ASSET SALES AND PRODUCT MARKETS

By

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ABSTRACT

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This study investigates the information content revealed by the asset sale announcement about the viability of the trading relationship with the large customer. We find the asset sale announcement reveals largely negative information about the relationship viability, and thus affects the asset selling supplier and the large customer of the asset seller negatively. We find the negative information is more evident when the post-sale servicing commitment is important and the asset seller makes intense relationship-specific investment. Consistently, the asset sale announcement also reveals reduced incentives to maintain the major trading relationship. The relationship is more likely to be terminated or shortened and the proportion of the bilateral trading is more likely to be reduced after the asset sale when post-sale servicing commitment is important. Our results show that the asset sale announcement contains negative-informationsignal on the trading relationship with the large customer.

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TABLE OF CONTENTS

LIST O	FTABL	ΞSν	/ii		
LIST OF FIGURES					
1	Introduc	tion	1		
2	Literatu	re review and hypothesis development	6		
3	Data		12		
4	Asset sa 4.1 4.2 4.3	le announcement returns	14 14 15		
5	Changes	s in post-asset sale relationship strength	21		
6	Determi	nant of asset sale	24		
7	Summar	ry and conclusion	26		
APPEN	IDIX A	TABLES AND FIGURES 2	28		
APPENDIX B		VARIABLE DEFINITIONS	56		
BIBLIC	BIBLIOGRAPHY70				

LIST OF TABLES

Table 1	Sample Distribution by Year, Industry, and Number of firms with large public customer
Table 2	Deal-, Seller-, Customer-, Buyer-Specific Characteristics
Table 3	Cumulative abnormal returns (CARs) for asset selling firms, their large public customers, and asset buying firms
Table 4	OLS regressions of cumulative abnormal returns (CARs) for asset selling firms around the asset sale announcement date on explanatory variable
Table 5	OLS regressions of cumulative abnormal returns (CARs) for asset selling firms with large public customers and without large customers
Table 6	OLS regressions of cumulative abnormal returns (CARs) for large public corporate customers of asset selling firms around the announcement date on explanatory variables
Table 7	Logit regressions of relationship termination after asset sales by firms with large public customers
Table 8	Logit regressions of change in percentage of COGS of large public corporate customers of asset selling firms after the asset sales
Table 9	Post-asset-sale relationship survival for asset selling firms with a large public customer and non-asset selling matching firms with a large public customer
Table 10	Determinant of asset sales
Table 11	Determinant of asset sales: Subsampled by technology intense industry and durable industry

LIST OF FIGURES

Figure 1	Interaction Term in Logit Regression: Model (2) of Table 7	52
Figure 2	Interaction Term in Logit Regression: Model (4) of Table 7	63
Figure 3	Interaction Term in Logit Regression: Model (2) of Table 8	64
Figure 4	Interaction Term in Logit Regression: Model (4) of Table 8	65

1. Introduction

Many firms in the U.S. maintain durable trading relationships with major customers. Previous literature shows that the existence of such relationships can have a significant effect on firms' financial policies and ownership structure. For example, Titman (1984) and Banerjee, Dasgupta, and Kim (2008) argue that the existence of large customer affects a firm's ability to use debt and Fee, Hadlock, and Thomas (2006) show that product market relationships have an important implication for ownership structure of firms with major customers. Johnson, Kang, Masulis, and Yi (2011) find that a firm's decision to issue equity has spillover effects down the supply chain. Several studies further show that the customer-supplier relationship influences other corporate important decisions, such as those related to CEO compensation (Arora and Alam (2005)), information disclosure (Almazan, Suarez, and Titman (2006)), earnings management (Raman and Shahrur (2008)), and IPO valuation (Johnson, Kang, and Yi (2008)), However, in spite of extensive research on the effect of major customer relationships on a wide spectrum of corporate decisions, relatively little is known about how customer-supplier relationships influences a firm's investment decision such as asset sales.¹

In this study we examine the effect of asset sellers' trading relationships with a large customer on asset sale announcement returns and the continued viability of these relationships. We explore several questions that aim to shed light on the role of the customer-supplier relationships in asset sales. For example, does a close relationship with a large customer affect an asset selling firm's announcement returns? Does information revealed by an asset sale announcement pass along the supply chain and thus affect customer value around asset sale announcements? What are the determinants of the asset sale valuation effects for firms that

¹ The exception is Fee and Thomas (2004) who examine the upstream and downstream productmarket effect of firms' horizontal mergers and acquisitions activities.

maintain customer-supplier relationships? What is the impact of the asset sale on post-sale customer-supplier relationship dynamics?

Customer-supplier relationships can have a significant effect on a firm's asset sales decision and its value. There are two competing views on this effect, namely, the view that asset sales adversely affect the values of both the supplier and the customer (the "negative-informationsignal-view") and the view that they have a positive effect on the values of both the supplier and the customer (the "positive-information-signal-view"). According to the negative-informationsignal-view, asset sales announcements by firms with a large customer convey negative information about the continued viability of sellers' trading relationship with the customer. Shleifer and Summers (1988) argue that the supplier-customer relationships are governed by non-enforceable implicit contract and thus vulnerable to new information that can have an effect on the viability of their relationship. Because the supplier's asset sales can involve relationshipspecific assets that are critical in continuing its relationship with major customers, they may have a significant effect on the profitability of both suppliers and customers and the continued viability of their relationship.² For example, if the supplier sells the assets with high levels of asset specificity that are critical in maintaining the trading relationship with its customer, its asset sale announcements should convey important information about the continued viability of its trading relationship with the customer. It is also possible that firms with a large customer engage in asset sales to prepare a potential loss of their major customers who are in financial difficulty and develop new relationships with other customers. In both cases, asset sale announcements by

² For our sample, about 30% of suppliers' total sales are generated from the sales to the large customers. We define a large customer as a customer who is accountable for more than 10% of a firm's annual sales.

firms with a large customer can convey negative information about the customer-supplier relationship, adversely affecting the values of both the supplier and its customer.

In contrast, the positive-information-signal-view suggests that asset sales announcements by firms with a large customer convey positive information about the continued viability of sellers' trading relationship with the customer. For example, if a supplier sells its assets to increase its efficiency or to relax its financial constraint, its asset sales announcements can be good news for both the supplier and the customer since asset sales will strengthen the supplier-customer relationship by having a more reliable supplier. In this case, asset sales announcements should have a positive effect on the values of both the supplier and the customer.

The negative- (positive-) information-signal-view also suggests that the negative (positive) effects of asset sale announcements on the values of the supplier and the customer are more pronounced when the suppliers are in durable goods or high-tech industries where post-sale service and product guarantee are important (Titman (1984)) or when they have made intense relationship-specific investments (Williamson (1983)). The view also suggests that asset sales by firms with a large customer changes in trading partners' incentives to maintain their relationships and thus impacts post-sale relationship strength, particularly when the post-sale service and product guarantee support are important.

We find that our results are largely consistent with the negative-information-signal-view. Specifically, we find that asset sellers with a large public customer realize less positive abnormal announcement returns when they are in industries where post-sale service and product guarantee are important: For sellers with a large public customer, their CARs (-1, 1) are significantly lowers when they operate in durable goods or high tech industries and these lower returns are more evident when these sellers are perceived to be risky (i.e., have high stock return volatility)

in the market. Sellers with a large public customer also realize lower returns when they have higher levels of asset specificity (i.e., higher R&D intensity) or when their post-sale relationship strength is expected to deteriorate. In contrast, we do not observe these results for sellers without a large public customer. We also find that the large customers of asset sellers experience more negative returns when sellers operate in high tech industries, particularly when they are risky, when they invest more in R&D activity, when the customer-supplier relationship is expected to be terminated after the asset sale, and when the large customers are in competitive industries, as measured by Herfindahl index.

The analysis of post-sale dynamics also supports the negative-information-signal view. We find that the likelihood of terminating the major trading relationship increases after the asset sale if risky sellers operate in industries where post-sale product support is important. We also find that these risky sellers are more likely to experience reductions in their sales to the large customer after the asset sales.

Our research contributes to the literature in several ways. First of all, to the best of our knowledge, this study is the first to examine the effect of customer-supplier relationship on voluntary asset sale. Previous literature shows that the existence of customer-supplier relationships can have a significant effect on a wide spectrum of corporate decisions such as capital structure, ownership structure, compensation decision, and financial decision, but no study to date examines how major customer-supplier relationship affects asset sales. Unlike Johnson, Kang, Masulis, and Yi (2011) who investigate the spillover effect of a firm's financing decision (SEO) on large customers, we examine the effect of a firm's investment decision on large customers. Our study is also different from Fee and Thomas (2004) who examined the spillover effect of horizontal mergers, another type of important corporate investment activities,

on trading partners in supply chains to find the source of value gain in horizontal mergers. We expand their analysis by examining asset sales, which enable us to investigate the change in trading relationships that does not involve the change in ownership.

Second, we contribute to the asset sale literature. Previous studies examine the effect of asset sales announcements on the seller's shareholder value and the potential source of this wealth gains. For example, Gordon, Benson, and Kempmeyer (1984), Jain (1985), and Hite, Owers, and Rogers (1987) find the positive shareholder wealth effect of asset sales. Maksimovic and Gordon (1998, 2001) and Yang (2008) argue that this positive shareholder wealth effect of asset sales comes from the increase in efficiency of selling firms. On the other hand, Lang, Poulsen, and Stulz (1995) and Schlingemann, Stulz and Walkling (2002) argue that asset sales are motivated by selling firms' financial need, which also benefits shareholders. We extend this literature by examining the effect of asset sales on the value of customers, another important type of a firm's stakeholders, and introducing customer-supplier relationships as another significant factor that affects firm value.

Third, we contribute to the literature on product market relationships. By showing the importance of major customer relationships in asset sales we provide new evidence on the argument that the product market relationship has significant impact on corporate decisions.

The study proceeds as follows. In Section II we discuss related literature and main hypotheses. Section III describes the data and sample characteristics. In Section IV we report abnormal returns for asset selling firms and their customers, and provide results from crosssectional regressions. We examine the post-asset sale changes in relationships between asset selling firms and their large public customers in Section V. In section VI we analyze the determinants of asset sale. Finally, Section VII summarizes and concludes the paper.

2. Literature review and hypothesis development

Previous literature shows that voluntary asset sales have positive announcement effects for both asset sellers and buyers. For example, Jain (1985) finds significant positive mean excess returns of 0.70% and 0.34%, respectively, for asset sellers and buyers in a sample of over 1,000 sell-off events and Gordon, Benson, and Kampmeyer (1984) report a mean abnormal announcement returns of 8% for asset selling firms in a sample of 53 voluntary corporate selloffs.

The positive returns for sellers and buyers can come from several different sources. First, the gains from asset sales may come from the increase in efficiency by reallocating assets from the inefficient sellers to the buyers who can make better use of them, thereby creating higher value for both asset sellers and buyers. Hite, Owers, and Rogers (1987) show that sellers realize gains at the bid but lose the gains at the offer termination, and interpret these results as evidence that the gains from asset sales are not from price adjustment but from efficiency gain. Similarly, Maksimovic and Phillips (2001) find that asset transactions tend to improve the allocation of resources and are originated from profit maximizing decision. The second potential source of gains is the increase in focus. John and Ofek (1995) show that asset sellers' announcement returns and post-sale performances are greater when they increase the focus in their main business after the asset sales. The third potential source of gains is the relaxation of sellers' financial constraint. Lang, Poulsen, and Stulz (1995) argue that the asset sale decisions are motivated by the selling firm's financial situation and find that the gains from asset sales is dependent on the use of sale proceeds. Schlingemann, Stulz, and Walkling (2002) argue that liquidity in the market for corporate asset plays an important role in determining firms' asset sales and show that firms are more likely to divest segments in industries with a more liquid

market for corporate assets, unrelated segments, poorly performing segments, and small segments.

