

Do family firms care for their stakeholders? Evidence from the customer-supplier relationship

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Abstract

We examine how the presence of family control affects the manner in which a firm collaborates with its supplier firms. We find that supplier firms that have a family firm as a major customer exhibit higher overall profitability, higher gross margin, more efficient asset management, and longer duration of the relationship than other supplier firms (without a family customer). Using the difference-in-difference approach, we confirm that our results are not driven by family firms' preference for profitable suppliers to begin with. Our findings indicate that family customer firms maintain a generous and cooperative attitude in their relations with supplier firms, the behavior which is consistent with theories regarding family firms in the finance and management literature.

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1. Introduction

Prior literature in finance finds that family firms are unique organizational entities that differ from non-family firms in many ways. Family owners have blockholders with undiversified personal wealth portfolio (LaPorta et al., 1999; Anderson et al., 2012; Kim et al., 2014), maintain a long-term perspective (Anderson and Reeb, 2003; Fahlenbrach, 2009), have greater reputation concerns (Chen et al., 2010), and are often motivated by non-financial goals such as increasing their socioemotional wealth (Leitterstorf and Rau, 2014). Despite a rich body of literature on family firms, one limitation of the literature is that most empirical studies focus primarily on the effect of family control on the characteristics of family firms themselves, such as profitability and investment behavior (e.g., Anderson and Reeb, 2003; Anderson et al., 2012; Isakov and Weisskopf, 2015). We argue that such unique features of family firms are better explored and highlighted when we observe family firms' interaction with their major stakeholders. A hypothesis that family owners have a longer-term investment horizon, for example, could be more directly tested if we examine the length of the relationship between family firms and their business partners. Yet there has been relatively little empirical research attempting to investigate family firms' interaction with other economic units.

In this study, we examine how the presence of family control affects the manner in which a firm collaborates with its major supplier firms. Do family customer firms maintain a more generous and cooperative attitude in their contractual relations with major supplier firms than non-family customer firms? If so, why? The goal of this paper is to answer these key questions by contrasting characteristics of supplier firms in the U.S. that have family firms as their major customers with those of supplier firms with non-family customer firms. To the best of our knowledge, this is the first paper to explore the family firm behavior towards its business counterparts.

There are several reasons why inter-firm customer-supplier relationship provides a unique and ideal opportunity for studying family firms' interaction with their stakeholders. First, as documented in seminal papers by Williamson (1979) and Klein, Crawford and Alchian (1978), large customer firms have an incentive to exploit their suppliers using their strong bargaining positions. It is also well known that customer firms' strong bargaining

power arises from suppliers' commitment to the relationship-specific investment made early in the relationship (Titman and Wessels, 1988). Previous empirical work supports the notion by providing evidence that having a major customer hurts suppliers' gross margins and other profitability measures (Lustgarten, 1975; Patatoukas, 2012; Irvine et al., 2016). This setting helps us to clearly observe the *abnormal* customer behavior by family firms. That is, the finding that supplier firms' profitability is not negatively affected by family major customers would indicate that family firms less engage in post-contract opportunistic behavior to exploit their suppliers. Another advantage of focusing on a family firm's suppliers among its varied group of stakeholders is the availability of data. Two recent papers examine how family firms behave towards their major stakeholders, namely their employees and the society surrounding them (Huang et al., 2015; El Ghouli et al., 2016). However, the data should be limited for such stakeholders, while the abundance of data for public supplier firms enables us to observe the effect of family control on the firm's stakeholders in much more detail.

To perform our analyses, we merge both information on family firms and information on customer-supplier linkage among public firms with Compustat database. It is worth mentioning early in this paper that, although the primary focus of our discussion is on the behavior of *family customer* firms, the unit of observation in our sample is a *supplier* firm-year, as it is supplier firms' performance that reflects the customer firm behavior. Our sample consists of 11,408 supplier firm-years from 1992 to 2009, where 37.4% of the sample have at least one family customer firm.

