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Corporate spinoffs and information asymmetry between investors

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Abstract

We examine the effect of corporate spinoffs on the trading environment of the stock of firms that spinoff units. Spinoffs change the information environment of firms. The increased transparency following spinoffs can obviate informed traders' information or make it more valuable. We find that residual return variance increases following spinoffs. More importantly, transaction costs and the price impact of trades are also higher following spinoffs. These results are stronger for spinoffs where parent firms divest unrelated subsidiaries. Changes in the information environment associated with focusing spinoffs appear to benefit informed traders at the expense of uninformed traders.

JEL classification: G34; G14
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1. Introduction

A corporate spinoff splits a company into two separately traded entities. It involves a pro rata distribution of the parent firm's ownership in another firm (the subsidiary) to the parent's shareholders. Existing evidence shows that these transactions yield positive abnormal stock returns of approximately 3% on the average.[2] Several explanations for

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[1] Tel.: +1-902-420-5730.
[2] Schipper and Smith (1983) report a 2.8% average 2-day abnormal return. Hite and Owers (1983) report a 3.3% 2-day abnormal return. More recently, Daley et al. (1997) report a 3.4% 2-day abnormal return.

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these abnormal returns have been offered. They include transferring assets to higher valued uses (Kudla and McInish, 1988), improved contracting (Aron, 1991) and improved focus (Daley et al., 1997).

More recently, attention has turned to the informational effects of spinoffs. Krishnaswami and Subramaniam (1999) report evidence that there are changes in the information environment of firms following spinoffs. They document increased earnings forecast accuracy and lower dispersion in analysts' earnings forecasts following spinoffs. In a similar vein, Gilson et al. (2001) report increased analyst coverage and analyst specialization following stock breakups.[3] They find that the improved forecast accuracy following the breakup is related to an increase in the number of analysts covering the firms. Overall, the evidence indicates that the information environment of firms changes around spinoffs. In particular, the quantity and precision of available information increases.

This paper considers the effect of spinoffs on the information asymmetry between shareholders.[4] For reasons outlined in the next section, a spinoff can either alleviate or exacerbate informational asymmetries. Intuitively, spinoffs may reduce inter-shareholder information asymmetry by allowing more accurate estimation of firm value based upon public information. That is, when business units are separated into distinct trading entities, they become easier to value than the combined firm. Conversely, informational asymmetry may be exacerbated after a spinoff. If informed traders have superior knowledge about the value of only one of the business units of a multidivision firm, they may not trade on that knowledge because subsequent changes in the value of that unit may be offset by changes in the value of the other units. If the units are separated, the informed can trade on their information without the risk that the benefits of their superior knowledge will be diversified away. Even if spinoffs do not increase the total amount of information available about a firm, this increases the benefits of being informed.

Other papers that look at the informational effects of separating a firm's assets consider the information asymmetry between managers and shareholders. Nanda (1991) and Nanda and Narayanan (1999) formally develop models where there is informational asymmetry between managers and shareholders and diversification impedes investors' ability to value a firm. The separation of the firm's assets improves the ability of investors to value those assets. In this way, the models treat the separation of the firm's assets as a solution to the problem analyzed by Myers and Majluf (1984). Krishnaswami and Subramaniam (1999) find evidence consistent with this source of spinoff gains. They document that firms that undertake spinoffs are in need of external capital and that the frequency of equity issues increases after the spinoff. This evidence supports the contention that diversification imposes information costs.

[3] Stock breakups include spinoffs, equity carve-outs and targeted stock offerings.

[4] We are aware of one other paper that examines this question. Bates et al. (1999) examine bid–ask spreads around 24 spinoff transactions over the 1993–1997 period. They are unable to find a significant change in transactions costs or the adverse selection component of bid–ask spreads with their sample.

In contrast, Hadlock et al. (2001) construct a model where diversification alleviates the Myers and Majluf (1984) problem. In their model, valuation errors across the multiple segments in a diversified firm are imperfectly correlated. As a result, instead of imposing an information cost, diversification provides an information benefit by making valuation errors smaller for diversified firms. They report evidence consistent with diversification reducing the asymmetry between managers and shareholders; market reactions to equity issues are less negative for diversified firms than for pure plays.

The differences in the conclusions of these papers might be attributed to their samples. Krishnaswami and Subramaniam (1999) select a sample of firms that chose to separate their assets, which might indicate that diversification at these firms imposed information costs. Hadlock et al. (2001) look at firms that are diversified and have chosen not to separate their assets, which might indicate low diversification-related information costs. Since we are examining firms that choose to separate their assets, we discuss the effects of such sample selection problems in our results.

Spinoffs provide ideal ground for an examination of how markets process information. Unlike earnings announcements, which provide a one-shot increase in public information, the results of Krishnaswami and Subramaniam (1999) and Gilson et al. (2001) indicate spinoffs result in a more permanent change in a firm's information environment. Therefore, rather than the transitory change in information asymmetry surrounding public announcements, we expect to find a permanent change in the trading environment of firms following spinoffs.

Our results show that idiosyncratic volatility increases following focus increasing spinoffs. This is consistent with stock prices being more sensitive to firm-specific information. It is also consistent with an increased activity of informed traders in the market. When we analyze the trading environment of firms that spinoff units, we find that transaction costs and the price impact of trades increase. These results are stronger when spinoffs increase firm focus. Further, the changes are not due to transitory effects around the spinoff event itself. The results indicate that the effects of asymmetric information on trading increase after a firm increases its focus through a spinoff. Overall, our results are consistent with the idea that spinoffs actually *increase* informed traders' advantage over uninformed traders.

The rest of the paper is set up as follows. In the Section 2, we discuss competing views of the effect of spinoffs on information asymmetry. Section 3 describes the sample and the data we use in our tests. Section 4 presents the results and Section 5 concludes.

2. Spinoffs and information asymmetry

Habib et al. (1997) suggest that the increased quality of information after a spinoff increases the informativeness of prices. In their model, as prices become more informative, information asymmetry is reduced. However, this ignores the question of exactly how the information is incorporated into prices. There are two possibilities. Increased price informativeness may be a result of uninformed investors basing trading decisions on their now-more-accurate information set. Under this view, spinoffs reduce informed traders' advantage, as public information is now better and, therefore, the information available to uninformed traders is closer to that of informed traders. However, increased price informativeness could also arise from greater activity by traders who gather and/or act on information. Under this view, a spinoff increases the advantage of informed traders. The details of these two views are outlined below. The truth, in all likelihood, probably involves both. Which of the effects dominates, however, will determine the effect of the spinoff-induced change in the information environment on transaction costs.

