Institutional Demand and Security Price Pressure: The Case of Corporate Spinoffs

Keith C. Brown and Bryce A. Brooke

The significant presence of institutional investors in today's capital markets suggests that the objectives and constraints of these participants can dramatically affect the behavior of security prices. This paper, as an example, tests the hypothesis that the need for institutional investors to rebalance their portfolios by liquidating newly created corporate spinoff shares generates a substantial, although temporary, selling pressure in these securities.

A sample of 74 publicly traded spinoffs over the period from January 1980 to April 1990 demonstrates that, on average, the initial decline in the spinoff firm's stock price is significantly related to the degree to which institutions divest their shares in the firm. Block trades by institutional investors create the largest movements in value. The price pressure from institutional sales appears to be a function of parent and spinoff-firm characteristics that proxy for the investment restrictions faced by institutions.

The role played by institutional investors in securities markets has without doubt increased substantially in recent years. Data compiled by Salomon Brothers, for instance, indicate that by the middle of 1990 institutional investors held approximately 45% of the outstanding publicly traded equity in the United States and controlled approximately 75% of the dollar volume of trading on the New York Stock Exchange. Given all the influence institutional investors can potentially exert on stock prices, it is surprising that the objectives and constraints they face when making allocation decisions have not been the focus of more financial research.

Farrar and Girton have shown that, on average, institutional holdings tend to be concentrated in a relatively few large firms, rather than spread across a variety of smaller companies.[1] This bias toward large companies has indirect support from studies that document institutional traders' propensity to adjust their portfolios in the aftermath of an inclusion to or deletion from the Standard & Poor's 500 index.[2] Pruitt and Wei demonstrate that these adjustments in institutional holdings are positively correlated with the abnormal returns that follow the listing or delisting announcement, which corroborates Schleifer's finding that the institutional demand curve for stock is downward sloping.[3]

Institutional investors appear to face several constraints as well. In his analysis of why corporations pay dividends, Black notes that certain professional investors, such as trustees, effectively demand that firms do so because it may not be prudent to hold non-dividend-paying stocks.[4] Additionally, following the adoption of the Employee Retirement Income Security Act (ERISA) in 1974, a large number of pension fund managers adopted formal investment guidelines in an effort to reduce the risk of their portfolios. These guidelines often included a prohibition on holding shares of non-publicly traded stock or equity in venture capital projects.[5] Badrinath, Gay and Kale offer an interesting explanation of why such restrictions are rational. In establishing their "safety net" hypothesis, they provide evidence to support the view that professional investment managers attempt to mitigate the liability resulting from their fiduciary responsibilities by imposing restrictions on the selection process itself.[6] That is, they argue that, by requiring that all stock purchases satisfy minimum levels of various quantifiable characteristics (such as firm size, return volatility, trading liquidity, quality rating or dividend yield), professional money managers can establish the prudence of their investments.[7]

To extend this argument, consider the case of corporate spinoffs. In a spinoff, stockholders exchange their claims on an existing firm for new shares in two distinct entities—the original parent firm and a new, wholly separate, subsidiary (i.e., spinoff) firm. Shares of the spinoff may not pass the same quality screens that those of the original parent company passed. Fund managers may thus be forced to sell the spinoff shares as quickly as their guidelines dictate. Because the liquidation will take place in an unseasoned market (to the extent that the spinoff is publicly traded at all), it is conceivable that

Keith C. Brown is Associate Professor of Finance at the Graduate School of Business of the University of Texas, Austin. Bryce A. Brooke is an observer of the financial scene.

these shareholders' activities will create a temporary downward price pressure, as demonstrated by Kraus and Stoll.[8]

This article documents that institutional investors' need to liquidate shares in new spinoff companies creates temporary but substantial selling pressure, which significantly affects the value of the securities.[9] More precisely, we argue that these transitory effects are largely the result of a change in institutional demand, which is itself a function of the characteristics of both the parent and the spinoff companies. The analysis that follows develops the intuition for and provides evidence consistent with the hypothesis that, other things equal, the greater the constraints associated with institutional investment in the original parent company, the greater the decline in the price of a spinoff firm during its initial trading period. Cross-sectional tests show the magnitude of this price-pressure effect to be directly related to the level of institutional ownership of the spinoff relative to that of the original company.

TESTABLE HYPOTHESES

A general form of the hypothesis we test can be stated as follows: The more severe the investment restrictions on the institutional shareholders of the parent company, the greater the subsequent negative selling pressure on the spinoff company. Unfortunately, given the uniqueness of many institutional investment constraints, a strict examination of this form of the hypothesis might be impossible. Consequently, we chose to employ several different generalized proxies for demand-side restrictions in testing our fundamental premise.

We first consider variables measuring the percentage of institutional ownership in the parent firm at the time of the restructuring; the larger this percentage, the more severe we expect the ensuing selling pressure on the spinoff to be. This forecast is rooted in the notion that the economic characteristics of the spinoff company are likely to violate the investment guidelines of at least some institutional shareholders of the parent firm. Second, we consider many of the specific economic variables that restrict the behavior of professional investors, including (1) the quality rating of the parent and spinoff firms; (2) the dividend yield of the parent firm; (3) whether or not the parent firm is in the Standard & Poor's 500; and (4) the size of the spinoff firm relative to the parent. In each case, our hypothesis is that the greater the economic presence of the parent firm (i.e., the higher its quality rating, the higher its dividend yield, its inclusion in the S&P 500, the greater its outstanding market value), the more likely it is that the spinoff will fail to meet institutional investment policies, hence the stronger the subsequent selling pressure.