We start our analyses by comparing key performance measures and the length of customer-supplier relationship between i) supplier firms with family customer firms and ii) supplier firms without family customers. We find that the presence of a family customer firm leads to higher overall performance (i.e., ROA and ROE), higher asset turnover, higher gross margin, and longer duration of the relationship of supplier firms. On average, ROA of suppliers with family customers is 1.4% higher than other suppliers. Perhaps more importantly, gross margin is also 2.2% higher for suppliers with family customers. As gross margin of the supplier is a direct measure of whether a major customer exploits the supplier (Patatoukas, 2012; Irvine et al., 2016), this finding suggests that family firms

less engage in opportunistic behavior to exploit their suppliers' gross margin. Moreover, significantly higher asset turnover (by 9.8%) and operating margin (by 4.0%) for suppliers with family customers indicate that having a family customer firm leads to better utilization of fixed assets and SG&A costs of supplier firms. Our analysis also reveals that family customer firms maintain longer relationship with their suppliers than non-family customer firms (5.2 years to 4.8 years), which is consistent with the stylized fact that family firms pursue a long-term perspective in investment decisions.

We also examine whether the presence of a family customer mitigates the negative effect of bargaining power variables that are believed to be related to the relative difference of bargaining power between customers and suppliers, and thereby negatively affect supplier firm performance. The first measure we adopt is the customer concentration index (*CC*) introduced in Patatoukas (2012). A supplier firm with a concentrated customer-base is more likely to be abused by its customer because of the supplier firm's huge commitment to the relationship-specific investment. Secondly, we obtain the ratio of customer firm size to supplier firm size for all supplier firm-years in our sample, as, intuitively, the relative difference in firm size should serve as a proxy for the relative difference in bargaining power as well. After confirming that the two bargaining power variables are indeed negatively related to supplier firm profitability, we further show that the negative effect is significantly reduced if the supplier has a family firm as a major customer.

A reasonable concern, however, is whether our results truly indicate that family customer firms are better at nurturing and cooperating with their suppliers than non-family customer firms, or the results are merely an artifact that is driven by a family customer firm's preference for already profitable suppliers. Given that many founding families are undiversified blockholders, it is possible that they have an incentive to reduce firm-specific risk by entering into a relationship with a profitable and financially healthy supplier firms to begin with (LaPorta et al., 1999). To address this concern, we first conduct a subsample analysis to only include suppliers with family customer firms and their matching supplier firms chosen using the propensity score matching. We find similar results to our baseline result, which suggests that our main result is not driven by ex-ante differences in firm characteristics

between suppliers with family customers and other suppliers. We also employ the difference-in-difference method to test whether a supplier firm with family customers exhibits high profitability even before becoming the supplier firm, or the firm's profitability has been elevated since the firm initiated the customer-supplier relationship with family customers. Notably, we find that a supplier firm with family customers has lower profitability than other suppliers in the pre-relationship period but experiences a significant boost in profitability during the relationship period.

Overall, our results strongly suggest that family customer firms do maintain a more generous and cooperative attitude towards their supplier firms. We relate our findings to the concept of socioemotional wealth (SEW), which a recent and growing body of research in management adopts to explain unique corporate choices made by family firms. Leitterstorf and Rau (2014) describe socioemotional wealth as the non-economic utility of family firms that derives from the identity overlap between family members and the family firm (i.e., the reputation of the family firm is directly related to the reputation of family members). Empirical evidence in management research shows that family firms less engage in socially harmful activities (Berrone et al., 2010) and even sacrifice economic gains to protect socioemotional wealth (Gomez-Mejia et al., 2007; Leitterstorf and Rau, 2014). We argue that family firms' generous attitude towards supplier firms is also in line with family firm behavior found in the socioemotional wealth literature.

Our study contributes to two strands of literature. First, we add to the literature on family firms by shedding new light on the topic of family firms' interaction with their stakeholders. Again, to our knowledge, no study has attempted to provide an in-depth analysis of how a family firm's major stakeholder is affected by the behavior of the family firm. Second, we expand on the literature on the customer-supplier relationship. While recent empirical work in this area has mainly considered customer firms as a homogenous group and has focused on the average effect of customer concentration on supplier firm performance, our results provide novel evidence that heterogeneity among customer firms leads to different mechanisms in which supplier firm performance is affected by customer firms.

The remainder of this paper is organized as follows: Section 2 describes the data and variables, while Section 3 provides univariate results. Section 4 delivers main empirical results, and Section 5 concludes.