2.1. Why might a spinoff reduce information asymmetry?

Hasbrouck (1991) states that most useful private information is essentially advance knowledge of public information. This sort of private information would be obviated by better public disclosure. If spinoffs result in useful information about the firm becoming public sooner (because the firm is a less complicated entity which is easier for everyone to value), then information asymmetry is reduced. Intuitively, this simply means that if more information is easily available to all traders, then there are fewer nonpublic pieces of information that informed traders could gather to gain an advantage.

2.2. Why might a spinoff increase information asymmetry?

Results from the security design literature provide a rationale for why spinoffs could increase information asymmetry. Gorton and Pennacchi (1993) and Subrahmanyam (1991) present models where the bundling of claims on individual assets into composite claims reduces informed traders' informational advantage. To the extent that a spinoff decomposes the claims on the underlying assets, the informational advantage of the informed will increase. This is because informed traders are likely to have an informational advantage concerning the value of a particular line of business of the firm. If the firm becomes less diversified through a spinoff, any informational advantage is less likely to be offset by changes in the value of the parts of the firm that the informed know little or nothing about. This argument implies that information based traders act strategically in deciding which stocks to trade. Informed traders have a greater incentive to gather and act on information about firms that are more focused (in this case, because of a spinoff) because that is where their private information has the greatest value.

A second rationale for spinoffs increasing asymmetric information among investors can be found in the models of Kim and Verrecchia (1994, 1997) and Lundholm (1991). In both models, public information complements traders' private information. Lundholm concludes that public signals will increase the informational disparity between uninformed and informed traders. If this is the case, then spinoffs may result in an increase in information asymmetry on a permanent basis. Because the flow of information following a spinoff has improved, informed traders can combine this better public information with their own private information to gain an even greater advantage. In essence, increased public information complements private information, rather than replacing it, and increases the advantage of information-based traders.[5]

Since spinoffs result in both the unbundling of claims on the underlying assets and increased public information, either or both of these motivations can explain any observed increase in inter-shareholder information asymmetry following spinoffs. Since we are interested in determining whether spinoffs are to the benefit or detriment of uniformed shareholders, we do not attempt to differentiate between these arguments. We leave the determination whether one or the other explanation is more accurate to future research.

3. Data and empirical methods

We examined the Wall Street Journal Index over the period 1984–1994 for stories related to spinoffs to collect our sample. The initial sample is restricted to firms for which the effective date of the distribution can be identified from the Wall Street Journal or from CRSP and for which intraday data for the relevant periods are available on either the TAQ or ISSM databases. We did not include cases where the subsidiary already had publicly traded stock outstanding (as this implies a much different information environment). If more than one spinoff is associated with a given parent firm during our sample period, the observations are included only if there is no overlap between the pre- and post-spinoff event windows (defined below) of the spinoffs. We also deleted one case where the reported spinoff was found to be a tracking stock rather than a true spinoff and one case where the parent firm was a closed end fund. The final sample consists of 84 spinoffs.

Table 1 presents the distribution of our sample over the period as well as some descriptive information about the firms. The 84 spinoffs in our sample are fairly evenly distributed across the period under study. The fewest spinoffs occur in 1984 (1) and the most occur in 1988 (15). We categorize spinoffs into focusing and nonfocusing. We follow Krishnaswami and Subramaniam (in press) and Daley et al. (1997) and classify spinoffs as focusing if the parent and subsidiary have different two-digit SIC codes. All other spinoffs are classified as nonfocusing. We find that 59 of our 84 spinoffs (70%) are focusing.[6] Our binary classification system for focus allows for the possibility that some parent firms may have increased their focus, but remain diversified firms. However, this possibility would bias our tests against finding any difference between focusing and nonfocusing spinoffs.[7] The third column in Table 1 presents the size of the subsidiary relative to that of the parent. The relative size is

[5] Krinsky and Lee (1996) present evidence supporting the supposition that public information increases asymmetric information. They find that the adverse selection component of the bid–ask spread increases after public earnings announcements.

[6] This is similar to the percentage of focusing spinoffs Daley et al. report in their sample.

[7] We discuss robustness checks on our classification system in Section 4.

Table 1
Sample of spinoffs—by year of announcement

Year	No. of spinoffs	No. of focusing spinoffs	Average relative size of subsidiary
1984	1	1	0.0719
1985	8	6	0.1777
1986	13	11	0.1839
1987	5	4	0.2735
1988	15	9	0.3621
1989	4	2	0.0329
1990	10	6	0.1702
1991	3	3	0.2745
1992	4	2	0.1075
1993	9	6	0.2234
1994	12	9	0.1621
Total	84	59	0.2194

The spinoff is classified as focusing if the parent firm and the divested subsidiary have different two-digit SIC codes. Relative size of the subsidiary is calculated as the total assets of the subsidiary in the year following the spinoff as a percentage of the total assets of the parent firm plus the total assets of the subsidiary in the year after the spinoff. Size data is only available for 74 of our sample firms. For the 10 missing firms, either the parent (three) or subsidiary (seven) data were unavailable.

measured as the total assets of the spun-off unit relative to the sum of the assets of the parent and subsidiary in the year following the transaction. Total assets for parents and subsidiaries are taken from Standard and Poors' COMPUSTAT when available. If unavailable on COMPUSTAT, data are gathered from annual reports or proxy statements. We observe that the average subsidiary represents 21.94% of the parent firms' assets. There is broad variation in the size of spun off units. In 1988, the average subsidiary makes up 36% of the combined firm. In the following year, the average size of the subsidiary is only 3% of the combined firm.

Our initial results focus on changes in the effect of firm-specific information on the prices of parent firms prior to and following the spinoff. We measure the information flow by examining the residual variability of daily stock returns around the event.[8] For these tests, we estimate market models and examine the residual variance before and after the spinoff. In order to estimate the market model effectively, we use 250-day sample periods. We define the "pre-spinoff" period as the 250 days ending 50 days prior to the first public announcement of the spinoff, and the "post-spinoff" period as the 250 days beginning 50 days after the effective date.

Our main tests focus on changes in the microstructure of trade following a spinoff. For these tests, we define the "pre-spinoff" period as the 40 days prior to the announcement of the spinoff. The period between the initial announcement and the effective date of the spinoff is excluded from the analysis. This allows time for any information effects around the spinoff announcement itself to dissipate, so that we can concentrate on permanent changes in the information environment of the parent firms. We define the "post-spinoff"

[8] Ross (1989) presents a model where return variance measures the rate of information arrival.

period in three different ways: days +1 to +20 after the effective date, days +21 to +40 after the effective date and days +41 to +60 after the effective date. These correspond to approximately the first full quarter following the spinoff. Examining trading in stages over the first quarter after the separation allows us further power to determine if the effects observed represent temporary or permanent changes in the trading environment of the firm.