SELECTING A SAMPLE

Using the data base maintained by the Securities Data Company (SDC), we isolated all 320 corporations spun off from parent firms between January 1980 and April 1990. The shares of the spinoff and parent firms had to be publicly traded, and each parent–spinoff pair had to have complete data on the relevant set of investment characteristics (defined below). These inclusion criteria reduced the size of the final sample to 74 events. For this sample, stock price and return data were obtained from Interactive Data Corporation (IDC).

Consistent with the hypotheses outlined above, we identified several potential sources for the postevent trading behavior of the sample of spinoff firms. The primary variable is the level of institutional holdings in both the parent and spinoff firms. Data from Vickers Stock Research Corporation were used to determine the number of distinct financial institutions owning shares and the percentage of total outstanding common stock controlled by institutional ownership. Both these variables were assembled from a list of the portfolio holdings of approximately 4500 investment companies, banks, college endowments, insurance companies and "13F" money managers collected by Vickers. We established institutional ownership as of the month in which the restructured shares first traded for the parent firm and as of three months after this date for the spinoff firm.[10]

The Standard & Poor's *Stock Guide* provided information on dividend yields and stock ratings for the parent–spinoff pairs. For the latter variable, Standard & Poor's assigns to each company one of eight rankings—ranging from A+ (highest) to D (in reorganization)—based on economic factors such as growth and stability of earnings, dividend payment records and firm size. Standard & Poor's requires a 10-year financial history before a company can be rated; thus none of the spinoff firms is eligible, and each is categorized as NR (not ranked). Finally, a firm size variable, proxied by the market value of the company's common stock (defined as the product of the number of outstanding shares and the price per share), was provided for each firm in the sample by the Securities Data Corporation.

Table 1 lists comparative statistics for each of these variables. The display emphasizes the differences between the parent firms and the spinoff companies. Although virtually all the variables indicate these two groups may differ substantially in terms of suitability for the professional investor, the most dramatic difference is their respective sizes. On average, parent firms are more than five times larger than their spinoffs ($2.106 billion to $388 million). The samples are also distinguished by the sizable percentage of parent firms in the S&P 500 at the time of the restructuring (i.e., 31 of 74), versus zero spinoffs in the index. The parent companies trade somewhat more frequently than their spinoffs on organized exchanges. Finally, from both an earnings quality (i.e., a median stock ranking of A−) and a cash flow (i.e., a mean dividend yield of 2.65%) viewpoint, the parent firms represent a more attractive portfolio of stocks than the spinoffs, at least to someone concerned primarily with liquidity and safety.[11] To the extent these characteristics are crucial factors to institutional investors, there is strong *a priori* reason to expect such investors to

Table 1. Institutional Ownership Variables for 74 Publicly Traded Parent and Spinoff Companies, 1980–1990

	Parent Firms	Spinoff Firms
Firm Size (millions of dollars)		
Mean	2106.2	387.6
Median	965.2	154.2
Std. Deviation	3216.8	664.8
Minimum	64.1	8.0
Maximum	14867.2	3843.8
Number in S&P 500:	31	0
Stock Exchange:		
NYSE	57	40
AMEX	6	7
OTC	11	27
Avg. Dividend Yield (%):	2.65	0.81
Avg. Stock Ranking:	A−	NR
Number of Institutional Owners:		
Mean	181.6	44.8
Median	123.5	28.5
Std. Deviation	186.1	43.4
Minimum	9.0	0.0
Maximum	912.0	194.0
% of Institutional Ownership:		
Mean	41.8	22.7
Median	42.5	19.0
Std. Deviation	18.5	17.7
Minimum	2.0	0.0
Maximum	80.0	80.0

liquidate the spinoffs' shares shortly after they receive them.

This notion is substantiated by the statistics reported for postspinoff institutional ownership. Both the average number of institutions holding shares and the percentage of institutional ownership indicate that institutions invest more heavily in the established, parent firms than in the spinoffs. Because these numbers were, by definition, the same for the two samples at the time the restructuring took place, the differences in Table 1 reflect a net sale of spinoff shares. Given the magnitude of the difference in institutional ownership of the two groups (42.5% vs. 19.0%), it is entirely reasonable to expect some temporary decline in the prices of the spinoff shares, barring any compensating excess demand from another sector of the investing public.

MEASURING ABNORMAL PERFORMANCE

For each firm in the spinoff sample, an event day (Day 0) is designated as the first date on which its stock traded in the secondary markets. We then investigate the presence of institutional selling pressure by calculating the abnormal performance in the (Day +1 to Day +60) postevent period.[12] Abnormal performance on Day +t for the jth company (i.e., u_{jt}) is measured by the following residual process:

$$u_{jt} = R_{jt} - E(R_{jt}), \quad (1)$$

where R_{jt} and $E(R_{jt})$ represent actual and predicted stock returns, respectively.

An immediate problem with the calculation of Equation 1 presents itself: That is, it is difficult to establish the expected return for a corporation that did not trade separately from its parent until Day 0. It is nevertheless important to calculate a date and firm-specific estimate for $E(R_{jt})$, because it is unreasonable to assume that expectations for both the new firm and the market will remain constant over the entire postevent period.[13] The most straightforward approach to estimating the Day +t abnormal returns for the jth spinoff involves "backcasting" the residual u_{jt} using ordinary-least-squares estimates of the single-index market model estimated over the interval (Day +61 to Day +260). That is, for each of the 74 spinoff events in the sample, we estimate:

$$E(R_{jt}) = a_j + b_j R_{mt} \quad (2)$$

for each day in the (Day +1 to Day +60) event period, where R_{mt} is the Day +t return to the market as proxied by the S&P 500 index and (a_j, b_j) are the market model parameters.[14]

Two further manipulations are performed on the return residuals generated by this process. First, to facilitate cross-sectional tests of the primary hypothesis, we compute for each day in the postspinoff event period the following measure of firm j's cumulative response:

$$CR_{jt} = CR_{jt-1} + u_{jt};\ t = 2, \ldots, 60, \quad (3)$$

where $CR_{j1} = u_{j1}$. Second, to establish the samplewide postevent valuation effect, we also compute the cumulative average response on each Day +t:

$$CAR_t = CAR_{t-1} + AR_t;\ t = 2, \ldots, 60, \quad (4)$$

where $AR_t = \Sigma_j[u_{jt}/N_t]$. Here N_t is the number of spinoff firms reporting data on Day +t, and $CAR_1 = AR_1$. The t-statistics for Equation 4 are calculated in the usual manner, using estimates for the cross-sectional standard errors for the respective CR_{jt} values.

