Stock Market Driven Acquisitions.

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Abstract

We present a model of mergers and acquisitions based on stock market misvaluations of the combining firms. The model explains who acquirers whom, whether the medium of payment is cash or stock, what the valuation consequences of mergers are, and why there are merger waves. Some of the key predictions of the model are: 1) acquisitions are disproportionately for stock when market valuations are high, and for cash when they are low; 2) targets in cash acquisitions earn low returns prior to the acquisitions, whereas bidders in stock acquisitions earn high returns; 3) long run returns to bidders in stock acquisitions are likely to be negative, those to bidders in cash acquisitions are likely to be positive; 4) despite negative long run returns, acquisitions for stock serve the interest of long run shareholders of the bidder; 5) diversification strategies serve the interest of bidding shareholders even when they earn negative announcement returns; 6) such diversifying acquisitions are likely to be for stock; 7) management resistance to cash tender offers is often in the interest of shareholders; 8) acquisition targets are likely to have managers and shareholders with relatively shorter horizons than the bidders.

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I. Introduction.

In the late 1990s, the U.S. and world economies had experienced a large wave of mergers and acquisitions (Figure 1). Most of these deals were for stock, and the acquirers were typically in the same industry as the targets (Andrade et al. 2001). This wave of acquisitions was very different from the "hostile" takeover wave of the 1980s in the U.S., when many acquirers were financiers, and the medium of payment was often cash rather than stock. These acquisitions also differed from the "conglomerate" wave in the 1960s, when mergers typically involved firms from different industries. At the same time, the waves of the 1960s and 1990s were similar in that the medium of payment was generally stock and both occurred during periods of very high stock market valuations. In the 1980s, in contrast, the valuations were lower.

When economists explain these takeover waves, they usually have a special story for each one (e.g., Nelson 1959, Shleifer and Vishny 1991, Holmstrom and Kaplan 2001). The 1960s are described as the conglomerate merger wave, in which well-run acquirers built up diversified groups by adding capital and management to the acquired firms (Gort 1962, Rumelt 1974, Meeks 1977, Steiner 1975). The 1980s are described as bust-up takeovers, in which raiders financed by bank debt and junk bonds acquired and split up the very same conglomerates assembled in the 1960s, because the conglomerate organization was no longer efficient (Jensen 1986, Blair, ed. 1993, Bhagat, Shleifer, and Vishny 1990). The wave of related acquisitions in the 1990s still does not have a name, but many of these mergers were evidently intended to consolidate major industries (Holmstrom and Kaplan 2001, Andrade et al. 2001). In this respect, the recent wave is similar to the 1920s "mergers for oligopoly" (Stigler 1968).

In this paper, we propose a more unified theory of acquisitions, which does not rely on a special story for every decade. In our theory, acquisitions are driven entirely by stock market valuations of the participant firms. We do not assume that markets are efficient, but rather that the stock market may misvalue potential acquirers, potential targets, as well as their combinations, and derive the theory of acquisitions from the assumptions about valuations. The theory we propose is part of the growing body of research on behavioral corporate finance, including DeLong et al. (1989), Morck et al (1990a), Shleifer and Vishny (1990), Stein (1988, 1989, 1996), and Baker and Wurgler (2000), which sees corporate financial policies as a response to market misvaluations. Our theory is in some ways the opposite of Roll's hubris hypothesis of corporate takeovers, in which financial markets are rational, but corporate managers are not. In our theory, managers rationally respond to less than rational markets.

The idea that stock market valuations are an important determinant of merger activity dates back at least to Nelson's (1959) study of merger waves in the U.S. "It appears that merger expansion was not only a phenomenon of prosperity, but that it was also closely related to the state of the capital market. Two reference cycle expansions, unaccompanied by a strong upswing in stock prices, were marked by the absence of a merger revival" (Nelson 1959). Recent studies of the long run returns to bidding firms have returned to market efficiency issues. Loughran and Vijh (1997) find that the market does not react correctly to the news of a merger, with acquirers making cash tender offers earning positive long run abnormal returns, and those making stock acquisitions earning negative long run abnormal returns. Rau and Vermaelen (1998) show that this pattern of returns remains even after the correction for size and book-to-market ratio recommended by Fama and French (1993). They also

find that glamour bidders pay more frequently with stock than do value bidders. Our model explains these findings in a simple way.

