEOs of bidding firms have different motives as they age and progress in the firm. For example, they might learn about making better acquisitions (see Murphy (1986) for how shareholders learn about their CEO's ability and how they should optimally structure the CEO's pay-performance contract). Pan, Wang and Weisbach (2015) find that a firm's stock return volatility declines with CEO tenure due to learning about a CEO's ability. Under the learning hypothesis, older and more seasoned executives would make better acquisitions. Alternatively, under the career concern hypothesis of Gibbons and Murphy (1992), CEOs are implicitly incentivized early in their career from their reputation in the labor market, which could partially substitute for a higher explicit incentive contract. During these years, CEOs would be more willing to undertake costly unobservable managerial actions to correctly increase the market's assessment of their ability. Later on in their career, CEOs require a higher explicit pay-performance sensitivity to compensate them for reduced career concerns. Therefore, one would expect younger and less experienced CEOs to make better acquisitions.

5. CONCLUSIONS

The above discussion shows that the early papers that found shareholders of acquirers earned zero or mostly negative abnormal returns in the post-1980s period have to be reexamined. Further, a number of new hypotheses have yet to be examined. I hope future research will shed light on the important issue on shareholder wealth maximization in a merger and acquisition transaction keeping in mind the new hypotheses and testing methodologies.

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