Stock Market Driven Acquisitions:

Theory and Evidence*

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October 4, 2005

Abstract

SMDA theories predict that acquirer overvaluation increases target premia in stock mergers but not in cash ones. I find exactly this predicted asymmetry when regressing observed merger premia on several proxies for acquirer overvaluation. Because this test relies only on the differential effects of overvaluation in stock versus cash mergers, it is robust to standard alternative explanations that the literature has, thus far, not ruled out. I also investigate the previously unexplored relationship between merger premia and post-merger abnormal equity returns. Treating returns as a proxy for *ex ante* overvaluation, I find the same asymmetric relationship across cash and stock deals as with more traditional signals of mispricing.

*I would especially like to thank Jeremy Stein, as well as John Campbell, Raj Chetty, Ben Edelman, Benjamin Friedman, Richard Holden, David Laibson, Gregor Matvos, Randall Morck, Emily Oster, Parag Pathak, Jesse Shapiro, and Andrei Shleifer for many useful comments and discussions. Participants the Harvard Finance Lunch made several insightful comments. Geoff Verter, Kenneth Froot, and Sarah Eriksen were instrumental in enabling me to obtain the dataset used in this paper. I acknowledge research support from the National Science Foundation.

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1 Introduction

During the "internet boom," many asset priced soared and then crashed back to earth, and Wall Street witnessed an unprecedented flurry of merger activity. Figure 1 shows the number of mergers in each year since 1973; the abnormal level of activity in the late 1990s is clear.[1] The possibility of a connection between the timing of these two phenomena has not escaped economists. Loughran and Vijh (1997) first suggested that overpriced firms undertaking equity mergers could explain salient facts in the merger literature. Shleifer and Vishny (2003) propose a theory of "stock-market-driven acquisitions" (henceforth SMDA) in which a potential acquirer with overvalued equity may use that stock as a cheap currency to purchase hard assets. Though the merger would be followed by negative returns for the joint company, and might even destroy value on net, it would, nevertheless, raise the long run value of the acquiring company's shares. Rhodes-Kropf and Viswanathan (2004) also analyze this theory, using a standard signal-extraction problem between idiosyncratic misvaluation, market-wide misvaluation, and economic synergies to lead targets to willingly accept overvalued acquirer stock in a merger.

There is much anecdotal evidence to suggest that high valuations drive mergers. One example of a possible SMDA is America Online's purchase of Time Warner (announced on January 10, 2000), using $166 billion in stock. The AOL stock price had doubled in the year before the announcement, climbing to its all-time high just one month before the deal; AOL stock has fallen by more than 80% in the four years since the acquisition, so that the securities with which AOL bought Time Warner are now worth less than $30 billion. Furthermore, AOL offered a $45 billion premium (compared to the market value of Time Warner's stock), but, according to the *Financial Times*, the deal included only $8 billion in economic synergies, so that most of the benefits of the deal must have come from other sources.[2] Of course, it is possible that AOL-TimeWarner fared poorly after the merger for other reasons; but, if the management of AOL had forecasted the subsequent stock price decline, this merger is a prime example of an SMDA.

Other plausible examples of such behavior include Vivendi Universal's purchases of Seagrams and Canal+ in 2000. Vivendi's stock price reached its all-time high just one month before the first of these acquisitions, up more than 50% in the previous year; since that time, it has fallen by more than 75%. Guillaume Hannezo, Vivendi's

[1] This figure does not include mergers trimmed out of my sample. See Section 4.2 for details on the sample.
[2] "All-Share Deals: Paper Money." *FT.com* site, February 11, 2000.

financial director, subsequently remarked that

> Depending on where you are in the cycle, the real cost of issuing shares is extremely different: issuing shares at the middle of the internet bubble ... was the right thing to do. Looking back, because of the bubble we had a very low weighted average cost of capital on the equity side. For the same reason today we have a very high cost of capital on the equity side, which explains why we would never envisage a significant acquisition.[3]

In essence, Mr. Hannezo acknowledges that Vivendi engaged in two SMDAs, using overvalued equity to finance the mergers.

Investment bankers also confirm that stock market valuations, alongside economic synergies, often play a key role in the mergers and acquisitions advisory business. One senior vice president in Lehman Brothers' M&A group remarked in an interview that: "There is no question that equity valuation is one of the leading indicators of M&A trends. The common theme among all of these [deals] is a rich earnings multiple which enabled [the bidders] to do stock-based acquisitions with seemingly 'cheap' paper."[4]

The finance literature, in response to these theories and anecdotes, has produced many papers attempting to ground the SMDA theory empirically. For example, Dong, Hirshleifer, Richardson and Teoh (2005) find that different proxies for overvaluation predict the method of payment and premia in mergers; Rhodes-Kropf, Robinson, and Viswanathan (2005) show that mergers are timed to coincide with high levels of firm-specific overvaluation, and that acquirers are often more highly valued than targets; and Ang and Cheng (2003) show that overvaluation correlates with an increased probability of firms choosing to merge and then financing mergers with equity.

But while many of these recent results are consistent with the SMDA theory, they do not rule out alternative explanations of those findings. For example, firms with apparently high market valuations might expect higher future growth, as in the "Q-theory" of mergers and thus wish to expand through a merger and even pay higher target premia (Brainard and Tobin (1968); Jovanovic and Rousseau (2002); Harford, 2005). Alternatively, managerial hubris, perhaps driven by a high stock valuation, might drive firms to incorrectly extrapolate strong pre-merger performance and expand in the mistaken belief that merger synergies are larger than in reality (Roll, 1986; Rau and Vermaelen, 1998). Indeed, most of the facts in the existing literature are consistent not only with

[3] "Companies & Finance Europe: Vivendi Universal Chief Comes Under Attack," by Jo Johnson. *Financial Times*, March 7, 2002.
[4] Doug Solomon, personal interview, March 5, 2002.

the SMDA theory but also with one or more of these alternative stories, and thus the literature has yet to provide strong empirical support for the SMDA theory.

In this paper, I test new and more robust hypotheses of the SMDA model. To do so, I first model the incentives facing potential acquirers with overvalued equity and the actions of targets. When I account for mispricing in the stock market, overvaluation increases the premium paid to the target in equity mergers but not in cash mergers. SMDAs create this effect for two reasons: First, the acquiring firm earns additional surplus from selling overpriced stock to the target in an equity deal. Second, the buyer is less patient, since the deal must be completed before the overvaluation collapses. These effects on target premia cannot operate in cash mergers, since there is no sale of stock.

I then use the asymmetry between stock and cash mergers to derive two new empirical hypotheses. First, traditional proxies for overvaluation (such as the book-to-market ratio or the value-to-price ratio) should covary more positively with target premia in equity deals than in cash acquisitions. Though my measures of mispricing undoubtedly correlate with neo-classical and psychological drivers of merger premia as well, they should do so equally in cash and stock acquisitions, and thus any differential effect in stock mergers reflects the impact of overvaluation. These conditions required for the validity of the hypotheses are weaker than in previous tests for the effects of overvaluation on mergers. A statistically significant difference between the coefficient in equity deals and that in cash deals provides evidence to reject a null-hypothesis that acquirer overvaluation does not drive equity mergers.

The SMDA model also generates testable hypotheses for post-merger returns. The most straightforward of these predictions, recognized since Loughran and Vijh (1997), is that the stock of equity acquirers should underperform following a merger. But the theory also suggests that there should be a differential relationship between post-merger returns and merger premia across stock and cash deals. Since subsequent acquirer returns are, like the book-to-market ratio, a noisy proxy for *ex ante* overvaluation, a similar logic as above applies: Post-merger returns should correlate more negatively with target premia in equity deals than in cash ones. The formal test of this hypothesis will, somewhat counterintuitively, place the returns on the righthand side of the regression equation. Nevertheless, such a finding would imply that merger premia have predictive power for future returns, controlling for traditional market factors.

I test these empirical predictions from the SMDA model in the CRSP/Mitchell merger database. I first demonstrate that proxies for acquirer overvaluation, including the book-to-market ratio and value-to-price ratio, have a differentially positive effect on target premia in equity mergers. The estimated effects are both economically and statistically significant: An increase in the acquirer overvaluation proxy from the 25th to the 75th percentile of that distribution (henceforth, IQR) predicts an increase of 4.3 percentage points, or 25%, in the median equity target premium as compared with the implied movement in an otherwise similar cash deal. These results are robust to controlling for industry differences between acquirers and targets, year fixed effects, and a number of balance sheet variables. Since the IQR of equity merger premia is 46.8 percentage points, this analysis suggests that factors relating to acquirer mispricing can explain 9.2% of the variation in equity target premia.

The data also support the hypotheses concerning post-merger returns. First, I confirm the finding of Lughran and Vijh (1997), that equity acquirers underperform cash buyer following the merger. I then find that the relationship between merger premia and post-merger abnormal returns differs across stock and cash deals. Controlling for balance sheet variables, a decrease in post-merger abnormal returns from the 75th to the 25th percentile of that distribution increases the target premium by 6.5 percentage points more than the effect in a similar cash merger. As before, this effect is both statistically and economically significant, as well as robust to alternative specifications.

The findings in this paper contribute to the literature on mergers in two important ways. First, the tests I derive from the asymmetry of SMDA theories rely on weaker identification assumptions than those previously examined. Accordingly, I can rule out many standard alternative explanations, such as the Q-theory of mergers or managerial hubris. Though other authors in the literature have compared cash and stock mergers in this way, none have identified this asymmetry as an implication of the SMDA hypothesis, and thus have not recognized the import of these findings for understanding the drivers of mergers. Second, I show that the relationship between target premia and post-merger abnormal returns exhibits an asymmetry across cash and equity acquisitions. As I show, these results together provide doubly robust support for the SMDA theory, since potential confounds for one hypothesis typically bias against the other.

The next section briefly reviews the existing literature on the effects of stock market valuation on corporate decision-making. Section 3 provides a theoretical model of SMDAs to formalize the familiar intuition and derives

from it identifying empirical predictions of the theory. Section 4 describes the methodology and data sources used to test the basic prediction of the model. Section 5 presents empirical results on the relationship between firm overvaluation and target premia, while Section 6 exaamines post-merger returns and their connection to SMDAs. Section 7 concludes.

2 The Existing Literature

The idea that perceived equity valuations affect managerial decisions is by no means new. The most obvious example of this behavior is an equity issue; firms should find it preferable to issue equity when they can receive a better price for it in the market. Most generally, Stein (1996) shows that managers should change the optimal hurdle rates for projects in the face of an "irrational" world. Indeed, evidence has shown such behavior, both across time and in a cross-section of the market. Taggart (1977) first shows evidence of the timing of seasoned equity issues, suggesting that U.S. firms postpone equity issues until their market valuation is high. Marsh (1982) finds a similar result for companies in the United Kingdom, demonstrating that firms in need of capital are heavily influenced by market conditions and the past history of security prices in choosing between debt and equity. Choe, Masulis and Nanda (1993) also connect the decision to issue equity with the aggregate economy's position in the business cycle. Jung, Kim and Stultz (1996), though, suggests that agency concerns are an important cause of equity issuance.

There is also evidence that managers time the market in initial public offerings (IPOs). Loughran, Ritter and Rydqvist (1994), using a database including IPOs in 38 countries worldwide, show that companies successfully time these issues to occur in periods of high market valuations, and that these companies' stocks often show low long run returns following the initial release. Lerner (1994) demonstrates a similar result for venture capital firms, while Pagano, Panetta, and Zingales (1998) show that privately held Italian firms are more likely to go public when their industry's book-to-market ratio is low. Most recently, Ritter and Welch (2002) suggest in a survey paper that these patterns in IPO issuance may be changing over time, and that other considerations, including as non-rationality and the principal-agent relationship between managers and shareholders, play a key role as well.

Conversely, Ikenberry, Lakonishok and Vermaelen (1995) show that stock repurchases coincide with periods

of low equity market valuation. Graham and Harvey (2001) add to the evidence for market timing with survey data documenting what considerations managers focus on when issuing equity. Most notably, they report that two-thirds of CFOs agree that "the amount by which our stock is undervalued or overvalued was an important or very important consideration" in issuing equity, and a similar number agree that "if our stock price has recently risen, the price at which we call sell is 'high'."

Moreover, managers seem to be quite successful in their market timing efforts, at least as judged by post-issue returns. Even net of adverse announcement effects from asymmetric information (Myers and Majluf, 1984), issuers earn negative excess returns following equity sales, suggesting that their stocks were indeed overvalued and later returned to fundamental valuations. Stigler (1964) first suggests this phenomenon, while Ritter (1991), Loughran and Ritter (1995), and Spiess and Affleck-Graves (1995) convincingly demonstrate this fact in large samples of firms. As before, stock repurchasers show the opposite effects of market timing and earn high subsequent returns (Ikenberry, Lakonishok and Vermaelen, 1995).