AGGREGATE VALUATION EFFECTS

Table 2 lists cumulative average residuals from Equation 4 for the sample of spinoff firms at various points in the (Day +1 to Day +60) postevent interval. It presents four different stratifications of the sample—the whole sample; whether the spinoff's parent firm is in the S&P 500; whether the number of institutions holding the spinoff firm relative to the parent is above or below the median for the entire sample; and whether the percentage of institutional holdings in the spinoff firm relative to the parent is above or below the median. For the latter two specifications, the ratio of the number of institutions (i.e., NSR) is defined as the number of institutions holding the spinoff firm divided by the number of institutions holding the parent firm, and the percentage institutional share ratio (i.e., ISR) is defined as the percentage institutional ownership in the spinoff firm divided by the percentage institutional ownership in the parent firm. Both variables serve as a proxy for the

Table 2. Cumulative Average Residuals for 74 Spinoffs between January 1980 and April 1990

Interval	Whole Sample	PSP: Parent in S&P 500		NSR: Institutional Number Ratio		ISR: Institutional Share Ratio	
		Yes (n = 31)	No (n = 43)	Above Median (n = 37)	Below Median (n = 37)	Above Median (n = 37)	Below Median (n = 37)
				Panel A: Initial Decline Phase			
+1,+1	−0.24	0.62	−0.87	0.45	−0.94	0.13	−0.62
+1,+10	−0.94	−2.82	0.41	1.20	−3.09†	2.32	−4.21**†
+1,+20	−2.71	−5.66**	−0.58	0.86	−6.28**†	2.10	−7.52**†
+1,+30	−4.27**	−8.04**	−1.54	−0.52	−8.01**†	1.35	−9.88**†
+1,+35	−3.94*	−7.33**	−1.51	−1.80	−6.09*	1.47	−9.36**†
+1,+40	−3.42	−5.32	−2.06	−0.31	−6.54*	1.81	−8.66**†
+1,+50	−3.11	−6.38*	−1.23	−1.65	−4.57	1.62	−7.84*†
+1,+60	−2.28	−5.36	0.07	−1.86	−2.70	2.54	−7.10†
				Panel B: Rebound Phase			
+31,+35	0.32	0.72	0.04	−1.28	1.92†	0.12	0.53
+31,+40	0.84	2.72*	−0.51	0.21	1.47	0.46	1.22
+31,+50	1.15	1.66	0.80	−1.13	3.45	0.27	2.05
+31,+60	1.98	2.68	1.48	−1.34	5.31*	1.19	2.78

** Significant at the 0.05 level.
* Significant at the 0.10 level.
† Indicates that the difference in CARs between the subgroups is significant at the 0.10 level or better.

magnitude of the institutional selloff that occurs after restructuring. Figure A illustrates a complete set of the residuals for each subsample.

For the whole sample, the pattern of abnormal returns is consistent with the hypothesis that, on average, seller-initiated price pressure develops once the spinoff shares start to trade in the public market. Information about the source of this effect can be inferred from the abnormal return patterns of three "selling pressure" subsamples, the first of which isolates the price behavior of the 31 spinoffs whose parents were listed in the S&P 500 index. From the earlier investment constraint analysis, we would expect this group to be more likely to experience transitory price changes than the other 43 firms. The findings support this contention; only the spinoffs with "indexed" parents have statistically significant residual returns. These numbers suggest that postspinoff price behavior depends on a factor limiting the actions of professional money managers in general and index funds in particular.

The sample stratifications based on the two institutional ownership variables, NSR and ISR, provide a more direct test of the price pressure hypothesis. Both the number of institutional investors in and the percentage of institutional ownership of the parent firm and the spinoff firm are identical at the time of the event; the ratios will fall away from a value of 1.00 as institutions liquidate positions in the spinoff company. To the extent that this sale of unseasoned shares induces an abnormal decline in value, there should be a more pronounced impact for low-ratio (i.e., less than the samplewide median) than for high-ratio firms.[15]

The data reported in both Table 2 and Figure A strongly suggest that this did occur. In particular, for the NSR variable it is apparent that a significant decline in price during the initial trading period occurs only for the half of the sample for which the actual number of institutions liquidating their spinoff shares is the greatest. For the ISR variable, the results are similar and even more striking. It is apparent that transitory postspinoff price declines are linked to institutional investors' need to rebalance their portfolios.[16]

Finally, we should note the relatively long period over which this price pressure effect takes place. Interviews we conducted with portfolio managers and traders in an attempt to establish a reason for this indicated that the timing of the decision to sell the spinoff is often dependent on the normal rebalancing process of the particular institution. Index fund managers, for example, will sell the spinoff stock immediately in order to reduce index tracking error, whereas other managers may wait until the next scheduled portfolio rebalancing decision to divest the shares. Thus postspinoff divestitures are typically spread out over time.