However, previous research on asset sales largely ignores the role of product market relationship in asset sales. In particular, we have almost no evidence on asset sales in which selling firms maintain the major trading relationship with their large customers. This lack of evidence is surprising given that almost 20% of asset selling firms in our sample have a close trading relationship with at least one major customer. Previous studies examine how the product market relationships affect firms' financial decision and their performance. For example, Titman (1984) and Grinblatt and Titman (2002) argue that since the supplier' liquidation decision affects its customers, the supplier has an incentive to implement the ex-ante value maximizing liquidation policy by choosing a certain capital structure. Titman and Wessels (1988) empirically examine the validity of this theory of optimal capital structure using supplier-customer relationship variables such as product uniqueness and indicators for durable goods and high tech industries. Similarly, Banerjee, Dasgupta, and Kim (2008) test stakeholder theory of capital structure using buyer-supplier relationship variables such as a durable goods industry classification and the sales fraction to customers and find that the effect of the customer-supplier relationship on leverage ratios of both customers and suppliers are stronger when the customers and the suppliers operate in durable goods industries and the suppliers' sales to the customers are larger. Maksimovic and Titman (1991) model how the supplier' financial health affects its incentive to produce high quality products for its customers and show that a financially distressed firm has an incentive to cut cost and reduce the quality of its product, which lowers the price it receives for its product and thus decreases its profit.³

These studies suggest that product market relationships, particularly supplier-customer relationships, can play an important role in explaining the causes and consequences of asset sales made by firms having relationships with major customers. The supplier-customer relationships are governed by non-enforceable implicit contract and thus vulnerable to new information that can have an effect on the viability of their relationship (Shleifer and Summers (1988)). Supporting this view, Brown, Fee, and Thomas (2009) find that suppliers with substantial relationship-specific investments are more negatively affected by customers' LBO. Johnson, Kang, Masulis, and Yi (2011) argue that SEOs conveys negative news about the viability of supplier's major customer relationships and document that SEO firms with major customer relationships experience more negative announcement returns than those without such relationships and the customers also realize negative returns around their suppliers' SEO announcements.

Because the supplier's assets are usually dedicated to maintaining its bilateral trading relationships with large customers, its asset sale announcements should convey important information about the continued viability of its trading relationship with the customer as well as its financial and operational performance. These information contents revealed by the supplier's

³ Several other studies show the importance of major customer-supplier relationships in firms' investment decision and ownership distribution. For example, Fee and Thomas (2004) find that the improved productive efficiency achieved from the horizontal merger transfers to customers. Fee, Hadlock, and Thomas (2006) show that the variables related to supplier and customer relationship such as R&D intensity and sales fraction to customers systemically predict the presence of customers' equity stake in suppliers.

asset sale should affect the customer's judgment about the credibility of its supplier and thus change the values of both supplier and customer.⁴

Asset sale news announced by a supplier with a large customer can convey either positive or negative information. If a supplier's asset sale is motivated to increase its efficiency, to streamline its business by focusing on its core competitive industries, or to relax its financial constraint, it should be good news for the supplier as well as the customer since it will strengthen the supplier-customer relationship by having a more reliable and financially healthy supplier. In addition, the asset sale itself can reveal the news about the relationship with large customer. If the asset sale is designed to strengthen the customer-supplier relationship, for example to finance the relationship specific investment by selling the asset unrelated to the relationship with large customer, then the asset sale announcement can reveal information that the major trading relationship becomes strengthened. According to these arguments, asset sale announcements made by the suppliers with a large customer should have a positive valuation effect for both selling firms and their customers (positive-information-signal view).

In contrast, asset sale announcements made by the suppliers with a large customer can convey negative information about the customer-supplier relationship, adversely affecting the values of both the supplier and its customer. Because supplier-customer relationships are largely governed mainly by implicit contracts, suppliers and customers bound by these implicit contracts may freely breach their partner's trust and indulge in opportunistic behavior when it is profitable (Johnson, Kang, Masulis, and Yi (2011)). For example, if the supplier thinks that the relationship

⁴ The customers have strong incentives to monitor the condition of their supplier to secure the quality of the input for their product. The supply chain literature suggests that the financial credibility of suppliers plays an important role in achieving trust from the customers and the customers use the suppliers' financial and operational performance to identify and measure the supply chain risk (Trkman and McCormack (2009)).

with its major customer is not beneficial anymore, it will decide to terminate or reduce the importance of its bilateral trading relationships with a major customer by selling assets specifically devoted to these relationships. This termination or reduction in the importance of the relationships caused by the asset sale will put the customer in the peril of sacrificing its product quality because of the disruption in supply chain as noted by Titman (1984) and Maksimovic and Titman (1991). Alternatively, asset sales by firms with large customers might reveal negative information about the sellers' financial condition (Schlingemann, Stulz, and Walkling (2002)), which can have a negative effect on their major trading relationships. In these cases, the asset sale announcements by firms with large customers convey negative information about the viability and market values of major customer relationships, thus negatively affecting the values of both trading partners (negative-information-signal-view)

These arguments lead to our first hypothesis:

H1: If positive- (negative-) information-signal view holds, the abnormal returns around the asset sale announcements will be positive (negative) for both asset sellers and their large customers.

However, the effects of asset sales on supplier and customer values can vary depending on the characteristics of the industries that the suppliers operate in and the importance of their trading relationship with a large customer. For example, Maksimovic and Titman (1991) argue that firms in durable goods and high-tech industries where products require specialized servicing commitment in the future and thus product guarantees are particularly important should maintain low leverage. The insight of this argument is that customers are reluctant to do business with highly levered suppliers in durable goods and high-tech industries because the concerns that suppliers' financial difficulties can affect their incentives to honor their implicit contracts with customers are particularly severe when they are in durable goods and high-tech industries. Thus, given that the relationship's economic importance is especially large when the suppliers operate in durable goods and high-tech industries, large customers are likely to be more sensitive to asset sales made by suppliers in these industries.

It is also possible that the level of asset specificity dedicated to a particular commercial relationship affects the asset sale announcement returns for both selling firms and their customers. Firms that produce the materials and intermediate products that involve high levels of asset specificity are likely to have the hard-to-replace relationship with their major customers, making it very costly for suppliers and customers to switch trading partners (Williamson (1985, 1991)). Titman and Wessel (1988) also argue that customers of firms producing unique or specialized products suffer relatively high costs in the event that they lose their supplier. Thus, the valuation effects of asset sale announcements are expected to be particularly pronounced if firms sell assets that are specialized in producing materials and intermediate products that are unique to their customer.

All these arguments suggest that the positive (negative) effects of asset sale announcements for suppliers and their large customers are more pronounced when the suppliers are in durable goods or high-tech industries or when the asset specificity in the relationships is higher. Following Acs and Isberg (1991) and Santarelli (1991), we measure the degree of asset specificity using R&D intensity (R&D expenditures divided by total assets). This leads to our second and third hypotheses. H2: If positive- (negative-) information-signal view holds, the abnormal returns around the asset sale announcements will be more positive (negative) for both asset sellers and their large customers if the suppliers are in durable goods or high-tech industries.

H3: If positive- (negative-) information-signal view holds, the abnormal returns around the asset sale announcements will be more positive (negative) for both asset sellers and their large customers if the suppliers make large trading relationship-specific investments.

The positive- (negative-) information-signal view also implies that asset sales made by firms with a large customers signal positive (negative) news about the viability of the post-sale major trading relationships. If asset sales are motivated by firms' incentives to strengthen (weaken) their trading relationships with major customers, we expect that there is a high probability that the customer-supplier relationships continue (terminate) after the asset sales. We also expect that the asset selling firms with large customers increase (decrease) the sales to the customers after the asset sales and the large customers of the asset selling firms increase (decrease) the purchase from the asset selling firms. To the extent that the incentives of asset sellers and their major customers to make relationship-specific investments and to continue their relationships are particularly important when asset sellers are in durable goods or high-tech industries, we expect the predicted effects above to be more evident for asset sellers in these industries. Thus, our fourth hypothesis is:

H4: If positive- (negative-) information-signal view holds, after the asset sales, there is a high probability that the customer-supplier relationships continue (terminate) and the sales to the

customers increase (decrease), particularly when sellers are in durable goods or high-tech industries.

3. Data

We obtain our sample asset sale deals from Thomson Financial's SDC Mergers & Acquisitions database during the 1993-2006 period. We exclude the cases in which asset sales are accompanied by mergers and acquisitions, recapitalizations, buybacks, exchange offers, bankruptcy, equity carve-out, joint ventures, liquidations, and spin-offs.⁵ For each asset sale, we use the date an asset sale is first mentioned in *Factiva* as the initial announcement date. In addition, we search *Factiva* for involuntary asset sales and exclude such observations from the sample. Following Eckbo and Masulis (1992), we also exclude the asset selling firms that belong to financial (SIC 6000-6199) and utilities (SIC 4910-4940) industries where the investment decisions are highly regulated. To be included in our sample, we require that firms' stock returns and financial data be available in CRSP and Compustat, respectively. These restrictions result in a final sample of 2,666 asset sale deals.

We use Segment Customer tape of COMPUSTAT Database to identify the existence of large customers (customer that accounts for greater than 10% of a supplier's sales). We follow the procedure similar to that of Fee and Thomas (2004) and Shantan, Dasgupta, and Kim (2008) to identify whether the large customer is public company. First, we match customer names' abbreviations with names in CRSP/Compustat merged dataset. If the match is almost certain and distinct, we link the abbreviations to Compustat names and Gvkey. When a customer

⁵ We only use acquisition of asset (AA) and acquisition of certain asset (AC) as our asset sales sample.

abbreviation matches more than one company name in CRSP/Compustat merged dataset, we use business description for supplier and customer to further screen the match. Second, for all abbreviations whose links to names in CRSP/Compustat could not be confirmed, we use Lexis/Nexis Acedemic, Google, Factiva, and company website to determine if the abbreviation is that of the subsidiary of a public company. If the linkage is confirmed, we then match the abbreviations with its Compustat/CRSP parent firm. We find that out of 2,666 asset sellers, 513 have the relationship with large customers, of which 310 have publicly listed firms as their large customers, 150 have privately held firms as their large customers, and 53 have the governments as their large customers.

4. Asset sale announcement returns

4.1. Announcement returns for asset selling firms and large public customers

We use the standard event study methodology to investigate the valuation effects of asset sale announcements. We estimate market model parameters by using days -301 to -46 relative to the announcement date. We use the CRSP-value-weighted index return as the proxy for the market portfolio.⁶ The daily abnormal returns (residual of the market model) are accumulated to obtain the cumulative abnormal return (CAR) from day *-t* before the announcement date to day *+t* after the announcement date.

Table III Panel A reports the abnormal returns for asset selling firms. The average CARs (-1, 1) for a full sample of asset sellers, a subsample of asset sellers with a large public customer, and a subsample of asset sellers without a large public customer are 2.13%, 2.49%, and 2.08%, respectively, all of which are significant at the 1% level. These results are consistent with those

⁶ Using the CRSP equally weighted index return gives qualitatively similar results.

in previous studies which show that asset sales announcements have a significant positive effect on selling firm value (Jain (1985), Gordon, Benson, and Kampmeyer (1984)). The difference in average CARs (-1, 1) between firms with and without a large public customer is not statistically significant. The median CARs show similar pattern.

Panel B reports the CARS for the large customers of asset selling firms. We find that the mean and median CARs for all event windows considered are not statistically significant.

Panel C reports the CARs for asset buyers. The average CARs (-1, 1) for a full sample of asset buyers, a subsample of asset buyers whose sellers have large public customers, and a subsample of asset buyers whose sellers do not have large public customers are 2.51%, 1.68%, and 2.63%, respectively, all of which are significant at the 1% level. The difference in average CARs (-1, 1) between the two subsamples is not statistically significant. The median CARs show similar pattern.

4.2. Multivariate analysis of announcement returns for asset selling firms

To better understand the cross-sectional variation of CARs, we estimate an ordinary least squares (OLS) regression in which the dependent variable is the CAR (-1, 1). Following asset sale literature, we include the following variables in the regressions as the control variables: indicator for proceeds used to pay debt, indicator for the deal paid with cash only, proceeds amount scaled by total assets (relative deal size), firm age, long-term debt to total assets, Tobin's q, stock return volatility, stock price run-up, log (equity capitalization), return on assets, and asset liquidity.⁷ Our key variable of interest is the indicator variable for the existence of large customer that takes the value of one if an asset seller has a large customer prior to the asset sale

¹ See, for example, Bates (2005), Moskowitz and Grinblatt (1999).

and zero otherwise (*Large customer*). We decompose *Large customer* into two indicators, the indicator for asset sellers whose relationships with the large customers continue more than one year after the asset sales (*Continued large customer*) and the indicator for asset sellers whose relationship with the large customers stop within one year after the asset sales (*Stopped large customer*). Another key variables of interest are the indicator variables for the importance of post-sale service commitment (*Durable goods industry* and *Technology intense industry*) and asset specificity (*R&D intensity*). *Durable goods industry* (*Technology intense industry*) takes the value of one if the asset seller operates in durable goods industry (technology intense industry) and zero otherwise. *R&D intensity* is R&D expenditures scaled by total assets. Detailed definitions of the variables used in Table 4 are described in Appendix.

The results for a full sample of 2,666 asset sale deals are reported in Table 4. In model (1), we only include the variables used in previous studies. Consistent with previous studies, we find that asset sellers realize higher announcement returns when they use the proceed to repay debt, when the deal is paid with cash only, when relative deal size is larger, when the growth opportunity measured by Tobin's q is smaller, when firm size is smaller, and when previous performance measured by returns on assets is larger.