Despite this evidence, stock market valuations have not been among the leading theories of mergers. Andrade et al. (2001) classify the theories used to explain mergers between 1973 and 1998 as dealing with efficiency, agency costs, regulation, and diversification. Holmstrom and Kaplan (2001) argue that improvements in corporate governance and regulation fostered more efficient capital markets, in turn leading to greater takeover activity.

Our approach has two principal advantages. First, it does not rely on a special story for each industry and each time period. In fact, we argue that the specific theories that have been proposed for individual merger waves are more like ex post rationalizations, which attach stories to the more systematic reality of market misvaluations. Second, the theory provides a unified framework for answering such question as who acquires who?, is the medium of payment cash or stock?, what are the valuation consequences of mergers?, and what is the relationship between merger waves and market valuations? In other words, we attempt to make predictions about the pace and nature of merger activity based solely on the knowledge of relative valuations. This approach allows us to shed light not only on the available short and long term event study evidence, but also on less well studied aspects of merger activity.

Some of the key predictions of our model include the following: 1) acquisitions are disproportionately for stock when market valuations are high, and for cash when they are low; 2) targets in cash acquisitions earn low returns prior to the acquisitions, whereas bidders in stock acquisitions earn high returns; 3) long run returns to bidders in stock acquisitions are likely to be

negative, those to bidders in cash acquisitions are likely to be positive; 4) despite negative long run returns, acquisitions for stock serve the interest of long run shareholders of the bidder; 5) diversification strategies serve the interest of bidding shareholders even when they earn negative announcement returns; 6) such diversifying acquisitions are likely to be for stock; 7) management resistance to cash tender offers is often in the interest of shareholders; 8) acquisition targets are likely to have managers and shareholders with relatively shorter horizons than the bidders.

In the next section, we present a simple model of stock market driven mergers. In section III, we analyze mergers for cash in this model, and in section IV, mergers for stock. In section V, we attempt to put all the ingredients together and to make predictions about the equilibrium nature of M&A activity as a function of stock market conditions. Section VI concludes.

II. A simple model of acquisitions.

We consider two firms, 0 and 1, with capital stocks K and K_1, and stock market valuations per unit of capital of Q and Q_1. We do not assume that Q and Q_1 reflect efficient valuations of these firms. Rather, Q and Q_1 capture investor sentiment about the two firms. Without loss of generality, we assume that $Q_1 > Q$. Importantly, the investor sentiment affecting valuations can but need not be idiosyncratic: it can reflect over- or under-valuations of entire industries, sectors, or groups of firms with similar characteristics. For example, all diversified firms (conglomerates) can be in or out of favor, as can all technology stocks, all basic industry stocks, or all European stocks.

We assume that the two firms can merge, and that the short run valuation of the combined equity per unit of capital is given by $sQ_1 + (1-s)Q$, so the market value of the two firms together is V =

$(K + K_1)$ $(sQ_1 + (1-s)Q)$. We call s the "perceived synergy" of the merger. In effect, s is the story that the market consensus holds about the benefits of the merger. It could be a story about industrial diversification, or consolidation, or cross-European integration. For example, s can be high when the market favors diversification and the two firms come from different industries, or when the market favors consolidation and the two firms are in the same industry. Alternatively, s might be high when a well-performing firm (high Q_1) merges with a poorly-performing firm (low Q), as in the analysis of Rau and Vermaelen (1998). In our model s is just the lubricant that greases the wheels of the M&A process – it might be invented by investment bankers or academics and have little to do with the reality of what drives actual acquisitions.