2. Data and Variables

In this study our empirical strategy is to distinguish between supplier firms that have a family firm as a major customer and other supplier firms without a family major customer. Hence the core of our data is both information on family firms and information on customer-supplier linkage among firms. Merging the key data listed above with the Compustat database, we obtain a comprehensive sample that contains information on U.S. public supplier firms between 1992 and 2009.

2.1. Customer-supplier Links

To define a supplier firm, one can simply explore whether the firm has any major corporate customers by utilizing the Compustat Customer Segment Files, which provide names of major customer firms and revenue derived from each customer for each firm-year observation. Since the Customer Segment File is crude data without firm identifiers of customer firms, however, we use the customer-supplier links dataset used by Cohen and Frazzini (2008). The dataset is an expansion of the Compustat Customer Segment Files, as they add PERMNO of public customer firms either by using a phonetic string matching algorithm or manually. Because it is necessary in this study to identify a customer firm to determine whether the firm is a family firm, we focus on the subset of the supplier firm universe, where a supplier firm is defined as the firm with at least one identifiable (i.e., non-missing PERMNO) public customer firm.

2.2. Family Firm

There is no universally agreed definition of a family firm in finance literature. However, we follow the definition of a family firm by Anderson et al. (2009) and Anderson et al. (2012) and utilize the family firm dataset used in

their research. Anderson et al. (2012) define a family firm as the firm in which the founder or the founder's descendants continue to exist as either blockholders, top-level executives, or directors. The dataset covers the time period from 1992 to 2010. In terms of firms, the dataset covers the S&P 500 firms in the 1990s, while the coverage expands to the S&P 1500 firms in the 2000s.

In other words, we cannot determine whether a customer firm is a family firm unless the firm is a component of the S&P 500 or 1500 index depending on the time period. However, we assert that this is not necessarily a limitation of our study. Instead, we believe the span of the family firm data fits the purpose of this paper and decide to stick to the S&P 500 firms only for the entire sample period. The first and obvious reason is of course the consistency of data between the 1990s and the 2000s. More importantly, however, by focusing only on supplier firms with a S&P 500 customer firm, we solidify the implicit assumption of our study that the customer firm's policy towards a supplier firm is the main driver of the supplier firm profitability. As a result of the sample restriction, the mean (median) of the ratio of customer firm size to supplier firm size is 1,695 (180) in our final sample. Such a huge difference in size between suppliers and customers makes it more likely, although does not guarantee, that the customer firm's policy is an important determinant of supplier profitability for most supplier firms in our sample. Now our definition of a supplier firm is even further narrowed down to the firm with at least one identifiable S&P 500 customer firm. It is noteworthy that this seemingly strict restriction makes us lose only about one-third of the sample, which suggests that a majority of customer firms in the U.S. are large enough to be components of the S&P 500 index. We create the main variable of this paper, *FC*, which takes the value of one if the supplier has at least one S&P 500 family customer firm and zero otherwise.

2.3. Sample

The final sample consists of 11,408 supplier firm-year observations from 1992 to 2009 with non-missing key Compustat variables used in this study. Our sample excludes firms in the financial industry and firms with negative book value of equity. Among 11,408 supplier firm-years, 4,268 observations (37.4%) have family customer firms.

Table 1 lists our variable definitions.

3. Univariate Results

3.1. Descriptive Statistics

Table 2 presents summary statistics for our sample firms. We break the sample up into subsamples based on having family customer firms. In Panel A, statistics and difference tests of various performance variables are presented. The overall firm performance variable return on asset (*ROA*) and return on equity (*ROE*) are significantly higher in suppliers with family firm customers. The Du-Pont decomposition indicates that higher asset utilization or higher margin can drive higher return. Total asset turnover (*TAT*) measure efficiency of asset utilization and profit margin (*PM*), operating margin (*OM*) and gross margin (*GM*) are used to measure firm's margin. Suppliers with family firm customers use asset more efficiently, and have higher margins except for gross margin. It seems that some of non-family firm suppliers have experienced serious net loss. The differences of mean and median of gross margin between family firms' suppliers and non-family firms' suppliers are not significant.

