

BEHAVIORAL FINANCE[†]

Shareholder Heterogeneity: Evidence and Implications

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The perfect market paradigm provides a powerful foundation for financial theory. In perfect capital markets, there are no transaction costs, all traders have equal and costless access to information, and traders act as price takers. If existing claims "span" the state space, excess supply curves are perfectly elastic. Moreover, differences in preferences or beliefs do not result in disagreement among shareholders about firm policies. Underlying this unanimity is the shared valuation of the stock, which translates into agreement about firm strategies. The ability to transact without affecting the market price is central to many important propositions, including the Modigliani-Miller irrelevance theorems.

This paper examines the nature of supply curves for corporate equity. Until recently there has been little direct empirical assessment of their elasticity. At issue is whether or not the supposition of shareholder homogeneity of valuations (and its implications) represents a good approximation to actual markets. This paper's call for further empirical evaluation of shareholder valuations echoes the perspective offered by Eugene Fama and Merton Miller, who in discussing perfect markets observed that

[N]o such market exists in the real world, nor could it. Rather, what we have here is an idealization...permit[ing] us to focus more sharply on a

limited number of aspects of the problem and usually greatly facilitat[ing] both the derivation and statement of the sought-for empirical generalizations. In the nature of the case, however, the generalizations so obtained can never be anything more than approximations to the real phenomena that they are supposed to represent. The question is whether, considered as approximations, they are close enough; and this, of course, is a question that can only be answered empirically and in light of the specific uses to which the approximations are put.

[1972, pp. 21-22]

This paper provides evidence that current shareholders' valuations differ *dramatically*. This provocative empirical finding implies that the hypothesis of common valuations indeed is not always a good approximation. If the approximation is poor, then conclusions stemming from it must be reconsidered. This requires additional analysis of the microeconomic foundations of disagreement in shareholder valuations, and the contexts where shareholder disagreement is substantial.

I. Evidence: Supply Curve Elasticity

My earlier paper (1990a), investigating the extent to which the supply curves for equity deviate from perfect elasticity, examines shareholder tendering responses in Dutch auction repurchases of stock. In Dutch auctions, the company states the number of shares it will repurchase, and a price range within which stockholders can offer to sell their shares. Shareholders fill out tendering schedules indicating how many shares they are willing to sell at each price within this range. It is a dominant strategy for atomistic

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shareholders to tender their shares at their true valuations.

The firm then compiles the tendering responses from the lowest to the highest price, constructing the supply curve for the stock. All stockholders who tendered at prices at or below the minimum price necessary to acquire the number of shares the company seeks receive the purchase price for their tendered shares. In the sample examined, on average, 16.7 percent of the outstanding shares are tendered at or below the purchase price, which is at a 13.4 percent premium above the preannouncement market price.

Firms are not required to disclose the shareholder tendering responses. However, 32 of the 52 firms conducting Dutch auctions between 1981 and 1988 disclosed this proprietary information to me. The individual tendering responses provide a unique opportunity to examine directly the elasticity of the supply curve for stock.

The supply curves documented in Dutch auction repurchases have a distinct upward slope. When bids are ranked from lowest to highest, the average difference between the 1st and 6th percentile bid is 4.4 percent of the preannouncement market price, from the 6th to 11th is 2.6 percent, and from the 11th to 16th is 2.0 percent. That is, the difference between the 16th percentile shareholder valuation and the 1st percentile shareholder valuation is 9.1 percent. The average arc elasticity of the supply curve is 1.67. Formal regression analysis confirms the significant upward slope of these curves.

Evidence consistent with upward-sloping supply curves is detected in similar transactions. M. Bradley et al. (1988) find that the premium paid in interfirm tender offers is increasing in the fraction of target shares purchased by the acquirer. David Brown and M. Ryngaert (1990) find results similar to Bradley et al.'s for fixed price repurchase tender offers.

Andrei Shleifer (1986) also provides evidence suggestive of an upward-sloping supply curve, finding that the share prices of firms added to the S&P 500 Index increase at the announcement of the inclusion. The magnitude of the price increase is positively

related to the increased buying of the shares by Index funds. Since being included does not signal any information about stock value, the findings suggest that the price increase is being driven by increased demand in the presence of an upward-sloping supply curve.

II. Supply Curve Elasticity and Information Interpretations

In light of the evidence suggestive of less than perfect elasticity for stock, I reexamine the traditional interpretations of the share price reaction to specific corporate events. In perfect capital markets, the number of shares traded in a given stock has no effect on its price. If the market is less than perfect, a large purchase (sale) of shares could inflate (depress) the price of the shares temporarily due to market illiquidity. Further, the number of shares traded can carry new information about the stock that would cause a permanent reassessment of share value. While these alternative hypotheses have been considered extensively in the existing literature, few papers have allowed for a third possibility: a large purchase (sale) of shares could inflate (depress) the price of the shares permanently due to an upward-sloping supply curve. If the excess supply curve is less than perfectly elastic, then a large purchase (sale) alters the marginal holder of stock to one with a higher (lower) reservation price.