We define $s^* = K_1/(K + K_1)$ as the "no perceived synergy" point. At this point, the market weights the combination of the two firms in proportion to their relative sizes, as measured by "book" capital. The case of $s < s^*$ corresponds to negative perceived synergy in that, in valuing the combination, the market attaches relatively more weight to the firm with lower valuation per unit of capital. Likewise, the case of $s > s^*$ corresponds to positive perceived synergy in that, the market attaches relatively more weight to the firm with higher valuation per unit of capital. The case $s = 0$ corresponds to the market valuing the combination at the same value per unit of capital as the less valuable firm, and $s = 1$ to the market valuing the combination like the more valuable firm. It is possible in this model (and interesting to consider) that $s > 1$, in which case the combination of the two firms is perceived by the "euphoric" market to be more valuable (again, per unit of capital) than even the more valuable firm is on its own. It is also possible that $s < 0$, although we are unlikely to see mergers in this case. In general, we think it more likely that $0 < s < 1$. Under these assumptions, the total short run

gains from two firms merging are given by $(K + K_1)(sQ_1 + (1-s)Q) - KQ - K_1Q_1$, which are positive as long as $s > s^*$.

We make the extreme assumption that, in the long run, all assets are worth q per unit of capital. Thus, in the long run, firm 0 as a standalone entity is worth qK, firm 1 is worth qK_1, and the combination, if it materializes, is worth $q(K + K_1)$. This assumption implies that there are no long run gains from merger (regardless of whether cash or stock is used): no synergies in combining the two firms, and no managerial improvements. Put differently, s is completely "a story" that market participants convince themselves of at the time of the merger. This is not to suggest that, empirically, mergers are always pure financial plays that create no long run value and entail no real consequences. We note, however, that there is a great deal of doubt, especially outside the 1980s, that mergers increase profitability (Meeks 1977, Ravenscraft and Scherer 1987). We make the assumption that mergers are driven purely by stock market considerations and have no long run real consequences in order to see how far it takes us.

In the following analysis, we distinguish sharply between short and long run consequences of acquisitions. In this model, since acquisitions create no long term value, their long term role is only to redistribute wealth between the long term shareholders of target and acquiring firms. In the short run, however, acquisitions can in principle serve the interests of both target and acquirer shareholders. This distinction might be useful if we think of some professional managers and institutional investors as short term shareholders who care about the short term valuation effects of the merger, but of entrepreneurs with large stakes as long term shareholders, who are stuck with their shares even as markets return to efficiency. The distinction also enables us to revisit the evidence on long run acquirer returns, which

many studies find to be negative (Agrawal and Jaffe 2000, Andrade et al. 2001). Without the assumption of market efficiency, an alternative view of long run performance emerges.

III. The arithmetics of returns.

In this section, we consider the more valuable firm 1 acquiring the less valuable firm 0 (we return to the opposite possibility later), and examine the consequences of such an acquisition for both long and short term shareholders of the target and the acquirer, depending on whether the means of payment is cash or stock. In the analysis, we need to discuss the determination of the takeover premium. Rather than stick to a specific model of takeovers, we assume that the acquirer pays a price $P = Q + p(Q_1 - Q) = pQ_1 + (1-p)Q$ per unit of capital of the target. Like the measure of synergy, s, the variable p here refers to the weight that the acquirer puts on his own valuation in paying for the target. Two special cases stand out. In the first, p=0 and there is no takeover premium. In the second, p = s, and the acquirer pays the price reflecting the merged short run valuation of the combined entity. It is also possible that p > s, as in Roll (1986), and the bidder overpays. We can analyze such cases, but they are not of central interest.

Throughout this analysis, we make the simplifying assumption that, aside from having a theory of perceived synergies, the market draws no inferences from the announcement of an acquisition. The announcement does not cause prices to converge to long term values, or any other correction. Put differently, neither the mergers themselves, nor the choice of cash versus stock, convey any information about the management's valuation of assets in place (Myers and Majluf 1984) or the severity of the

agency problems (Morck et al 1990). Market beliefs are specified completely by Q, Q_1 and s, and traders stick to these beliefs in the short run.