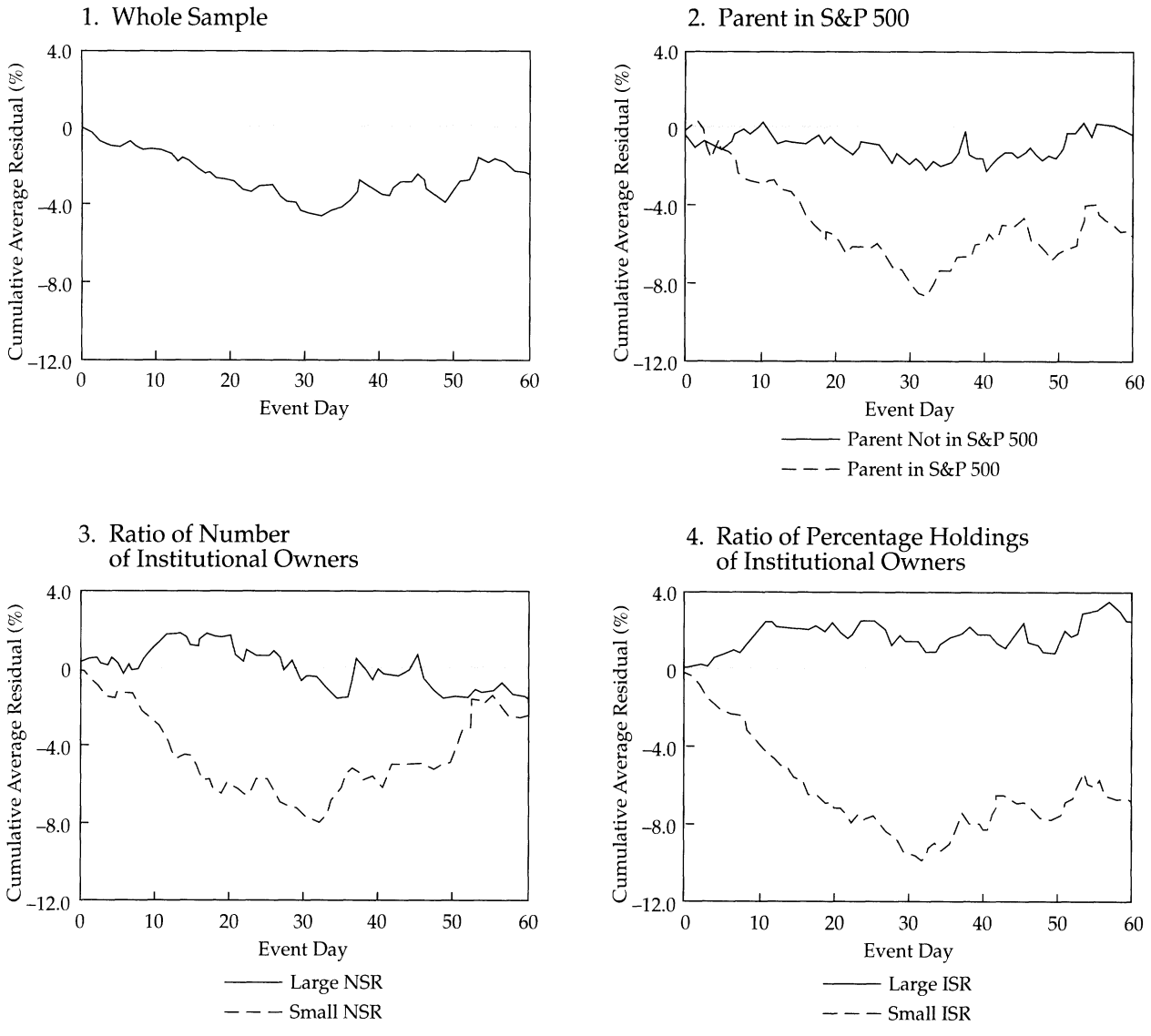
Cross-Sectional Results

We next estimate the following cross-sectional regression between abnormal returns and the institutional tendency to sell spinoff shares for each day in the postevent period:

$$CR_{jt} = a_0 + a_1(INST)_j + e_{jt};\ j = 1, \ldots, 74. \quad (5)$$

Here CR_{jt} is the cumulative response residual for the jth firm, as defined by Equation 3, and INST is the generic form of a variable representing the impact of changes in the institutional ownership of the spinoff firm. Three definitions of INST were tested—NSR, ISR and PSP (a

Figure A. Cumulative Average Residuals for 74 Spinoffs between January 1980 and April 1990



binary variable assuming the value of one if the spinoff's parent is in the S&P 500). Table 3 reports the estimated coefficients for all three forms of Equation 5 for several different segments of the 60-day postevent interval.

If a decline in the value of NSR or ISR is meaningfully correlated with the postspinoff price decrease, the coefficient b_1 should have a positive value. Indeed, the estimated coefficients in Table 3 indicate that both institutional ownership variables are significantly positively correlated with the initial decline in spinoff value as soon as 10 days after the spinoff takes place. Thus our overall finding is that the seller-initiated price displacement that occurs after the spinoff firms begin to trade is significantly related to the liquidation of shares by institutional investors.

The last regression in Table 3 breaks the postspinoff CARs into S&P and non-S&P subgroups. The estimated coefficients are generally in the predicted (i.e., negative) direction, but the statistical strength of this variable is not as great as that of the institutional ownership ratios just considered. This suggests that at least some institutional investors are motivated to sell their postspinoff shares by something other than this particular dimension of the parent company's status. So, although the effective "delisting" from the S&P 500 that occurs with the spinoff may influence the decision-making of these

Table 3. Cross-Sectional Regressions Linking Postspinoff Valuation Effects With Institutional Ownership Variables