We also explore the supplier-customer relationship in Panel C. To measure bargaining power of customers, we use customers' relative size to a supplier and the customer-concentration index (Patatoukas, 2012)¹. Even though firms with family firm customers are larger, the ratio of relative size for family firms' suppliers (*RelSize*) are bigger. Family firms' suppliers have bigger customers than non-family firms' supplier in our sample. The mean of *CC* for family firms' suppliers is lower, however, the median of *CC* is higher than for non-family firms' suppliers. It looks skewed for *CC* of non-family firms' suppliers. Panel A shows statistics of control variables affecting firm's performance. There are significant differences in characteristics between firms with family firm customers and firms

¹ $CC_{it} = \sum_{j=1}^J \left(\frac{Sales_{ijt}}{Sales_{it}} \right)^2$

with non-family firm customers. Firms with family firm customers tend to be larger and older firms. Family firms' suppliers also have higher leverage ratio and lower growth rates than non-family firms' suppliers.

3.2. Correlation Analysis

Table 3 reports the Spearman correlations among the variable used in our analysis. The relationships between variables and our primary variable, *FC* dummy, are consistent with the univariate tests. *FC* dummy is positively associated with supplier firms' performance, asset utilization and margins except for gross margin. *CC* is negatively associated with firm's performance. Patatoukas (2012) shows that *CC* enhances asset utilization, however, *CC* is negatively associated with asset turnover in our sample. Customers' relative size (*logRelSize*) is negatively associated with performance variables.

Overall, the univariate results suggest that suppliers that sell to more than one S&P500 family firm customers show higher accounting performance than suppliers that sells to only S&P500 non-family firm customers except for gross margin. However, the univariate tests also indicate that there are significant differences in firm characteristics can affect firm's performance between family firms' suppliers and non-family firms' suppliers.

4. Main Results

4.1. Baseline Model

Table 4 presents the results of the ordinary least squares (OLS) regressions for suppliers' performance with control variables. Two-digit SIC dummies and year dummies are included and the standard errors are clustered at the firm level. In Column (1) and (2), overall firm performance variable return on asset (*ROA*) and return on equity (*ROE*) are used as a dependent variable, respectively, and the *FC* dummy, the primary explanatory variable, has a positive and statistically significant coefficient. By DuPont decomposition, firms can make higher performance with higher efficiency. To investigate how performance of suppliers with family firm customers is derived, we regress total asset

turnover (*TAT*) and profit margin (*PM*) in Column (3) and (4). The family firm customer-supplier relationship (*FC* dummy) is positively associated with supplier's margin (*PM*) as well as efficiency of asset utilization (*TAT*). These results suggest that family firm customers may be more cooperative and provide favorable deal to their suppliers. The regression results of operating margin (*OM*) and gross margin (*GM*) support our hypothesis. Family firm customers' suppliers can save operating costs and get better price condition. Although there is no significant difference in gross margin between firms that have family firm customer and firms that do not have in the univariate test, family firms' suppliers have higher gross margin after explanatory variables controlled. The signs of explanatory variables are consistent along models with various performance measures. The larger and older firms tend to be more profitable, and leverage has a negative effect on firms' performance. Sales growth rate is positively associated with firm's performance.

Taken together, with more cooperative supplier-family firm customer relationship, suppliers can achieve higher performance than non-family firm's suppliers.

4.2. The Effect of Bargaining Power Variables

In this section, we investigate the exercise of bargaining power in family firm customer-supplier relationship. From the conventional view of customer-supplier relationship, customers can exert bargaining power and expropriate suppliers (Galbraith, 1952; Scherer, 1970; Porter, 1974). Supplier's customer-base concentration (*CC*) or customer's relative size to a supplier (*RelSize*) can be proxies for customer's bargaining power.

In Table 5, We add the *CC* variable and the interaction term with *FC* dummy to the baseline analysis. The *CC* variable is negatively associated with suppliers' performance (Panel A). Suppliers with concentrated customers have lower margins and asset turnover, suggesting that customers' bargaining power makes suppliers performance lower. Panel B shows family firm customers' incremental exercise of bargaining power. The coefficient of interaction term is statistically significant and positive, and offset the negative effect of *CC*.