Consider first short run returns (in terms of dollar amounts rather than percentages). Since the market draws the same inferences from the acquisitions for cash and for stock, it is obvious that the bidder, the target, and the total short run returns are invariant to whether the means of payment is cash or stock. (This is not true for long run returns.) We can establish:

Proposition 1. Total short run returns from the acquisition are given by

(1) $(K + K_1)(s-s^*)(Q_1-Q)$;

short run target returns from the acquisition are given by:

(2) $Kp(Q_1-Q)$;

and short run bidder returns from the acquisition are given by:

(3) $(Q_1-Q)[K_1(s-1) + K(s-p)]$.

Total returns are increasing in the difference between Q_1 and Q as long as $s^* > s$. In the short run, acquisitions take advantage of the perception that the combination of the two firms is synergistic, in that some of the value of the more valuable one spills over on the less valuable one. Equation (2) reveals that p governs how much of that gain in the short run goes to the target firm. When $p = 0$, target shareholders obviously do not gain; when $p = s$, they gain proportionately to their capital.

Finally, equation (3) reveals two elements of the short run gains of bidding shareholders. To the extent that the market is euphoric and $s > 1$, they gain from the upward revaluation of their initial capital stock. But if $s < 1$, the bidding shareholders lose from the negative revaluation of their own capital. However, to the extent that $p < s$, the bidding shareholders also gain from getting a share of the

increased short run valuation of the target's stock. In principle, it is possible that bidding shareholders gain in the short run even without market euphoria, if p is sufficiently below s. The relationship between p and s also crucially determines the long run returns to the bidding shareholders.

The analysis thus far suggests that at least some takeover activity may be driven purely by short run stock market perceptions. Obviously, when $s > 1$, there is a money machine available to the bidding firm, which can buy assets and get its own capital revalued upwards. Presumably, such opportunities are limited. But even if the market is not euphoric, but believes that positive synergies are available from a merger, both the target and the acquirer can gain as long as $s < p$. The maximum price that the bidder can afford to benefit in the short run is solved by setting the bidder return to equal zero, and is given by:

(4) $p = (s - s^*)/(1 - s^*)$,

which is increasing in s. Bidders can afford to pay higher premia in more buoyant markets.

The more interesting results obtain when we combine these findings with the analysis of long run gains from merger. Here we treat acquisitions for cash and stock separately. For the former, the results are established in:

Proposition 2: Long run combined returns from acquisitions for cash are zero in total, and given by $K(P-q)$ for the target, and $K(q-P)$ for the acquirer.

In this model, by construction there are no long term profitability gains from making acquisitions. What the target gains, the bidder loses. In this framework, the only long run reason to make acquisitions for cash is the undervaluation of the target. If the short run price of the target is sufficiently low that, even given the takeover premium, its true long term value is still higher, it may pay

the acquirer to choose cash as the means of making acquisition.

This observation suggests that the management of takeover targets might serve the interest of long term shareholders by resisting tender offers at a premium. In our model, the interest of long term shareholders is not just an excuse, as it has been portrayed in agency models, and the fact that share prices drop when a bid is defeated is not evidence of managerial failure. When the fundamental reason of acquisitions is long run valuation of the target, as it is in our model, takeover resistance benefits long term shareholders and hurts the short term ones.

In the case of acquisitions for stock, the results are given by:

Proposition 3: Long run returns from acquisitions for stock are zero in total, and given by

(5) $KQ\{[(pQ_1 + (1-p)Q)/(sQ_1 +(1-s)Q)] - 1\}$

for the target and the opposite for the acquirer.

Proposition 3 has an obvious interpretation. Long run target returns are positive as long as $p > s$, i.e. the price paid to the target exceeds the combined valuation of the two entities. Since in the long run, this is a zero sum game, the opposite holds for the bidder. The only way for the bidder to benefit from the acquisition in the long run is by increasing his shareholders' claim on physical capital. As long as $p < s$, bidder shareholders end up owning more capital in the long run, and since all capital is worth the same, they end up being better off. An alternative way to state this result is that, when the premium is below the blended valuation of the two companies, there is an "arbitrage" opportunity available to the bidding shareholders from redistributing wealth away from the target shareholders to themselves. When $p = s$, this arbitrage does not pay.