All trades and quotes in the pre- and post-spinoff periods are collected for each parent firm. For spinoffs occurring before 1993, we obtain the data from the ISSM tapes. Transaction data from 1993 to 1994 are from the NYSE's Trades and Quotes (TAQ) database. We use the transaction data to measure changes in transaction costs and the price impact of trades.

4. Results

4.1. Changes in the impact of firm-specific information

Using daily return data from CRSP, we estimate the following regressions for each firm:

$$r_{\mathrm{it}}^{\mathrm{pre}} = \alpha_i^{\mathrm{pre}} + \beta_i^{\mathrm{pre}} r_{\mathrm{mt}}^{\mathrm{pre}} + \varepsilon_{\mathrm{it}}^{\mathrm{pre}} \tag{1}$$

$$r_{\mathrm{it}}^{\mathrm{post}} = \alpha_i^{\mathrm{post}} + \beta_i^{\mathrm{post}} r_{\mathrm{mt}}^{\mathrm{post}} + \varepsilon_{\mathrm{it}}^{\mathrm{post}} \tag{2}$$

where r_{it} is the daily return for a firm and r_{mt} is the daily return on the CRSP value weighted index. Pre and post refer to the 250-day periods starting 50 days before and after the announcement and effective dates, respectively. Our results are the same if we use 60-day periods beginning 10 days before and after the announcement and effective dates.

Since unsystematic risk results from the market's adjustment to firm-specific information, the residual variation, $\sigma(\varepsilon)$, is a measure of the amount of price variability due to firm-specific information. If prices are more sensitive to firm-specific information, we expect $\sigma(\varepsilon)$ to increase. Therefore, we are interested in comparing $\sigma(\varepsilon^{\mathrm{post}})$ and $\sigma(\varepsilon^{\mathrm{pre}})$.

We link residual variance and informed trading for the following reasons. First, Benston and Hagerman (1978) argue that informed traders derive their information advantage from idiosyncratic moves in the stock price, rather than market wide, systematic factors. If informed traders act strategically in choosing which stocks to trade, they will move to stocks that provide greater opportunities to trade on firm-specific information.[9] Following a spinoff, these greater opportunities could either be

[9] Habib et al. (1997) assume that informed traders do not act strategically and do not alter their trading strategies due to a change in the information environment after a spinoff.

Table 2
Standard deviations of market model residuals surrounding spinoffs

	All spinoffs ($N=70$)		Focusing ($N=50$)		Nonfocusing ($N=20$)	
	Mean	Median	Mean	Median	Mean	Median
Panel A: preannouncement days (− 300, − 50)	0.0200	0.0168	0.0185	0.0152	0.0239	0.0194
Panel B: post-spinoff days (+ 50, + 300)	0.0238	0.0194	0.0234	0.0187	0.0251	0.0210
Difference	0.0038	0.0026	0.0049	0.0035	0.0012	0.0016
(statistic for test of difference)	(3.16)***	(2.77)***	(3.30)***	(3.27)***	(0.60)	(0.11)

This table reports the standard deviation of market model residuals for sample firms with CRSP data available for both the pre- and post-spinoff periods. Market models are estimated for both the pre- and post-spinoff periods. "Pre-spinoff" refers to days − 300 to − 50 relative to the initial announcement of the spinoff. "Post-spinoff" refers to days + 50 to + 300 relative to the effective date of the spinoff. The standard deviation of residuals is calculated for each firm over these periods and the cross-sectional means and medians are reported in the table. Spinoffs are nonfocusing if the parent and subsidiary share the same two-digit SIC code, and focusing if otherwise. Differences between mean and median pre-spinoff and post-spinoff residual standard deviations, along with *t*-statistics for the difference in means and *z*-statistics from signed rank tests for the difference in medians, are reported.

* Significance at the 10% level.

** Significance at the 5% level.

*** Significance at the 1% level.

because actual information flow has increased or because segment specific factors now actually move prices rather than being diversified away across multiple segments. This would result in an increase in the degree of adverse selection following an increase in residual variation. Second, to the extent that trading is required to incorporate firm-specific information, changes in residual variance may reflect changes in the behavior of informed traders.[10] Specifically, higher residual variance may indicate the presence of a greater proportion of information-based traders gathering information and acting upon it. Therefore, an increase in residual variation either attracts informed traders or reflects their presence. For our purposes, it is irrelevant which of these is true; the important point is a link between residual variation and informed trading. Additionally, some microstructure models use return variance as a measure of insiders' superior information. For instance, Kyle (1985) assumes that the informed trader can predict perfectly the future price and, thus, the variance of a security is an exact measure of the value of the informed trader's information. Under this interpretation, changes in the residual standard deviation directly measure changes in the informed traders' information advantage.

Table 2 reports evidence on changes in return variability following spinoffs. We have 70 firms with CRSP data in both the pre- and post-spinoff periods. Prior to the spinoff, the average (median) standard deviation of market model residuals is 2.00% (1.68%). The post-spinoff period shows a significant increase in residual standard deviation. The

[10] French and Roll (1986) and Barclay et al. (1990) show that volatility during trading hours is primarily related to the incorporation of private information into asset prices.

average (median) standard deviation in the post-spinoff period is 2.38% (1.94%). This 38 basis-point (26 bp) increase is significant at the 1% level. This evidence is consistent with spinoffs increasing the sensitivity of parent firms' prices to firm-specific information.[11]

To see if this increased sensitivity can be attributed to the removal of any diversification effects that existed for the combined firm, we separate the sample into focusing and nonfocusing spinoffs to see if the amount of additional information incorporated into prices is affected by whether the parent and subsidiary are substantively different. Both Habib et al. (1997) and Gorton and Pennacchi (1993) suggest that changes in the information environment of the parent firm will be lower the greater the correlation between the parent firm's operations and the subsidiary firm's operations. That is, there is less diversification when the combined entities are similar, so there is a smaller increase in information effects when they are separated.

Using the 50 focusing spinoffs with data, we find a 49-bp increase in average residual standard deviation and a 35-bp median change in residual standard deviation. Both of these changes are statistically significant at the 1% level. When we examine the 20 nonfocusing spinoffs, we find that there is no significant change in the residual standard deviation of returns following the spinoff. Specifically, the residual standard deviation increases by 12 bp on average and the median change is 16 bp. The *P*-values associated with these changes are 0.55 and 0.91, respectively. While the high *P*-values are partly due to the smaller sample of nonfocusing spinoffs, we note that the nonfocusing changes are considerably smaller than the changes measured for focusing spinoffs.