Although the fact of negative excess returns following equity issues is not disputed, some economists nonetheless disagree that this evidence suggests overvaluation at the date of issue. Eckbo and Norli (2000) and Eckbo, Masulis and Norli (2000), for instance, suggest that these low excess returns result not from overvaluation at the date of issue but rather the lower risk of issuers. These low returns could also result from managers misvaluing their stocks. If firms choose to issue when they *incorrectly* believe that their stock prices are overvalued, they may be acting inefficiently, thus lowering the expected future cash flow of the firm.

Finally, some further studies document market timing in managerial actions other than equity issues. For instance, Jenter (2003) analyzes insider trading patterns and reports that managers in high book-to-market firms purchase additional equity despite sizable initial exposure to the firm's idiosyncratic risk, while managers in low book-to-market firms sell more stock than predicted on the basis of equity ownership, compensation grants and recent stock price history. In Jenter's data, managers also sell additional stock when the firm issues equity.

There is a small but growing literature on market timing in mergers. Shleifer and Vishny (2003) assume that all capital is identically valued in the long run, but they allow the market to misprice each individual stock, as well as the "synergies" from merging, in the short run. Rhodes-Kropf and Viswanathan (2004) provide more microeconomic foundation to these ideas, suggesting that a signal-extraction problem accounts for target

firms' willingness to accept overvalued stock as payment in equity mergers. From these basic assumptions, these papers then derive several predictions, including: 1) acquirers use stock disproportionately when general market or industry valuations are high; 2) acquirers in stock mergers should earn high returns and exhibit other signs of overvaluation prior to the merger; 3) despite negative long run returns, acquisitions for stock serve the interest of long-term shareholders of the bidder. The intuition for the first two predictions is that overvaluation of a company's stock prompts managers to undertake equity mergers, even in the absence of any economic synergies, to capitalize on their stock as a "cheap acquisition currency." The logic behind the final prediction is that, while the stock price of the acquirer may fall after equity mergers, it would have dropped further in the absence of a merger as the stock returned to its efficient level.

These predictions fit well with several stylized facts in the literature. Andrade, Mitchell and Stafford (2001), for instance, report that, in 66% of mergers from 1973 to 1998, the acquirer's price-to-earnings ratio exceeded the target's price-to-earning ratio. Rhodes-Kropf, Robinson, and Viswanathan (2005) show that mergers are timed to coincide with high levels of firm-specific overvaluation, and that acquirers are often more highly valued than targets. Dong, Hirshleifer, Richardson and Teoh (2005) find that different proxies for overvaluation predict the method of payment and premia in mergers. Akbulut (2005) and Song (2005) confirm these findings, using insider trading-based measures of overvaluation. Teoh, Welch and Wong (1998) report that managers attempt to artificially inflate earnings prior to a stock acquisition by altering discretionary accruals; thus, managers not only exploit misvaluations but also actively create them. These findings are countered by Heron and Lie (2000), though, who find no evidence of managed earnings prior to mergers, but are confirmed by Pshisva and Suarez (2004) using a new and improved dataset. Furthermore, Sudarsanam, Mahate and Freeman (2001) report that "glamour" bidders, as measured by book-to-market ratio, are more likely to use equity than cash in a sample of United Kingdom firms engaging in acquisitions between 1983 and 1995.

There has also been some work on post-merger returns. Loughran and Vijh (1997), using matched firm pairs to calculate abnormal returns, find the firms undertaking equity mergers significantly underperform cash mergers and all forms of tender offers (though especially cash ones). The authors then speculate that overpriced firms may be drawn to issuing equity in a merger. Rau and Vermaelen (1998) find that "glamour" acquirers earn significantly lower stock returns following mergers, though report no systematic differences across firms using

different method of payment. These authors argue that incorrectly extrapolation of pre-merger performance is the explanation for their finding. Agrawal and Jaffe (2000) review this post-merger returns literature more extensively, though these results are subject to the criticisms of the post-issue return literature from above. Among those who dispute that overvaluation plays an important role is mergers are Mitchell and Mulherin (1996) and Harford (2005), for instance, who argue that neo-classical factors account for most of the variation in merger activity across time.

3 The Empirical Content of Stock Market Driven Acquisitions

Before one can look for the effects of overvaluation in mergers, one must examine carefully what are those effects. Therefore, this section develops a simple model of SMDAs to clarify the intuition and empirical predictions discussed above. The departure point for this model is the idea that managers may undertake equity mergers, even in the absence of economic synergies, in order to take advantage of a favorably priced stock (Loughran and Vijh, 1997; Shleifer and Vishny, 2003; Rhodes-Kropf and Viswanathan, 2004). Based on this insight, I work through the logic of both the acquirer incentives and the bargaining process to generate the key testable hypotheses investigated in this paper. For the sake of simplicity, I do not model these interactions mathematically but rather highlight the primary intuitions that would be contained in such a formalism.[5]

3.1 Generating Testable Hypotheses

My setup is a basic one, that of a potentially overvalued acquirer bidding to acquire a target firm. Suppose that only the management of the potential buyer is aware of any overvaluation, and that neither the target firm, nor the market, can deduce mispricing from the actions of the overvalued firm. (In this particular way, rational expectations would fail in a more formal model of such behavior). In the long run, however, suppose that any mispricing in the buyer's stock price dissapates, and that, knowing this inevitability, acquiring management maximizes over this horizon. These circumstances create the incentive to sell the overpriced equity in the short run for assets that will not depreciate as much over time.

[5] There are many different ways to model this setup and prove the desired results. Readers interested in a detailed explication of one such such mathematical representation (and the discussion of a number of others) should see Friedman (2005), an earlier draft of this paper.

In order for management to cash out of the overvalued stock, they could either sell the equity directly to the market in an SEO or purchase another company by issuing stock. This paper focuses on the consequences of the latter option; for a number of reasons, this may be the more sensible choice in many situations. For instance, Baker, Coval and Stein (2004) suggest that some shareholders in a company may be inertial investors and would not resell acquirer stock on the open market were they to receive it after an equity merger. If there is downward-sloping demand for the acquirers stock in the market, (Shleifer, 1986; Moeller, Schlingemann, and Stulz, 2004b), an equity merger exerts less downward price pressure on the stock than a similarly sized SEO. Also, the size of equity issues through stock mergers can be larger than through seasoned equity offerings, allowing the acquirer to sell more overpriced stock for a similar discount. For instance, AOL issued $166 billion of stock to Time Warner shareholders in conjunction with their merger, far more than it could have realistically sold on the open market in a direct stock issue. If there are positive economic synergies between the two firms, the acquirer would be able to reap both the synergistic and misvaluation benefits in one corporate action, thus minimizing any fixed costs of transactions.

Supposing that our firm did choose to acquire a target company, two main factors drive the willingness-to-pay. The most basic input is the total value of the target company to the acquirer, including any "economic synergies." An increase in this value will raise the bid for *any* potential acquirer, no matter the mode of payment.[6] For a firm attempting an equity takeover, though, acquirer misvaulation also determines the willingness-to-pay. As the overvaluation of the acquirer increases, the long run value of the company shrinks as a fraction of the total nominal value; thus, management is willing to give up more of the company to complete the deal. Taken to the extreme, an "internet" acquirer with a positive stock price but zero long run value would gain from issuing *any* finite number of shares to acquire assets with real value. Furthermore, the acquirer knows that the overvaluation could disappear at any time, and so has less patience (or bargaining power) in the negotiation. Since neither of these effects operate in cash deal, overvaluation has no affect on the merger premium.

This asymmetric impact of overvaluation is the key theoretical intuition for this paper. From it I develop a number of empirical predictions that will identify the impact of overvaluation in equity mergers in the data.

[6] I assume, in this discussion, that the potential acquirer does not hold all of the bargaining power, in which case the bid would entirely determined by external factors.

HYPOTHESIS 1: A proxy for overvaluation, such a Tobin's Q, correlates more positively with merger premia in equity deals than in cash ones.

In the presence of stock-market-driven acquisitions, overvaluation should positively affect the premia paid in equity deals, but not cash ones. In actual data, though, one is unlikely to be able to measure overvaluation without also capturing some of the economic synergy; for instance, the book-to-market ratio and the value-to-price ratio, each measures of company valuation, likely capture a bit of both. This comparative static is robust to the missing data problem, however. Since the economic value of the target affects the merger premium equally in all mergers, the proxies should only correlate more positively with bid sizes in equity deals if overvaluation plays a role. By looking not for the level of the effect of the book-to-market ratio in stock deals alone but rather for the effect relative to cash mergers, I can isolate the impact of overvaluation in equity acquisitions more easily than in previous analyses. I test Hypothesis 1 in Section 5 below.

This model also makes strong predictions with respect to the post-merger returns to the acquirer.

HYPOTHESIS 2: The stocks of equity acquirers should underperform those of cash acquirers in a period after the close of the merger.

The market must be unaware of the mispricing of the buyer at the time of the merger for the SMDA to succeed. Eventually, the information asymmetry behind the overvaluation will disappear, at which point the price will, in expectation, have adjusted to its fundamental level. Since firms choose equity as the means of financing will likely do so because their stock is overpriced, the post-merger abnormal returns of equity acquirers should be lower, on average, than those for cash bidders. The literature has recognized this as an implication of the SMDA theory before; for good measure, I confirm the finding in my sample at the beginning of Section 6.

Finally, this model makes a clear prediction about the cross-section of post-merger returns of acquirers.

HYPOTHESIS 3: An acquirer's post-merger abnormal return correlates more negatively with the merger premia in equity deals than in cash ones.

Since the post-merger abnormal can be viewed as a noisy proxy for *ex ante* overvaluation, the relationship between it and the merger premium should be the same as the correlation between the merger premium and valuation ratios, as in Hypothesis 1. In this way, both the choice of stock or cash and the level of the merger premium have predictive value for post-merger abnormal stock returns. I test Hypothesis 3 in Section 6 below.

3.2 Alternative Explanations

Many alternative theories of mergers do make predictions about the relationship between Tobin's Q and merger premia, but these effects are constant across methods of payments and so cannot explain the differences predicted by the SMDA model. For instance, a neoclassical "Q-theory" of mergers would predict a positive correlation between Tobin's Q and merger premia, but under that theory the relationship should be the same across cash and equity deals. Similarly, one theory of managerial overconfidence might argue that hubris is greatest when the book-to-market ratio is high, so that merger premia would then correlate positively with Tobin's Q (since an overconfident manager would overpay). But, here too, the effect should be the same in cash and equity mergers.

Post-merger returns are somewhat more difficult to analyze for the other theories. The semi-strong version of the efficient markets hypothesis would predict that the merger premium - and, indeed, any public information - has no predictive power on returns whatsoever. If market efficiency does not hold, misvaluations could go in either direction. If markets underpredict future movements, for instance, then Q-theory would argue that a high target premium indicates future growth, and thus more positive abnormal returns, after mergers with large premia. An overconfidence-based theory would forecast negative abnormal future returns after most mergers but no clear relation to the size of the premium. None of these stories predict a different relationship between the target premium and post-merger returns in cash and equity deals.

One potentially confounding effect is the selection of firms into cash and equity mergers. If an omitted variable correlates not with the choice of equity versus cash but also with both overvaluation and the merger premium, it could spuriously bear out Hypotheses 1 and 3. (The ideal situation would be random assignment of method-of-payment to firm, but that is, of course, unrealistic). Theory suggests that the primary variable on which firms should select into equity of cash for mergers is the market overvaluation of their stock; the more overvalued the acquirer, the more it has to gain from a stock merger over a cash merger. But selection along these lines would not provide an alternative explanation for these hypotheses, since the direct correlation of overvaluation with merger premia is precisely the effect I measure.

One variable which could bias the results in this way would be demand for capital structure. High value firms (with large economic synergies) which preferred equity deals, perhaps to leave options open for future financing decisions, would create the effect predicted in Hypothesis 1. This particular theory is harder to square with

Hypotheses 2 and 3, though, since the cause of initially high value in these firms would also need to covary with post-merger underperformance. So long as the market has accurately assessed the firm in question, there would be no predictive power for returns. And if this is not the case, the positive information that causes the firm manager to prefer equity to cash should increase post-merger abnormal returns, not lower them.

In order to spuriously generate results which support Hypotheses 1 and 3, an omitted variable would need to covary positively with Tobin's Q (and other *ex ante* proxies for overvaluation), negatively with post-merger abnormal returns, and more positively with target premia in equity deals than in cash acquisitions. There are many omitted variables which satisfy two out of these three requirements, such as the example given in the paragraph above, and no doubt some that meet all the criteria. Nevertheless, these hypotheses seem more robust to omitted variable bias than previous tests in this literature.

With these cautions in mind, I now turn to testing the hypotheses developed above.