The ratio of customers' relative market value size to supplier also can be a proxy for the relative bargaining

power (Galbraith, 1952; Porter, 1974). Coefficients of the *logRelSize* variable is negative, but not all significant (Panel A of Table 6). On average including family firms' suppliers and non-family firms' suppliers, *RelSize* is negatively associated with gross margin (*GM*), return on asset (*ROA*), total asset turnover (*TAT*). In Panel B, we test the effect of *RelSize* separately by family firm customers using the interaction term. *FC* dummy alleviate the negative effect of *RelSize* in all regression models.

These results support the idea that family firm customers refrain from exercising power resulting in higher suppliers' performance.

4.3. Other Possible Explanations for Main Findings

To support our interpretation that the relationship with family firm customers induce an improvement of supplier's performance, we need to check other possible interpretations. One possible explanation is family firms may have strong preference for suppliers who outperform.

Propensity score matching method allows us to make a comparison group with non-family firm customers which is as similar as possible to the suppliers with family firm customers in terms of observable characteristics determining firm's performance. Before matching, suppliers with family firm customers have distinctive characteristics from suppliers with non-family firm customers.

We use a probit model to calculate a firm's Propensity scores for having S&P500 family firm customers. *FC* dummy variable is included as a dependent variable and industry and year dummies are incorporated to control time- and industry effects in calculating scores. Using a nearest-matching implementation, we find two nearest comparable suppliers which can be matched to more than one supplier with family firm for each year and industry. Suppliers with family firm don't have comparable non-family firm's suppliers are excluded. It's almost 1 to 1 matching and finally 6,688 supplier firm-year are included. In Panel A of Table 7, difference tests of control variables between family firms' suppliers and non-family firm suppliers are shown. Before matching, there are significant differences in all explanatory variables. With matched sample, differences of firm age and leverage are

become insignificant, and the differences of asset size and sales growth become weaker, but they are still significant. The sample of non-family customers' suppliers is not enough size to find perfectly matched sample. However, in probit regression (Panel B), only size variable remains statistically significant with a matched sample. The pseudo- R^2 drops to below 1%.

Table 8 present results of baseline analysis using the propensity score matched sample. The results are consistent with the results of 'PreMatch' sample. The coefficient of family firm's supplier dummy remains significant and positive in all regressions from *ROA* to *GM*. Higher operating efficiency of family firms' supplier is also kept. The coefficient of *FC* dummy has become intensified slightly. The propensity score analysis supports our hypothesis that family firm customers provide favorable relationship to their suppliers.

Finally, in Table 9, we conduct the difference-in-difference analysis to test whether a supplier firm with family customers exhibits high profitability even before becoming the supplier firm, or the firm's profitability has been elevated since the firm initiated the customer-supplier relationship with family customers. Only a subset of firms that have experienced a transition from a non-supplier firm to a new supplier firm are used in this analysis. To define pre-relationship period and relationship period, we use three different time windows: i) from Year -3 to Year +3, ii) from Year -2 to Year +2, and iii) from Year -1 to Year +1, where Year 0 is the year when the firm first became a supplier firm by acquiring its first S&P 500 major customer firm. *Post* dummy equals one for firm-year observations in the relationship period and zero otherwise. Table 9 presents evidence that firms that become suppliers of family customer firms originally exhibit lower profitability than other firms as marginally significant yet consistently negative coefficients of *FC* dummy show. The main variable of interest, *FC * Post*, has positive and significant coefficients in all columns. The results in Table 9 confirm that it is not that family firms acquire profitable suppliers to begin with, but rather that originally less profitable suppliers of family firms enjoy a significant increase in their profitability during the relationship period.

5. Conclusion

Both theories regarding family firms that are well-known in the finance literature and socioemotional wealth theory, a concept gaining popularity in management research, predict that family firms will maintain a more generous and cooperative attitude towards their suppliers than other firms do. It is also anticipated that family firms will pursue a longer-term relationship with their supplier firms. The finance literature has documented that family firms have a longer-term perspective and greater reputation concerns, and relatively recent papers in management show that protecting socioemotional wealth is one of the most important goals of family members.

This paper examines the manner in which family customer firms interact with their supplier firms. We find that the presence of a family customer firm is associated with higher overall profitability, higher gross margin, better asset utilization, and longer duration of the relationship of supplier firms. Our robustness tests confirm that our results are not driven by family firms' preference for already profitable suppliers. This study highlights the importance of considering heterogeneity among potential customer firms when a firm chooses to become a supplier of large firms.