Although Krishnaswami and Subramaniam (1999) report a decline in residual standard deviation across their entire sample of spinoffs, the differential changes in the residual variance for focusing versus nonfocusing transactions reported here should not be surprising. The separation of disparate business units removes any diversification effects while there should be little reduction in return variability from separating two like units. The increased residual variance for parents following focusing spinoffs suggests that idiosyncratic information now has a greater effect on prices. Habib et al. (1997) suggest that uninformed traders are better off with prices that are more informative. This would tend to lower transaction costs and the price impact of trades. However, as mentioned above, a greater role for idiosyncratic information may serve to attract informed traders. This would tend to raise transaction costs and the price impact of trades. We examine this issue in the next section.

4.2. Microstructure changes around spinoff transactions

In this section, we present evidence on changes in the relative effective bid–ask spread and the estimated adverse selection component of the bid–ask spread around spinoffs.

[11] We also examine the absolute values of raw daily returns and market-adjusted daily returns. The results for these alternative measures of price variability are similar to those reported in Table 2.

Table 3
Changes in relative effective spreads surrounding spinoffs

	All spinoffs			Focusing			Nonfocusing		
	N	Mean	Median	*N*	Mean	Median	*N*	Mean	Median
Panel A: preannouncement									
Days (−40, −1)	84	0.0103	0.0074	59	0.0090	0.0079	25	0.0127	0.0072
Panel B: post-spinoff									
Days (+1, +20)	84	0.0139	0.0103	59	0.0139	0.0104	25	0.0140	0.0082
(statistic for test of difference)		(3.00)***	(4.08)***		(3.02)***	(3.85)***		(0.75)	(1.55)
Days (+21, +40)	80	0.0135	0.0086	57	0.0136	0.0095	23	0.0133	0.0085
(statistic for test of difference)		(1.97)**	(2.32)**		(2.30)**	(1.84)*		(0.05)	(1.53)
Days (+21, +40)	78	0.0164	0.0094	55	0.0173	0.0097	23	0.0142	0.0078
(statistic for test of difference)		(2.42)**	(3.60)***		(2.48)**	(3.09)***		(0.29)	(1.90)*

This table contains relative effective spreads before and after a spinoff. "Preannouncement" refers to the 40 days prior to the initial announcement of the spinoff. "Post-spinoff" is defined relative to the effective date of the spinoff and is broken up into days +1 to +20, +21 to +40 and +41 to +60. Spinoffs are nonfocusing if the parent and subsidiary share the same two-digit SIC code, and focusing if otherwise. The effective spread is calculated as two times the absolute value of the difference between the transaction price and the prevailing quote midpoint (quotes are lagged by 5 s), divided by the quote midpoint. This is then averaged across all transactions for the stock. The table reports the cross-sectional means and medians of the stock-specific mean spread. *t*-statistics from a matched *t*-test of the difference between pre and post spreads and *z*-statistics from signed rank tests of the difference between pre- and postmedians are reported. All tests are based only on firms with data available in both periods.

* Significance at the 10% level.

** Significance at the 5% level.

*** Significance at the 1% level.

Table 3 reports changes in relative effective bid–ask spreads around spinoffs for the original sample of 84 firms that had TAQ data available.[12,13] The relative effective spread is measured as two times the absolute difference between the transaction price and the midpoint of the quoted bid and ask outstanding at the time of the trade, divided by the quote midpoint.[14] We concentrate on the relative effective spread because that is the transaction cost measure of most interest to investors. The relative effective spread is averaged across all transactions for each stock and Table 3 reports the cross-sectional means and medians of these figures.

[12] Some firms do not have trade data in all three post-spinoff periods resulting in slightly different sample sizes across periods.

[13] The difference between the number of firms with TAQ data and the number with CRSP data could be due to some firms being taken over or merging in the year following the spinoff. This would be consistent with the findings of Cusatis et al. (1993). This might bias our results if a future takeover is driving the changes in spreads rather than the spinoff itself. However, the regression results presented in Table 4 show that even when the sample is constrained to surviving firms with CRSP data available, the results still hold.

[14] As is standard in microstructure studies, quotes were lagged 5 s to mitigate nonsynchronous recording of trades and quotes. In addition, the data was filtered for typographical errors as in Brennan and Subrahmanyam (1995); for each trade, a range was determined that included the previous bid and ask, as well as the following bid and ask (or trade price if a trade occurred before a quote revision). If the trade was outside of this range by more than four times the width of the range, then it was discarded.

Across the entire sample, the mean relative effective spread in the first month following the effective date of the spinoff increases. The mean and median relative effective spreads increase by 36 and 29 basis points, respectively, and each is significant at the 1% level. Examination of the second and third months following the spinoff shows the increase in spreads to be permanent. The average (median) effective spread is 32 bp (12 bp) higher in the second month and 61 bp (20 bp) higher in the third month following the transaction. These changes are statistically significant.

We have argued that informed traders will be attracted to more focused firms because their information advantage will not be diversified away. If true, then we should observe differences in how relative effective spreads change between the subsamples of focusing and nonfocusing spinoffs. The remaining columns Table 3 report the changes in spreads for the subsamples. The second set of columns shows that relative effective spreads increase following focusing spinoffs. In the first month following these transactions, the average (median) relative effective spread increases by 46 bp (25 bp). These changes are significant and appear permanent as the effective spreads in the second and third month following focusing spinoffs remain significantly higher than the effective spread prior to the spinoff. The third set of columns shows that this is not the case for nonfocusing spinoffs. Other than the median in the third post-spinoff period, there are no significant changes in the relative effective spreads of parent firms that spinoff like subsidiaries.

In summary, trading costs measured by the relative effective spread increase significantly following a spinoff that increases the focus of the parent firm, but do not change following a spinoff of a related subsidiary. This is consistent with the previous finding of increased residual return variation for focusing spinoffs. It is also consistent with the hypothesis that informed traders are attracted to less-diversified firms and this in turn raises the costs of transacting for all investors.