4 Methodology and Data Sources

4.1 Empirical Specification

Since Hypotheses 1 and 3 are parallel in their predictions, I can test them in a unified empirical framwork. The functional form is

$$AAR_{it}^{T} = \alpha + \beta * \rho_{it} + \beta_{stock} * \rho_{it} + \gamma X_{it} + \nu_{stock} + \xi_t + \varepsilon_{ijt} \tag{1}$$

where ρ_{it} is the overvaluation proxy, X_{it} is a vector of controls for merger i in time period t, ν_{stock} is a dummy for a stock merger, and ξ_t is a year fixed effect.[7] I test the null hypothesis that $\beta_{stock} = 0$, which would imply no significant SMDA presence in the data. For proxies such as the book-to-market ratio or the post-merger abnormal stock return, which become lower as overvaluation increases, Hypothesis 1 and 3 predict that $\beta_{stock} < 0$.

One potential confound is that equity-acquiring firms may be systematically different than those choosing cash or debt. For instance, firms that are highly levered or possess less cash may be unable to borrow at a low rate and so may issue equity to finance the merger. If these factors systematically correlate with *both* the

[7] Year fixed effects, in many of my specifications, are "bad" controls. As such, many regressions do not include them, though the fullest specifications always do. Each table indicates, for each regression, whether such controls are present.

premia paid, perhaps due to differences in valuation or bargaining power, *and* the overvaluation proxy, then an improperly specified regression would attribute such effects to the SMDA theory through omitted variable bias.

In order to limit such possibilities, I include a number of control variables in the X_{it} vector, including fixed effects interacting 2-digit SIC code and method of payment, 1-. 2-, and 3-digit SIC industry-difference fixed effects, and year fixed effects. I also use a number of balance sheet variables as controls: The cash-to-assets ratio, the leverage ratio, a fixed effect for dividend-payment, the dividend-to-assets ratio, and log(assets) for the acquiring company, as well as log(assets) for the target company.[8] I also allow method-of-payment-specific coefficients for these variables. Note that, conditional on this vector of control variables, the choice of method of payment need not be independent of the proxy for overvaluation; indeed, the simplified model in Section 3 predicts that firms choose the medium of transaction solely from the extent of overpricing. Rather, the choice of equity or cash must be uncorrelated with unobservables which, themselves, correlate with merger premia. The robustness of the results below to the rather lengthy control vector suggests that this identification assumption is appropriate.

4.2 Data

The primary source of data for this paper is the CRSP/Mitchell Merger Database.[9] This dataset contains information on 12,578 merger bids from January, 1962 through December, 2000. These bids include unsuccessful bids, earlier bids of eventually successful acquirers, and announced mergers that subsequently failed, as well as successful acquisitions. Cleaning the dataset of all uncompleted mergers leaves 5,387 completed bids. The relevant variables included in this dataset are: the identities of the acquiring and target companies, the form of transaction (cash, mixed, or stock), whether the deal was friendly, neutral, or hostile, and the merger announcement date in the *Wall Street Journal*.[10]

The other datasets used are the Center for Research in Securities Prices (CRSP) database and Standard &

[8] In regressions not reported in this paper, I included acquirer and target log(Market Cap) instead of log(Assets) for the size controls. In addition, I tried controlling for simple Assets and Market Cap (without logs). In none of these permutations did results change substantively. The results are available upon request from the author.

[9] I thank Kenneth Froot, Geoff Verter and Sarah Eriksen at Harvard Business School for helping me to gain access to this dataset.

[10] Since the *WSJ* will most likely run the merger announcement the day after the initial press release, the announcement date may be one day before the reported announcement date in the Mitchell Dataset. The dataset manual is unclear on this point. For the empirical analysis below, I assume that the reported date in the Mitchell database is the actual date on which the news of the mergers became public, although the results are substantively unchanged if the alternate assumption is made.

Poor's COMPUSTAT database, both of which are available though Wharton Research Data Services (WRDS). The CRSP database contains a history of security prices and earnings, while the COMPUSTAT database provides detailed balance and income sheet information. Stocks traded on the NASDAQ were not fully integrated into CRSP until 1973, though, an event that drastically changed the size and composition of the sample (Andrade, Mitchell, and Stafford, 2001). Thus, I focus on mergers in my sample that occur only from 1973-2000. Merging the Mitchell merger database with CRSP yields a sample of 3,827 mergers.

I further trim the sample in a number of ways. First, I use only mergers in which the method of payment was all-equity or all-cash. The sketched model in Section 3 is not rich enough to deal with "hybrid" cases, though the estimates, in practice, often behave as averages of the coefficients for equity and cash deals. Second, I remove acquisitions of extremely small companies from the data by removing any merger in which the market capitalization of the target did not exceed \$1 million or 5% of the acquiring company. This practice, by now standard in the literature, weeds out the very smallest takeovers as potentially unrepresentative. Depending on the precise specification, I am left with a dataset of 1500-1800 total mergers and 1300-1400 when I include the balance sheet controls. Finally, to reduce the sensitivity to outliers, I windsorize the dependent variable and primary independent variable of interest for each regression at the 5th and 95th percentile.

I calculate the abnormal returns to the target stock during the announcement period using a standard three-factor market model calibrated during the six-month period immediate preceding the beginning of the announcement period window. I use two different windows for the announcement period. The "long" window begins twenty trading days before the announcement of the merger and extends until the close date. The average close date is approximately six months after the announcement date; more than 95% of mergers have closed within one year. This window should be long enough to capture the "run-up" in the target stock price before the announcement (Schwert, 1996) as well as to allow the uncertainty following the announcement to subside.[11] I also present some results using the "short" window that includes only one trading day before and after the announcement date as a robustness check. I also multiply the dependent variable by 100 (so that if a target stock displayed an abnormal return of 20% within the announcement-period window, $AAR^T = 20$).

[11] Schwert (1996) calculates the pre-announcement "run-up" in the target stock from 127 trading days before the merger, but the vast majority of the action occurs in the final 20 days of trading. I experimented with several extended announcement period windows and the results were substantively unchanged.

The main proxy for overvaluation is the acquirer book-to-market ratio (B/M), calculated as the ratio of the per share book value of equity to the market price. Each of these variables are available from the CRSP daily stock return files. By choosing B/M as a proxy for overvaluation, I do not mean to imply that this measure correlates exclusively, or even primarily, with overvaluation. Rather, the key identification assumption is that B/M does not *differentially* correlate with an omitted driver of merger premia between stock and cash bidders. This assumption is much weaker than those required in similar papers in the literature.

The second proxy for perceived overvaluation is the acquirer residual-value-to-price ratio. The residual value for each firm measures the book value of equity, adjusted for future growth in income (as measured by analyst forecasts). This ratio is thus an attractive measure for overvaluation, since the model of residual income accounts for future growth prospects and forms a more forward-looking measure than the book-to-market ratio. On the other hand, the treatment of future growth is only as unbiased as the consensus analyst forecast from which it is derived; if analysts are captured by (or, even worse, themselves create) the "hype" which drives overvaluation, this ratio could seriously underestimate the overvaluation in a stock. I follow the method of Dong et al. (2005) to estimate the residual income model, which itself takes after Lee, Myers, and Swaminathan (1999).[12]

As further robustness checks, I use the acquirer earnings-to-price ration and the pre-merger abnormal return to the acquiring company's stock to measure overvaluation. I calculate the former as the average of per quarter earnings per share during the preceding year to the price of the acquiring firm's stock on the twenty-first trading day before the announcement date. This moving average of earnings helps to remove any seasonality as well as to reduce the impact of artificial earnings management through discretionary accruals leading up to the merger announcement (Pshisva and Suarez, 2004). I compute the pre-merger abnormal returns in a one-year or six-month window ending twenty trading days before the announcement date, using a three-factor market model to calculate the expected return. Theoretically, firms with large past abnormal returns could either be normally valued companies becoming overvalued or undervalued companies returning to proper valuation. Polk and Sapienza (2002) use this measure and cite a number of studies suggesting that this measure does proxy for overvaluation. Marsh (1982) also suggests that managers respond to their equity valuations relative to recent

[12] My procedure differs from DHRT(2005) only in the discount factor used. Instead of estimating a firm-specific CAPM-adjusted discount rate, I follow D'Mello and Shroff (2000) and assume a constant discount rate of 12.5% per annum across firms. The estimates of the variable discount rates proved extremely imprecise in practice in my sample. For more detail on the procedure used to estimate the residual income model, see Section I, DHRT (2005).

history.[13]

5 Empirical Results: Overvaluation and Target Premia

5.1 Summary Statistics

Figure 1 shows the number of mergers in each year in my sample and the breakdown between methods of payment. The number of mergers per year increased dramatically in the 1990s, and this increase is largely due to the explosion of equity mergers. Cash mergers increased in the late 1990s after a lull around 1991, but the frequency of cash mergers was roughly the same in the late 1990s as in the mid-1980s. The 1970s was a decade of very few mergers.[14]

Summary statistics for target premia, the main dependent variable, appear in Table 1. Because of the non-normal distribution of the variables, I give various quantiles instead of a standard deviation. The mean premium paid to the target in my sample, as measured over the "short" announcement period window, is 12.14%. This figure increases if the premium is measured over the "long" window, as one might expect. The distribution of returns in the "long" window is much wider as well, with an IQR of 46 percentage points, as compared to 21 percentage points in the shorter window.

Table 1 also breaks down these distributions by method of payment and period. More than two-thirds of mergers are equity financed, a proportion that is roughly constant throughout the sample. The distributions of merger premia in the two sub-periods are very similar. Average premia are greater in cash deals than in equity mergers, and the distribution is somewhat more diffuse. This last fact might initially seem inconsistent with the SMDA theory of mergers; after all, in any given merger, any gains from selling overpriced acquirer stock come in addition to economic gains and should thus raise the premium paid. This logic is not correct, though, since it holds all other aspects of the merger equal. For instance, equity mergers with substantial gains from the sale

[13] Earnings manipulation is another popular measure of overvaluation in the literature, but I do not use it in this analysis. A number a papers (i.e., Sloan, 1996, and Hribar and Collins, 2001) suggest that investors fail to correct for the difference between earnings from cash flows and earnings by accrual. Earnings accruals thus predict future returns. Mergers are a poor application of this proxy, though. Since managers determine the level of earnings manipulation endogenously in the run up to a merger, the most overvalued companies may not be those with the greatest accruals. In fact, Pshisva and Suarez (2004) suggest that it is the companies least overvalued one year before a merger that manipulate earnings the most.

[14] The paucity of mergers in the 1970s is somewhat accentuated by my exclusion of targets with a market capitalization less than $5 million, but the effect is small. The substantive impact both of Figure 1 and of the remaining analysis is unchanged by adjusting the cutoff for inflation across decades.

of stock might have fewer economic gains than cash mergers. Also, firms that undertake equity mergers are different along a number of dimensions that might influence the average premium size. Since I control for these differences in the regressions, though, they should not bias the results.[15]

Table 2 displays summary statistics for the key independent variables in this paper. Stock acquirers are more overvalued than cash acquirers as measured by all four proxies, and especially so for those firms in the extremely overvalued tail of the distribution. The number of mergers in the sample differs slightly across the four proxies; past abnormal returns are available for slightly more mergers than the balance sheet variables. The sample in which I could find all of the proxies is given as the "Total Sample Overlap" at the bottom of the table. The results below are not substantially affected if I use only these core data in the regressions. Table 2 also summarizes two other aspects of the mergers in my sample. First, there are virtually no hostile mergers, and those present are usually financed with cash. Second, equity mergers are less likely to occur between firms in different industries, as measured by 1-, 2-, or 3-digit SIC codes.[16]

Table 3 summarizes the balance sheet control variables. There are small but intuitive differences across stock and cash mergers. 72% of cash acquirers pay dividends, in comparison with only 63% of stock acquirers. Those firms that do pay dividends tend to pay more dividends, as measured by the dividends-to-assets ratio, if they are involved in a cash merger. Cash and equity acquirers appear quite similar in terms of leverage and cash reserves except for a few rather cash-laden stock bidders. Mergers financed through equity are likely to involve larger firms, though this effect seems mostly present above the median of the size distribution. The distribution of the relative size of the target is roughly the same across methods of payment.

5.2 Results

Table 4 displays the results from the basic specification using the target premia as measured over the "long" window and the acquirer book-to-market ratio (B/M) as the proxy for overvaluation. The most basic regression appears in column (1). The differential impact of B/M on the premium in stock deals (-13.411) is negative and

[15] Indeed, when I include the full slate of covariates in Table 6, the fixed effect for an equity deal becomes positive, though insignificant.