In model (2), we include *Large customer* to test whether the existence of large customer has significant effect on asset sale announcement returns. The coefficient estimate on *Large customer* is 0.008 but statistically insignificant.

In model (3), to investigate further the effect of major customer relationship on asset sale announcement returns, we decompose *Large customer* into *Continued large customer* and *Stopped large customer*. The coefficient estimate on *Continued large customer* is positive and significant at the 5% level while the coefficient estimate on *Stopped large customer* is insignificant. These results suggest that the asset sale announcement reveals the information about the potential changes in the viability of the major trading relationship and the stock market react positively only when selling firms maintain trading relationships with their existing large customers.

In model (4) and (5), we add indicator variables for the importance of post-sale service commitment. We find that the coefficient estimates on *Durable goods industry* and *Technology intense industry* are not significant.

In model (6), we include *R&D intensity* as an explanatory variable. This variable is not significantly related to CARs.

Overall, the results in Table 4 show that the viability of the major trading relationship after the asset sales is the key determinant of asset sale announcement returns and other product market relationship variables do not have any statistically discernible effect on asset sale announcement returns for the full sample.

To further examine the role of product market relationship variables in explaining the crosssectional variation of asset sale announcement returns, in Table 5, we divide the full sample into asset sellers with large public customers and asset sellers without large customers and estimate the regressions separately for these two subgroups.

Models (1) through (8) show the results using a subsample of asset sellers with large public customers. In models (1) and (3), we find that the coefficient estimates on *Durable goods industry* and *Technology intense industry* are -0.02 and -0.021, respectively, both of which are significant at the 10% level. These estimates indicate that asset selling firms with large public customers that operate in durable goods (technology intense) industries realize 2% (2.1%) lower announcement returns than those with large public customers that operate in nondurable goods

(nontechnology intense) industries. Thus, the valuation effects of asset sale announcements are higher if firms sell assets that are specialized in producing materials and intermediate products that are unique to their customer. Given that the mean CAR (-1, 1) for asset selling firms with large public customers is about 2.49%, the impact of the post-sale service commitment on asset sale announcement returns is both statistically and economically, These results support the negative-information-signal view of H2.

In models (2) and (4), we include the interaction term between *Durable goods industry* and stock return volatility and between *Technology intense industry* and stock return volatility, respectively. We find that the coefficient estimates on these interaction terms are negative and significant at the 5% and 1% levels, respectively.⁸ Thus, the negative relation between *Durable goods industry* (*Technology intense industry*) and asset sales returns is particularly pronounced when sellers are perceived to be risky by the market.

Model (5) investigates the effect of relationship-specific investment on the announcement return by including R&D intensity as an explanatory variable. We find that the coefficient estimate on R&D intensity is negative and significant at the 10% level, suggesting that asset sale announcement returns are more (negative) when the sellers make large trading relationship-specific investments. This result supports the negative-information-signal-view of *H3*.

In models (9) through (13), we reestimate the models (1) through (5) using a subsample of asset sellers without large customers. We find that none of the coefficient estimates on *Durable goods industry*, *Technology intense industry*, their interactions with stock return volatility, and *R&D intensity* is statistically significant. These results suggest that the factors that affect asset

⁸ We do not include industry fixed effects in these models because we use industry indicator variables as our explanatory variables.

sale abnormal returns are different between firms with and without large customers and that even among firms with large customers, asset sale abnormal returns vary depending on the importance of post-sale product support and guarantee, and the extent of relationship-specific investment.

In models (6) through (8), we include the measures of ex-post changes in relationship strength with large customers. The results show that the asset sale announcement signals new information about the viability of the major trading relationship. Specifically in models (6) and (7), the coefficient estimates on *Continued large customer* and *Post-sale relationship length* (number of years from the asset sale year to relationship termination) are 0.047 and 0.012 respectively, both of which are significant at the 1% level. In model (8), the coefficient estimate on *High drop in sales to large customer* (indicator variable that takes the value of one if the asset selling firm has above the median decline in the percent of sales to the large customer from the year before the asset sale to after the asset sale and zero otherwise) is -0.034 and significant at 1% level. These results suggests that asset sellers who continue the major trading relationships with their exiting large public customers or strengthen their post-sale trading relationships realize more positive returns around the asset sale announcement dates than other asset sellers. These results support *H4*.

4.3. Multivariate analysis of announcement returns for large public customers of asset selling firms

In this subsection we examine whether the factors that explain the CARs (-1, 1) for asset sellers with large public customers can also explain those for large public customers of asset sellers. The results are reported in Table 6. In models (1) through (4), we investigate the effect of the importance of post-sale service commitment on announcement returns for large public customers. We find that the coefficient estimate on *Technology intense industry* is a significant - 0.017 (model (3)), suggesting the large customers whose suppliers operate in technology intense industry realize 1.7% lower announcement return than those whose suppliers operate in nontechnology industries. In addition, in model (4), the coefficient estimate on the interaction term between *Technology intense industry* and *Stock return volatility* is negative and significant at the 10% level. Thus, when asset sellers operating in technology intense industry are perceived to be risky by the market participants, their large customers realize particularly lower returns. These results support the negative-information-signal-view of *H2*.

In model (5), we include $High \ R\&D$ (indicator variable that takes the value of one if the ratio of R&D expenditures to total assets for asset selling firm is above the sample median and zero otherwise) to examine the effect of asset specificity of asset sellers on customer announcement return. The coefficient estimate on $High \ R\&D$ is -0.012, which is significant at 10% level, suggesting that the large customers of asset selling firms who invest more in R&D activity experience lower announcement return than those of asset selling firms who invest less in R&D activity investment. Thus, the large customers of asset selling firms experience more negative announcement returns when the asset sellers make intense relationship-specific investment, supporting the negative-information-signal-view of H3.

In models (6) through (8), we investigate the relation between the ex-post relationship changes and customer announcement returns. Similar to the result for asset selling suppliers, the large public customers of asset selling suppliers who continue the major trading relationship after the asset sales realize higher announcement return than other large public customers (model (6)). These results are consistent with the negative-information-signal-vew of *H4*. However, However, we do not find any significant difference in abnormal returns between large public customers of

asset selling suppliers who strengthen their post-sale trading relationship and those of asset selling suppliers who do not strengthen their post-sale trading relationship, as measured by *Postsale relationship length* and *High drop in % COGS* (indicator variable that takes the value of one if the large customer experiences more drop than the sample median in the percent of the purchase from the asset selling supplier out of total cost of goods sold compared to the year right before the asset sale).

In model (9), we include the measure of competition in the industry the large public customers belong to. The coefficient estimate on *Herfindahl-Hirschman Index (HHI) in customer industry* is a significant 0.285 at the 5% level, suggesting that the announcement returns of large public customers is higher when they have stronger monopolistic power in the industry.

In summary, we find that there exist the spill-over effect of asset sale announcement down to the supply chain and that the ex-post viability of the major trading relationship, the importance of the major trading relationship, and the uniqueness of assets invested for the relationship are important determinants of asset sale announcement returns of both asset selling firms and their large public customers, which supports the negative-information-signal-view.

5. Changes in post-asset sale relationship strength

In this section we examine how the strength of trading relationship between asset selling firms and their large customers changes after asset sales. The results are reported in Table 7 and Table 8.

In the first three regressions in Table 7, we examine the likelihood of relationship termination after the asset sales in which the dependent variable is an indicator variable that takes the value of one if the relationships terminate in the year of the asset sale or in the year after the asset sale and zero otherwise. We find an insignificant coefficient estimate on *Durable*

goods industry in model (1). However, in model (2), the coefficient estimate on the interaction term between *Durable goods industry* and stock return volatility is positive and significant, indicating that risky asset sellers with large public customers who operate in durable goods industry are more likely to terminate the relationship after the asset sales. We examine the interaction term further for its sign and significance. Figure 1 shows that for most of the firms the interaction effect is positive and for the group of firms whose predicted probability is around 0.6 the interaction effects are significant. We also find that the major trading relationship is more likely to be terminated after the asset sales if the asset selling suppliers operate in technology intense industries. These results support the negative-information-signal-view.

In model (4), we examine the likelihood of high drop in sales to the large customers after the asset sales. The dependent variable is an indicator variable that takes the value of one if the drop in the ratio of a supplier's sales to the large customer to its total sales is higher than the sample median and zero otherwise (*High drop in sales to customer*). The coefficient estimate on the interaction term between *Durable goods industry* and stock return volatility is positive and significant at 1% level, suggesting that risky asset selling suppliers that operate in durable goods industries are more likely to experience the decrease in sales to the large customer after the asset sales. We examine the interaction term further for its sign and significance. Figure 2 shows that for most of the firms the interaction effect is positive and significant. This result is again largely consistent with the prediction of the negative-information-signal-view.

In Table 8, we use as the dependent variable a *high drop in % of COGS of customer* that takes the value of one if the drop in the proportion of a supplier's sales out of the customer's COGS is higher than the sample median and zero otherwise. Model (2) shows that the likelihood of *high drop in % of COGS of customer* is higher when risky asset sellers with large public

customers operate in durable goods industry. We examine the interaction term further for its sign and significance. Figure 3 shows that for most of the firms the interaction effect is positive and significant. Model (3) shows that the likelihood of *high drop in % of COGS of customer* is higher when asset selling suppliers operate in technology intensive industries. Model (4) shows that the result in model (3) is only evident when asset selling suppliers operating in technology intensive industries are perceived risky by the market. We examine the interaction term further for its sign and significance. Figure 4 shows that for most of the firms the interaction effect is positive and for the group of firms whose predicted probability is around 0.3 the interaction effects are mostly significant. These results suggest that asset sales by firms with large customers indeed reveal the information about the deterioration in the viability of the major trading relationship, particularly when they are operate in industries where post-sale service commitment is important and at the same time they are perceived to be risky by the market.

In Table 9, we estimate Cox proportional hazards model to examine the effect of asset sale on the survival of the major trading relationship. A non-asset-selling firm with a large public customer is matched to each asset selling firm with a large public customer by industry (Fama and French (1997) 48 industry classification), size (market value of equity), and number of years the relationship has been maintained prior to the asset sale. Our sample consists of 310 asset sellers with large public customers plus 310 non-asset-sellers with large public customers. The dependent variable is the number of years the relationship lasts after an asset sale. We found that sales dependence squared is positively related to the likelihood of relationship termination (i.e., the relationship lives shorter) while sales dependence and asset seller size are negatively related to the likelihood of relationship termination (i.e., the relationship survives longer), which is consistent with Fee, Hadlock, and Thomas (2006). More importantly, model (1) shows that asset sellers are more likely to terminate the relationship after the asset sales. Model (2) shows the fact that a supplier operates in durable goods industry reduces the likelihood of relationship termination controlling asset sale event. Model (3) and (4) show that technology intense industry indicator variable and R&D intensity don't have significant effect on the likelihood of relationship termination. These results suggest that an asset sale event averagely implies negative changes in the major trading relationship with large customer and the change is not driven by industry characteristics.

6. Determinant of asset sale

In Table 10, we estimate logit regressions to examine the determinants that affect the asset sale decision. Our sample consists of 52,347 COMPUSTAT firm-year observations from 1993 to 2006. Using the COMPUSTAT Segment Customer database, 13,354 firms are identified as having at least one large customer and using Thomson Financial's SDC Mergers & Acquisitions database, 5,681 firms are identified as engaging in asset sales. The dependent variable is an indicator that takes the value of one if a firm engages in asset sale in a certain year and zero otherwise. We find that the probability of asset sales increases with a firm's leverage and stock return volatility. The probability of asset sales is also higher when the firm has negative free cash flows. In contrast, the likelihood of asset sales decreases as a firm has more investment opportunities and experiences better operating performance. These results are largely consistent with those in previous literature and support the negative-information-signal view.

More important, we find that having large customer does not affect the probability of asset sale (model 1). However, a firm who terminated the major trading relationship prior to asset sales is more likely to sell its asset (model 2). This result suggests that the change in major trading relationship prior to asset sales affects a firm's future asset sale decision.

The results from models (3) through (5) suggest that relationship-specific variables such as the indicator for durable goods industry, the indicator for technology intense industry, and the indicator for high R&D intensity do not affect the probability of asset sale.

Models (6) through (8) confirms that after controlling for relationship-specific variables a firm that terminated the major trading relationship prior to asset sales is more likely to sell its asset, which suggests that asset sale announcement conveys negative information about the change in major trading relationships.

In Table 11, we investigate the effect of the importance of post-sale service commitment on the likelihood of asset sale by dividing the sample into two subgroups: technology and nontechnology industries and durable and non-durable goods industries.