As in Harris (1994), increased relative spreads could be caused by lower prices and a binding tick constraint. Because a decrease in price level is expected following the completion of a spinoff (as assets are removed from the parent firm), it is possible that it is the decrease in price that is driving our results and not a change in the information environment. To examine this possibility we look at changes in raw effective spreads.[15] Prior to the announcement, raw effective spreads average 20.59¢ across the entire sample.[16] After the effective date, effective spreads average 23.66¢. The increase in the dollar effective spread has a P-value of 0.20. The results are similar for the focusing subsample. The raw effective spread increases by 5¢ from 21.38¢ to 26.56¢ (P-value = 0.13). Effective spreads decrease following nonfocusing spinoffs. Given that raw effective spreads show a large and economically important increase after a focusing spinoff and a small decrease following a nonfocusing spinoff, our results on transaction costs do not seem to be driven solely by lower average prices. To further investigate the possibility that a binding tick constraint is affecting

[15] The dollar effective spread is measured as two times the absolute difference between the transaction price and the midpoint of the quoted bid and ask outstanding at the time of the trade.

[16] The results of these robustness checks are not reported in the tables. They are available upon request.

Table 4
Relative effective spreads for parent and subsidiary after spinoff

	All spinoffs		Focusing		Nonfocusing	
	Parent	Subsidiary	Parent	Subsidiary	Parent	Subsidiary
Days (+1, +20), mean/median	0.0117/0.0072	0.0203/0.0120	0.0117/0.0073	0.0222/0.0127	0.0118/0.0067	0.0149/0.0105
(N_{parent}, $N_{subsidiary}$, t-statistic, median statistic)	(42, 42, 2.75,*** 2.88***)		(31, 31, 2.88,*** 2.69***)		(11, 11, 0.52, 1.33)	
Days (+21, +40), mean/median	0.0115/0.0069	0.0200/0.0125	0.0131/0.0074	0.0215/0.0124	0.0120/0.0065	0.0159/0.0125
(N_{parent}, $N_{subsidiary}$, t-statistic, median statistic)	(40, 42, 3.09,*** 3.79***)		(30, 31, 3.03,*** 3.57***)		(10, 11, 0.87, 1.38)	
Days (+41, +60), mean/median	0.0151/0.0078	0.0213/0.0133	0.0156/0.0079	0.0233/0.0138	0.0135/0.0075	0.0157/0.0125
(N_{parent}, $N_{subsidiary}$, t-statistic, median statistic)	(39, 42, 1.18, 3.07***)		(29, 31, 1.06, 2.80***)		(10, 11, 0.51, 1.27)	

This table contains relative effective spreads after a spinoff for both the parent firm and the spun-off subsidiary. The post-spinoff period is divided into three 20-trading-day periods, measured relative to the effective date of the spinoff. Spinoffs are nonfocusing if the parent and subsidiary share the same two-digit SIC code, and focusing if otherwise. The effective spread is calculated as two times the absolute value of the difference between the transaction price and the prevailing quote midpoint (quotes are lagged by 5 s), divided by the quote midpoint. This is then averaged across all transactions for the stock. The table reports the cross-sectional means/medians of these averages. Parentheses contain the number of parent firms and subsidiary firms as well as t-statistics from a matched t-test and z-statistics from a signed rank test of the difference between parent and subsidiary mean and median spreads. All tests are based only on cases where both parent and subsidiary have data available. Numbers of observations vary because of lack of trading data on TAQ.

* Significance at the 10% level.

** Significance at the 5% level.

*** Significance at the 1% level.

our results, we examine raw quoted spreads for our sample firms. We find that the average quoted spread is approximately \$0.33 in both periods. For each stock, we take the number of quoted one-eighth spreads (one-eighth was the binding tick size during our sample period) as a proportion of the total number of quotes for that stock. Thirty-seven of the eighty-four stocks (44%) show some increase in the proportion of one-eighth spread quotes following the spinoff. However, the proportions are generally quite low. In the post-spinoff period, only 5 of 84 firms exhibit one-eighth quotes more than 50% of the time. This indicates that a binding tick constraint is not a major factor in our results.

Our results show increased transaction costs for focusing spinoffs based on parent-to-parent comparisons, pre- and post-spinoffs. We argue that this is due to a change in the information environment of the parent. An alternative explanation for this finding is that our sample firms have spun off their most informationally transparent units.[17] We explore this possibility by examining the bid-ask spreads for the 42 subsidiary firms for which TAQ data are available in the post-spinoff period. The results, presented in Table 4, show that, across the entire sample, the average relative effective spread is significantly higher for subsidiary firms than for their parents. This holds for all three post-spinoff periods. Dividing the sample into focusing (31 firms) and nonfocusing (11 firms) spinoffs, we see that in focusing spinoffs, subsidiaries have significantly higher spreads than parents, while in nonfocusing spinoffs, there is no significant difference between subsidiary and parent spreads. There is no evidence that firms spin off units with less asymmetric information. In fact, since the subsidiary firms spun off in focusing cases have higher spreads than their parents, the opposite seems to be true in these cases.[18]

Returning to a comparison of the parent firm pre- and post-spinoffs, we now examine the relation between spread changes and spinoff type, the size of the subsidiary and changes in residual volatility using regression analysis. We also control for price level changes as a final check that lower prices do not drive our results. All regressions in Table 5 use the change in the relative effective spread for the parent firm as the dependent variable. We estimate regressions using the change in spreads measured over each of the 3 months following the spinoff.

The first three columns of Table 5 use the change in relative effective spread from preannouncement to the first month after the effective date (days $+1$ to $+20$ relative to the effective date) as the dependent variable. The first regression shows the effect a focused spinoff on the effective spread after controlling for price changes associated with the spinoff and the size of the subsidiary relative to the parent. Price change is measured by the change in the average (across all transactions) trade price in each period. The effect of the price change has the expected negative sign and is significant at the 5% level. That is, as the price falls, the relative effective spread increases. The effect of focus is significant after controlling for the effect of the price change, again indicating that price reduction is

[17] We thank an anonymous referee for suggesting this possibility.

[18] We also compared spreads for the pre-spinoff firm to the market weighted average spread of the parent and subsidiary firms after the spinoff. The results are very similar to the parent-to-parent comparison of spreads reported in Table 3.