[16] The SIC code recorded for each company in the main CRSP/COMPUSTAT database is only the "primary" line of business. Thus, this classification may overestimate the extent to which the industries of the target and the acquirer differ. To check this possibility, I used the Compustat Industry Segment Data to construct a new dummy variable to indicate if *any* of the acquirer's or target's industries overlapped. The sample size was too small for strong statistical inference, but these effects were never significant and, in this smaller sample, their inclusion did not affect the parameter of interest.

highly statistically significant (more on the economic significance of this coefficient below). Since B/M decreases with the overvaluation of the company, these significant negative coefficients confirm the prediction of the SMDA model: An increase in overvaluation for an equity bidder raises the target premium more than would an like-sized increase for a similar cash bidder. The estimated stock fixed effect (-7.918) picks up the lower average premium in stock deals, as mentioned above.[17] This regression contains very few controls for the average differences between equity and cash acquirers, though; when I add these covariates below, this effect loses significance. This differential effect in equity mergers is consistent with the splits between the "stock sample" and "cash sample" reported by Dong et al. (2005).

The remaining columns of Table 4 add to the basic specification of column (1). Column (2) adds three dummy variables indicating that the target and acquirer are in different primary industries at the 1-, 2-, and 3-digit levels; the coefficient of interest is virtually unchanged. Column (3) further adds 2-digit SIC industry fixed effects. If companies in more highly valued industries pay higher average premia and are more likely to use equity, the basic regression might erroneously attribute this effect to the overvaluation proxy. The differential impact of B/M in equity deals falls in magnitude to -11.153 when I control for mean industry premia, but the effect is still statistically significant at the 1% level. Column (4) allows separate mean premia for different methods of payment in different industries, and the estimate of the SMDA effect increases to -12.827. Column (5) adds year fixed effects. This final specification may actually be a bad control. If the average level of overvaluation changes across years, but also affects premia, the year dummies remove this potentially valuable source of variation. Nevertheless, the SMDA effect remains statistically significant at -11.109.

Table 5 repeats this analysis using the "short" announcement window to measure the target premium. The coefficients in Table 5 are smaller than those in Table 4, as one might expect from the decreased magnitude of "short" window premia, but the results are still statistically and economically significant. The addition of year and industry fixed effects lower the coefficient of interest somewhat, though it remains statistically significant even in the full specification.

The impact of overvaluation on target premia, as measured in Tables 4 and 5, is not only statistically significant

[17] Some have argued that a "Cash" bid can be misleading if a company simultaneously issues large amounts of stock. To explore this potential problem, I have recalculated all of these analyses after removing "Cash" bidders with large increases in shares outstanding within one year of the announcement date of the merger. The results are substantially unchanged.

but also economically important. An IQR-sized increase in overvaluation in equity acquirers would decrease B/M by 0.43 and therefore raise the premium paid by 4.8 percentage points (using the estimate from column 5 in Table 4). The effect using the "short" merger window is somewhat muted. Since the median target premium in equity mergers is 17%, this effect is equivalent to a 28% increase in the median equity target premium. Viewed from another perspective, the SMDA effect of 4.8 percentage points is about 10% of the IQR in the distribution of target premia in equity deals, implying that, by this crude measure, concerns related to acquirer overvaluation drives 10% of the payments in equity mergers. This low number perhaps accounts for much of the difference in opinion in this literature over the importance of SMDAs in driving mergers; though overvaluation does have a statistically identifiable and economically important impact on mergers, it appears that the great majority of the variation has other causes.

In order to further account for differences across mergers that might impact premia differentially in equity and cash deals, Table 6 adds the balance sheet control variables described in Section 4.1. I run each specification for both the "long" and "short" window. Columns (1) and (5) replicate the specification from column (4) of Tables 4 and 5 for ease of comparison. Columns (2) and (6) add the balance sheet controls. The coefficient for the "long" window decreases a bit, implying some positive selection into equity as a method of payment. The results for the "short" window show the opposite effect, however; the magnitude of the coefficient actually increases. Furthermore, the large negative fixed effect for an equity merger which appeared in Table 4 and 5 now becomes positive but insignificant. The balance sheet covariates appear to control well for these differences

Columns (3) and (7) allow the balance sheet variables to affect the target premia differently in cash and equity mergers, but the estimated SMDA effect hardly changes. Columns (4) and (8) include the year fixed effects. The coefficients of interest decrease in magnitude in this final specification, relative to the previous columns' estimates, but they remain significant. Using the "short" window, the SMDA effect in the full model is actually greater than in the basic functional form in Column (5); adding the balance sheet controls helps identify the SMDA theory. The weakest estimate of the SMDA effect over the "long" window would imply a 4.3 percentage point or 25% increase in the median equity target premium from an IQR-sized decrease in B/M. This consrvative estimate suggests that SMDA-related effects drive 9.2% of the variation in equity target premia.

Since much of this analysis was motivated by the apparent pattern of SMDAs in the 1990s, it is useful to look

how this theory performs in the different periods of this analysis. Table 7 runs the primary specifications - one with and one without the balance sheet controls - separately for the sub-periods 1973-1989 and 1990-2000. (There are few observations in the 1970s, and so I merge the two earlier decades for this table). The interpretation of the results differs between the "short" and "long" windows. In the "long" window, the SMDA effect seems present in both periods. Without balance sheet controls, the differential effect of B/M in equity mergers is statistically significant and of similar magnitude to the estimates in the full sample. These coefficients become smaller and lose statistical significance when year dummies and balance sheet controls are added, but the estimates are statistically indistinguishable from the full-sample estimates in Table 6.

The estimates using the "short" window demand a different interpretation, though. In the earlier decades, the coefficient measuring the SMDA effect is statistically insignificant (and of the wrong sign). But in the 1990s the coefficient is much larger in both magnitude and statistical significance than before. This relationship holds both with and without the year dummies and balance sheet controls. Perhaps information flowed less well into the market in earlier decades, and so the "short" window measures the target premium imprecisely for that period.

Table 8 replicates the previous analysis using the residual-value-to-price ratio (V/P) as the proxy for overvaluation, and these results follow the same pattern as Table 6. When I measure the target premium using the longer post-announcement window, V/P has the same differential impact in equity mergers, relative to cash deals, as B/M. The weakest estimate of the impact of overvaluation, from Column (4), implies that an IQR-sized increase in acquirer V/P would increase the target premium by 5 percentage points. This impact is slightly larger than that measured using B/M, suggesting that this may indeed be a purer measure of overvaluation. These results When I use the short announcement window to measure target premia, I find no significant impact of V/P. Though magnitude of these coefficients is in line with the estimates from the other measures of overvaluation, the standard errors are too large for firm conclusions. Dong et al. also find no significant differential impact of acquirer V/P on target returns using a short window around the announcement period, but they do not look over the longer window. Especially when viewed in contrast to the other specifications in this paper (including those in Tables 9 and 10), the non-result using V/P over the short window seems anomalous.

Tables 4 through 8 have established a clear differential impact of the acquirer B/M on the target premium in equity deals. It remains possible, however, that this relationship may not be driven by overvaluation, though,

but instead by some particular aspect of B/M. Therefore, as a further check on robustness, Tables 9 and 10 repeat the exercise of Table 6 using the earnings-to-price ratio (E/P) and pre-merger abnormal equity return, respectively, as proxies for overvaluation. Since E/P can be negative, I adapt the functional form in line 1 to allow a separate intercept and slope in both cash and equity mergers when E/P is negative. This also helps to improve the accuracy of this proxy for overvaluation: For instance, a negative E/P might signal either an overpriced internet start-up or a fading "old economy" conglomerate. The coefficient of interest in Table 8 is the estimate of the impact of E/P in equity deals relative to the effect in cash deals.

The pattern of coefficients in Table 9 closely matchs that displayed in previous regressions. I use the acquirer earnings-to-price (E/P) ratio as the proxy for overvaluation. Since a lower E/P implies a higher degree of overvaluation, the negative and statistically significant coefficients for the differential impact of E/P in equity mergers broadly confirm the prediction of the SMDA theory. As above, the addition of balance sheet variables increases the estimated impact in the "short" window. An increase in overvaluation equal to the interquartile range of E/P increases the target premium over the "long" window by 5 percentage points, a magnitude almost identical to the B/M effect measured above.

Table 10 replicates the previous results using the pre-merger abnormal return to the acquirer stock as the measure of overvaluation. The positive and significant differential effect of past abnormal returns in equity mergers again confirms the prediction of the SMDA theory. This result is robust to the length of the announcement period window, the length of the pre-merger window, and the inclusion of the full slate of controls. The economic magnitude of these coefficients is slightly larger than with either B/M or E/P as the overvaluation proxy. A calculation similar to those above suggests that an IQR-sized increase in past abnormal equity returns increases the target premium by 8 percentage points, nearly one-half of the median premium in equity mergers. Such an impact would account for 20% of the variation in equity target premia.

It is always possible, of course, that there exists an omitted variable that correlates positively with each of my measures of perceived overvaluation and also with the target premium differentially in equity mergers. If so, then the results in Tables 4 through 8 would be biased in favor of results consistent with Hypothesis 1. But the many specifications to which this analysis is robust suggest such is not the case. The data support Hypothesis 1 and suggest that acquirer valuation drives 9.2% - a small though economically important fraction - of the variation in

equity target premia.

6 Empirical Results: Post-Merger Returns

In the empirical results presented in Section 5, I use *ex ante* valuation ratios as proxies for overvaluation. While the literature contains evidence that each of these measures does covary with overvaluation, at least in part, potential biases may remain. Thus, in order to further test the predictions of the theory in Section 3, I use the *ex post* realization of abnormal returns as an overvaluation proxy. There are potential biases in this measure as well, but they tend to run in the opposite direction to the biases in the valuation ratios used above. For instance, a high book-to-market ratio could signal strong growth opportunities rather than overvaluation. But such strong prospects would appear, if at all, as positive post-merger abnormal returns, which would not be confused with overvaluation. Furthermore, though the target premium is the dependent variable, these regressions display the additional predictive power of the merger premium for post-merger stock returns.

6.1 Post-Merger Returns Across Methods of Payment

Table 11 displays summary statistics for the post-merger abnormal and simple returns. The horizon for these returns begins at the close of the merger and extends either one or three years forward. I calculate abnormal returns over these periods as "Jensen's Alpha" from a three-factor regression model using betas calculated within the sample.

Hypothesis 2 predicts that firms, after an equity merger, should underperform those buying with cash. In my sample, acquiring firms, on average, earn negative returns following the close of the merger, and these losses are even greater after controlling for the predicted model return. Especially over the one-year horizon, equity acquirers do worse than cash buyers throughout the distribution, as predicted by Hypothesis 2. The average level of simple post-merger returns (and especially over three-years) is lower in this sample than in much of the literature (e.g. Loughran and Vijh, 1997; Rau and Vermaelen, 1998), though the patterns across types of mergers and levels of abnormal returns are broadly consistent with previous findings.

To further investigate the differences in the post-merger returns between equity and cash buyers in this sample, I form companies in the sample into portfolios for stock and cash acquirers. I then calculate the average monthly

buy-and-hold returns that accrue, holding the stocks for one year after the close of the merger. Table 12 reports the "Jensen's Alpha" for each of these portfolios, along with the standard errors for these coefficients.[18] When equally weighted across stocks, equity acquirers exhibit abnormal post-merger returns that are significantly less than zero. Using a three-factor Fama-French model, the equity protfolio underperforms the market by 0.57% per month, or 7.06% per year, and trails the returns of cash acquirers by even more. This estimate is slightly larger than that in Loughran and Vijh (1997), which estimates post-equity-merger returns of -4.9%, though that figure is the annualized return over a five year period. The figures would be consistent if the negative abnormal returns were concentrated at the beginning of the post-merger period. When portfolio returns are value-weighted, equity acquirers underperform cash buyers, though the difference is not statistically significant.

6.2 Post-Merger Returns and Target Premia

Hypothesis 3 predicts a differential relationship between post-merger abnormal returns and target premia in deals across methods of payment. Since a lower post-merger return implies greater *ex ante* overvaluation, the post-merger returns should correlate more negatively with merger premia in equity mergers than cash ones. I test Hypothesis 3 using a regression framework parallel to that in Section 5 above. Therefore, the abnormal post-merger return is the key independent variable; the dependent variable is, once again, the target premium, as measuring by the abnormal announcement-period return to the target stock.[19]

Table 13 displays the first of these regressions. Column (1) presents the most basic specification, capturing the average partial correlation between the target premium and the post-merger return across all mergers; there is no significant effect. When I allow the effect to vary across mergers by the method of payment, though, the coefficient for companies in stock mergers begins to differ from that for cash buyers. Though the raw effect is not significantly different across methods of payment without controls, the differential becomes strongly significant, at -13.163, with the addition of my full slate of balance sheet controls.[20]

The differential effect of the post-merger return on target premia is consistent with Hypothesis 3. As predicted

[18] In the regressions which calculate the "Jensen's Alpha" for equal-weighted portfolios, I follow the standard procedure of weighting the monthly return observations by the number of stocks held in the portfolio for each month.