This result raises one of the most interesting possibilities of the model, namely that it may be in

the long, but not the short, term interest of shareholders of firm 1 to acquire firm 0. When $p < s$, the shares of firm 1 may well drop on the announcement of the deal, but the acquisition is still a good idea because the shares would have fallen even more without it. This might be the logic of some high flying firms acquiring lower flying firms, even when both are overvalued (e.g., AOL acquiring Time Warner). Even when a bidder's shares fall on the announcement, it might still benefit its long term shareholders to buy hard capital. Without the acquisition, the bubble in its shares burst even further than it does with the acquisition.

In fact, even when both the short and the long run bidder returns are negative, the acquisition may still be in the interest of long term shareholders. The reason for this is that if the bidder shares are sufficiently overvalued, using them as a means of payment to buy the less overvalued assets enables the bidding shareholders to raise their claim on capital, and therefore their long run returns relative to what they would be otherwise. The long run returns after the acquisition are negative, but not as negative as they would be without it.

The analysis illustrates the potential importance of defensive acquisitions by firms with overpriced shares: using these shares to buy assets is better than any alternative. This analysis also cautions against interpreting the finding of negative bidder returns – in either the short or the long run – as indicative of violations of shareholder interest. The simple point is that the alternative of not making an acquisition could have resulted in still lower returns.

A particularly important instance of defensive acquisitions that our model points to is diversification. Diversification here should be interpreted broadly as buying assets in a lower valuation equivalence class. This might include acquisitions in a different industry, of private (and lower valued)

firms in the same industry, or of smaller (and lower valued) firms. The model suggests a theory of diversification independent of either the implausible theory of conglomerate synergies or the standard agency costs explanations. Specifically, a high valuation firm might find acquisition targets in the same industry to be very expensive, especially when the whole industry is overvalued. In contrast, a diversifying acquisition might be cheaper, and more attractive in the long run, because it enables the acquirer to use its overvalued shares to increase its claim on capital. In fact, there is an interesting tradeoff between making related acquisitions, which might bring higher short run returns because of higher perceived synergies, and diversifying, which may hurt in the short run but be more attractive in the long run. Diversification that the market saw in the 1960s and the 1990s might then simply be an attempt to use overvalued shares to buy relatively less overvalued capital. As we argue in Section IV, this interpretation is consistent with the data on both returns and profitability changes accompanying diversification.

This analysis also suggests why making acquisitions for stock might be better than selling stock and holding cash. For the case of issuing shares and holding cash, $s = s^*$, and might in fact be lower if market participants conclude that the lack of investment opportunities warrants a downward revaluation of the firm. Consistent with the available evidence (Myers and Majluf 1984), short run returns from equity issues are likely to be negative. In contrast, as long as the acquirer can plausibly tell a story about a positive synergy, its claim on long run capital increases from making an acquisition for stock relative to issuing shares and holding cash. As a consequence, it might be more advantageous to buy overvalued capital with even more overvalued shares than to issue equity and hold properly valued cash. From the long run perspective, a high s lubricates the market for acquisitions.

Finally, we return to the possibility of firm 0, the less valuable one, acquiring firm 1. If we represent the price that firm 0 pays for firm 1 as before as $P = Q + p(Q_1 - Q) = pQ_1 + (1-p)Q$, we must have $p \geq 1$ for firm 1 shareholders to agree to a takeover. A straightforward calculation shows that bidder 0 returns in this acquisition are given by:

(6) $(Q_1 - Q)(sK + (s-p)K_1) \leq (Q_1 - Q)(sK + (s-1)K_1)$.

Comparing equation (6) with equation (3) shows that (3) is always higher than (6): firm 1 always gains more from being the bidder in the short run. It is also obviously the case in this model that the more overvalued firm gains more from being the bidder for either cash or stock in the long run. In other words, in every situation where firm 0 can gain from being the bidder in a merger, firm 1 gains more from being the bidder in that merger, but the opposite is not true. This is the sense in which, in this model, the relatively more overvalued firm is the natural bidder.

This raises a final question, and a problem. In this model, the combined long run returns of the bidder and the target are always positive, so if the bidder acts in the interest of its long term shareholders by making the acquisition, the target must be hurting *its* long term shareholders by agreeing to it. Put differently, who in this model would agree to be a target?