Estimation Interval	NSR: Institutional Number Ratio			ISR: Institutional Share Ratio			PSP: Parent in S&P 500		
	b_0	b_1	R^2	b_0	b_1	R^2	b_0	b_1	R^2
+1,+1	−1.032	2.141	0.015	−0.923	0.983	0.030	−0.869	1.494	0.020
+1,+10	−5.611	12.669**	0.121	−3.027*	3.013**	0.066	0.409	−3.229	0.022
+1,+20	−9.836**	19.347**	0.153	−5.401**	3.893**	0.060	−0.581	−5.081	0.029
+1,+25	−9.543**	18.466**	0.126	−5.429**	3.887**	0.054	−0.558	−5.211	0.028
+1,+30	−11.285**	19.053**	0.106	−6.687**	3.499	0.035	−1.545	−6.498	0.035
+1,+35	−8.499**	12.368*	0.042	−6.290**	3.393	0.030	−1.506	−5.820	0.026
+1,+40	−9.306**	15.967*	0.051	−5.020	2.307	0.010	−2.056	−3.265	0.006
+1,+50	−7.119*	10.885	0.020	−5.022	2.766	0.013	−0.749	−5.636	0.015
+1,+60	−5.537	8.835	0.011	−4.174	2.736	0.011	−0.065	−5.294	0.011

** Significant at the 0.05 level.
* Significant at the 0.10 level.

shareholders, it does not by itself explain the spinoff company's postevent value.

Despite the substantial difference in the explanatory powers of NSR and ISR on the one hand and PSP on the other, the institutional ownership variables are partially correlated with the S&P 500 indicator. To guard against the possibility that the above findings reflect a mixture of information, we reestimate Equation 5 using NSR and ISR as regressors for two subgroups—the 31 observations with the parent firm in the S&P 500 and the 43 where the parent firms aren't indexed. When the parent firm is not included in the index, both institutional ownership ratios have almost the same degree of statistical significance as before. Again, the selling pressure induced by institutionally oriented liquidation of spinoffs is based on more information than whether the parent firm is in the S&P 500.

EXPLAINING POSTSPINOFF SELLING PRESSURE

The data presented thus far support two conclusions. First, there is an observable tendency for institutional investors to reduce their holdings in spinoffs after a restructuring. Second, for a sizable number of spinoff firms, this share reduction leads to significant, seller-induced price pressure that is largely temporary in nature. A question that naturally follows is whether it is possible to predict which firms will experience the largest share liquidation using the *ex ante* investment-constraint proxy variables we outlined earlier.

We test for the significance of the relationship between the institutional ownership measures and five of the prespinoff economic variables summarized in Table 1. Given that these latter variables were originally posited as being representative of restrictions faced by various institutional investors, we have no *a priori* prediction about which among them would be the most significant on a samplewide basis.

To establish these relationships, two separate statistical tests are conducted. First, we run a series of multivariate linear regressions of the following form:

$$(INST)_j = f(DYLD_j, PCAP_j, SCAP_j, PSP_j, PRAT_j) + e_j; \quad j = 1, \ldots, 74, \quad (6)$$

where DYLD is the parent firm's preevent dividend yield; PCAP and SCAP are the logarithms of the parent and spinoff firms' equity capitalizations as the new shares began trading; PSP indicates the parent's presence in the S&P 500; and PRAT is a binary variable assuming the value of one if the preevent parent firm stock ranks A− or better. Second, as a nonparametric alternative to these regressions, we also calculate Spearman rank correlation coefficients between the various institutional variables and the set of regressors.

For each of these methodologies, two definitions of the institutional-ownership dependent variable are used—NSR and ISR. For either proxy of INST, we predict that the signs of statistically significant coefficients on DYLD, PCAP and PSP would be negative, and those on SCAP and PRAT would be positive. That is, the more restrictive the independent variable, the lower the value of INST is likely to be. (In this context, the smaller the value of SCAP, the more likely it is to serve as a binding constraint to any portfolio managers facing minimum size restrictions on their investments. Thus any significant correlation between SCAP and INST should be positive.) Table 4 summarizes the findings for the regressions in Equation 6.[17]

Overall, the results indicate that the collection of investment-restriction proxies are, at best, only partly successful at explaining the cross-sectional variation in postspinoff sales. In fact, only the PSP variable shows any consistency in the significance and direction of its coefficient value, with the most pronounced results being associated with the change in the number of institutional holders. Interestingly, although the parent company's presence in the S&P 500 does not appear to have a direct bearing on the value of the spinoff, it does seem to have an indirect role in helping to encourage institutional selling. Further, the parent capitalization variable, although not statistically reliable in the linear

Table 4. Regressions Linking Postspinoff Institutional Ownership Variables With Preevent Investment-Restriction Proxies

Dependent Variable	Independent Variable						
	Intercept	DYLD	PCAP	SCAP	PSP	PRAT	Adj. R^2
NSR	0.404**	−0.014					0.013
	0.555**		−0.013				0.009
	0.365			0.000			0.000
	0.455**				−0.208**		0.120
	0.397**					−0.061	0.010
	0.054	−0.006	0.012	0.025	−0.242**	−0.049	0.147
ISR	0.787**	−0.038					0.009
	0.731		−0.002				0.000
	0.986			−0.025			0.001
	0.817**				−0.299		0.026
	0.756**					−0.137	0.005
	0.366	−0.027	0.051	−0.007	−0.358	−0.094	0.042

** Significant at the 0.05 level.
* Significant at the 0.10 level.

equations, has a Spearman correlation coefficient significant at the 1% level, which confirms the previously cited survey results showing that institutions have historically demonstrated a marked preference for larger companies. Conversely, the parent firm's stock rating and dividend yield do not appear to exert a direct influence on institutions' decision to liquidate their spinoff positions, inasmuch as these variables do not generate statistically significant coefficients in either test.[18]

Additional Evidence

One of the appeals of using the corporate spinoff event to examine price pressures induced by institutional investors is that such tests can be conducted with little regard for the information content of the restructuring itself. Because the first date on which the parent and spinoff firms trade as separate entities will have been announced in advance, the trading behavior that is observed in the postevent period should be influenced primarily by demand-side factors. Karpoff noted that, although trading volume is often used to infer the information content of a financial event, there are also several empirically observed relationships between price and volume that can be classified as "non-information" trading phenomena.[19] Of particular interest here is the widely cited positive correlation between volume and absolute price changes.