[19] See Baker, Stein, and Wurgler (2003) for a similar instance in which post-event abnormal returns must be placed on the righthand side of the regression equation.

[20] As in the more extensive specifications in Table 6 through Table 10, I allow a method-of-payment-specific coefficient for each control variable.

by the model, more overvalued firms, as measured now by a larger post-merger abnormal stock price decline, pay differentially high premia in equity mergers. This effect is both statistically and economically significant; a decrease in the post-merger abnormal return equal to the IQR in that distribution, which is 50 percentage points, predicts a 6.5 percentage point increase in the premia. Such a movement would increase the median premium in equity deals (relative to that in a cash deal) by 38% more than the corresponding increase for cash deals, a larger figure than the 28% increase predicted by a similar movement in the acquirer book-to-market ratio in Table 6 above.

Though the post-merger return appears on the right-hand side of the regression equation, one can interpret the relationship as predictive since the regression coefficient simply reflects the conditional correlation of two variables. To illustrate this predictive power, I sort acquirers in 8 bins by the method of payment used and by the quartile of premium.[21] I then form eight equal-weighted portfolios, each of which holds stocks in the appropriate group for one year beginning the day after the close of the merger. The average monthly abnormal returns from a three-factor model appear in Table 14, along with standard errors for "Jensen's alpha" of each portfolio.[22] The pattern of returns across the different portfolios is clear: Larger premia predict more positive post-merger abnormal returns for cash acquirers, but larger relative declines for equity buyers. This pattern is an "inverse" of the relationship in column (2) of Table 13. The portfolio of small-premia equity acquirers is extremely volatile, and so the difference between it and the large-premia portfolio is not statistically significant, but there is a significant difference between the "Low Mid" portfolio and the "High" portfolio. Since the pattern of returns for cash mergers is opposite that in equity deals (and significantly so), the predictive power of the premia in equity deals cannot be a general relationship operating in all mergers.

Though the relationship between the target premium and the post-merger abnormal stock return appears strong, the correlation could simply be a mechanical result of mutual covariance with the *ex ante* proxies from Section 5. Thus, column (4) in Table 13 includes the acquirer's book-to-market ratio, interacted with method of payment, as a further control. The relationship between the target premium and the post-merger return remains

[21] To avoid a "look-ahead" bias, I use the premium quartiles of the previous year (for cash and stock mergers separately) to classify acquirers. For instance, a stock merger announced in 1997 would be sorted into bins based on the distribution of target premia in stock deals announced in 1996.

[22] These average abnormal returns are the "alphas" from a regression of the equal-weighed portfolio return on the market, high-minus-low, and small-minus-big. I weight the observations by the average number of stocks in the portfolio in a given month.

significant as before, though the magnitude of the method-of-payment differential is slightly smaller. The results in column (3) are also robust to the addition of value-to-price ratio in column (5).

In the previous specifications in Table 13, I omit all fixed effects due to the problems in interpretation (since the fit of a fixed effect is forward looking). As a result of this omission, though, I do not control for industry-difference effects, industry * method-of-payment effects, or year effects. To ensure that these results are not sensitive to this potential of omitted variables, I include each of these sets of fixed effects in columns (6) through (8). The coefficient of interest does not decrease in these further specifications, and, when controlling for the acquirer V/P, actually increases.

Tables 15 through 17 explore the robustness of the relationship between the target premium and the post-merger abnormal return to various specifications. In Table 15, I vary the length of the post-merger window over which returns are measured.[23] (Columns (1) and (2) reproduce columns (3) and (4) of Table 13 for ease of comparison.) The differential relationship between the target premium and the post-merger returns is somewhat muted over the shorter six month horizon in columns (3) and (4), thought the effect is present and significant over the three year period. The market correction for overpriced acquirers appears to concentrate one year after the close of the merger.

One perennial concern when forecasting returns is the choice of market model. Thus, in Table 16, I replicate the results in Table 15 using simple post-merger returns. The differential relationship in equity mergers is significant over all horizons, though the effect in the first six months remains somewhat lessened.[24]

Finally, in Table 17, I explore the differences in the relationship between target premia and post-merger returns across the sample period. Following Table 7, I split the sample into two subsamples: pre-1990 and post-1990. I then run the specifications found in columns (3), (4), and (7) of Table 13 in each period. Though the sample sizes are reduced and standard error increased, a consistent pattern emerges. In the early period, there is no evidence of a differential effect in equity mergers, but the coefficients measured over the later sample are each larger than those in Table 13, This pattern is consistent both with the results in Table 7 above and with anecdotal evidence suggesting that SMDAs were concentrated in the "bubble" years of the 1990s.

[23] Though the horizon for measuring returns differs, all returns are annualized.

[24] A third version of these results, using a single-factor market model, yields results which are substantively unchanged from those in Tables 15 and 16. These tables are available from the author upon request.

7 Conclusion

This paper contributes to the literature on stock-market-driven acquisitions in two primary ways. First, by exploiting the asymmetry of SMDA theories between cash and equity mergers, I develop tests for the impact of overvaluation on merger premia which are robust to many more alternative explanations, such as a Q-theory of mergers, or a managerial hubris interpretation of the evidence. Specifically, proxies for overvaluation, however imperfect, should covary more strongly with target premia in equity mergers than in cash ones. Using the book-to-market ratio and value-to-price ratio, among others, Section 5 presents statistical evidence of exactly such a relationship. An increase in overvaluation equal to the book-to-market IQR raises an equity target premium by 4.5 percentage points more than in a similar cash deal. Such an impact equals 25% of the median target premium, or 9.2% of the variation in equity target premia. These results are robust to the inclusion of a number of control variables, including industry*method-of-payment dummies, year fixed effects, and a slate of balance sheet control variables with method-of-payment-specific coefficients. The asymmetric relationship is also present when using the acquirer value-to-price ratio, earnings-to-price ratio, or pre-merger abnormal stock return as the proxy for overvaluation.

Second, I investigate the relationship between post-merger abnormal returns and SMDAs. After verifying the existing result that equity acquirers suffer worse post-merger abnormal returns than cash buyers, I show that target premia covary with post-merger returns in exactly the asymmetric way predicted by the SMDA theory. These results are also robust to a number of alternative specifications and are, if anything, larger in economic magnitude than the relationship between *ex ante* overvaluation proxies and target premia.

The results in paper, though broadly supportive of the SMDA theory of mergers, suggest one possible resolution of the debate between advocates of this theory and a more traditional Q-theory of mergers. Variation in overvaluation explain 9.2% of the variation of target premia (as measured by the IQR) in these data. If target premia are roughly proportional to the overall benefits of mergers, these findings suggest that the aggregate impact of overvaluation on mergers could be both economic important and dominated by neo-classical factors in the aggregate. Of course, overvaluation might explain far more in specific instance; indeed, the entire impetus for the development of the theory of SMDAs seems to have come from a few very popular anecdotes in which mispriced played a major role.

On the other hand, the results in this paper may underestimate the importance of overvaluation in several ways. First, it reflects only the effect of a single measure of overvaluation on merger premia. (The independent estimates of this magnitude in this paper are quite similar, though, and so each of the different proxies may be accurately measuring the same underlying effect of overvaluation.) Second, targets may be less able to capture the rents from acquirer overvaluation than from other, more public elements of the surplus in a merger, in which case the aggregate impact of mispricing would be understated by looking only at target premia. As discussed in Section 3.4, different models of SMDAs make different predictions as to the extent that the target shares in the benefits of an SMDA. Nevertheless, understanding the determinants of target premia is an important first step to comprehending the drivers of mergers as a whole.

Though this paper provides evidence in support of the SMDA theory, it does not take a stand on this question of the particular mechanism through which SMDA effects operate. Are target managers completely unaware of the mispricing of the acquirer's stock, as in my model? Are they partially aware, as in Rhodes-Kropf and Viswanathan (2003)? Or are they bribed with golden parachutes or executive positions in the new company, as in Hartzell, Ofek, and Yermack (2001)? This puzzle would be an interesting topic of future research.

The results presented here have several important broader implications. First, stock market driven acquisitions can simultaneously decrease the joint profitability of the two companies *and* increase the value of the acquiring firm's stock. Intuitively, this situation occurs when the value created for the acquirer by selling overpriced stock outweighs the negative economic effects of the merger per se. But, because the gains from the sale of overpriced stock are transfers from the eventual purchasers to current shareholders, and thus are not welfare improving, these mergers can be socially inefficient even when they add value to the acquiring firm. Furthermore, unlike acquisitions (such as those motivated by agency problems) that actively both destroy company value and reduce social welfare, these mergers are in the interests of the shareholders despite lowering aggregate profitability.

Second, these results suggest a possible explanation for merger waves. As noted by Andrade, Mitchell and Stafford (2001), among others, mergers occur in large waves, both across time and across industries. Shleifer and Vishny (2003) suggest this application of their model as well. A large upswing in shares prices could trigger mergers motivated by stock market considerations alongside other equity issues. Not only did the proliferation of mergers in the late 1990s correlate with historically large returns to equity, but prior merger waves also appear

to have occurred during large bull markets. For example, Andrade et al. (2001) mention two other merger waves, one cresting in 1967-1968 and the other during 1985-1986. The S&P 500 earned a 13.5% annual return during the first wave and a whopping 23.6% per year during the latter, compared to an average yearly return of 9.5% since 1945. Though hardly conclusive, these basic facts suggest an empirical connection between market timing in mergers and merger waves.

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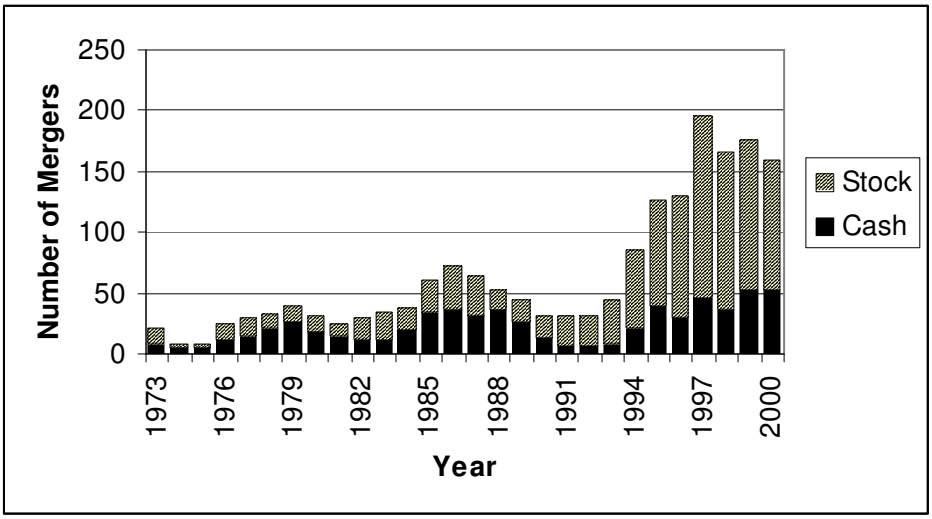
Tables and Figures

Figure 1: Mergers by Year and Method of Payment



Source: CRSP/Mitchell Merger Database. This represents only the 1792 mergers used in my analysis.

Table 1: Target Premia Summary Statistics

Method of Payment:		Cash	Stock	All
Target Announcement Period	95%	49.56%	39.00%	49.56%
Abnormal Return [-1,+1]	75%	30.31%	17.64%	20.71%
Quantiles	50%	14.44%	6.19%	8.89%
	25%	4.96%	-1.48%	-0.11%
	5%	-3.69%	-11.22%	-11.04%
	Mean	**18.66%**	**9.24%**	**12.14%**
Target Announcement Period	95%	99.99%	95.14%	99.99%
Abnormal Return [-20,close]	75%	56.08%	43.30%	48.68%
Quantiles	50%	33.81%	16.97%	23.60%
	25%	14.47%	-3.47%	2.82%
	5%	-9.21%	-30.45%	-30.45%
	Mean	**36.91%**	**22.48%**	**26.95%**
Sample Size		647	1145	1792

Period:		1973-1989	1990-2001	All
Target Announcement Period	95%	46.83%	49.56%	49.56%
Abnormal Return [-1,+1]	75%	18.10%	22.62%	20.71%
Quantiles	50%	6.73%	10.06%	8.89%
	25%	-0.22%	0.08%	-0.11%
	5%	-7.28%	-11.22%	-11.04%
	Mean	**10.72%**	**12.89%**	**12.14%**
Target Announcement Period	95%	99.37%	99.99%	99.99%
Abnormal Return [-20,close]	75%	48.27%	49.07%	48.68%
Quantiles	50%	23.26%	23.92%	23.60%
	25%	3.91%	2.01%	2.82%
	5%	-30.45%	-29.10%	-30.45%
	Mean	**26.85%**	**27.01%**	**26.95%**
Sample Size		615	1177	1792

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. The abnormal returns are calculated from one day before the announcement until one day after the announcement in the short upper panel. The period is from 20 trading days before the announcement to the close of the merger in the lower panel. The abnormal returns are calculated using a three-factor market model.