In the first two columns, we compare firms in technology intense industries with firms in non-technology intense industries. The results show that firms in non-technology intense industries are more likely to sell their asset when the major trading relationships were terminated prior to asset sales than firms in technology intense industry. Although we find that the coefficient estimate on relationship termination is positive and significant in both regressions, its significance is stronger in regression using non-technology firms than in regression using technology firms.

In the last two columns, we compare firms in durable goods industries with firms in nondurable goods industries. We find that while the coefficient estimate on relationship termination is positive and significant in regression using firms in non-durable goods industries, the corresponding coefficient estimate is not significant in regression using firms in durable goods industries. To the extent that selling assets in durable goods or technology intense industries involves higher switching costs than selling asset in non-durable goods or non-technology intense industries, these results suggest that an asset sales are more likely to occur when firms face less switching costs in replacing the trading partners, further supporting the negative-information-signal view.

7. Summary and conclusion

In this paper we examine the information content of asset sales announcements in associate with durable major trading relationships. Specifically, we suggest two competing views about the link between asset sales announcement returns and the importance of major customer-supplier relationships: the positive-information-signal view that posits that the asset sales announcements signal positive information about the major customer-supplier relationship and the negative-information-signal view that posits the asset sales announcements signal negative information about the major customer-supplier relationship and the negative-information about the major customer-supplier signal negative information about the major customer-supplier signal negative information about the major customer-supplier relationship. We find results that are largely consistent with the negative-information-signal view.

Specifically, first, we find that the asset sale announcement affects the return of the large customer of the asset selling firm as well as that of the asset selling firms. The asset sale announcement affects negatively both asset selling firm and its large customer.

Second, the negative effects are more prominent especially when the supplier operates in industries where post-sale servicing commitment is important and has made relationship intense investments.

Third, a major trading relationship is likely terminated when the supplier implements asset sale and the relationship between asset selling supplier and large customer is more likely terminated or attenuated when post-sale servicing commitment is important and the asset selling supplier is risky. Finally, we find that a firm sells its asset when the major trading relationship is terminated and selling relationship-related asset impose more costs when the firms operate in industries where post-sale servicing commitment is important.

Overall, these results suggest that asset sale announcements by firms with large customers convey negative news in regard to the viability of the major trading relationship with the large customer and thus have spillover effects down to the major customer.

APPENDIX A TABLES AND FIGURES
Table 1 Sample Distribution by Year, Industry, and Number of firms with large public customer

The sample consists of 2,666 asset sale deals reported in Thomson Financial's SDC Mergers & Acquisitions database from 1993 to 2006. 310 out of the 2,666 asset sale deals involve at least one large public customer. The existence of the relationship with the large customer is found in COMPUSTAT Segment Customer database and the name of the customer in the database is used to identify whether the customer is public company. An asset seller is defined as having a large customer when the seller has at least one customer which accounts for 10% or more of the asset seller's total sales. When an asset seller has more than one large customer, the customer that represents the largest amount of total sales is identified as the large customer. Industry classifications are based on the two-digit SIC. The numbers in parentheses are those of asset sellers with a large public customer.

	Agricu , Fore and Fi	ulture stry, shing	Min ar Constr	ing id uction	Manufa	Manufacturing C El S		Transportation, Communications, Electric, Gas, and Sanitary Services		esale d ail de	
Year			Number of Asset Selling Firms (Number of Asset Selling Firms with Large Customer)								
1993	0	(0)	7	(3)	72	(8)	8	(5)	4	(0)	
1994	0	(0)	12	(4)	65	(8)	11	(4)	19	(1)	
1995	2	(0)	24	(7)	81	(4)	13	(3)	16	(1)	
1996	0	(0)	11	(1)	144	(16)	15	(0)	17	(3)	
1997	0	(0)	11	(2)	103	(12)	37	(0)	22	(2)	
1998	0	(0)	23	(2)	136	(15)	27	(1)	15	(0)	
1999	0	(0)	19	(3)	136	(12)	40	(3)	21	(0)	
2000	2	(0)	11	(1)	111	(18)	29	(0)	20	(2)	
2001	0	(0)	10	(0)	97	(16)	15	(1)	18	(0)	
2002	0	(0)	14	(0)	95	(15)	29	(0)	8	(1)	
2003	0	(0)	17	(2)	95	(14)	24	(0)	18	(2)	
2004	0	(0)	18	(4)	85	(22)	26	(1)	13	(1)	
2005	0	(0)	22	(4)	87	(12)	18	(2)	11	(1)	
2006	0	(0)	24	(10)	120	(23)	12	(0)	13	(2)	
Total	4	(0)	223	(43)	1427	(195)	304	(20)	215	(16)	

	Fina Insuran Real I	nce, ce, and Estate	Serv	ices	Oth	ers	То	tal
Year			Numb	er of As	set Sellin	g Firms		
1000		(Number	r of Asset	Selling	Firms wi	th Large	Customer)	(1.6)
1993	1	(0)	1	(0)	0	(0)	99	(16)
1994	3	(0)	10	(3)	0	(0)	120	(20)
1995	5	(0)	21	(0)	0	(0)	162	(15)
1996	10	(0)	20	(0)	0	(0)	217	(20)
1997	8	(0)	36	(3)	1	(0)	218	(19)
1998	8	(0)	31	(1)	0	(0)	240	(19)
1999	6	(0)	43	(4)	0	(0)	265	(22)
2000	5	(0)	46	(3)	3	(0)	227	(24)
2001	3	(0)	25	(5)	1	(0)	169	(22)
2002	4	(0)	24	(5)	1	(0)	175	(21)
2003	3	(0)	30	(2)	0	(0)	187	(20)
2004	1	(0)	49	(7)	0	(0)	192	(35)
2005	8	(0)	39	(0)	2	(1)	187	(20)
2006	3	(0)	36	(2)	0	(0)	208	(37)
Total	68	(0)	417	(35)	8	(1)	2666	(310)

Table 1 (Cont'd)

Table 2 Deal-, Seller-, Customer-, Buyer-Specific Characteristics

The sample consists of 2,666 asset sale deals reported in Thomson Financial's SDC Mergers & Acquisitions database from 1993 to 2006. In 310 out of the 2,666 asset sale deals, the asset sellers have at least one large public customer. The existence of the relationship with the large customer is found in COMPUSTAT Segment Customer database and the name of the customer, customer name, in the database is used to identify whether the customer is public company. An asset seller is defined as being with a large customer when the seller has at least one customer which accounts for 10% or more of the asset seller's total sales. When an asset seller has more than one large customer, the customer that accounts for the largest amount of total sales is identified as the large customer. The sample also includes 310 non-asset selling matching firms with a large public customer. Panel B shows the sample of 310 large public corporate customers of asset selling firms and 310 large public customers of non-asset-selling matching firms. A non-asset-selling firm with a large public customer is matched to each asset selling firm with a large public customer by industry (Fama and French (1997) 48 industry classification), size (market value of equity), and number of years the relationship has been maintained prior to the asset sale. Panel C shows the sample of 1,090 public asset buyers, 141 of which are associated with the asset sellers who have a large customer. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. *p*-values are reported in parentheses.

Table	2
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Panel A. Asset	sale and	asset selle	r charact	teristics								
	Total sa asset s	mple of ellers	Sellers v large p custo	without oublic mers	Seller large custo	s with public omers	Non-sel large custo	lers with public omers	Test of	difference	Test of	difference
	(N=2,666): A		(N=2,3	56): B	(N=310): C		(N=3	10): D	(E	B-C)	Test of difference (D-C) t-test Wilcoxor z-test	D-C)
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	t-test	Mann- Whitney z-test	t-test	Wilcoxon z-test
Deal character	ristics											
Deal size (\$ millions)	223.88	77.00	227.25	78.50	198.26	67.95	i		0.95 (0.34)	1.55 (0.12)		
Relative deal size	0.15	0.05	0.15	0.04	0.16	0.06)		-0.50 (0.62)	-3.57 *** (0.00)		
Deals paid with cash	0.77	1.00	0.77	1.00	0.76	1.00)		0.37	0.37		
only (indicator)									(0.72)	(0.72)		
Proceed used to	0.18	0.00	0.18	0.00	0.22	0.00)		-1.74 *	-1.74 *		
pay debt (indicator)									(0.08)	(0.08)		

Table 2 (Cont'd)

Panel A. Asset sa	le and a	sset selle	r charac	cteristics (Cont'd)							
	Total sample of asset sellers		Sellers withoutSellers withNorlarge publiclarge publiclacustomerscustomerscustomers		Non-sel large custo	lers with public omers	Test of d	lifference	Test of	difference		
	(N=2,666): A		(N=2,	356): B	(N=3)	10): C	(N=3	10): D	(B	-C)	(I	D-C)
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	t-test	Mann- Whitney z-test	t-test	Wilcoxon z-test
Seller characteri	stics											
Large customer (indicator)	0.19	9 0.00			1.00	1.00	1.0	0 1.00				
Continued large customer (indicator)	0.10	0.00			0.56	1.00)					
large customer (indicator)	0.09	9 0.00			0.44	0.00						
Asset liquidity	0.1	1 0.04	0.12	2 0.04	0.06	0.03			1.51 (0.13)	2.81 ^{***} (0.01)		
industry (indicator)	0.2	1 0.00	0.19	9 0.00	0.35	0.00	0.3	7 0.00	-6.58 *** (0.00)	-6.53 *** (0.00)	0.42 (0.68)	0.42 (0.68)
Technology intense industry (indicator)	0.15	5 0.00	0.14	4 0.00	0.23	0.00	0.2	5 0.00	-4.28 *** (0.00)	-4.26 **** (0.00)	0.66 (0.51)	0.66 (0.51)

Table 2 (Cont'd)

Panel A. Asset s	Panel A. Asset sale and asset seller characteristics (Cont'd)											
	Total sa asset s	mple of sellers	Sellers v large p custor	without oublic mers	Seller large j custo	s with public mers	Non-selle large p custor	ers with ublic ners	Test of d	lifference	Test of c	lifference
	(N=2,666): A		(N=2,3	56): B	(N=31	0): C	(N=310	D): D	(B	-C)	(D	-C)
	Mean	Median	Mean	Median	Mean	Median	Mean	Median	t-test	Mann- Whitney z-test	t-test	Wilcoxon z-test
Seller character	ristics (Co	nt'd)										
Total asset (\$ millions)	12,281.03	2,316.66	12,941.89	2,447.08	7,258.47	1,503.88	1,644.26	324.79	2.98 *** (0.00)	4.09 *** (0.00)	-7.02 *** (0.00)	-8.77 ^{***} (0.00)
capitalization (\$ millions)	13,696.40	1,603.25	14,186.70	1,757.03	9,970.16	864.27	1,605.92	379.04	1.93 [*] (0.05)	4.51 *** (0.00)	-5.62 *** (0.00)	-5.16 ^{***} (0.00)
Leverage	0.27	0.23	0.27	0.23	0.25	0.24	0.20	0.15	1.86 [*] (0.06)	1.51 (0.13)	-3.21 *** (0.00)	-4.44 *** (0.00)
Tobin's Q	1.58	1.27	1.59	1.28	1.46	1.21	1.97	1.43	2.05 ^{**} (0.04)	2.41 ^{**} (0.02)	4.69 ^{***} (0.00)	4.84 ^{***} (0.00)
R&D intensity	0.03	0.00	0.03	0.00	0.05	0.01	0.05	0.00	-5.82 *** (0.00)	-5.81 *** (0.00)	0.17 (0.86)	-1.22 (0.22)
Stock price run-up	0.11	0.06	0.11	0.07	0.09	0.01	0.14	0.04	0.64 (0.53)	2.48 ** (0.01)	0.90 (0.37)	1.49 (0.14)
Stock return volatility	0.03	0.02	0.03	0.02	0.04	0.03	0.04	0.03	-4.36 *** (0.00)	-5.03 *** (0.00)	0.62	1.25 (0.21)
ROA	0.10	0.11	0.11	0.11	0.08	0.11	0.09	0.13	3.24 *** (0.00)	2.55 ** (0.01)	0.65	3.06 *** (0.00)
Firm age (years)	25.68	21.00	26.36	23.00	20.47	14.00	17.25	11.00	5.62 *** (0.00)	5.49 ^{***} (0.00)	-2.70 *** (0.01)	-2.14 ** (0.03)