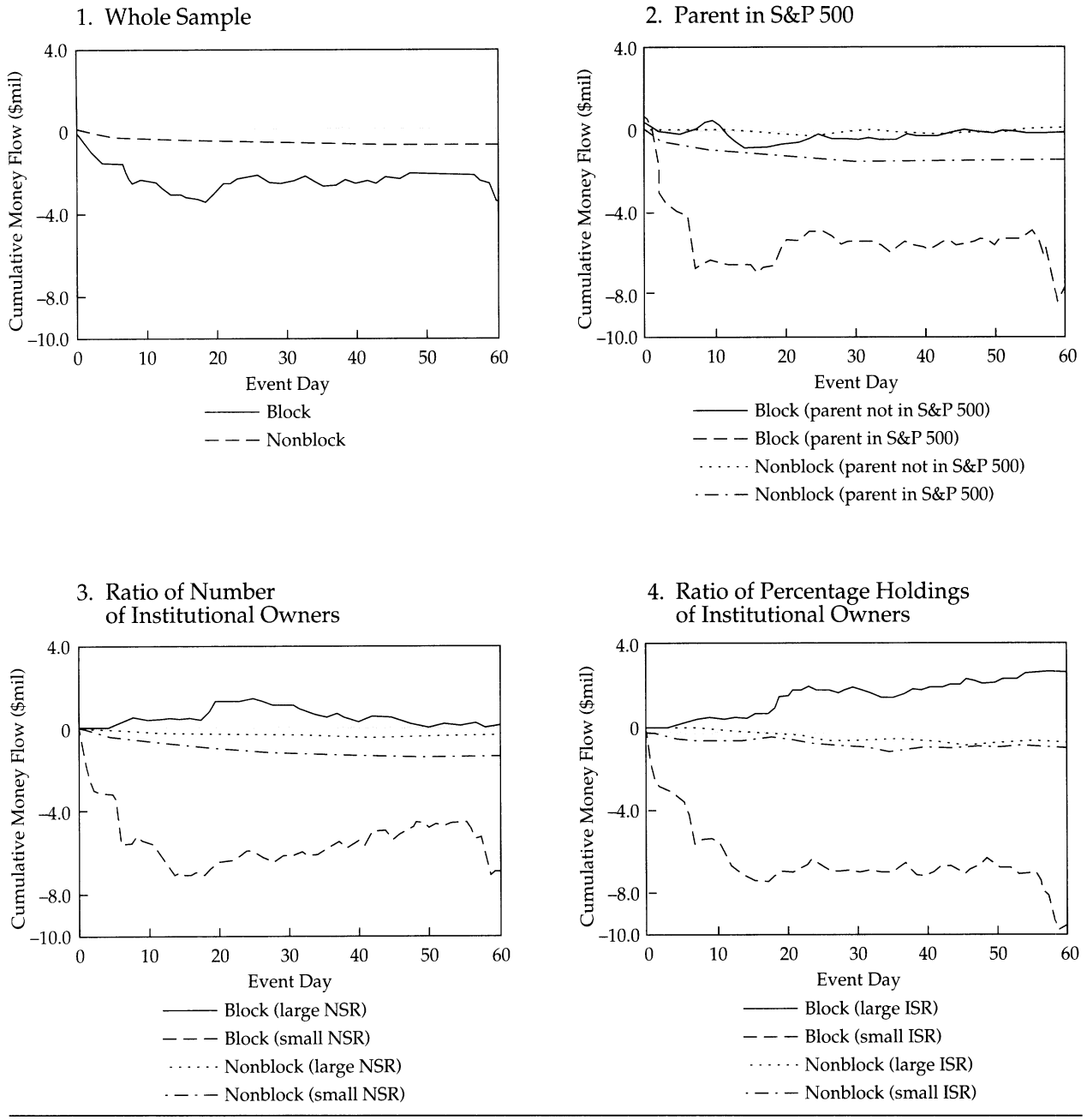
To test this relationship in the context of institutional trades, we examine data on the net daily price displacement caused by traders transacting in blocks of 10,000 shares or more. Assuming that professional investors are the traders most likely to submit orders of this size, this variable provides an excellent means of isolating the impact of the institutionally motivated liquidation of spinoff shares.

Salomon Brothers (which maintains a proprietary data base on this variable) defines block money flow as the product of the number of block shares involved in a particular trade and the share price displacement caused by the trade itself. (For example, a 20,000 share order that caused the stock's price to decline by an eighth would generate block money flow of −$2,500.) Using intraday transaction data from Fitch Inc. and Monchick Weber, we create a daily block net money flow measure by subtracting the total dollar value of all downtick trades from the total dollar value of all uptick trades. Trades not associated with a price movement are ignored in the calculations. We were able to obtain data on this variable for 47 of the 74 spinoff events in our sample.[20]

Figure B summarizes the block net money flow over the 60-day postspinoff period for four different stratifications of the reduced sample—all 47 events; subgroups created by the parent firm's presence in the S&P 500; subgroups created by the median value of NSR; and subgroups created by the median value of ISR. These data are expressed in cumulative form (i.e., each day's reported level is the sum of all previous days' actual block net money flows) so as to provide a better sense of the total influence exerted by institutional investors. Further, for comparative purposes, each panel of the display also indicates the cumulative nonblock net money flows associated with these sample divisions. In the present context, nonblock flow proxies for the aggregate impact of smaller institutional trades as well as the noninstitutional segment of the spinoff market.