Table 2: Basic Summary Statistics, by Method of Payment

Method of Payment:		Cash	Stock	All
Total Sample Size		647	1145	1792
Hostile or Neutral Merger		0.77%	0.17%	0.39%
Industry Difference:				
1 Digit of SIC Code		32.15%	18.95%	23.72%
2 Digits of SIC Code		58.11%	43.76%	48.94%
3 Digits of SIC Code		71.87%	55.11%	34.88%
Acquirer Book-to-Market Ratio	95%	1.769	1.801	1.746
Quantiles:	75%	0.775	0.509	0.603
	50%	0.423	0.215	0.271
	25%	0.151	0.077	0.093
	5%	0.014	0.002	0.002
	N	520	981	1501
Acquirer Earnings-to-Price Ratio	95%	0.205	0.162	0.173
Quantiles:	75%	0.092	0.053	0.07
	50%	0.056	0.023	0.03
	25%	0.017	0.005	0.008
	5%	-0.034	-0.193	-0.134
	N	524	972	1496
Acquirer Value-to-Price Ratio	95%	1.865	1.485	1.866
Quantiles:	75%	1.549	0.699	0.823
	50%	0.648	0.404	0.5
	25%	0.296	0.169	0.196
	5%	0.061	0.054	0.054
	N	358	515	873
Acquirer Pre-Merger Abnormal	95%	34.13%	48.82%	48.45%
Return Quantiles (six months):	75%	6.79%	12.75%	10.43%
	50%	-5.81%	-3.53%	-4.15%
	25%	-19.95%	-20.28%	-20.11%
	5%	-57.03%	-70.13%	-69.96%
	N	625	1104	1729
Acquirer Pre-Merger Abnormal	95%	48.61%	70.31%	70.31%
Return Quantiles (one year):	75%	7.59%	16.53%	12.72%
	50%	-11.00%	-7.14%	-9.20%
	25%	-32.00%	-39.29%	-35.79%
	5%	-80.00%	-92.67%	-92.67%
	N	600	1064	1664
Total Sample Overlap (excluding P/V)		486	894	1380

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. Percents may not add to one due to rounding. Pre-merger abnormal returns are calculated over the a period of the relevant length that ends 1 month before the announcement date. Earnings-to-Price ratios are calculated using the stock price on the day before the beginning of the announcement window and the twelve-month moving sum of earnings per share. The acquirer book-to-market ratio is calculated as the ratio of the per share book value of equity to market price, using the most recent report. For each overvaluation proxy, I give the specific sample size. "Total Sample Overlap" represents the observations with all four measures.

Table 3: Balance Sheet Summary Statistics, by Method of Payment

Method of Payment:		Cash	Stock	All
Acquirer Cash / Assets	95%	37.01%	60.39%	55.73%
Quantiles:	75%	15.12%	18.54%	16.69%
	50%	6.07%	6.65%	6.43%
	25%	2.22%	2.65%	2.47%
	5%	0.45%	0.45%	0.45%
Acquirer Leverage Ratio	95%	94.51%	94.48%	94.49%
Quantiles:	75%	73.23%	91.03%	87.67%
	50%	60.26%	62.29%	61.44%
	25%	46.88%	42.56%	43.83%
	5%	23.86%	15.46%	18.17%
Acquirer Dividends / Assets	95%	4.15%	4.01%	4.08%
Quantiles:	75%	2.11%	0.84%	1.41%
	50%	0.72%	0.29%	0.34%
	25%	0.00%	0.00%	0.00%
	5%	0.00%	0.00%	0.00%
Acquirer Issues Dividends?		72.11%	62.69%	65.95%
Acquirer Total Assets (in $MM)	95%	16,572.0	32,114.0	26,654.0
Quantiles:	75%	3,025.0	4,139.0	3,482.1
	50%	768.0	914.0	877.5
	25%	210.8	184.3	194.8
	5%	38.6	22.6	26.3
Target Total Assets (in $MM)	95%	2,413.0	10,651.0	7,170.0
Quantiles:	75%	477.5	1,395.0	824.6
	50%	140.7	267.4	213.2
	25%	56.7	67.0	62.9
	5%	15.4	11.5	12.9
Relative Target Size Quantiles:	95%	3.84	1.37	1.86
(Market Cap Ratio)	75%	0.48	0.50	0.49
	50%	0.22	0.23	0.22
	25%	0.10	0.11	0.10
	5%	0.06	0.06	0.06
Sample Size		442	792	1234

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. Figures are calculated from the annual report preceding the merger announcement. The leverage ratio is the ratio of short- and long-term outstanding debt to the sum of this debt and the book value of equity.

Table 4: Basic Acquirer Book-to-Market Specification, Long Announcement Period

Explanatory	*Dep. Variable: Target Abnormal Return, [-20, close]*				
Variables:	(1)	(2)	(3)	(4)	(5)
Acquirer B/M	2.849	2.834	1.273	1.823	1.210
	(2.435)	(2.433)	(2.527)	(2.647)	(2.705)
*Acquirer B/M * Stock*	-13.411***	-13.274***	-11.153***	-12.827***	-11.109***
	(2.948)	(2.947)	(3.051)	(3.203)	(3.236)
Stock Fixed Effect	-7.918***	-8.298***	-7.326***	--	--
	(2.361)	(2.391)	(2.727)		
Industry Difference FX	no	yes	yes	yes	yes
Industry Effects	no	no	yes	yes	yes
*Industry*Cash Effects*	no	no	no	yes	yes
Year Effects	no	no	no	no	yes
R-Squared	0.0651	0.0692	0.1130	0.1297	0.1512
N	1542	1542	1542	1542	1542

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. Standard errors appear in parentheses below the coefficient. Each column contains a separate regression. The dependent variable, the abnormal return to the stock of the target company from one month before the announcement date to the close of the merger, is generated from a three-factor market model. I use betas estimated in the period 6 months before the start of the window. The acquirer book-to-market ratio is calculated as the ratio of the per share book value of equity to market price, using the most recent report Industry effects are at the 2-digit SIC level. Industry difference fixed effects control for differences at the 1-, 2-, and 3-digit SIC code level. Coefficients that are significantly different from 0 are denoted by the following system: * 10%, ** 5%, *** 1%.

Table 5: Basic Acquirer Book-to-Market Specification, Short Announcement Period

Explanatory Variables:	*Dep. Variable: Target Abnormal Return, [-1, +1]* (1)	(2)	(3)	(4)	(5)
Acquirer B/M	0.836	0.821	0.725	0.685	0.946
	(1.174)	(1.174)	(1.229)	(1.282)	(1.286)
*Acquirer B/M * Stock*	-3.316***	-3.278**	-2.997**	-3.034**	-2.631*
	(1.149)	(1.420)	(1.484)	(1.549)	(1.537)
Stock Fixed Effect	-7.916***	-8.002***	-7.896***	--	--
	(1.131)	(1.147)	(1.255)		
Industry Difference FX	no	yes	yes	yes	yes
Industry Effects	no	no	yes	yes	yes
*Industry*Cash Effects*	no	no	no	yes	yes
Year Effects	no	no	no	no	yes
R-Squared	0.0817	0.0834	0.1128	0.1382	0.1879
N	1542	1542	1542	1542	1542

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. Standard errors appear in parentheses below the coefficient. Each column contains a separate regression. The dependent variable, the abnormal return to the stock of the target company from one month before the announcement date to the close of the merger, is generated from a three-factor market model. I use betas estimated in the period 6 months before the start of the window. The acquirer book-to-market ratio is calculated as the ratio of the per share book value of equity to market price, using the most recent report. Industry effects are at the 2-digit SIC level. Industry difference fixed effects control for differences at the 1-, 2-, and 3-digit SIC code level. Coefficients that are significantly different from 0 are denoted by the following system: * 10%, ** 5%, *** 1%.

Table 6: Full Acquirer Book-to-Market Specification with Balance Sheet Controls

	Dependent Variable:							
Explanatory	*Target Premium [-20, close]*				*Target Premium [-1, +1]*			
Variables:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Acquirer B/M	1.823	1.318	1.524	0.476	0.685	2.085	2.082	1.730
	(2.647)	(2.857)	(2.912)	(2.978)	(1.282)	(1.381)	(1.409)	(1.414)
*Acquirer B/M * Stock*	-12.827***	-11.099***	-11.308***	-10.083***	-3.034**	-3.984**	-3.953**	-3.373**
	(3.203)	(3.472)	(3.575)	(3.619)	(1.549)	(1.676)	(1.727)	(1.718)
Acq. Cash/Assets		-8.032	-5.911	-7.067		-0.538	0.32	-2.231
		(6.658)	(7.682)	(7.803)		(3.195)	(3.693)	(3.681)
Acq. Leverage Ratio		-5.352	-0.362	-1.049		-2.552	-2.642	-2.832
		(5.509)	(7.086)	(7.152)		(2.645)	(3.413)	(3.382)
Acq. Dividends > 0		1.492	3.449	4.094		0.507	1.421	2.391
		(2.704)	(3.406)	(3.458)		(1.299)	(1.641)	(1.694)
Acq. Dividends / Assets		-96.616*	-117.578**	-123.852**		-40.232	-37.811	-40.884
		(54.348)	(60.680)	(61.406)		(26.104)	(29.279)	(29.025)
Ln(Acquirer Assets)		3.519***	4.773***	4.569***		1.877***	2.262***	2.088***
		(0.869)	(1.155)	(1.163)		(0.417)	(0.555)	(0.549)
Ln(Target Asset)		-2.002**	-3.553***	-3.702***		-0.861**	-1.316**	-1.536***
		(0.904)	(1.153)	(1.166)		(0.434)	(0.555)	(0.551)
Industry Difference FX	yes	yes	yes	yes	yes	yes	yes	yes
Industry Effects	yes	yes	yes	yes	yes	yes	yes	yes
*Industry*Cash Effects*	yes	yes	yes	yes	yes	yes	yes	yes
*Controls*Cash*	-	no	yes	yes	-	no	yes	yes
Year Effects	no	no	no	yes	no	no	no	yes
R-Sauared	0.1297	0.1491	0.1550	0.1739	0.1382	0.1736	0.1757	0.2233
N	1542	1375	1375	1375	1542	1375	1375	1375

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. Standard errors appear in parentheses below the coefficient. Each column contains a separate regression. The dependent variable, the abnormal return to the stock of the target company from one month before the announcement date to the close of the merger (or one day before to one day after the announcement date, for the short window), is generated from a three-factor market model. I use betas estimated in the period 6 months before the start of the window. The acquirer book-to-market ratio is calculated as the ratio of the per share book value of equity to market price. I use the most recent report for this measure, as well as all other balance sheet variables. Industry effects are at the 2-digit SIC level. Industry difference fixed effects control for differences at the 1-, 2-, and 3-digit SIC code level. In columns (3)-(4) and (7)-(8), I interact the six balance sheet control variables with a dummy for cash payment as well, so the coefficient reported in the table for the controls can be interpreted as the effects in stock deals. Coefficients that are significantly different from 0 are denoted by the following system: * 10%, ** 5%, *** 1%.