The answer to this question lies in the differences in the horizons of the various shareholders (see also Stein 1988, 1989). Proposition 1 shows that the target shareholders generally get the majority of *short run* gains in the acquisition. This implies, in our model, that firms managed in the interest of *long term* shareholders are likely to be acquirers, and firms managed in the interest of *short term* shareholders are likely to be targets. In this model, target shareholders may receive a significant premium, given by p, and get either cash or stock. If they can sell the stock to investors willing to hold

it, they benefit. The long term shareholders of the acquirer -- who for whatever reason cannot sell -- also benefit as long as $p < s$. The losers are those who are holding shares in an overvalued market when they do not have to.

This analysis suggests that we expect target firms to be those whose managers want to "get out," for reasons of retirement, ownership of stock options, or attention to short horizon institutional shareholders. In contrast, we expect bidding firms to be controlled by shareholders who cannot as easily get out: entrepreneurs with large equity stakes, managers with individual long horizons, or professional managers serving at the pleasure of large shareholders who cannot get out. Some examples such as AOL acquiring Time Warner fit this description: the former firm is substantially entrepreneurial, while the latter was run by a professional manager nearing retirement. We are not aware, however, of any systematic evidence bearing on this issue.

IV. Discussion.

In this section, we apply the previous analysis to ask who acquires whom, under what circumstances, and what means of payment are used? Our previous analysis suggests that the more highly valued firm (relative to its book capital) acquires the less highly valued one. In the following discussion, we assume, therefore, that firm 1 is the acquirer.

We divide our discussion into two parts. First, we examine the theory in light of the available empirical evidence on short and long run stock returns around acquisition announcements. Second, we look at the relationship between the aggregate merger activity and the stock market by considering the merger waves in the U.S. economy.

Implications for the cross-section of returns.

The recent evidence on long and short term stock returns around acquisition announcements is carefully summarized by Agrawal and Jaffe (2000) and Andrade et al. (2001) and we rely on their summaries of evidence rather than on individual studies. In particular, Andrade et al. (2001) show that in a sample of 3,688 mergers between 1973 and 1998, target firms gain 23.8% in the window beginning 20 days before the acquisition announcement and ending on the close. Acquirer firms lose 3.8% over the same interval, and the combined value change is a statistically insignificant 1.9%. If we translate the returns in the propositions into percentage returns rather than dollar amounts, our model can easily mimic this pattern of returns. In fact, the simple case of $s = p = 1$, $s^* = .8$, $Q_1 - Q = .2$ generates roughly the right magnitudes. More generally, Proposition 1 shows why the returns to the target are of a different order of magnitude than those to the acquirer.

The evidence on long run returns are more interesting. Our model suggests that the acquirer would only make a cash bid if the target is undervalued even at the bid price, i.e., $P < q$. This is likely to happen mostly with seriously undervalued targets, which must have experienced low returns prior to being acquired. The evidence on this is limited, although Andrade et al. (2001) show that in 66% of mergers between 1973 and 1998, the acquirer's Q exceeded the target's Q. More importantly, our model predicts that long run bidder returns from cash acquisitions should be positive. Loughran and Vijh (1997) find that, after a size and book-to-market adjustment, tender offers result in positive abnormal bidder returns of 43% in the 5 years following the merger. Rau and Vermaelen (1998) use a larger sample of 316 tender offers between 1980 and 1991, and find that acquirers experience long run

excess returns of 8.5% in the 3 years following the merger. This evidence is strongly supportive of the model.

The crucial case in this model is of course acquisitions for stock. The model suggests that such acquisitions are made by overvalued acquirers of the relatively less overvalued targets. Moreover, in the model, such acquisitions are likely to result in negative long run returns, but -- as long as $p < s$ -- not as negative as would have obtained without the acquisition. This prediction is consistent with Rau and Vermaelen (1998), who find that acquirers in mergers earn a statistically significant negative 4% return relative to a peer portfolio in the 3 years after the merger. Agrawal and Jaffe (2000) list numerous earlier papers corroborating this finding. Rau and Vermaelen also show that value bidders outperform glamour bidders in the 3 years after the completion of the merger, and that glamour bidders pay more frequently with stock than do value bidders. Both of these findings are consistent with our view that acquisitions completed with stock arise from the relative overvaluation of the target relative to the bidder. Acquisitions for stock by the glamour bidders indeed appear to be a defensive strategy, as suggested by the model.