Most importantly, regardless of how the sample is partitioned, block money flow is the dominant factor associated with postspinoff price changes. This, of course, is consistent with our earlier hypothesis that the selling pressure will come from those traders who, having received shares in the spinoff company, are the most likely to liquidate them. Further, Panels 2 through 4 indicate that, within the block flow data, the greatest price pressure is coming from those institutional inves-

Figure B. Cumulative Block and Nonblock Net Money Flow for 47 Spinoffs between January 1980 and April 1990



tors under the most severe constraints to sell their holdings. For instance, Panel 2 shows that the cumulative block flow falls to −$6.78 million by Day +6 for those spinoffs whose parent firms are in the S&P 500, whereas the spinoffs whose parents aren't in the S&P 500 experience a slight positive reaction ($0.21 million). The same general pattern is observed for the institutional ownership variables.[21]

Finally, an examination of the statistical differences between each of the block net money flow measures within the low and high-ratio groups provides further support for the notion that institutional investors cause the downward pressure on spinoff share price. In particular, for the (Day +1 to Day +30) interval, the cumulative block money flows are significantly different across the NSR and ISR subsamples (p-values of 0.086 and 0.014, respectively). Additionally, the nonblock money flows are significantly different for the NSR and PSP groups for this same period (respective p-values of 0.016 and 0.000). Given that the price displacement represented by the cumulative block statistics shows no tendency to revert to zero, it is apparent that once the

institutions most likely to sell their spinoff positions do so, they do not reestablish their holdings any time soon.

IMPLICATIONS

Our evidence is consistent with the notion that institutional investors, because of the need to rebalance their positions according to a plethora of constraints, rapidly liquidate the shares of new spinoffs from parent companies in their portfolios. This activity creates, in turn, a seller-induced temporary decline in the value of these shares. Moreover, the magnitude of this postevent change in institutional demand is directly related to certain preevent characteristics of the parent firm—most notably, the parent firm's presence in the S&P 500—which proxy for institutional investment restrictions. Finally, the block trades of institutional investors have a large adverse impact on firm value.

Several implications can be drawn from these findings. First, and most practically, our evidence suggests that, for investors that do not hold shares in the parent company, the optimal time to buy stock in the spinoff firm is well after the restructuring takes place. Further, the exact time for such purchases depends greatly on the structure of institutional ownership of the parent firm, which, of course, can be established before the event occurs. Conversely, those investors that must liquidate their spinoff shares should do so as quickly as their policy guidelines allow them to.

More broadly, there are dramatic differences in the trading behavior of institutional and noninstitutional investors. The data are consistent with the existence of substantial variations across investor classes in the demand elasticity for common stock, variations that appear to be related to differences in the degree to which investors' behavior is restricted. An investigation of other investment characteristics, such as firm earnings, dividends and rating changes, might yield similar discrepancies.

The differential postspinoff price effects we have documented suggest considerable differences in the way institutional and noninstitutional investors execute their transactions. The net money flow analysis indicates that the most substantial price displacements are caused by block traders, which we assume to be institutional investors. To the extent that this behavior can be generalized, it is entirely possible that stocks with a large percentage of institutional holdings have dramatically different trading characteristics than do those issues with less institutional representation. Factors embodying these variations that would be of concern to any investor might include differentials in the dealer's bid-ask spread and differences in the intraday pattern of return volatility.[22]

FOOTNOTES

1. D. Farrar and L. Girton, "Institutional Investors and Concentrations of Financial Power: Berle and Means Revisited," *Journal of Finance* 36 (1981), 369–81.
2. See L. Harris and E. Gurel, "Price and Volume Effects Associated with Changes in the S&P 500 List: New Evidence for the Existence of Price Pressures," *Journal of Finance* 41 (1986), 815–29, and J. Woolridge and C. Ghosh, "Institutional Trading and Security Prices: The Case of Changes in the Composition of the S&P 500 Index," *Journal of Financial Research* 9 (1986), 13–24.
3. See S. Pruitt and K. Wei, "Institutional Ownership and Changes in the S&P 500," *Journal of Finance* 44 (1989), 509–13, and A. Shleifer, "Do Demand Curves for Stock Slope Down?" *Journal of Finance* 41 (1986), 579–90.
4. F. Black, "The Dividend Puzzle," *Journal of Portfolio Management* 2 (1976), No. 2.
5. See J. Cummins, J. Percival, R. Westerfield and J. Ramage, "Effects of ERISA on the Investment Policies of Private Pension Plans: Survey Evidence," *Journal of Risk and Insurance* 47 (1980), 447–76.
6. S. Badrinath, G. Gay and J. Kale, "Patterns of Institutional Investment, Prudence, and the Managerial 'Safety-Net' Hypothesis," *Journal of Risk and Insurance* 56 (1989), 605–29.
7. An implicit assumption of the safety net hypothesis is that every separate investment made by an institution on behalf of a client is subject to *ex post* legal scrutiny. This is indeed the approach commonly adopted by many state laws. For pension fund managers governed by the federal statutes of ERISA, however, prudence is decided on the basis of the performance of the entire portfolio. Nevertheless, even these investors may find front-end restrictions on the quality of the inputs to the portfolio to be a useful safeguard, a point discussed in J. Gordon, "The Puzzling Persistence of the Constrained Prudent Man Rule," *New York University Law Review* 62 (1987), 52–114.
8. A. Kraus and H. Stoll, "Price Impacts of Block Trading on the New York Stock Exchange," *Journal of Finance* 27 (1972), 569–88. See also R. Holthausen, R. Leftwich and D. Mayers, "The Effect of Large Block Transactions on Security Prices: A Cross-Sectional Analysis," *Journal of Financial Economics* 19 (1987), 237–68.
9. Although the academic literature has paid little attention to either the cause or magnitude of these postspinoff price effects, they seem to be well established phenomena in the professional investment community. For instance, Neuhauser observed that "most recipients of spin-offs are more likely to sell the shares than not. Recipients ranging from trust officers, index funds, and individual investors all get shares in companies they often never even knew they owned; . . . [p]ossessed of no good reason to keep the shares they tend to sell." (See C. Neuhauser, "Spin-Off Notes," *Investment Research* (Bear Stearns & Co. Inc.), November 15, 1988.) Further, Michael Carty, manager of Value Line's Centurion Fund, recently remarked that "my own philosophy has been to hold the parent and sell the spinoff. I'm wary of [spinoffs] until they have proven