The typical Dutch auction repurchase buys 15 percent of the outstanding shares and increases the market price at its announcement by 7.8 percent. These price increases are frequently attributed to new information. This interpretation is appropriate when the supply curve is perfectly elastic; if the supply curve is flat, only new information can change the stock price. However, attributing the price change solely to information is misleading when the supply curve is upward sloping because, in addition to any shift in the supply curve, movement along the supply curve is confounded with new information. Specifically, if we assume that the repurchase conveyed no information, an elasticity estimate of 1.67 would nevertheless imply an average price

increase of 9.1 percent, exceeding the observed announcement effect.

Myron Scholes (1972) finds a permanent negative price reaction to the sale of large blocks. Since there is a permanent price effect, he concludes that the sale signals information to other traders. Greater price changes occur if the seller is presumed to have adverse information motivating the sale. Wayne Mikkelson and M. Megan Partch (1985) reconsider block sales in light of an upward-sloping supply curve. They document a significant negative price reaction to block sales regardless of the type of seller. Further, the magnitude of the price response is positively related to the size of the offering. While this work suggests possibly important lasting supply effects, they find no relationship between the price reaction and elasticity determinants they consider. Thus, further empirical analysis is needed to determine the relative importance of the information, liquidity and supply components of the price reaction, for not only block trades but all changes in the supply or demand of shares.

III. Supply Curve Elasticity and Corporate Control

Under shareholder unanimity, the composition of a firm's shareholders, and the elaborate rules governing shareholder voting, have little impact. Under this supposition it is difficult to explain why these rules vary dramatically across firms, and why changes in these rules result in large changes in stock prices. An example of the insights gained by allowing for shareholder heterogeneity is the role it plays in the choice of cash distribution method.

Cash distributions are usually explained as ways to signal information, alter leverage, or disgorge free cash, but few theories have untangled the choice between alternative methods of distribution. One plausible explanation is that the method of distribution is influenced by its effects on the nature of the shareholder population. For example, my article (1991) argues that distributing cash through a share repurchase as opposed to dividends serves as an effective takeover deterrent in the presence of an upward-

sloping supply curve for stock. Shareholders willing to tender in a repurchase are systematically those with the lowest valuations. The repurchase therefore skews the distribution of the remaining shareholders towards a more expensive pool, raising the cost of a takeover to the acquirer. Interestingly, targets of takeover activity account for nearly half of all recent repurchases.

On the other hand, my paper with Kenneth Judd (1989) shows that dividends may be chosen even if they are tax disadvantaged relative to share repurchase, because dividends do not change the population of shareholders. This may be desirable since it maintains the current majority. Hence, while a repurchase deters a takeover by altering the shareholder population, dividends may be desirable precisely because they do not alter the population of shareholders in the absence of takeover concerns.

When shareholders have differing preferences and transactions are costly, sometimes opposed shareholders may choose to remain together within a firm, fighting over firm decisions, instead of incurring the costs of portfolio reshuffling. Since firm decisions are made in light of the conflict, shareholder nonunanimity makes corporate control decisions central. In particular, focusing on shareholder disagreement may help us evaluate the recent prevalence of supermajority requirements and other corporate charter amendments. Rene Stulz (1988) argues that supermajority rules effectively change the marginal shareholder to one requiring a higher premium, thereby benefiting shareholders while making takeovers less likely. Allowing for shareholder heterogeneity may also yield an understanding of the increased use of nontraditional takeover mechanisms like two-tiered tender offers, and the impact of legislation like that passed in Delaware in 1988, requiring that hostile takeovers be approved by 85 percent of all nonaligned shareholders.

IV. Conclusion

Despite the importance of common shareholder valuations to finance theory and practice, there is direct evidence of significant shareholder disagreement in Dutch

auction repurchases. It is vital that we learn more about the market conditions underlying shareholder heterogeneity and the contexts where they are significant.

Perhaps the most important unanswered question is: what causes the significant deviation from perfect elasticity? My paper (1990b) sheds light on this question by examining empirically the cross-sectional determinants of supply curve elasticity in Dutch auction repurchases. Preliminary findings indicate that supply curves are more elastic when institutional holdings are high, dividend yield is high, price has not varied much in the past 5 years, and the fraction bought back is large.

Supply curves may be more elastic when institutional holdings are high because institutions have small capital gains liabilities or institutional investors share consensus. Capital gains taxes induce shareholders with lower basis values to value the share more highly; many institutions are tax exempt. Further consistent with tax-induced heterogeneity, low tax bracket investors typically hold high dividend yield stocks, hence, we would observe more elastic supply curves for these stocks. Since price variability may result in increased dispersion of basis values, these supply curves would be less elastic. Many of the same variables affect the tendering rates for fixed price share repurchases in Brown and Ryngaert. These results demand further examination of nontax sources of heterogeneity, including asymmetric information and divergence of opinion.

Knowledge of the relative importance of taxes, transactions costs, or asymmetric information for shareholder disagreement affects tax reform and regulatory policies. Consider, for example, lowering the tax rate on capital gains. Since taxes on capital gains induce shareholders with different capital gains liabilities to value shares differently, decreasing the capital gains tax diminishes the disparity of liabilities across shareholders, increasing consensus. If taxation is an important source of shareholder heterogeneity, this change in policy could lead to increased agreement among investors. Similarly, if asymmetric information is an important source of shareholder heterogeneity,

then changes in regulatory policy for required disclosure of security trading may also have important implications for shareholder disagreement. These policies, though designed for taxation or regulation, might radically change the market for corporate control.

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