Table 7: Full Book-to-Market Specification, By Sample Period

	Dependent Variable and Period of Analysis:							
	Target Premium [-20, close]				*Target Premium [-1, +1]*			
Explanatory	*1973-1989*		*1990-2000*		*1973-1989*		*1990-2000*	
Variables:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Acquirer B/M	2.747	1.494	1.143	-1.157	-0.801	-0.539	6.830***	7.153***
	(3.340)	(3.840)	(4.889)	(5.345)	(1.681)	(1.927)	(2.321)	(2.520)
*Acquirer B/M * Stock*	-9.927**	-8.551	-11.033**	-7.793	2.628	2.52	-10.975***	-10.600***
	(4.435)	(5.308)	(5.500)	(6.013)	(2.223)	(2.655)	(2.611)	(2.836)
Acq. Cash/Assets		14.312		-4.570		4.063		-3.112
		(28.033)		(8.656)		(14.003)		(4.071)
Acq. Leverage Ratio		-20.077		2.929		2.607		-3.992
		(17.774)		(8.265)		(8.860)		(3.897)
Acq. Dividends > 0		10.817		3.274		-0.176		2.857
		(10.320)		(3.911)		(5.158)		(1.844)
Acq. Dividends / Assets		-180.025		-157.040*		47.083		-79.970**
		(183.643)		(84.927)		(91.560)		(40.022)
Ln(Acquirer Assets)		2.857		4.561***		1.235		2.194***
		(2.908)		(1.314)		(1.449)		(0.618)
Ln(Target Asset)		-0.284		-3.751***		-0.528		-1.572
		(3.210)		(1.310)		(1.603)		(0.617)
Industry Difference FX	yes	yes	yes	yes	yes	yes	yes	yes
Industry Effects	yes	yes	yes	yes	yes	yes	yes	yes
*Industry*Cash Effects*	yes	yes	yes	yes	yes	yes	yes	yes
*Controls*Cash*	-	yes	-	yes	-	yes	-	yes
Year Effects	no	yes	no	yes	no	yes	no	yes
R-Squared	0.3506	0.4421	0.1349	0.1739	0.2586	0.3672	0.1878	0.2477
N	480	383	1062	992	478	381	1065	995

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. Standard errors appear in parentheses below the coefficient. Each column contains a separate regression. The dependent variable, the abnormal return to the stock of the target company from one month before the announcement date to the close of the merger (or one day before to one day after the announcement date, for the short window), is generated from a three-factor market model. I use betas estimated in the period 6 months before the start of the window. The acquirer book-to-market ratio is calculated as the ratio of the per share book value of equity to market price. I use the most recent report for this measure, as well as all other balance sheet variables. Industry effects are at the 2-digit SIC level. Industry difference fixed effects control for differences at the 1-, 2-, and 3-digit SIC code level. In columns (3)-(4) and (7)-(8), I interact the six balance sheet control variables with a dummy for cash payment as well, so the coefficient reported in the table for the controls can be interpreted as the effects in stock deals. Coefficients that are significantly different from 0 are denoted by the following system: * 10%, ** 5%, *** 1%.

Table 8: Full Value-to-Price Specification with Balance Sheet Controls

	Dependent Variable:							
Explantory	*Target Premium [-20, close]*				*Target Premium [-1, +1]*			
Variables:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Acquirer V/P	8.613**	8.721*	9.301**	7.802*	1.532	3.409	3.890	3.725
	(4.142)	(4.466)	(4.538)	(4.707)	(2.101)	(2.309)	(2.346)	(2.371)
*Acquirer V/P * Stock*	-13.429**	-12.868**	-13.913**	-10.831*	-1.396	-3.377	-4.222	-3.229
	(5.629)	(6.089)	(6.221)	(6.442)	(2.839)	(3.130)	(3.197)	(3.230)
Acq. Cash/Assets		-31.245***	-33.095**	-36.562**		-1.646	-1.648	-1.704
		(10.878)	(13.767)	(14.298)		(5.553)	(7.024)	(7.116)
Acq. Leverage Ratio		-10.480	-7.972	-2.471		0.942	-1.329	-1.968
		(9.340)	(12.029)	(12.445)		(4.760)	(6.137)	(6.198)
Acq. Dividends > 0		-0.134	1.892	0.577		-0.413	1.121	2.646
		(4.250)	(5.487)	(5.635)		(2.162)	(2.800)	(2.806)
Acq. Dividends / Assets		-284.60***	-326.30**	-261.47*		-115.20**	-100.98	-98.251
		(107.932)	(137.463)	(142.919)		(54.875)	(70.137)	(71.148)
Ln(Acquirer Assets)		2.286*	3.055*	3.171*		1.816***	1.498	1.318
		(1.360)	(1.836)	(1.875)		(0.694)	(0.937)	(0.933)
Ln(Target Asset)		-2.180*	-3.923**	-4.253**		-1.493**	-1.566*	-1.680*
		(1.290)	(1.688)	(1.734)		(0.660)	(0.861)	(0.863)
Industry Difference FX	yes	yes	yes	yes	yes	yes	yes	yes
Industry Effects	yes	yes	yes	yes	yes	yes	yes	yes
*Industry*Cash Effects*	yes	yes	yes	yes	yes	yes	yes	yes
*Controls*Cash*	no	no	yes	yes	no	no	yes	yes
Year Effects	no	no	no	yes	no	no	no	yes
R-Squared	0.1850	0.2215	0.2292	0.2591	0.1851	0.2136	0.2195	0.2861
N	725	642	642	642	725	642	642	642

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. Standard errors appear in parentheses below the coefficient. Each column contains a separate regression. The dependent variable, the abnormal return to the stock of the target company from one month before the announcement date to the close of the merger (or one day before to one day after the announcement date, for the short window), is generated from a three-factor market model. I use betas estimated in the period 6 months before the start of the window. The acquirer value-to-price ratio is calculated following the method of Dong et al. (2005), but using a constant discount rate of 12.5% for all firms (following D'Mello and Shroff (2000)). I use the most IBES earnings expectations report for this measure. Industry effects are at the 2-digit SIC level. Industry difference fixed effects control for differences at the 1-, 2-, and 3-digit SIC code level. In columns (3)-(4) and (7)-(8), I interact the six balance sheet control variables with a dummy for cash payment as well, so the coefficient reported in the table for the controls can be interpreted as the effects in stock deals. Coefficients that are significantly different from 0 are denoted by the following system: * 10%, ** 5%, *** 1%.

Table 9: Full Acquirer Earnings-to-Price Specification with Balance Sheet Controls

Explanatory Variables:	*Dependent Variable: Target Premium [-20, close]* (1)	(2)	(3)	*Target Premium [-1, +1]* (4)	(5)	(6)
Acquirer E/P	8.354	22.633	8.515	16.819	37.069**	37.688**
	(30.402)	(33.622)	(27.071)	(14.571)	(16.166)	(16.482)
*Acquirer E/P * Stock*	-121.48***	-117.92**	-99.639**	-40.315**	-52.559***	-50.379**
	(41.106)	(46.095)	(47.177)	(19.645)	(22.120)	(22.205)
Acquirer E/P ≤ 0	8.718	8.346	8.166	0.901	1.541	0.517
	(9.116)	(10.125)	(10.338)	(4.342)	(4.847)	(4.851)
*Acquirer E/P * Acq. E/P ≤ 0*	98.147	61.793	89.157	0.848	-38.682	-58.874
	(96.240)	(105.420)	(109.401)	(45.851)	(50.491)	(51.336)
*Acq. E/P ≤ 0 * Stock*	-17.151*	-14.43	-14.929	-0.293	-1.335	-1.713
	(10.180)	(11.188)	(11.433)	(4.849)	(5.356)	(5.364)
*Acquirer E/P * Stock * Acq. E/P ≤ 0*	51.705	69.144	36.100	81.334	100.09*	117.29**
	(111.120)	(121.690)	(124.563)	(52.887)	(58.218)	(58.410)
Acq. Cash/Assets		-3.301	-3.815		3.807	2.362
		(7.874)	(7.967)		(3.764)	(3.733)
Acq. Leverage Ratio		1.511	1.556		-1.689	-1.574
		(7.241)	(7.302)		(3.466)	(3.425)
Acq. Dividends > 0		3.127	3.297		1.73	2.723*
		(3.427)	(3.480)		(1.641)	(1.633)
Acq. Dividends / Assets		-68.758	-73.155		-28.972	-30.51
		(52.919)	(53.427)		(25.342)	(25.053)
Ln(Acquirer Assets)		4.904***	4.760***		1.998***	1.812***
		(1.197)	(1.208)		(0.573)	(0.566)
Ln(Target Asset)		-3.866***	-4.017***		-1.311**	-1.549***
		(1.183)	(1.196)		(0.566)	(0.561)
Industry Difference FX	yes	yes	yes	yes	yes	yes
Industry Effects	yes	yes	yes	yes	yes	yes
*Industry*Cash Effects*	yes	yes	yes	yes	yes	yes
*Controls*Cash*	-	yes	yes	-	yes	yes
Year Effects	no	no	yes	no	no	yes
R-Sauared	0.1212	0.1439	0.1641	0.1484	0.1809	0.2319
N	1496	1324	1324	1496	1324	1324

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. Standard errors appear in parentheses below the coefficient. Each column contains a separate regression. The dependent variable, the abnormal return to the stock of the target company from one month before the announcement date to the close of the merger (or one day before to one day after the announcement date, for the short window), is generated from a three-factor market model. I use betas estimated in the period 6 months before the start of the window. The acquirer earnings-to-price ratio is calculated as the ratio of annual earnings per share to share price 1 month before the announcement date. The balance sheet variables are calculated from the most recent annual report before the announcement period. Industry effects are at the 2-digit SIC level. Industry difference fixed effects control for differences between acquirer and target at the 1-, 2-, and 3-digit SIC code level. In columns (2)-(3) and (5)-(6), I interact the six balance sheet control variables with a dummy for cash payment as well, so the coefficient reported in the table for the controls can be interpreted as the effects in stock deals. Coefficients that are significantly different from 0 are denoted by the following system: * 10%, ** 5%, *** 1%.

Table 10: Full Acquirer Pre-Merger Return Specification with Balance Sheet Controls

	Dependent Variable and Primary Independent Variable:							
	Target Premium [-20, close]				*Target Premium [-1, +1]*			
Explanatory	*6 Month Pre-Ret*		*1 Year Pre-Ret*		*6 Month Pre-Ret*		*1 Year Pre-Ret*	
Variables:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Acquirer Pre-Merger Abnormal Return	-11.876**	-11.949*	-5.738	-3.825	-8.202***	-6.267**	-4.587**	-2.981
	(5.544)	(6.284)	(3.931)	(4.520)	(2.652)	(3.023)	(1.889)	(2.169)
*Acquirer Pre-Merger Abnormal Ret*Stock*	23.034***	27.189***	14.886***	15.441***	10.222***	10.551***	6.208***	4.955**
	(6.429)	(7.019)	(4.537)	(5.173)	(3.072)	(3.456)	(2.179)	(2.483)
Acq. Cash/Assets		-2.549		1.791		-1.295		0.198
		(7.640)		(8.065)		(3.662)		(3.869)
Acq. Leverage Ratio		-6.741		-3.547		-5.665*		-5.135
		(7.166)		(7.272)		(3.435)		(3.489)
Acq. Dividends > 0		8.671**		9.208***		3.913**		4.567
		(3.398)		(3.461)		(1.629)		(1.662)
Acq. Dividends / Assets		-130.999**		-112.930*		-54.589*		-53.210*
		(61.336)		(61.450)		(29.397)		(29.483)
Ln(Acquirer Assets)		5.791***		5.506***		2.250***		1.986***
		(1.145)		(1.191)		(0.549)		(0.572)
Ln(Target Asset)		-3.857***		-3.776		-1.666***		-1.463
		(1.139)		(1.169)		(0.546)		(0.561)
Industry Difference FX	yes	yes	yes	yes	yes	yes	yes	yes
Industry Effects	yes	yes	yes	yes	yes	yes	yes	yes
*Industry*Cash Effects*	yes	yes	yes	yes	yes	yes	yes	yes
*Controls*Cash*	-	yes	-	yes	-	yes	-	yes
Year Effects	no	yes	no	yes	no	yes	no	yes
R-Squared	0.1266	0.1949	0.1285	0.1933	0.1355	0.2330	0.1392	0.2400
N	1782	1397	1712	1348	1781	1394	1711	1345

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. Standard errors appear in parentheses below the coefficient. Each column contains a separate regression. The dependent variable, the abnormal return to the stock of the target company from one month before the announcement date to the close of the merger (or one day before to one day after the announcement date, for the short window), is generated from a three-factor market model. I use betas estimated in the period 6 months before the start of the window. The pre-merger abnormal return to the acquirer stock is calculated using a three-factor model over the relevant horizon. Industry effects are at the 2-digit SIC level. Industry difference fixed effects control for differences at the 1-, 2-, and 3-digit SIC code level. In even columns, I interact the six balance sheet control variables with a dummy for cash payment as well, so the coefficient reported in the table for the controls can be interpreted as the effects in stock deals. Coefficients that are significantly different from 0 are denoted by the following system: * 10%, ** 5%, *** 1%.

Table 11: Post Merger Returns, by Method of Payment

Transaction Form:		Cash	Stock	All
Post-Merger Abnormal Return	95%	67.58%	67.58%	67.32%
[close, + 1 yrs]	75%	13.60%	5.91%	8.49%
	50%	-12.12%	-15.04%	-14.08%
	25%	-34.95%	-45.63%	-41.79%
	5%	-80.68%	-86.54%	-86.47%
	Mean	**-10.83%**	**-17.41%**	**-15.01%**
Sample Size		614	1066	1680
Post-Merger Return	95%	81.19%	73.62%	81.19%
[close, + 1 yrs]	75%	29.08%	21.85%	24.82%
	50%	2.02%	-6.22%	-2.77%
	25%	-24.13%	-36.00%	-31.72%
	5%	-66.53%	-74.85%	-74.85%
	Mean	**2.73%**	**-6.00%**	**-2.58%**
Sample Size		614	1066	1680
Post-Merger Abnormal	95%	31.91%	31.91%	31.91%
Annualized Return	75%	2.11%	-0.78%	1.03%
[close, + 3 yrs]	50%	-15.31%	-15.69%	-15.50%
	25%	-32.78%	-32.64%	-32.72%
	5%	-58.33%	-59.46%	-59.46%
	Mean	**-15.42%**	**-15.81%**	**-15.50%**
Sample Size		380	654	1034
Post-Merger Annualized Return	95%	35.82%	37.28%	37.28%
[close, + 3 yrs]	75%	11.63%	5.87%	8.20%
	50%	-4.27%	-9.30%	-7.61%
	25%	-22.48%	-27.54%	-25.54%
	5%	-49.04%	-52.11%	-52.11%
	Mean	**-5.46%**	**-10.24%**	**-8.40%**
Sample Size		620	989	1609

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. Returns are calculated beginning the day after the merger closed over a one- or three-year horizon. Abnormal returns are calculated using a three-factor market model estimated during the period.