themselves." (See R. Casey, "Spotting the Most Promising Spinoffs," *New York Times*, October 29, 1989.) Finally, institutions that index their investments will be particularly affected by this need to rebalance, as noted in B. Collins and D. Cushing, "A Guide to Equity Index Fund Management," in F. Fabozzi, ed., *Managing Institutional Assets* (New York: Harper & Row, 1990).

10. This difference in timing was necessary because institutions typically rebalance their portfolios only on a monthly basis and report their holdings on a quarterly basis. Thus, it is possible that any transactions made near the time of the spinoff would not be reflected in the data base for up to three months.
11. Eleven of the parent firms were not ranked, and 15 had a dividend yield of 0.0%.
12. Because the spinoff firms did not begin trading until Day 0, the first market-generated prices observable for these companies occur at the end of that day. Thus the first abnormal return cannot be calculated until Day +1.
13. Seifert and Rubin implicitly did so by choosing a mean-adjusted return process. See B. Seifert and B. Rubin, "Spin-Offs and the Listing Phenomenon," *Journal of Economics and Business* 41 (1989), 1–19. For a study of longer-term postspinoff performance, see P. Cusatis, J. Miles and R. Woolridge, "Restructuring Through Spinoffs: The Stock Market Evidence," *Journal of Financial Economics* 33 (1993), 293–311.
14. One concern about predicting $E(R_{jt})$ with the process summarized by Equation 2 is the potential that returns to the newly created spinoff companies will be more volatile immediately after the restructuring than during the parameter estimation period beginning on Day +61. Analyses of the daily cross-sectional return volatilities, however, suggest that this is not a significant problem. (The average daily standard deviations of the cross-sectional returns in the (Day +1 to Day +60), (Day +61 to Day +120) and (Day +61 to Day +260) intervals are 3.74%, 3.41% and 3.36%, respectively.) It is important to recognize, though, that even if these slight differences suggest higher systematic risk in the first period than in subsequent ones, the methodology outlined above is biased *against* our central hypothesis, in that $E(R_{jt})$ would be understated.
15. The information generated by the NSR and ISR variables does not merely duplicate that associated with the S&P 500 subsample. To support this observation more formally, chi-square tests for the randomness of a two-way classification of NSR vs. S&P and ISR vs. S&P yielded statistics of 4.497 (p-value = 0.034) and 1.388 (p-value = 0.239), respectively. Thus, it does not appear that these variables serve as perfect proxies for one another.
16. As summarized in Panel B of Table 2, the CAR patterns for the various subgroups during the latter half of the postspinoff period—like those of the entire sample—exhibit a weak tendency to rebound in the second half of the postevent period. However, an inspection of the CAR levels for the (Day +31 to Day +60) interval indicates that only the low-ISR subgroup has a subsequent price recovery that is statistically significant (i.e., 5.31% with a p-value of 0.06).
17. With one exception, the Spearman correlation coefficients mirrored the results of the parametric approach portrayed in Table 4 and will not be reported in detail here. The exception, involving the relationship between NSR and PCAP, is discussed below.
18. As a final investigation of postspinoff valuation effects, we estimated the direct relationship between the abnormal announcement return (AAR_j) to the jth parent firm and the postspinoff CR_{jt} using cross-sectional regressions. Following G. Hite and J. Owers, "Security Price Reactions Around Corporate Spin-Off Announcements," *Journal of Financial Economics* 12 (1983), 409–36 as well as K. Schipper and A. Smith, "Effects of Recontracting on Shareholder Wealth: The Case of Voluntary Spinoffs," *Journal of Financial Economics* 12 (1983), 437–68, the AAR is defined as the abnormal return for the two-day period surrounding the first public announcement of the spinoff event. For the collection of 74 parent firms in our sample, the average value of AAR_j was a statistically significant 3.23% ($p = 0.005$). Given that Hite-Owers and Schipper-Smith found comparable values of 3.3% and 2.8%, respectively, it appears that our sample is consistent with those earlier works. However, based on the results of our regressions, there appears to be no strong and systematic relationship between the abnormal price increase that occurs at the time the restructuring is first announced and the valuation effects that occur after the spinoff firm starts trading on its own.
19. J. Karpoff, "The Relationship Between Price Changes and Trading Volume: A Survey," *Journal of Financial and Quantitative Analysis* 22 (1987), 109–26.
20. To ensure that the 47 companies for which we had block net money flow data constituted an appropriate subsample of the original 74 spinoffs, we reproduced the results in Tables 2 and 3 and found that they were qualitatively identical to those reported in the last section. Both these new findings and the identity of the 47 firms are available from the authors upon request.
21. It is also interesting to note the differences in the timing of block sales between the PSP, NSR and ISR subsamples. For the latter two subgroups, which by definition incorporate institutions having any reason to liquidate their spinoff positions, the lowest cumulative block net money flow figures in the first 30 days after the event are −$7.07 million on Day +16 and −$7.35 million on Day +17, respectively. This contrasts with the much quicker reaction of those institutions—presumably index funds—that are motivated primarily by the parent firm's presence in the S&P 500.
22. We thank Charles D'Ambrosio, Stuart Gilson, Dilip Thadani and Rex Thompson for their helpful suggestions.