Table 5
Regression results

	Post-spinoff period: window relative to effective date				
	(+1, +20)			(+21, +40)	(+41, +60)
Intercept	0.0011 (−0.34)	−0.0009 (−0.28)	−0.0057 (−1.33)	−0.0059 (−1.02)	−0.0031 (−0.47)
Change in average price	−0.0003 (−2.19)**	−0.0001 (−1.04)	−0.0001 (−0.86)	−0.0001 (−1.05)	(0.0005) (1.05)
Focus	0.0053 (1.66)*	0.0033 (1.21)	0.0097 (2.05)**	0.0109 (1.76)*	0.0167 (2.17)**
Log of relative size of subsidiary	0.0011 (1.01)	0.0007 (0.94)	−0.0025 (1.50)	−0.0020 (−1.05)	−0.0028 (−1.24)
Change in residual standard deviation		0.7266 (2.75)***	0.2939 (1.31)	0.4125 (1.43)	0.5620 (1.42)
Focus × log relative size of subsidiary			0.0042 (2.23)**	0.0045 (2.07)**	0.0059 (2.16)**
Focus × change in residual standard deviation			0.5180 (1.46)	0.5378 (1.35)	0.0167 (0.04)
N	74	66	66	66	66
Adjusted R^2	0.0287	0.4052	0.4502	0.4377	0.0531

This table presents the results from the estimation of the relation between changes in effective bid-ask spreads and changes in the characteristics of the parent firms' around a spinoff. The dependent variable is the change in the relative effective spread from the preannouncement to post-effective period. The preannouncement period is defined as the 40 trading days prior to the first public announcement of the spinoff. The post-effective period is defined variously as days +1 to +20, +21 to +40 and +41 to +60 relative to the effective date of the spinoff. Explanatory variables include: the change in the average price of the parent firm's common stock, the relative size of the subsidiary (measured as subsidiary's assets divided by parent assets plus subsidiary's assets), change in the level of idiosyncratic risk of the parents' common stock and an indicator variable that equals 1 for focusing spinoffs and 0 for nonfocusing spinoffs. *t*-statistics are in parentheses. Regressions utilize White's heteroskedasticity consistent covariance matrix. Sample sizes vary because of missing COMPUSTAT data or missing CRSP data.

* Significance at the 10% level.

** Significance at the 5% level.

*** Significance at the 1% level.

not driving the results of Table 3. The relative effective spread increases by approximately 53 bp following focusing spinoffs, while for nonfocusing spinoffs, there is no significant change in spread. The size of the subsidiary does not affect the impact of the focus variable on the change in trading costs.[19]

[19] We have 74 rather than 84 observations because of missing data on the size of subsidiaries in 10 cases. The sample drops to 66 in subsequent columns because sufficient return data is not available for eight of the parent firms in the 250 days beginning 50 days after the effective date.

In the second column of Table 5, we examine the effect of the changes in residual variability on the changes in trading costs. Again, changes in spread are measured from pre-spinoff to the first 20 trading days following the effective date. The effect of focus is no longer significant when we explicitly control for the change in residual variation. This is not entirely surprising since focusing spinoffs have significant increases in residual variation and nonfocusing spinoffs do not. The focus dummy may simply have picked up the impact of the increased information sensitivity in the previous regressions. The positive association between changes in residual variation and changes in trading costs is consistent with increased residual variance either attracting informed traders whose information is mostly firm-specific, or reflecting informed traders presence in the market as more firm-specific information is being incorporated in prices.

We next look at whether the impact of subsidiary size and changes in residual variance on trading costs differ between focusing and nonfocusing spinoffs. The third column of Table 5 shows that trading costs in the first month following the spinoff increase following focusing transactions, but not following nonfocusing transactions. Further, the effect of focus is stronger when the divested subsidiary is larger relative to the parent. The effect of changes in residual variation is no longer significant.

In the fourth and fifth columns of Table 5, we see that the effects observed represent permanent changes in the trading environment of the stock. These last two regressions define the dependant variable as the change in spread from pre-spinoff to the second and third months following the effective date, respectively. The effects of focus and the interactive effect of focus and subsidiary size on trading costs persist over the second and third months following the spinoff.[20]

Overall, the results support the contention that separating unlike business units increases trading costs. The evidence is consistent with our assertion that when firms become more focused via a spinoff of a dissimilar subsidiary this serves to attract informed traders who can now take better advantage of their information because its effects will not be diversified away. Further, the changes appear to be permanent and do not fade over the quarter following the actual spinoff distribution. Our basic results complement those of Fee and Thomas (1999), who find that spreads and measures of information asymmetry are smaller for diversified firms than for pure plays. The comparability of our results using a sample of spinoffs and those in Fee and Thomas (1999) suggests that sample selection bias is not an issue in our results.

Thus far, our results show that transaction costs increase following focus increasing spinoffs. While this is consistent with an increase in informed trading, it is not conclusive. We turn next to a more direct measure of the degree of information asymmetry between investors.

The final evidence we present reinforces our hypothesis that an increase in inter-shareholder information asymmetry at least partially accounts for observed increase in

[20] We employ the correlation between parent and subsidiary returns in the post-spinoff period as an alternate measure of relatedness and obtain similar results. Using this measure reduces the sample size considerably.

spreads. We investigate the price impact of trades to see if market makers change their perception of the informativeness of trades. We report results from two methods of estimating price impact.

The first method measures price impact by comparing the bid–ask midpoint immediately prior to a trade to the midpoint of the 5th and 10th quotes after the trade. This change in midpoint reflects the market makers perception of the information contained in the trade. If the market maker does not change the midpoint, then he believes that the trade has no information. The more the midpoint moves, the greater is the perceived information content of the trade. We measure the price impact over a window of 5- and 10-quote revisions because, as Huang and Stoll (1996) point out, it is important to allow enough time for offsetting trades to be observed.[21] Rather than using chronological time, we utilize event time in order to control for differing trade frequency across stocks.[22]

To obtain our measure of price impact, we take the ratio of the midpoint following the trade (with a 5- or 10-quote lag) to the midpoint prevailing at the time of the trade. Our measure is the log of the absolute value of this ratio. By using an absolute value, we avoid the necessity of having to sign the trades as buys or sells. Rather, we let the ex post result of each trade determine its implied sign. That is, our methodology assumes that a positive price impact only results from a buy order and vice versa for sell orders. This impact measure is based on the impact of trades rather than the unexpected component of a trade as in the more advanced models of Jones and Lipson (1999) or Hasbrouck (1991).[23]

We adopt the approach of Hasbrouck (1991) and Jones and Lipson (1999) to estimate our second measure of the informativeness of trades. The change in midpoint due to a trade at time t is defined as:

$$\Delta \mathrm{MP}_t = \ln\left(\frac{\mathrm{MP}_{t,\mathrm{post}}}{\mathrm{MP}_t}\right) \tag{3}$$

where $\mathrm{MP}_{t,\mathrm{post}}$ is the midpoint of the first quote revision following the trade. Each trade is signed as a buy $(+1)$ if the trade price is above the prevailing midpoint, as a sell (-1) if below the midpoint and is given a sign of zero if the trade occurs at the midpoint. The greater the degree of uncertainty about the value of a security, the greater should be $\Delta \mathrm{MP}_t$ in response to a trade. To account for the fact that it is only

[21] Huang and Stoll (1996) measure the adverse selection component of the bid–ask spread as the difference between the effective half-spread and the realized half-spread. If the quote midpoint does not move, the difference between the effective and realized half-spreads will be zero. Our measure of the midpoint impact of trades measures the adverse selection component of the spread.