Panel B: Characteristics of major supplier-	customer rela	tionships				
	Large public	customers of	Large public	customers of	Test o	f difference
	Sellers (N	V=224): A	non-sellers	(N=224): B		(B-A)
	Mean	Median	Mean	Median	t-test	Wilcoxon z-test
Customer characteristics						
Customer total assets (\$ millions)	47,025.54	28,728.00	43,809.21	26,676.67	-0.73	-1.04
					(0.47)	(0.30)
Customer market capitalization (\$ millions)	69,418.71	34,897.14	68,965.91	32,148.37	-0.06	-0.69
					(0.95)	(0.49)
Customer Tobin's Q	2.08	1.68	2.14	1.69	0.36	-0.02
					(0.72)	(0.99)
Customer leverage	0.19	0.19	0.19	0.19	-0.67	-0.55
					(0.50)	(0.58)
Customer ROA	0.15	0.15	0.15	0.15	0.74	0.22
					(0.46)	(0.83)
Customer stock price run-up	0.16	0.08	0.10	0.07	-1.35	-0.71
					(0.18)	(0.48)
Customer stock return volatility	0.02	0.02	0.02	0.02	1.24	0.91
					(0.21)	(0.36)
Relationship characteristics						
% of sales to customer	0.21	0.16	0.26	0.19	2.81 ***	3.42 ***
	0.21	0110	0.20	0117	(0.01)	(0.00)
% of COGS from supplier	0.06	0.01	0.02	0.00	-1.67*	-5.25 ***
					(0.10)	(0.00)
Pre-asset-sale relationship length (years)	3.68	3.00	3.31	3.00	-1.22	0.07
					(0.22)	(0.95)
Post-asset-sale relationship length (years)	2.01	1.00	2.14	1.50	0.60	0.33
					(0.55)	(0.74)
					` '	

Table 2 (Cont'd)

Panel C: Asset buyer and deal characteristics										
	Total Buyers (N=1,090): A		Buyers wh ha large cust (N=1	nose sellers ave public omers 41): B	Buyers wh don't large custo (N=94	nose sellers have public omers 49): C	Test of c	lifference -B)		
	Mean	Median	Mean	Median	Mean	Median	<i>t</i> -test	Wilcoxon z-test		
Deal characteristics										
Deal size (\$ millions)	226.96	84.00	171.87	64.00	235.14	87.90	1.44 (0.15)	2.18 ^{**} (0.03)		
Relative deal size	0.15	0.04	0.15	0.06	0.14	0.04	-0.19 (0.85)	-2.75 *** (0.01)		
Deals paid with cash only (indicator)	0.73	1.00	0.72	1.00	0.73	1.00	0.43 (0.67)	0.43 (0.67)		
Proceed used to pay debt (indicator)	0.17	0.00	0.22	0.00	0.16	0.00	-1.77 [*] (0.08)	-1.77 [*] (0.08)		
Seller characteristics										
Large customer (indicator)	0.21	0.00	1.00	1.00	0.09	0.00	-37.34 *** (0.00)	-24.73 *** (0.00)		
Continued large customer (indicator)	0.11	0.00	0.58	1.00	0.04	0.00	-23.72 ^{****} (0.00)	-19.27 ^{****} (0.00)		
Stopped large customer (indicator)	0.10	0.00	0.42	0.00	0.05	0.00	-14.79 *** (0.00)	-13.50 *** (0.00)		
Asset liquidity	0.08	0.04	0.06	0.03	0.08	0.04	1.18 (0.24)	1.77 [*] (0.08)		

Table 2 (Cont'd)

Panel C: Asset buyer and deal characteristics (Cont'd)										
	Total Buyers (N=1.090): A		Buyers wh ha large j custo (N=14	ose sellers ve public omers 41): B	Buyers wh don't large custo (N=94	nose sellers have public omers 49): C	Test of d	ifference -B)		
	Mean	Median	Mean	Median	Mean	Median	<i>t</i> -test	Wilcoxon z-test		
Seller characteristics (Cont'd)										
Durable goods industry (indicator)	0.23	0.00	0.38	0.00	0.21	0.00	-4.44 **** (0.00)	-4.40^{***}		
Technology intense industry (indicator)	0.18	0.00	0.27	0.00	0.16	0.00	-3.09 *** (0.00)	-3.08 *** (0.00)		
Stock return volatility	0.03	0.03	0.03	0.03	0.03	0.03	-4.03 *** (0.00)	-4.48 ^{***} (0.00)		
Buyer characteristics										
Buyer total assets (\$ millions)	6,137.44	1,056.39	5,148.67	1,462.79	6,284.34	1,015.47	2.51 ** (0.01)	3.70 *** (0.00)		
Buyer market capitalization (\$ millions)	6,903.44	1,237.91	7,544.41	1,598.08	6,808.21	1,125.12	2.47 ** (0.01)	4.48 *** (0.00)		
Buyer leverage	0.23	0.21	0.21	0.19	0.24	0.21	0.56 (0.58)	0.41 (0.68)		
Buyer Tobin's Q	2.06	1.58	2.13	1.49	2.05	1.59	2.44 ** (0.01)	2.87 ^{***} (0.00)		
Buyer stock return volatility	0.03	0.03	0.03	0.03	0.03	0.03	-4.03 *** (0.00)	-4.48 *** (0.00)		

Table 2 (Cont'd)

Panel C: Asset buyer and deal characteristics (Cont'd)										
	Total Buyers		Buyers wh ha large cust	nose sellers ive public omers	Buyers whose sellers don't have large public customers		Test of difference			
	(N=1,	090): A	(N=1-	41): B	(N=9	49): C	(C	-B)		
	Mean	Median	Mean	Median	Mean	Median	t-test	Wilcoxon z-test		
Buyer characteristics (Cont'd)										
Buyer R&D intensity	0.03	0.00	0.03	0.01	0.03	0.00	-3.18 ****	-2.53^{**}		
Buyer stock price run-up	0.26	0.14	0.12	0.09	0.28	0.15	$(0.00)^{*}$ 1.75 [*] (0.08)	3.60^{***}		
Buyer ROA	0.14	0.14	0.14	0.15	0.14	0.14	4.49 ***	3.91 ***		
Buyer firm age (years)	18.31	11.00	20.37	13.00	18.00	11.00	4.72 *** (0.00)	(0.00) 4.78 *** (0.00)		

Table 2 (Cont'd)

Cumulative abnormal returns (CARs) for asset selling firms, their large public customers, and asset buying firms

The sample consists of 2,666 asset sale deals reported in Thomson Financial's SDC Mergers & Acquisitions database from 1993 to 2006. 310 out of the 2,666 asset sale deals involve at least one large public customer. The existence of the relationship with the large customer is found in COMPUSTAT Segment Customer database and the name of the customer, customer name, in the database is used to identify whether the customer is public company. An asset seller is defined as operating with a large customer when the seller has at least one customer which accounts for 10% or more of the asset seller's total sales. When an asset seller has more than one large customer, the customer that accounts for the largest amount of total sales is identified as the large customer. The sample also includes 310 non-asset selling matching firms with a large public customer. Panel B shows the sample of 310 large public corporate customers of asset sellers and Panel C shows the sample of 1,090 asset buyers. 141 of the asset buyers are involved with the asset sellers who have large public customers. The abnormal returns are calculated using the market model estimated with returns from days -301 to -46 relative to the asset sale announcement day. The value weighted CRSP index return is used as the proxy for the market portfolio in calculating the daily abnormal returns (AR). The cumulative abnormal return (CAR)s are calculated by accumulating the daily abnormal returns from day -10, -5, -1 before the announcement date to day 0, +1, +5, +10 after the announcement date. The symbols ***, **, and * denote values are significantly different from zero at the 1%, 5%, and 10% levels, respectively. *p*-values are in parentheses.

Panel A: Abnormal returns for asset selling firms with and without a large public customer									
	Asset	Sellers	Asset	sellers	Asset	sellers			
	Total		large public		large	public	Test of D	ifference	
	(N=2,666): A		custo (N=3	omers (10): B	custo (N=2,3	omers 356): C	(C-	-B)	
	Mean	Median	Mean	Median	Mean	Median	t-test	Mann -Whitney z-test	
AR(-1)	0.44%**	0.00%	0.11%	-0.22%	0.48%**	0.02%*	0.65	1.40	
AR(0)	(0.02) 1.43% ^{***} (0.00)	(0.19) 0.34% ^{***}	(0.67) 2.45% ^{****} (0.00)	(0.47) $0.58\%^{***}$ (0.00)	(0.02) 1.30% *** (0.00)	(0.09) $0.32\%^{***}$ (0.00)	(0.52) -2.56 ^{**} (0.01)	(0.16) -2.37 ^{**} (0.02)	
CAR	1.87% ^{***}	0.45%***	2.56%***	0.57% ***	1.78%***	0.45% ***	(0.01) -1.08 (0.28)	-0.86	
(-1,0) CAR	2.13%****	0.73%***	2.49% ^{***}	(0.00) 1.07% ^{****}	2.08%***	0.69%***	(0.28) -0.50 (0.62)	(0.37) -0.78 (0.43)	
(-1,+1) CAR	(0.00) 2.60% ^{***}	(0.00) 0.76% ^{***}	(0.00) 2.58% ^{***}	(0.00) 0.62% ^{**}	(0.00) 2.60% ^{***}	(0.00) 0.81% ^{***}	0.02	(0.43) -0.11	
(-3,+3) CAR (-10,+10)	(0.00) 2.91% ^{***} (0.00)	(0.00) 1.10% ^{***} (0.00)	(0.00) 3.33% *** (0.01)	(0.02) -0.03% [*] (0.09)	(0.00) 2.85% ^{***} (0.00)	(0.00) 1.20% ^{***} (0.00)	(0.99) -0.36 (0.72)	(0.91) 0.48 (0.63)	

Table 3

Panel B: Cumula	Panel B: Cumulative abnormal returns for large public customers of asset sellers										
	Larg	ge public customers	(N=310)								
	Mean	t-test	Median	Sign-rank test							
AR(-1)	-0.01%	-0.08	-0.20%	-1.23							
		(0.93)		(0.22)							
AR(0)	0.01%	0.11	-0.05%	-0.52							
		(0.91)		(0.60)							
CAR(-1,0)	0.00%	0.02	-0.10%	-0.88							
		(0.99)		(0.38)							
CAR(-1,+1)	-0.18%	-0.82	-0.08%	-0.91							
		(0.41)		(0.36)							
CAR(-5,+5)	-0.30%	-0.80	-0.44%	-0.73							
		(0.42)		(0.47)							
CAR(-10,+10)	-0.22%	-0.41	-0.63%	-0.75							
		(0.68)		(0.45)							

Table 3 (Cont'd)

Panel C:	Panel C: Cumulative Abnormal Return for Asset buyers											
			Asset	buyers	Asset	buyers						
	Tatal		of selle	ers with	of seller	s without	Te	est of				
	Totals	sample	large	public	large	public	Diff	erence				
			custo	omers	custo	omers						
	(N=1,0)90): A	(N=1-	41): B	(N=9-	49): C	C-B					
								Mann-				
	Mean	Median	Mean	Median	Mean	Median	t-test	Whitney				
								z-test				
AR(-1)	0.09%	-0.03%	0.30%	0.24%	0.06%	-0.05%		-0.80				
	(0.34)	(0.98)	(0.39)	(0.42)	(0.53)	(0.80)	(0.39)	(0.42)				
AR(0)	1.39% ***	$0.40\%^{***}$	$1.32\%^{***}$	$0.79\%^{***}$	$1.40\%^{***}$	0.36% ***	0.15	-1.38				
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.88)	(0.17)				
CAR	$1.48\%^{***}$	0.51%***	1.62%***	$0.85\%^{***}$	1.46% ***	$0.44\%^{***}$	-0.29	-1.34				
(-1,0)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.77)	(0.18)				
CAR	2.51%***	$0.98\%^{***}$	$1.68\%^{**}$	0.96%***	2.63%****	$0.98\%^{***}$	1.08	-0.33				
(-1,1)	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.28)	(0.75)				
CAR	$2.49\%^{***}$	0.93% ***	$1.88\%^{**}$	$0.79\%^{**}$	$2.59\%^{***}$	$0.95\%^{***}$	0.61	0.11				
(-5,5)	(0.00)	(0.00)	(0.03)	(0.04)	(0.00)	(0.00)	(0.54)	(0.92)				
CAR	2.35%***	0.65% ****	1.48%	1.21%	2.48% ***	0.61%***	0.71	0.51				
(-10,10)	(0.00)	(0.00)	(0.18)	(0.39)	(0.00)	(0.00)	(0.48)	(0.61)				

Table 3 (Cont'd)

OLS regressions of cumulative abnormal returns (CARs) for asset selling firms around the asset sale announcement date on explanatory variable