Table 12: Predicting Abnormal Returns by Method of Payment

	Equal-Weighted		*Value-Weighted*	
Method of Payment:	*1-Factor Model*	*3-Factor Model*	*1-Factor Model*	*3-Factor Model*
Cash	0.56%*	0.37%	-0.12%	-0.31%
	(0.22%)	(0.19%)	(0.32%)	(0.31%)
Equity	-0.49%*	-0.57%**	-0.39%	-0.41%
	(0.20%)	(0.17%)	(0.25)	(0.25%)

Source: CRSP Database at WRDS. Mergers are sorted into bins using the quartiles of the method of payment of the merger. Stocks are each held in an portfolio for one year after the close. The monthly returns on these portfolios are then fitted to a 3-factor model weighting the returns by the number of stocks in the portfolio in a given month. The table displays the abnormal monthly return alphas from a regression on the 3-factor model and the standard errors of the estimates. In the equal-weighted portfolios, the monthly return observations are weighted in the regressions by the average number of stocks in the portfolio in a given month. In the value-weighted portfolios, individual returns are weighted by the market cap of each stock. Standard errors for the monthly abnormal returns appear in parentheses. A * denotes estimates statistical significance at the 5% level, ** at the 1% level.

Table 13: Post-Merger Abnormal Returns and Target Premia

Explantory Variables:	*Dependent Variable: Target Premium [-20, close]*							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post Merger Abnormal Return	1.648	6.677*	9.964*	9.083**	8.383*	9.028**	8.930**	7.951
	(2.490)	(3.535)	(3.771)	(4.006)	(4.797)	(4.039)	(4.260)	(5.667)
*Post Merger Abnormal Return * Stock*		-7.731	-13.163**	-11.420**	-12.913**	-12.766**	-12.158**	-19.229**
		(4.785)	(5.146)	(5.077)	(6.162)	(4.764)	(4.761)	(8.180)
Acquirer B/M				2.468			1.266	
				(2.890)			(3.592)	
*Acquirer B/M * Stock*				-14.68***			-12.067*	
				(5.013)			(5.999)	
Acquirer V/P					7.778*			8.639*
					(3.819)			(4.665)
*Acquirer V/P * Stock*					-18.11***			-10.396
					(6.164)			(7.645)
Balance Sheet Controls	no	no	yes	yes	yes	yes	yes	yes
Industry Diff. FX	no	no	no	no	no	yes	yes	yes
*Method-of-Payment * Industry FX*	no	no	no	no	no	yes	yes	yes
Year Effects	no	no	no	no	no	yes	yes	yes
R-Squared	0.0489	0.0508	0.0778	0.0907	0.0898	0.1711	0.1786	0.2736
N	1659	1659	1325	1267	605	1325	1267	605

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. Standard errors appear in parentheses below the coefficient, and are clustered by year. Each column contains a separate regression. The dependent variable in columns (1)-(8) is the abnormal announcement-period return to the target stock, calculated from 20 days prior to announcement to the close, as in Table 1. The abnormal return is calculated using a three-factor market model estimated in the sample. The post-merger abnormal return, calculated from the close date of the merger to one year after the merger, uses the same model. Columns (4)-(8) include the acquirer leverage ratio, cash/assets ratio, dividend/assets ratio, a dummy variable equal to 1 if the firm issues dividends, ln(assets), and target ln(assets), each interacted with method-of-payment dummies as controls. Columns (4) and (7) include the acquirer book-to-market ratio, calculated from the last balance sheet issued before the announcement of the merger. Columns (5) and (8) includes the acquirer value-to-price ratio, calculated following the method of Dong et al. (2005), but using a constant discount rate of 12.5% for all firms (following D'Mello and Shroff (2000)). Industry effects are at the 2-digit SIC level. Industry difference fixed effects control for differences at the 1-, 2-, and 3-digit SIC code level. Coefficients that are significantly different from 0 are denoted by the following system: * 10%, ** 5%, *** 1%.

Table 14: Predicting Abnormal Returns by Method of Payment and Target Premium

Method of Payment:	*Size of Target Premium* Low	Low Mid	High Mid	High
Cash	0.04%	-0.13%	-0.05%	0.88%*
	(0.30%)	(0.25%)	(0.28)	(0.40%)
Equity	0.17%	0.03%	-0.98%*	-1.11%*
	(1.00%)	(0.24%)	(0.28%)	(0.28%)

Source: CRSP Database at WRDS. Mergers are sorted into bins using the quartiles of the method-of-payment-specific bid distribution in the calendar year before the close of the merger. Stocks are each held in an equal-weighted portfolio for one year after the close. The monthly returns on these portfolios are then fitted to a 3-factor model weighting the returns by the number of stocks in the portfolio in a given month. The table displays the abnormal monthly return alphas from a regression on the 3-factor model and the standard errors of the estimates. The monthly return observations are weighted in the regressions by the average number of stocks in the portfolio in a given month. Standard errors for the monthly abnormal returns appear in parentheses. A * denotes estimates statistical significance at the 5% level.

Table 15: Post-Merger Abnormal Returns and Target Premia, Across Length of Post-Merger Period

	Dependent Variable: Target Premium [-20, close]					
	Post-Merger Abnormal Return Horizon:					
Explantory	*1-Year After Close*		*6 Months After Close*		*3 Years After Close*	
Variables:	(1)	(2)	(3)	(4)	(5)	(6)
Post Merger Abnormal Return	9.964*	9.083**	5.878*	4.259	4.990**	4.978**
	(3.771)	(4.006)	(2.960)	(3.275)	(2.107)	(2.282)
*Post Merger Abnormal Return * Stock*	-13.163**	-11.420**	-7.737	-5.451	-9.544***	-9.236***
	(5.146)	(5.077)	(4.763)	(5.078)	(2.534)	(2.919)
Acquirer B/M		2.468		1.862		2.704
		(2.890)		(2.956)		(3.136)
*Acquirer B/M * Stock*		-14.67***		-14.31***		-15.53***
		(5.013)		(4.946)		(4.952)
Balance Sheet Controls	yes	yes	yes	yes	yes	yes
Industry Diff. FX	no	no	no	no	no	no
*Method-of-Payment * Industry FX*	no	no	no	no	no	no
Year Effects	no	no	no	no	no	no
R-Squared	0.0778	0.0907	0.0722	0.0861	0.0815	0.0974
N	1325	1267	1361	1301	1063	1019

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. Standard errors appear in parentheses below the coefficient, and are clustered by year. Each column contains a separate regression. The dependent variable in columns (1)-(6) is the abnormal announcement-period return to the target stock, calculated from 20 days prior to announcement to the close, as in Table 1. The abnormal return is calculated using a three-factor market model estimated in the sample. The post-merger abnormal return is calculated using the same model. The post-merger return horizon in the first two columns is one year after the close date; in Columns (3) and (4), it is six months after the close date; and in Columns (5) and (6), it is three years after the close date. All returns are annualized. All columns include the acquirer leverage ratio, cash/assets ratio, dividend/assets ratio, a dummy variable equal to 1 if the firm issues dividends, ln(assets), and target ln(assets), each interacted with method-of-payment dummies as controls. Columns (2), (4), and (6) include the acquirer book-to-market ratio, calculated from the last balance sheet issued before the announcement of the merger. Coefficients that are significantly different from 0 are denoted by the following system: * 10%, ** 5%, *** 1%.

Table 16: Post-Merger Simple Returns and Target Premia, Across Length of Post-Merger Period

Dependent Variable: Target Premium [-20, close]

	Post-Merger Return Horizon:					
Explantory	*1-Year After Close*		*6 Months After Close*		*3 Years After Close*	
Variables:	(1)	(2)	(3)	(4)	(5)	(6)
Post Merger Simple Return	9.437**	9.731**	4.463*	4.103	4.365*	4.698*
	(3.520)	(3.660)	(2.241)	(2.571)	(2.258)	(2.341)
*Post Merger Simple Return * Stock*	-15.49***	-13.97***	-7.842**	-6.588*	-13.27***	-13.17***
	(4.461)	(4.676)	(3.037)	(3.295)	(3.563)	(3.651)
Acquirer B/M		1.752		1.563		2.436
		(2.951)		(3.029)		(3.277)
*Acquirer B/M * Stock*		-13.505**		-13.769**		-14.144**
		(5.230)		(5.081)		(5.222)
Balance Sheet Controls	yes	yes	yes	yes	yes	yes
Industry Diff. FX	no	no	no	no	no	no
*Method-of-Payment * Industry FX*	no	no	no	no	no	no
Year Effects	no	no	no	no	no	no
R-Squared	0.0825	0.0960	0.0756	0.0908	0.0970	0.1129
N	1325	1267	1361	1301	1063	1019

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. Standard errors appear in parentheses below the coefficient, and are clustered by year. Each column contains a separate regression. The dependent variable in columns (1)-(6) is the abnormal announcement-period return to the target stock, calculated from 20 days prior to announcement to the close, as in Table 1. The abnormal return is calculated using a three-factor market model estimated in the sample. The post-merger simple return is the return the acquirer stock following the close of the merger. The post-merger return horizon in the first two columns is one year after the close date; in Columns (3) and (4), it is six months after the close date; and in Columns (5) and (6), it is three years after the close date. All columns include the acquirer leverage ratio, cash/assets ratio, dividend/assets ratio, a dummy variable equal to 1 if the firm issues dividends, ln(assets), and target ln(assets), each interacted with method-of-payment dummies as controls. Columns (2), (4), and (6) include the acquirer book-to-market ratio, calculated from the last balance sheet issued before the announcement of the merger. Coefficients that are significantly different from 0 are denoted by the following system: * 10%, ** 5%, *** 1%.

Table 17: Post-Merger Abnormal Returns and Target Premia, By Sample Period

	Dependent Variable: Target Premium [-20, close]					
			Specification Period:			
Explantory	*1973-1989*	*1990-2000*	*1973-1989*	*1990-2000*	*1973-1989*	*1990-2000*
Variables:	(1)	(2)	(3)	(4)	(5)	(6)
Post Merger Simple Return	11.126**	9.038*	10.783*	9.992*	10.428	9.188**
	(5.128)	(4.953)	(5.956)	(5.381)	(9.289)	(3.590)
*Post Merger Simple Return * Stock*	-3.318	-13.991*	-5.098	-13.710*	-3.486	-13.922**
	(8.596)	(6.403)	(7.642)	(6.413)	(11.221)	(4.568)
Acquirer B/M			7.237*	-5.191	1.324	-1.604
			(3.699)	(3.528)	(4.124)	(4.559)
*Acquirer B/M * Stock*			-16.731**	-6.021	-8.900	-8.200
			(7.332)	(5.612)	(12.614)	(6.977)
Balance Sheet Controls	yes	yes	yes	yes	yes	yes
Industry Diff. FX	no	no	no	no	yes	yes
*Method-of-Payment * Industry FX*	no	no	no	no	yes	yes
Year Effects	no	no	no	no	yes	yes
R-Squared	0.1838	0.0649	0.1887	0.0777	0.1666	0.1859
N	373	952	356	911	356	911

Source: CRSP/Mitchell Merger Database and CRSP/COMPUSTAT Database at WRDS. Standard errors appear in parentheses below the coefficient, and are clustered by year. Each column contains a separate regression. The dependent variable in columns (1)-(6) is the abnormal announcement-period return to the target stock, calculated from 20 days prior to announcement to the close, as in Table 1. The abnormal return is calculated using a three-factor market model estimated in the sample. The post-merger abnormal return is calculated using the same model, calculated over the year following the close of the merger. All columns include the acquirer leverage ratio, cash/assets ratio, dividend/assets ratio, a dummy variable equal to 1 if the firm issues dividends, ln(assets), and target ln(assets), each interacted with method-of-payment dummies as controls. Columns (2), (4), and (6) include the acquirer book-to-market ratio, calculated from the last balance sheet issued before the announcement of the merger. Coefficients that are significantly different from 0 are denoted by the following system: * 10%, ** 5%, *** 1%.