[22] Madhavan et al. (1997) and Huang and Stoll (1997) provide alternative measures of the adverse selection component. Under the assumptions of these models, Jones and Lipson (l999) show that long window quote adjustments can be used to estimate the information component of the bid–ask spread.

[23] Using the same trade signing procedure as Jones and Lipson (1999), we determined that the correlation structure of order flow did not change from pre- to post-spinoff. Our results are, therefore, not due to changes in the time series properties of order flow.

the unexpected portion of a trade that contains information, the trade signs and midpoint impacts are set up as a bivariate vector autoregression:

$$\Delta \mathrm{MP}_t = \sum_{j=0}^{5} \alpha_j S_{t-j} + \sum_{i=1}^{5} \beta_i \Delta \mathrm{MP}_{t-i} + v_t \tag{4}$$

$$S_t = \sum_{j=1}^{5} \gamma_j S_{t-j} + \sum_{i=1}^{5} \eta_i \Delta \mathrm{MP}_{t-i} + \varepsilon_t \tag{5}$$

where S_t is the trade sign of trade t, and v_t and ε_t are independent error terms. The coefficient α represents the contemporaneous effect of a trade on the midpoint. Thus, α is a measure of the immediate price impact of a trade. The cumulative impulse response function over multiple lags will reveal the permanent price impact of a trade. The permanent impact of a trade on the price is a measure of the information content of the trade.

Table 6 presents the change in midpoint measure of adverse selection. Panel A shows the price impact of trades for all of our sample firms. The average 5-quote measured price impact is 62 bp and the 10-quote measured price impact is 86 bp prior to the spinoff announcement.[24] The larger price impact for the longer window is consistent with the results reported in Jones and Lipson (1999).[25]

The average five-quote price impact in the first month following the spinoff is 83 bp. The 21-bp increase is significant at the 1% level in both a *t*-test and a signed rank test.[26] In the second month following the spinoff, the average five-quote price impact is significantly greater by 15 bp. In the third month, the five-quote impact is 37 bp higher. The increase in price impact is significant and appears to be permanent. Looking at the 10-quote impact provides similar results. The changes in the first, second and third months following the spinoff are 29, 20 and 60 bp, respectively. All of the changes calculated using the 10-quote lag are statistically significant.

Panels B and C show results separately for focusing and nonfocusing spinoffs. Panel B shows that following focusing spinoffs the price impact of trades increases significantly. Examining the five-quote impact measures shows the impact of trades increasing by 24, 18 and 48 bp in the first, second and third months following the spinoff. The increased impact is significant in each of these windows. The 10-quote measures for focusing spinoffs yield similar results. Both of the price impact measures show increased price impact following focusing spinoffs and that the increase is not a short-term phenomenon.

[24] We find similar results using median price impact measures.

[25] Jones and Lipson (1999) report differences in the speed of information incorporation across exchanges. This will not affect our results because we are comparing each firm to itself, pre- and post-spinoff. Since we are concerned only with changes to each firm, differences across exchanges will not affect our results.

[26] Test statistics comparing windows use only firms that have data in each window. The reported means use all data available in a window.

Panel C presents the results for the nonfocusing spinoffs. The effect of nonfocusing spinoffs on the price impact of trades differs from that of focusing spinoffs. In the first month following the spinoff, both the 5- and 10-quote impact measures are significantly greater. However, the change in impact is smaller for nonfocusing spinoffs. The five-quote impact increase following nonfocusing spinoffs is 14 bp as compared to 24 bp for focusing spinoffs. The corresponding numbers for the 10-quote measure are 23 bp for nonfocusing and 33 bp for focusing. Besides being smaller, the change in price impact following nonfocusing transactions appears to be a short-term phenomenon, perhaps related to the event itself. While the 5- and 10-quote price impacts are higher in the second and third months following the transaction, none of the differences is significant. In the medians (not reported), the nonfocusing sample exhibits a negligible (3 bp with a 10-quote lag, 8 bp with a 5-quote lag) and insignificant rise in price impact from pre-spinoff to the third month following the spinoff; focusing spinoffs exhibit large and significant changes in median price impact.

Table 7 presents results from the bivariate vector autoregressions. Panel A reports the immediate midpoint response and the 30-trade cumulative impulse response for all firms. In the preannouncement period, the immediate and 30-trade impulse responses

Notes to Table 6:

This table contains the mean impact on the quote midpoint of a trade. “Preannouncement” refers to the 40 days prior to the initial announcement of the spinoff. Post-spinoff is defined relative to the effective date of the spinoff and is broken up into days +1 to +20, +21 to +40 and +41 to +60. Spinoffs are nonfocusing if the parent and subsidiary share the same two-digit SIC code, and focusing if otherwise. Quotes are lagged by 5 s and trades occurring at exactly the same time are summed into one trade. Price impact is measured by:

$$\left|\ln\left(\frac{\mathrm{MP}_{t+n}}{\mathrm{MP}_{t-1}}\right)\right|$$

where MP_{t-1} is the quote midpoint outstanding at the time of the trade and MP_{t+n} is the midpoint of the nth quote following, where n is set to 5 or 10. Price impact was averaged across all trades for each stock. The table reports cross-sectional means of these averages. Parentheses contain t-statistics from a matched t-test of the difference between mean pre- and post-price impact. Square brackets contain z-statistics from signed rank tests of the difference between median pre and post impacts. All tests are based only on firms with data available in both periods.

* Significance at the 10% level.

** Significance at the 5% level.

*** Significance at the 1% level.

Notes to Table 7:

This table reports mean cumulative impulse responses. The impulse responses are measured as per Jones and Lipson (1999). The table presents both the immediate midpoint response to a +1 error term introduced to trade sign as well as the cumulative impulse response after 30 lags. “Preannouncement” refers to the 40 days prior to the initial announcement of the spinoff. Post-spinoff is defined relative to the effective date of the spinoff and is broken up into days +1 to +20, +21 to +40 and +41 to +60. Spinoffs are nonfocusing if the parent and subsidiary share the same two-digit SIC code, and focusing if otherwise. Quotes are lagged by 5 s and trades occurring at exactly the same time are summed into one trade. Parentheses contain t-statistics from a matched t-test of the difference between pre and post spreads. Square brackets contain z-statistics from signed rank tests of the difference between pre and post. All tests are based only on firms with data available in both periods.