Interestingly, the key studies of long run bidder returns, such as Loughran and Vijh (1997), Rau and Vermaelen (1998), as well as Agrawal and Jaffe (2000), treat the two predictors of negative long run bidder returns – higher bidder valuation (measured in various ways) and use of stock as a means of payment – as evidence for two different hypotheses. They call them the method of payment hypothesis and the performance extrapolation hypothesis.

In our model, these results are part of the same story. The performance extrapolation hypothesis states that the market wrongly extrapolates the past performance of the bidder in

determining the value of the two firms. This corresponds to $s > s^*$ in our model. According to the means of payment hypothesis, if managers are better informed about the firm's prospects than the market, they will acquire with stock when stock is overpriced, and use cash otherwise. In our model, both the decision to acquire and the means of payment derive from market timing. Stock acquisitions are used specifically by overvalued bidders who expect to see negative long run returns on their shares, but are attempting to make these returns less negative than they would be otherwise. The examples of the acquisition of Time-Warner by AOL and of build-up of high valuation conglomerates with stock illustrate this phenomenon.

In these acquisitions for stock, a high level of perceived synergy is crucial -- no matter how presented. A higher perceived synergy level, s, helps not only the short run returns, but also the long run returns in the sense that the acquirer can pay a higher p and still stay below s. The role of s in this model is pivotal. Even if we thought that managers are long-run oriented, it is important for them to have a story for why an acquisition is beneficial even if this story is just a rationalization. Even if synergies do not exist, there are strong incentives to "invent" them.

In summary, the model seems to account for the basic facts of stock return research on mergers and acquisitions. As we argue below, it also sheds light on broader merger patterns.

Merger Waves

In his original study, Nelson (1959) pointed out that mergers are highly concentrated in time, that they generally occur during periods of high stock market valuations, and that the means of payment is generally stock. The most recent study, by Andrade et al. (2001) confirms this general picture,

except for the fact that the 1980s were generally a period of relatively low valuations. Consistent with our model, however, the 1980s witnessed a resurgence of acquisitions for cash: Andrade et al. (2001) report that all cash transactions were 45.6% of total mergers during 1980-1989, compared to only 27.4% during 1990-1998.

We can use the model to say a bit more about the American M&A experience of the last 40 years. In our framework, the conglomerate merger wave of the 1960s is the case of prototypical acquisitions by the more overvalued firms of the less overvalued ones for stock. A standard reason why these acquisitions took the form of diversification is that the anti-trust policy restricted related acquisitions (Shleifer and Vishny 1991). Our model suggests an alternative reason. In that period, related acquisitions -- even if they came with higher perceived synergies -- would have been very expensive. From the perspective of long term shareholders of the bidders, who generally fetched extremely high market valuations, it might have been better to use their stock to diversify and to build conglomerates to raise their shareholders' claim to long term capital. Conveniently, a good story was invented to support exactly such acquisitions: the efficiency gains from conglomeration obtained through better management. Thanks to this story, positive short run returns accrued to both the acquirers and the targets (Matsusaka 1990). Moreover, even though conglomerates appear not to have increased profits (Ravenscraft and Scherer 1987), and the long run stock market returns from the acquisitions have been negative (Agrawal and Jaffe 2000), such acquisitions were still preferred to doing nothing. In our framework, negative bidder returns are not evidence of failure to serve shareholder interests.