The sample consists of 2,666 asset sale deals reported in Thomson Financial's SDC Mergers & Acquisitions database from 1993 to 2006. 310 out of the 2,666 asset sale deals are announced by the asset sellers with at least one large public customer. The existence of the relationship with the large customer is found in COMPUSTAT Segment Customer database and the name of the customer, customer name, in the database is used to identify whether the customer is public company. An asset seller is defined as being with a large customer when the seller has at least one customer which accounts for 10% or more of the asset seller's total sales. When an asset seller has more than one large customer, the customer that accounts for the largest amount of total sales is identified as the large customer. The dependent variable is the CAR (-1, 1) for asset selling firms. The abnormal returns are calculated using the market model estimated with returns from days -301 to -46 relative to the asset sale announcement day. The value weighted CRSP index return is used as the proxy for the market portfolio in calculating the daily abnormal returns. The CAR (-1, 1) is calculated by accumulating the daily abnormal returns from day -1 before the announcement date to day +1 after the announcement date. All regressions include indicator variables for each Fama and French (1997) 48 industry and year except where noted. p-values reported in parentheses are heteroscedasticity robust and clustered by industry. Appendix summarizes the definitions of the variables used in table. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
Large customer (indicator)		0.008 (0.115)				
Continued large customer			0.017 **	0.014 *	0.013 *	0.018 **
(indicator)			(0.039)	(0.061)	(0.070)	(0.040)
Stopped large customer			-0.001	-0.004	-0.004	0.000
(indicator)			(0.852)	(0.579)	(0.550)	(0.953)
Durable goods industry				-0.004		
(indicator)				(0.197)		
Technology intense industry					0.002	
(indicator)					(0.490)	
R&D intensity					. ,	-0.067
,						(0.131)
Proceed used to pay debt	0.015 **	0.015 **	0.015 **	0.015 **	0.015 **	0.015 **
(indicator)	(0.013)	(0.013)	(0.011)	(0.013)	(0.012)	(0.012)
Deals paid with cash only	0.005	0.005	0.005	0.004	0.005	0.004
(indicator)	(0.154)	(0.174)	(0.179)	(0.183)	(0.158)	(0.185)
Relative deal size	0.037 ***	0.038 ***	0.038 ***	0.039 ***	0.039 ***	0.039 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age of the seller	0.000 ****	0.000 ***	0.000 ***	0.000 **	0.000 **	0.000 ***
6	(0.002)	(0.001)	(0.000)	(0.011)	(0.014)	(0.001)
Tobin's O	-0.006 **	-0.006 **	-0.006 **	-0.005 **	-0.005 **	-0.005 **
	(0.019)	(0.018)	(0.023)	(0.033)	(0.036)	(0.048)
Log(Market capitalization)	-0.004 ***	-0.004 ***	-0.004 ***	-0.003 **	-0.003 **	-0.004 **
8((0.007)	(0.010)	(0.009)	(0.013)	(0.014)	(0.011)
Leverage	-0.012	-0.011	-0.011	-0.008	-0.006	-0.012
	(0.355)	(0.369)	(0.370)	(0.471)	(0.600)	(0.351)
Return on assets	0.070 ***	0.070 ***	0.071 ***	0.067 ***	0.067 ***	0.064 ***
	(0.004)	(0.004)	(0.003)	(0.004)	(0.005)	(0.008)
Stock price runup	-0.018 ***	-0.017 ***	-0.018 ***	-0.019 ***	-0.019 ***	-0.017 ***
I I	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Stock return volatility	0.529 ***	0.524 ***	0.524 ***	0.550 ***	0.523 ***	0.532 ***
	(0.007)	(0.008)	(0.008)	(0.003)	(0.006)	(0.007)
Asset liquidity	-0.013	-0.013	-0.012	-0.010	-0.010	-0.012
	(0.424)	(0.421)	(0.448)	(0.457)	(0.479)	(0.453)
Industry fixed effect	Ves	Ves	Ves	No	No	Ves
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
	105	100	100	100	100	100
N	2,666	2,666	2,666	2,666	2,666	2,666
K-squared	0.108	0.109	0.112	0.095	0.095	0.112

Table 4

OLS regressions of cumulative abnormal returns (CARs) for asset selling firms with large public customers and without large customers

The sample consists of 310 asset sales by the firms with a large public corporate customer and 2,153 asset sales by the firms without a large customer, reported in Thomson Financial's SDC Mergers & Acquisitions database in the 1993–2006 period. We use the COMPUSTAT Segment Customer database field, *customer name*, to identify whether asset sellers have large corporate customers. An asset seller is defined as having a large customer when a customer represents 10% or more of an asset seller's total sales. When an asset seller has multiple large customers, the customer purchasing the largest amount is identified as the large customer database with those in the COMPUSTAT database. The dependent variable is the CAR (-1, 1) for asset selling firms. The abnormal returns are calculated using the market model. The market model is estimated using returns from days -301 to -46 relative to the asset sale announcement date. The value weighted CRSP index return is used as the proxy for the market portfolio. The CAR (-1, 1) is calculated by accumulating the daily abnormal returns from day -*1* before the announcement date to day +*1* after the announcement date. All regressions include indicator variables for each Fama and French (1997) 48 industry and year except where noted. *p*-values reported in parentheses are heteroscedasticity robust and clustered by industry. Appendix summarizes the definitions of the variables used in table. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	Asset sellers with large public customers									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
Durable goods industry (indicator)	-0.020 [*] (0.074)	0.028 (0.266)								
Durable goods industry (indicator) * Stock return volatility		-1.290 ** (0.041)								
Technology intense industry (indicator)			-0.021 [*] (0.089)	0.046 ^{**} (0.021)						
Technology intense industry (indicator) * Stock return volatility				-1.621 ^{***} (0.003)						
R&D intensity					-0.192 * (0.086)					

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	Asset sellers with large public customers (Cont'd)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
Continued large customer (indicator)						0.047 ***				
Post-sale relationship length						(0.003)	0.012 ***			
High drop in sales to large customer (indicator)							(0.000)	-0.034 *** (0.001)		
Stock return volatility	0.581	0.886 *	0.687	0.905 *	0.500	0.537	0.640	0.663		
	(0.238)	(0.082)	(0.176)	(0.070)	(0.379)	(0.296)	(0.222)	(0.210)		
Proceed used to pay debt (indicator)	0.020	0.021	0.019	0.016	0.023	0.028 *	0.030 **	0.027 *		
	(0.175)	(0.151)	(0.185)	(0.255)	(0.116)	(0.052)	(0.042)	(0.093)		
Deals paid with cash only (indicator)	0.019	0.019	0.019	0.018	0.023 *	0.024 *	0.023 **	0.025 **		
-	(0.120)	(0.121)	(0.111)	(0.124)	(0.070)	(0.056)	(0.038)	(0.028)		
Age of the seller	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		
-	(0.385)	(0.574)	(0.490)	(0.442)	(0.707)	(0.516)	(0.455)	(0.584)		
Relative deal size	0.018	0.018	0.020	0.016	0.023	0.033	0.031	0.029		
	(0.543)	(0.576)	(0.508)	(0.608)	(0.395)	(0.346)	(0.327)	(0.323)		
Tobin's Q	-0.003	-0.003	-0.003	-0.002	-0.005	-0.013 **	-0.008	-0.010*		
	(0.478)	(0.574)	(0.519)	(0.654)	(0.384)	(0.034)	(0.216)	(0.052)		
Log (Market capitalization)	-0.010 **	-0.010 **	-0.009 **	-0.010 **	-0.009 *	-0.010 **	-0.011 **	-0.009*		
	(0.012)	(0.018)	(0.023)	(0.016)	(0.080)	(0.045)	(0.022)	(0.084)		
Leverage	-0.077 **	-0.079 **	-0.075 **	-0.080 **	-0.061	-0.053	-0.049	-0.058		
6	(0.041)	(0.038)	(0.034)	(0.023)	(0.184)	(0.170)	(0.190)	(0.139)		
Return on assets	0.014	0.021	0.017	0.014	0.007	0.054	0.030	0.041		
	(0.719)	(0.633)	(0.664)	(0.740)	(0.881)	(0.102)	(0.388)	(0.176)		

Table 5	(Cont'	' d)
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	Asset sellers with large public customers (Cont'd)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)		
Stock price runup	0.001	-0.003	0.002	-0.003	0.001	0.004	0.004	0.004		
	(0.932)	(0.768)	(0.903)	(0.835)	(0.934)	(0.777)	(0.761)	(0.765)		
Asset liquidity	-0.057	-0.057	-0.064	-0.066	-0.011	-0.016	0.014	-0.014		
	(0.455)	(0.403)	(0.371)	(0.370)	(0.905)	(0.859)	(0.878)	(0.867)		
Industry fixed effect	No	No	No	No	Yes	Yes	Yes	Yes		
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Ν	310	310	310	310	310	310	310	310		
R-squared	0.243	0.256	0.241	0.258	0.352	0.385	0.395	0.367		

Table 5 (Cont	(d)
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	Asset sellers without large customers									
	(9)	(10)	(11)	(12)	(13)					
Durable goods industry (indicator)	-0.002 (0.694)	0.010								
Durable goods industry (indicator) * Stock return volatility		-0.349 (0.108)								
Technology intense industry (indicator)			0.002 (0.646)	-0.004 (0.820)						
Technology intense industry (indicator) * Stock return volatility				0.168 (0.717)						
R&D intensity					-0.073 (0.142)					
Continued large customer (indicator)										
Post-sale relationship length										
High drop in sales to large customer (indicator)										
Stock return volatility	0.541 ** (0.014)	0.626 ****	0.527^{**} (0.018)	0.500 ** (0.035)	0.558 ^{**} (0.013)					
Proceed used to pay debt (indicator)	0.012 ** (0.029)	0.012 ** (0.031)	0.012 ** (0.028)	0.012 ** (0.029)	0.012 ** (0.030)					
Deals paid with cash only (indicator)	-0.001 (0.860)	-0.001 (0.863)	0.000 (0.901)	0.000 (0.885)	0.000 (0.969)					
Age of the seller	0.000 (0.105)	0.000 (0.104)	0.000 (0.105)	0.000 (0.113)	0.000 ^{***} (0.018)					

Asset sellers without large customers (Cont'd)								
(9)	(10)	(11)	(12)	(13)				
.034 ***	0.034 ***	0.034 ***	0.034 ***	0.035 ***				
.001) (.006 **	(0.001) -0.006 ** (0.014)	(0.001) -0.007 ** (0.014)	(0.001) -0.007 ***	(0.001) -0.006 ** (0.021)				
.014) (0.002	(0.014) -0.002	(0.014) -0.002 (0.127)	-0.002	(0.021) -0.002 (0.120)				
.135) (.004 - .714) (-0.005	-0.003	-0.003 (0.763)	(0.120) -0.011 (0.452)				
0.070	0.070 ***	0.070	(0.703) (0.070^{***})	(0.432) 0.068^{***}				
0.022 ***	-0.022 ***	-0.022 *** (0.000)	-0.022 *** (0.000)	-0.021^{***}				
.003 .834)	-0.002 (0.861)	-0.003 (0.840)	-0.003 (0.830)	-0.007 (0.646)				
No Yes 2,153	No Yes 2,153 0.083	No Yes 2,153 0.082	No Yes 2,153 0.082	Yes Yes 2,153 0 101				
	Asse (9) 0.034 .001) 0.006 .014) 0.002 .135) 0.004 .714) 0.070 .009) 0.022 .000) 0.003 .834) No Yes 2,153 0.082	Asset sellers withou(9)(10) 0.034 *** 0.034 *** $.001$) (0.001) 0.006 ** -0.006 ** $.014$) (0.014) 0.002 -0.002 $.135$) (0.153) 0.004 -0.005 $.714$) (0.680) 0.070 *** 0.070 *** $.009$) (0.009) 0.022 *** -0.022 *** $.000$) (0.000) 0.03 -0.002 $.834$) (0.861) NoNoYesYes $2,153$ $2,153$ 0.082 0.083	Asset sellers without large custom(9)(10)(11) 0.034 *** 0.034 *** 0.034 *** $.001$) (0.001) (0.001) 0.06 ** -0.006 ** -0.007 ** $.014$) (0.014) (0.014) 0.002 -0.002 -0.002 $.135$) (0.153) (0.127) 0.004 -0.005 -0.003 $.714$) (0.680) (0.762) 0.070 *** 0.070 *** 0.070 *** $.009$) (0.009) (0.009) $.022$ *** -0.022 *** $.000$) (0.000) (0.000) $.003$ -0.002 -0.003 $.834$) (0.861) (0.840) NoNoNoYesYesYes $2,153$ $2,153$ $2,153$ 0.082 0.083 0.082	Asset sellers without large customers (Cont'd)(9)(10)(11)(12) 0.034 **** 0.034 **** 0.034 **** 0.034 **** $.001$)(0.001)(0.001)(0.001) 0.06 ** -0.006 ** -0.007 ** -0.007 ** $.014$)(0.014)(0.014)(0.015) 0.02 -0.002 -0.002 -0.002 $.135$)(0.153)(0.127)(0.130) 0.04 -0.005 -0.003 -0.003 $.714$)(0.680)(0.762)(0.763) 0.070 *** 0.070 *** 0.070 *** $.009$)(0.009)(0.009)(0.007) $.022$ *** -0.022 **** -0.022 **** $.000$)(0.000)(0.000)(0.000) $.003$ -0.002 -0.003 -0.003 $.834$)(0.861)(0.840)(0.830)NoNoNoNoYesYesYesYes $2,153$ $2,153$ $2,153$ $2,153$ 0.082 0.083 0.082 0.082				