* Significance at the 10% level.

** Significance at the 5% level.

*** Significance at the 1% level.

Table 6
Impact of trades on quote midpoint

	N	Impact of a trade on midpoint	
		5 quote lag	10 quote lag
Panel A: all spinoffs			
Preannouncement			
Days $-(40, -1)$	84	0.0062	0.0086
Post-spinoff			
Days $(+1$ to $+20)$	84	0.0083	0.0115
		(2.69)***	(2.25)**
		[2.95]***	[2.80]***
Days $(+21$ to $+40)$	79	0.0077	0.0106
		(1.88)*	(1.98)*
		[1.79]*	[1.94]*
Days $(+41$ to $+60)$	79	0.0099	0.0146
		(2.03)**	(2.03)**
		[3.00]***	[3.15]***
Panel B: focusing			
Preannouncement			
Days $(-40, -1)$	59	0.0062	0.0088
Post-spinoff			
Days $(+1$ to $+20)$	59	0.0086	0.0121
		(2.21)**	(1.79)*
		[2.25]**	[2.21]**
Days $(+21$ to $+40)$	56	0.0080	0.0110
		(1.84)*	(1.85)*
		[1.71]*	[2.04]**
Days $(+41$ to $+60)$	56	0.0110	0.0141
		(1.98)*	(2.03)**
		[2.90]***	[3.28]***
Panel C: nonfocusing			
Preannouncement			
Days $(-40, -1)$	25	0.0063	0.0080
Post-spinoff			
Days $(+1$ to $+20)$	25	0.0077	0.0103
		(2.16)**	(2.05)*
		[1.71]*	[2.14]**
Days $(+21$ to $+40)$	23	0.0069	0.0096
		(0.40)	(0.69)
		[0.36]	[0.67]
Days $(+41$ to $+60)$	23	0.0071	0.0158
		(0.68)	(0.96)
		[0.91]	[0.67]

Table 7
Cumulative impulse response

	N	Cumulative response	
		Immediate (lag 0)	Cumulative (lag 30)
Panel A: all spinoffs			
Preannouncement			
Days (−40, −1)	84	0.0023	0.0047
Post-spinoff			
Days (+1 to +20)	84	0.0036	0.0081
		(3.94)***	(4.07)***
		[4.50]***	[4.53]***
Days (+21 to +40)	79	0.0033	0.0062
		(2.55)**	(2.60)**
		[3.70]***	[1.77]*
Days (+41 to +60)	78	0.0043	0.0079
		(2.20)**	(2.73)***
		[3.99]***	[3.48]***
Panel B: focusing			
Preannouncement			
Days (−40, −1)	59	0.0022	0.0045
Post-spinoff			
Days (+1 to +20)	59	0.0037	0.0082
		(3.37)***	(3.62)***
		[3.97]***	[4.20]***
Days (+21 to +40)	56	0.0035	0.0060
		(2.40)**	(2.18)**
		[3.35]***	[1.09]
Days (+41 to +60)	56	0.0048	0.0083
		(2.10)**	(2.52)**
		[3.66]***	[3.33]***
Panel C: nonfocusing			
Preannouncement			
Days (−40, −1)	25	0.0025	0.0054
Post-spinoff			
Days (+1 to +20)	25	0.0033	0.0078
		(2.37)**	(1.85)*
		[2.09]**	[1.71]*
Days (+21 to +40)	23	0.0030	0.0066
		(0.90)	(1.70)
		[1.61]	[1.79]*
Days (+41 to +60)	22	0.0031	0.0070
		(0.87)	(1.22)
		[1.70]*	[1.15]

were 23 and 47 bp, respectively. In the three 1-month periods after the spinoff, the immediate response increases to 36, 33 and 43 bp. These increases are all significantly different from zero. The 30-trade cumulative impulse response also increases significantly in the 3 months following the spinoff. These changes are similar to those reported in Table 6 using the raw change in midpoints.

Panels B and C of Table 7 also corroborate the results for focusing and nonfocusing spinoffs in Table 6. The changes in price impact are larger and more often significant for focusing spinoffs. The immediate midpoint response increases by 15, 13 and 26 bp in the 3 months following focusing spinoffs. All three of these changes are statistically significant. For nonfocusing spinoffs, the corresponding increases are 8, 5 and 6 bp with the initial change being statistically significant in the mean and the change in the third post-spinoff period significant at 10% in the median (insignificant in the mean). A similar pattern is seen in the 30-trade cumulative impulse response. For focusing spinoffs, the increases in the 3 months following the spinoff are 37, 15 and 38 bp. The corresponding changes are 24, 12 and 16 bp for nonfocusing spinoffs.

The price impact evidence shows that on average market makers perceive trades to be more informative following spinoffs, but only for those spinoffs that increase the focus of the firm.[27] This is consistent with an increase in information asymmetry. The combination of larger and more permanent increases in price impact following focusing spinoffs is consistent with the theory of increased asymmetry coming from disaggregating dissimilar business units.

5. Conclusion

We ask whether the changes in firms' information environments associated with spinoffs changes the level of inter-shareholder information asymmetry. Opposing views about the effect of spinoffs on the advantage of informed traders exist in the literature. One suggests that a spinoff will increase the informativeness of prices and, therefore, reduce the advantage of informed traders. The other view is that the separation of unlike business units will increase the usefulness of the informed trader's information and, therefore, spinoffs will benefit informed traders. We find evidence of increased trading costs and increased price impact of trades. Both of these findings are stronger for focusing spinoffs that separate unlike business units. We conclude that focus-increasing spinoffs increase inter-shareholder information asymmetry.

We provide two rationales for why focusing spinoffs increase informed traders' advantage. The security design literature suggests that informed traders' information is more valuable because it is less likely to be diversified away in a more focused firm. The other rationale suggests the increased public information following spinoffs increases the precision of informed traders' private information, making it more valuable. Either or both

[27] We estimate regressions similar to those in Table 5 using the price impact measures as dependent variables. The results are consistent with those reported in Table 5 and are similar across the different price impact measures.

of these explanations are consistent with the observed increase in information asymmetry.[28] The end result is that, from the viewpoint of the firm, it appears that focusing spinoffs have a hidden cost, namely, an exacerbation of inter-shareholder information asymmetry and a concomitant increase in trading costs.

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[28] Since we are interested in whether spinoffs improve the situation of uninformed investors, we leave disentangling these arguments to future research.

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