The acquisition of smaller family firms by conglomerates such as ITT, and the vertical integration of franchisee-owned restaurants by McDonalds, illustrate this logic. In fact, in our model,

because the targets in these acquisitions were so much smaller than the acquirers, we can think of conglomeration as an example of diversification with s = 1. Indeed, informal discussions of the 1960s acquisitions often mention the idea that the purpose of these combinations was to transfer the high price earnings ratio of the acquirer to the earnings of the target. From this angle, the focus on efficiency aspects of conglomerates in most discussions of the 1960s is just window-dressing; the fundamental economics have to do with buying hard capital using overvalued shares. If the anti-trust policy allowed for related acquisitions, perhaps a different logic for the takeover wave of the 1960s would have been invented by the high valuation acquirers. Furthermore, the collapse of conglomerate shares in the 1970s is in no way evidence of a "failure" of this movement: the shares of the conglomerates would have collapsed even further had they not acquired all this capital with their overvalued stock.

In the 1980s, following a decade of miserable stock market performance, the market saw a wave of bust-up takeovers. Just as our model predicts, these were likely to be takeovers of undervalued firms, and they took place for cash rather than stock. The common finding that the bust-up value of the acquired firms was higher than the acquisition price is broadly consistent with our view that market undervaluation of targets was central to the 1980s takeovers (Kaplan 1989, Bhagat et al. 1992). Also consistent with this perspective, the 1980s acquisitions were not followed by negative long run acquirer returns, unlike the acquisitions from the earlier period.

Some other aspects of the 1980s takeover wave also fit in with the theory. The theory holds that, for these acquisitions to earn good short run returns for acquiring shareholders, a story of perceived synergy, or of benefits to the valuation of combined firms, is needed. It is possible that the free cash flow theory of Jensen (1986), with its emphasis on the elimination of agency problems through

takeovers, provided the necessary story for that period. Our model also provides an alternative interpretation of why the takeover wave of the 1980s petered out toward the end of that decade. The traditional explanation is that state and federal anti-takeover policies, as well as legal action against Drexel and other financiers of hostile takeovers, raised the legal costs of takeover bids to acquirers to the point that the activity was no longer profitable. In our model, in contrast, the more important culprit is the rising stock market prices, which eliminated undervaluation – the fundamental reason for the takeover wave of the 1980s. Like the conglomerate merger wave of the 1960s, the 1980s wave fits nicely into our framework.

The rising stock market valuations of the 1990s, particularly the second half of the 1990s, provided a stimulus for another massive takeover wave. The acquisitions were generally for stock, and the acquirers were often more highly valued firms than the targets, even when both belonged to the same industry. The story of perceived synergies also changed to a combination of technological synergies, industry consolidation, and European integration, although in some instances the spin did not rescue the short run acquirer returns. At the very end of the 1990s, during the peak of the internet bubble, we may in fact have witnessed some euphoric mergers, with $s>1$, where the acquirers and the targets both had internet interests. Such mergers, of course, had large positive short run benefits for both firms.

Perhaps the classic merger of this period is the acquisition of Time-Warner by America On Line for stock (although in this instance, s was not as high as AOL management hoped: the company lost a third of its market value in the few months following the announcement). From our perspective, the central feature of this acquisition is not technological synergies, but rather the attempt by the

management of overvalued AOL to buy hard assets of Time to avoid even worse returns in the long run. In this acquisition, as well as in many other deals involving high technology acquirers with overvalued stock prices, long run acquirer returns appear to be poor. However, according to our theory, these returns are not as negative as they would have been had the acquisitions not taken place. When future writers condemn the merger spree of the late 1990s as manifesting misguided policies of the acquirers, they should focus on the alternative of not making these acquisitions. Indeed, the fact that many of the high tech acquirers during this period were entrepreneurial firms, with managers owning substantial equity stakes, is prima facie evidence that the motive for these acquisitions is not agency, but overvaluation.

V. Conclusion.

This paper has presented a stock market based framework for thinking about mergers and acquisitions. This framework is not intended to deny the importance of more real rather than just valuation factors, emphasized by recent surveys by Holmstrom and Kaplan (2001) and Andrade et al (2001), not to mention our own earlier writings. On the other hand, the framework helps interpret a good deal of evidence, and sheds light on some of the anomalies in the finance literature on mergers and acquisitions. Last, it offers a more unified way of looking at M&A activity. As such, it may add to the set of frameworks that financial economists have used to examine mergers and acquisitions.

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Figure 1
Aggregate Merger Activity