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Table 1: Variable definitions

Variable	Definition
FC dummy	An indicator variable equal 1 if the supplier has at least one S&P 500 family customer firm
ROA	Operating Income Before Depreciation / average book value of assets between t-1 and t
ROE	Income before extraordinary items / average book value of equity between t-1 and t
TAT	Sales / average book value of assets between t-1 and t
PM	Income before extraordinary items / Sales
OM	Operating Income Before Depreciation / Sales
GM	Gross Profit / Sales
CC	Customer-base concentration index (Patatoukas, 2012)
logRelSize	$\log(\text{Customers' weighted average market value} / \text{supplier's market value})$
logSize	$\log(\text{book value of asset})$
logAge	$\log(\text{firm age})$
Leverage	book value of debt / book value of equity
Sales Growth	$\text{Sales } t / \text{Sales } t-1$

Table 2: Descriptive statistics

	N	Mean	Std.	t-value	difference of means	Median	difference of medians	z-value					
Supplier with Family Customer	0	1	0	1	1	0	1						
Performance of Suppliers													
ROA	7,133	4,256	0.058	0.091	0.033	-10.51	0.178	0.155	0.101	0.122	0.020	9.61	***
ROE	7,140	4,268	-0.066	-0.023	0.043	-6.36	0.366	0.344	0.054	0.081	0.027	7.20	***
TAT	7,140	4,268	1.052	1.282	0.229	-18.55	0.669	0.621	0.944	1.234	0.290	20.29	***
PM	7,140	4,268	-0.194	-0.079	0.115	-11.55	0.646	0.419	0.023	0.027	0.004	2.85	***
OM	7,133	4,256	-0.052	0.033	0.085	-10.53	0.528	0.329	0.090	0.094	0.004	2.03	***
GM	7,140	4,268	0.342	0.349	0.007	-1.59	0.263	0.202	0.338	0.325	-0.013	-1.22	
Characteristics of Supplier-Customer Relationship													
RelSize	7,087	4,216	1,052	1,695	643	-3.50	4,070	11,490	144	180	36	5.54	***
CC	7,140	4,268	0.109	0.093	-0.016	5.68	0.172	0.130	0.041	0.048	0.007	4.79	***
Characteristics of Suppliers													
Asset Size (mil.)	7,140	4,268	1,088	1,827	739	-5.95	4,666	7,269	142	187	44	8.04	***
Firm Age (years)	7,140	4,268	13.456	14.610	1.154	-5.29	10.48	11.74	10	11	1.000	2.83	***
Leverage	7,140	4,268	0.428	0.476	0.048	-11.17	0.226	0.221	0.415	0.480	0.065	11.26	***
Sales Growth	7,140	4,268	0.156	0.129	-0.027	4.37	0.347	0.307	0.092	0.077	-0.016	-3.22	***
Link Age	7,140	4,268	4.828	5.202	0.373	-4.43	4.478	4.287	3	4	1.000	7.28	***

Table 3: Correlation analysis

	FC	ROA	ROE	TAT	PM	OM	GM	CC	logRelSize	logSize	logAge	Leverage
ROA	0.090 11389	...										
ROE	0.067 11408	0.833 11389	...									
TAT	0.190 11408	0.395 11389	0.341 11408	...								
PM	0.027 11408	0.795 11389	0.868 11408	0.170 11408	...							
OM	0.019 11389	0.834 11389	0.694 11389	-0.001 11389	0.824 11389	...						
GM	-0.011 11408	0.245 11389	0.192 11408	-0.271 11408	0.354 11408	0.440 11389	...					
CC	0.045 11408	-0.090 11389	-0.086 11408	-0.084 11408	-0.092 11408	-0.118 11389	-0.085 11408	...				
logRelSize	0.052 11303	-0.276 11285	-0.289 11303	0.162 11303	-0.313 11303	-0.359 11285	-0.179 11303	0.164 11303	...			
logSize	0.075 11408	0.304 11389	0.298 11408	-0.122 11408	0.308 11408	0.428 11389	0.054 11408	-0.200 11408	-0.652 11303	...		
logAge	0.026 11408	0.154 11389	0.175 11408	0.149 11408	0.169 11408	0.135 11389	-0.021 11408	-0.123 11408	-0.112 11303	0.231 11408	...	
Leverage	0.105 11408	0.046 11389	0.023 11408	0.253 11408	-0.102 11408	0.017 11389	-0.254 11408	-0.121 11408	0.014 11303	0.257 11408	0.123 11408	...
Sales Growth	-0.030 11408	0.280 11389	0.255 11408	0.071 11408	0.242 11408	0.224 11389	0.088 11408	0.019 11408	-0.138 11303	0.044 11408	-0.174 11408	-0.048 11408