Table 5 (Cont'd)

OLS regressions of cumulative abnormal returns (CARs) for large public corporate customers of asset selling firms around the announcement date on explanatory variables

The sample consists of 247 large public corporate customers of asset selling firms, reported in Thomson Financial's SDC Mergers & Acquisitions database in the 1993–2006 period. We use the COMPUSTAT Segment Customer database field, *customer name*, to identify whether asset sellers have large corporate customers. An asset seller is defined as having a large customer when a customer represents 10% or more of an asset seller's total sales. When an asset seller has multiple large customers, the customer purchasing the largest amount is identified as the large customer. To determine whether a customer is publicly traded or privately held, we match the names in the COMPUSTAT Segment Customer database with those in the COMPUSTAT database. The dependent variable is the CAR (-1, 1) for large public customers of asset selling firms. The abnormal returns are calculated using the market model. The market model is estimated using returns from days -301 to -46 relative to the asset sale announcement date. The value weighted CRSP index return is used as the proxy for the market portfolio. The CAR (-1, 1) is calculated by accumulating the daily abnormal returns from day -*I* before the announcement date to day +*I* after the announcement date. All regressions include indicator variables for each Fama and French (1997) 48 industry and year except where noted. *p*-values reported in parentheses are heteroscedasticity robust and clustered by industry. Appendix summarizes the definitions of the variables used in table. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Durable goods industry	-0.010	-0.004							
	(0.332)	(0.872)							
Durable goods industry	× ,	-0.131							
* Stock return volatility		(0.716)							
Technology intense industry			-0.017 ***	6.009					
			(0.003)	(0.518)					
Technology intense industry				-0.562 *					
* Stock return volatility				(0.096)					
Stock return volatility		-0.095		0.063					
		(0.510)		(0.592)					
High R&D (indicator)					-0.012 *				
					(0.087)				

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Continued large customer						0.009 *			
(indicator)						(0.092)			
Post-sale relationship length							0.001		
							(0.496)		
High drop in %COGS								-0.003	
(indicator)								(0.591)	
HHI in customer industry									0.285 **
									(0.045)
Proceed used to pay debt	-0.002	-0.002	-0.003	-0.004	-0.004	-0.002	-0.003	-0.003	-0.003
(indicator)	(0.830)	(0.834)	(0.726)	(0.622)	(0.596)	(0.741)	(0.732)	(0.714)	(0.669)
Deals paid with cash only	0.007	0.007	0.007	0.007	0.006	0.008	0.008	0.008	0.007
(indicator)	(0.155)	(0.148)	(0.146)	(0.199)	(0.195)	(0.166)	(0.211)	(0.163)	(0.248)
Relative deal size	0.013	0.015	0.012	0.011	0.011	0.016	0.013	0.014	0.012
	(0.545)	(0.535)	(0.609)	(0.636)	(0.638)	(0.513)	(0.567)	(0.559)	(0.585)
Return on asset	0.028	0.020	0.036	0.016	0.020	0.032	0.016	0.030	0.013
	(0.236)	(0.351)	(0.177)	(0.491)	(0.420)	(0.219)	(0.499)	(0.246)	(0.603)
Tobin's Q	0.004	0.005	0.004	0.004	0.005	0.003	0.004	0.004	0.004
	(0.223)	(0.184)	(0.225)	(0.241)	(0.166)	(0.373)	(0.310)	(0.238)	(0.293)
Leverage	0.004	0.007	0.004	0.000	0.003	0.011	0.006	0.009	0.003
	(0.762)	(0.667)	(0.657)	(0.995)	(0.738)	(0.281)	(0.523)	(0.320)	(0.669)
Customer Tobin's Q	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.003	-0.002
	(0.423)	(0.410)	(0.356)	(0.314)	(0.403)	(0.373)	(0.401)	(0.460)	(0.570)
Log (Customer market cap)	0.008 ***	0.008 ****	0.009 ****	0.008 ***	0.008 ***	0.008 ***	0.007 ***	0.008 ***	0.007 ***
	(0.004)	(0.007)	(0.004)	(0.001)	(0.005)	(0.008)	(0.007)	(0.006)	(0.009)
Customer leverage	0.061 ***	0.060 **	0.049 **	0.053 ***	0.057 ****	0.056 ***	0.053 **	0.055 **	0.050 **
	(0.009)	(0.013)	(0.017)	(0.009)	(0.006)	(0.009)	(0.013)	(0.013)	(0.021)

Table 6 (Cont'd)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Customer ROA	0.025	0.027	0.020	0.020	0.022	0.020	0.027	0.022	0.016
	(0.670)	(0.646)	(0.709)	(0.723)	(0.682)	(0.735)	(0.668)	(0.708)	(0.795)
Customer stock price runup	-0.015	-0.015	-0.014	-0.016	-0.015	-0.013	-0.015	-0.014	-0.016
	(0.166)	(0.163)	(0.167)	(0.117)	(0.162)	(0.199)	(0.161)	(0.186)	(0.122)
Customer stock volatility	1.141 **	1.212 **	1.240 **	1.428 ***	1.068 *	1.140 **	1.123 *	1.095 *	1.029 *
	(0.049)	(0.031)	(0.017)	(0.004)	(0.052)	(0.044)	(0.053)	(0.055)	(0.085)
Asset liquidity	-0.082 **	-0.081 *	-0.082 **	-0.087 **	-0.089 **	-0.078 *	-0.078 **	-0.078 **	-0.078 **
	(0.050)	(0.052)	(0.033)	(0.024)	(0.038)	(0.054)	(0.048)	(0.042)	(0.050)
Industry fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ν	247	247	247	247	247	247	247	247	247
R-squared	0.266	0.269	0.276	0.274	0.265	0.27	0.241	0.259	0.253

Table 6 (Cont'd)

Logit regressions of relationship termination after asset sales by firms with large public customers.

The sample consists of 310 asset selling firms with large public corporate customers, reported in Thomson Financial's SDC Mergers & Acquisitions database in the 1993–2006 period. We use the COMPUSTAT Segment Customer database field, customer name, to identify whether asset sellers have large corporate customers. An asset seller is defined as having a large customer when a customer represents 10% or more of an asset seller's total sales. When an asset seller has multiple large customers, the customer purchasing the largest amount is identified as the large customer. To determine whether a customer is publicly traded or privately held, we match the names in the COMPUSTAT Segment Customer database with those in the COMPUSTAT database. The dependent variable in models (1) through (3) is the indicator variable for relationship termination which takes the value of one if the customer-supplier relationship is terminated in the year of asset sale or in the year right after the asset sale. The dependent variable in model (4) is the indicator variables for high drop in sales to customer that takes the value of one if the drop in the proportion of a supplier's sales to the large customer is higher than the sample median and zero otherwise. All regressions include year indicator variables for year. pvalues reported in parentheses are heteroscedasticity robust and clustered by industry. Appendix summarizes the definitions of the variables used in table. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively. Appendix summarizes the definitions of the variables used in table. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4) high drop in
	Termination	Termination	Termination	to customer
	(Indicator)	(Indicator)	(Indicator)	(Indicator)
Durable goods industry (indicator)	-0.412 (0.347)	-1.919 ** (0.012)		-1.946 *** (0.004)
Durable goods industry (indicator) * Stock return volatility	~ /	39.530 ^{**} (0.042)		46.690 ^{****} (0.001)
Technology intense industry (indicator)			1.427 **** (0.002)	
Stock return volatility	15.800	8.158	5.771	10.940
	(0.318)	(0.577)	(0.680)	(0.367)
Proceed used to pay debt (indicator)	0.040	0.028	0.092	0.253
	(0.895)	(0.930)	(0.745)	(0.513)
Deals paid with cash only (indicator)	0.274	0.295	0.282	0.571^{**}
	(0.437)	(0.415)	(0.463)	(0.048)
Age of the seller	-0.006	-0.003	0.003	0.006
	(0.616)	(0.818)	(0.846)	(0.496)
Relative deal size	1.082	1.097	1.266	1.834 ^{**}
	(0.210)	(0.187)	(0.123)	(0.041)
Tobin's Q	-0.480 ***	-0.529 ***	-0.592 ***	-0.376
	(0.001)	(0.000)	(0.004)	(0.110)
Log (Market capitalization)	0.060	0.066	-0.006	0.049
	(0.540)	(0.479)	(0.942)	(0.719)
Leverage	0.222	0.259	1.500	-0.844
	(0.806)	(0.779)	(0.115)	(0.434)
Return on assets	1.454	1.381	1.360	-0.523
	(0.108)	(0.148)	(0.112)	(0.657)
Stock price runup	-0.046	0.097	0.037	0.156
	(0.856)	(0.730)	(0.886)	(0.595)
Asset liquidity	1.761	1.859	1.535	2.292
	(0.382)	(0.304)	(0.413)	(0.428)
Year fixed effect	Yes	Yes	Yes	Yes
Ν	310	310	310	310

Table 7

Logit regressions of change in percentage of COGS of large public corporate customers of asset selling firms after the asset sales

The sample consists of 247 large public corporate customers of asset selling firms, reported in Thomson Financial's SDC Mergers & Acquisitions database in the 1993–2006 period. We use the COMPUSTAT Segment Customer database field, *customer name*, to identify whether asset sellers have large corporate customers. An asset seller is defined as having a large customer when a customer represents 10% or more of an asset seller's total sales. When an asset seller has multiple large customers, the customer purchasing the largest amount is identified as the large customer. To determine whether a customer database with those in the COMPUSTAT database. The dependent variable is the indicator variable for the high drop in % of COGS of customer which takes the value of one if the drop in the proportion of a supplier's sales out of the customer's COGS is higher than the sample median and zero otherwise. *p*-values reported in parentheses are heteroscedasticity robust and clustered by industry. All regressions include year indicator variables. Appendix summarizes the definitions of the variables used in table. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)
Durable goods industry (indicator)	0.390	-1.657 ***		
8	(0.369)	(0.003)		
Durable goods industry (indicator)	()	50.730 ***		
* Stock return volatility		(0.010)		
Technology intense industry (indicator)		(0.010)	1.175 ***	-0.623
			(0.005)	(0.427)
Technology intense industry (indicator)			(0.000)	41.080 **
* Stock return volatility				(0.026)
Stock return volatility		12.220		12,560
Stock lotain volatility		(0.504)		(0.494)
Log (Market capitalization)	0 448 ***	0.538 ***	0 409 ***	0.536 ***
Log (internet euphenization)	(0,000)	(0,000)	(0,000)	(0.001)
Return on asset	-0.044	1.050	0.256	1 173
	(0.973)	(0.499)	(0.836)	(0.437)
Tobin's O	-0 503 ***	-0.674 ***	-0 589 ***	-0.782 ***
	(0.003)	(0,000)	(0.000)	(0.000)
Proceed used to pay debt	0.387	0.412	0.503	0.603
Theeed used to puy debt	(0.476)	(0.442)	(0.329)	(0.225)
Deals paid with cash only	-0.085	-0.099	-0.167	-0.181
Deals paid with easil only	(0.692)	(0.657)	(0.442)	(0.410)
Relative deal size	2 189 ***	(0.057)	2165^{***}	2 311 ***
Relative deal size	(0.010)	(0.012)	(0.003)	(0.004)
Customer Tobin's O	0.298 ***	0.351 **	0.347^{***}	0.387 **
eustomer room's g	(0.008)	(0.029)	(0.005)	(0.013)
Log (Customer market can)	-0.423 ***	-0.479	-0.438 ***	$(0.013)^{***}$
Log (Eustomer market cap)	(0.002)	(0,001)	(0.001)	(0.001)
Customer leverage	-0.940	-0.738	-0.173	-0 545
eustomer ievorage	(0.450)	(0.615)	(0.894)	(0.682)
Customer ROA	3 157	3 780	3 291	3 873
	(0.280)	(0.212)	(0.242)	(0.179)
Customer stock price runup	0.655	0.987 **	$(0.242)^{*}$	0.939 *
eustomer stock price runup	(0.136)	(0.013)	(0.099)	(0.056)
Asset liquidity	6 209 *	6 306*	6 1 3 0 *	6 528 *
risser inquiaity	(0.077)	(0.064)	(0.073)	(0.050)
	(0.077)	(0.007)	(0.073)	(0.050)
Year fixed effect	Yes	Yes	Yes	Yes
Ν	247	247	247	247
		,	,	

Table 8

Post-asset-sale relationship survival for asset selling firms with a large public customer and non-asset selling matching firms with a large public customer

The sample consists of 310 asset sellers with large public corporate customers and 310 nonasset-selling firms with large public corporate customers reported in Thomson Financial's SDC Mergers & Acquisitions database in the 1993–2006 period. We use the COMPUSTAT Segment Customer database field, *customer name*, to identify whether asset sellers have large corporate customers. An asset seller is defined as having a large customer when a customer represents 10% or more of an asset seller's total sales. When an asset seller has multiple large customers, the customer purchasing the largest amount is identified as the large customer. To determine whether a customer is publicly traded or privately held, we match the names in the COMPUSTAT Segment Customer database with those in the COMPUSTAT database. The dependent variable is the number of years the relationship continues after the asset sale. The estimates are from a Cox proportional hazards model. *p*-values reported in parentheses are heteroscedasticity robust and clustered by industry. All regressions include indicator variables for year and each of Fama-French 48 industries. Appendix summarizes the definitions of the variables used in table. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

			Cox		
	(1)	(2)	(3)	(4)	(5)
Asset seller (indicator)	1.199 *	1.202 *	1.190 *	1.296 **	
	(0.071)	(0.067)	(0.085)	(0.018)	
Durable goods industry		0.760 *			
(indicator)		(0.095)			
Technology intense industry			0.834		
(indicator)			(0.351)		
Asset seller (indicator)				0.138	
* R&D intensity				(0.136)	
Asset seller with high CAR					1.057
(indicator)					(0.642)
Asset seller with low CAR					1.464 ***
(indicator)					(0.001)
Proceed used to pay debt	1.149	1.137	1.147	1.149	1.159
(indicator)	(0.224)	(0.259)	(0.229)	(0.224)	(0.198)
R&D intensity	0.508	0.829	0.686	1.216	0.444
	(0.425)	(0.831)	(0.672)	(0.851)	(0.338)
Percent of sales to customer	0.079 ****	0.069 ***	0.074 ***	0.074 ***	0.096 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
(Percent of sales to	8.993 ***	10.163 ***	9.493 ***	9.590 ***	7.675 ***
customer) ²	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log (1+firm age)	1.037	1.036	1.037	1.033	1.070
	(0.601)	(0.610)	(0.602)	(0.646)	(0.339)
Log (total assets)	0.921 ***	0.921 ***	0.922 ***	0.929 **	0.913 ***
	(0.008)	(0.008)	(0.009)	(0.020)	(0.003)
Negative free cash flow	1.074	1.071	1.069	1.087	1.085
supplier (indicator)	(0.497)	(0.510)	(0.532)	(0.431)	(0.438)
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Ν	620	620	620	620	620
Log pseudo-likelihood	-2319.90	-2318.78	-2319.66	-2318.99	-2317.65

Table 9

Table 10Determinant of asset sales

The sample consists of 52,347 COMPUSTAT firms from 1993 to 2006. Using the COMPUSTAT Segment Customer database, 13,354 firms are identified as having at least one large customer and using Thomson Financial's SDC Mergers & Acquisitions database, 5,681 firms are identified as engaging in asset sales. A firm is defined as having a large customer when a customer represents 10% or more of an asset seller's total sales. When a firm has multiple large customers, the customer purchasing the largest amount is identified as the large customer. The dependent variable is indicator variable that takes the value of one if a firm sells its asset in a certain year and zero otherwise. *p*-values reported in parentheses are heteroscedasticity robust and clustered by industry. All regressions include indicator variables for year and Fama-French 48 industries except otherwise where noted. Appendix summarizes the definitions of the variables used in table. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

			Logit					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Company with large customer	0.043							
(indicator)	(0.326)							
Relationship terminated	`	0.240 ***				0.239 ***	0.249 ***	0.186 ***
(indicator)		(0.001)				(0.001)	(0.001)	(0.002)
Relationship not terminated		0.052				0.051	0.057	-0.017
(indicator)		(0.437)				(0.429)	(0.391)	(0.704)
Durable industry (indicator)			0.016			0.006		
-			(0.818)			(0.930)		
Technology intense industry				-0.088			-0.099	
(indicator)				(0.381)			(0.313)	
High R&D firm (indicator)					-0.027			-0.029
					(0.829)			(0.816)
Firm age	0.034 ***	0.029 ***	0.029 ***	0.029 ***	0.034 ***	0.029 ***	0.029 ***	0.034 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Log (Market capitalization)	0.352 ***	0.334 ***	0.331 ***	0.333 ***	0.351 ***	0.334 ***	0.336 ***	0.353 ****
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Tobin's q	-0.260 ***	-0.227 ***	-0.225 ***	-0.222 ***	-0.258 ***	-0.227 ***	-0.225 ***	-0.259 ***
1	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	1.262 ***	1.150 ***	1.142 ***	1.119 ***	1.258 ***	1.151 ***	1.130 ***	1.263 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	-0.577 ***	-0.491 ***	-0.488 ***	-0.487 ***	-0.579 ****	-0.491 ***	-0.491 ***	-0.578 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Stock price runup	-0.241 ***	-0.274 ***	-0.275 ****	-0.277 ***	-0.241 ***	-0.274 ***	-0.277 ***	-0.241 ***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Stock return volatility	8.265	9.672	9.719	10.020	8.287	9.662	9.976	8.260
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Negative free cash flows	0.346	0.259	0.263	0.262	0.349	0.259	0.259	0.347
(indicator)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	-5.050	-4.735	-4.709	-4.704	-5.034	-4.737	-4.738	-5.046
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Year fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effect	Yes	Yes	No	No	Yes	No	No	Yes
Ν	52,347	52,347	52,347	52,347	52,347	52,347	52,347	52,347

Table 10 (Cont'd)

Determinant of asset sales: Subsampled by technology intense industry and durable industry

The sample consists of 52,347 COMPUSTAT firms from 1993 to 2006. Using the COMPUSTAT Segment Customer database, 13,354 firms are identified as having at least one large customer and using Thomson Financial's SDC Mergers & Acquisitions database, 5,681 firms are identified as engaging in asset sales. A firm is defined as having a large customer when a customer represents 10% or more of an asset seller's total sales. When a firm has multiple large customers, the customer purchasing the largest amount is identified as the large customer. The dependent variable is indicator variable that takes the value of one if a firm sells its asset in a certain year and zero otherwise. *p*-values reported in parentheses are heteroscedasticity robust and clustered by industry. All regressions include indicator variables for year and Fama-French 48 industries except otherwise where noted. Appendix summarizes the definitions of the variables used in table. The symbols ***, **, and * denote significance at the 1%, 5%, and 10% levels, respectively.

Logit									
		(1)		(2)					
	High Tech	non-High Tech	Durable	non-Durable					
Relationship terminated	0.176 *	0.216 ***	0.104	0.223 ***					
(indicator)	(0.051)	(0.010)	(0.277)	(0.007)					
Relationship not terminated	0.057	-0.019	0.003	-0.037					
(indicator)	(0.240)	(0.745)	(0.965)	(0.517)					
Firm age	0.048 ***	0.032 ***	0.036 ***	0.034 ***					
	(0.000)	(0.000)	(0.000)	(0.000)					
Log (Market capitalization)	0.293 ***	0.378 ***	0.337 ***	0.361 ***					
	(0.000)	(0.000)	(0.000)	(0.000)					
Tobin's q	-0.207 ***	-0.282 ***	-0.192 ***	-0.291 ***					
-	(0.000)	(0.000)	(0.000)	(0.000)					
Leverage	1.127 ***	1.233 ***	1.224 ***	1.264 ***					
-	(0.000)	(0.000)	(0.000)	(0.000)					
ROA	-0.561 ***	-0.571 ***	-0.522 ***	-0.613 ***					
	(0.000)	(0.001)	(0.000)	(0.001)					
Stock price runup	-0.169 **	-0.287 ***	-0.205 ***	-0.262 ***					
	(0.012)	(0.000)	(0.000)	(0.000)					
Stock return volatility	6.350 **	9.307 ***	5.892 ***	9.081 ***					
-	(0.010)	(0.000)	(0.000)	(0.000)					
Negative free cash flows	0.408 ***	0.349 ***	0.500 ***	0.298 ***					
(indicator)	(0.000)	(0.000)	(0.000)	(0.000)					
Constant	-4.913 ***	-5.120 ***	-6.353 ***	-4.926 ***					
	(0.000)	(0.000)	(0.000)	(0.000)					
Year fixed effect	Yes	Yes	Yes	Yes					
Industry fixed effect	Yes	Yes	Yes	Yes					
Ν	12,106	40,241	15,728	36,619					

Figure 1

Interaction Term in Logit Regression: Model (2) of Table 7

This shows the interaction effects between durable goods industry indicator and stock return volatility on the probability of major trading relationship termination after asset sale.





Figure 2 Interaction Term in Logit Regression: Model (4) of Table 7

This shows the interaction effects between durable goods industry indicator and stock return volatility on the probability of high drop in sales to customer after asset sale.





Figure 3 Interaction Term in Logit Regression: Model (2) of Table 8

This shows the interaction effects between durable goods industry indicator and stock return volatility on the probability of high drop in % of COGS from asset selling suppliers after the asset sale.




Figure 4 Interaction Term in Logit Regression: Model (4) of Table 8

This shows the interaction effects between technology intense industry indicator and stock return volatility on the probability of high drop in % of COGS from asset selling suppliers after the asset sale.





APPENDIX B VARIABLE DEFINITIONS

Appendix B: Variable definitions

This appendix provides a detailed description of the construction of all the variables used in the tables.

Variable name	Definition
Durable industry	An indicator variable taking a value of one for asset selling firms in durable industries as defined by the US Department of Census. The Census Bureau classification of durable industry firms is contained at: <u>http://www.census.gov/indicator/www/m3/appendixb.pdf</u> .
Firm age	The number of years since the asset selling firm first reported data item AT (book value of assets) in the COMPUSTAT database.
High drop in percent sales to customer	An indicator variable taking a value of one if the asset selling firm has above the median decline in the percent of sales to the large customer from the year before the asset sale to after the asset sale.
High drop in % COGS	
High R&D	An indicator variable taking a value of one if the asset selling firm has above the median R&D / total assets and zero otherwise.
Large customer	An indicator variable taking a value of one if the firm discloses a customer that accounts for greater than 10% of its sales and zero otherwise.
Large public customer	An indicator variable taking a value of one if the firm discloses a customer that accounts for greater than 10% of its sales and that customer can be found in the COMPUSTAT database.
Leverage	COMPUSTAT data item 9 / data item 6 in the year before the offer, winsorized at the 95^{th} percentile.
Market capitalization	COMPUSTAT data item CSHO* data item PRCC_F in the year before the asset sale. For firms missing COMPUSTAT observations, CRSP data using the shares outstanding and closing price for the month before the asset sale announcement is utilized.
Percent of cost of goods sold	The dollar amount of sales to the customer divided by the customer COMPUSTAT data item COGS.

Percent of firms in same industry with a large customer	Number of firms in the same industry (Fama and French (1997) 48 industry) as the firm of interest that also have large customers based on the COMPUSTAT segment level data divided by the total number of firms in that same industry.
Percent of sales to customer	The sales made to the large customer by asset selling firm divided by COMPUSTAT data item SALES.
Post-sale relationship length	The number of years from the asset sale year until the relationship is terminated.
Pre-asset-sale relationship length	The number of years from the first time the customer shows up in filings as a large customer until the asset sale year.
Proceeds	The offer price as reported in the SDC Platinum Merger & Acquisition Database.
Proceeds used to repay debt	An indicator variable taking on a value of one if the asset selling firm reports that it will use the proceeds to repay debt and zero otherwise.
R&D intensity	COMPUSTAT data item XRD / data item AT in the year before the asset sale.
Relationship tenure	The number of years the relationship has lasted.
ROA	ROA (return on assets) is measured as data item OIBDP / data item AT.
Stock price run-up	The buy-and-hold return for the SEO firm from day -365 to day -11 before the asset sale announcement date.
Stock return volatility	Daily stock return standard deviation for the asset sellers from day -365 to day -11 before the asset sale announcement.
Technology intensive industry	Following Loughran and Ritter (2004) we define a technology firm as having one of the following 4-digit SIC codes: 3571, 3572, 3575, 3577, 3578, 3661, 3663, 3669, 3671, 3672, 3674, 3675, 3677-3679, 3812, 3823, 3825-3827. 3829, 3841, 3845, 4812, 4813, 4899, 7371-7375, 7378, and 7379.
Tobin's Q	COMPUSTAT data (item LCT + item DLTT + item CSHO * item

 $PRCC_F) \, / \, item \, AT$ in the year before the asset sale.

Total assets COMPUSTAT data item AT in the year before the asset sale.

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