Table 4: Family customer presence and supplier firm performance

	(1) ROA	(2) ROE	(3) ATO	(4) PM	(5) OM	(6) GM
FC dummy	0.014 (2.62) ***	0.019 (1.92) *	0.098 (4.39) ***	0.055 (3.67) ***	0.040 (3.18) ***	0.022 (2.75) ***
logSize	0.033 (19.58) ***	0.069 (21.02) ***	-0.066 (-10.21) ***	0.062 (11.94) ***	0.067 (15.74) ***	0.020 (7.45) ***
logAge	0.029 (9.73) ***	0.059 (10.43) ***	0.116 (8.38) ***	0.116 (12.17) ***	0.079 (10) ***	0.008 (1.69) *
Leverage	-0.090 (-7.97) ***	-0.494 (-19.33) ***	0.615 (12.87) ***	-0.088 (-2.27) **	-0.035 (-1.12)	-0.183 (-9.77) ***
Sales Growth	0.070 (10.44) ***	0.112 (8.37) ***	0.178 (8.49) ***	0.067 (2.42) **	0.072 (3.42) ***	0.024 (2.46) **
Intercept	-0.093 (-7.99) ***	-0.242 (-11.4) ***	0.990 (22.2) ***	-0.602 (-15.86) ***	-0.460 (-14.14) ***	0.300 (16.54) ***
Industry fixed effects	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes
Adj_Rsq.	0.263	0.260	0.331	0.180	0.210	0.157
F-value	39.39	46.05	26.71	17.45	19.94	13.09
No. Obs.	11,389	11,408	11,408	11,408	11,389	11,408

Table 5: Interaction between family customer presence and customer concentration, and supplier firm performance

Panel A

	(1) ROA	(2) ROE	(3) ATO	(4) PM	(5) OM	(6) GM
FC dummy	0.014 (2.65) ***	0.019 (1.95) *	0.098 (4.42) ***	0.055 (3.8) ***	0.040 (3.29) ***	0.022 (2.82) ***
CC	-0.112 (-5.32) ***	-0.169 (-4.67) ***	-0.329 (-4.96) ***	-0.671 (-7.95) ***	-0.561 (-7.86) ***	-0.252 (-7.86) ***
logSize	0.031 (18.31) ***	0.066 (20.13) ***	-0.073 (-11.03) ***	0.049 (9.76) ***	0.056 (13.53) ***	0.015 (5.61) ***
logAge	0.028 (9.2) ***	0.057 (9.98) ***	0.111 (8.02) ***	0.107 (11.56) ***	0.072 (9.32) ***	0.005 (0.98)
Leverage	-0.095 (-8.48) ***	-0.501 (-19.7) ***	0.601 (12.61) ***	-0.115 (-3.06) ***	-0.058 (-1.92) *	-0.193 (-10.49) ***
Sales Growth	0.073 (10.98) ***	0.115 (8.74) ***	0.185 (8.95) ***	0.082 (2.98) ***	0.084 (4.06) ***	0.030 (3.08) ***
Intercept	-0.067 (-5.53) ***	-0.203 (-9.12) ***	1.067 (22.75) ***	-0.445 (-11.75) ***	-0.329 (-10.15) ***	0.359 (19.49) ***
Industry fixed effects	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes
Adj_Rsq.	0.272	0.264	0.336	0.210	0.242	0.180
F-value	39.43	45.14	27.54	18.81	21.00	15.51
No. Obs.	11,389	11,408	11,408	11,408	11,389	11,408

Panel B

	(1) ROA	(2) ROE	(3) ATO	(4) PM	(5) OM	(6) GM
FC dummy	0.003 (0.44)	0.004 (0.37)	0.068 (2.75) ***	0.018 (1.09)	0.002 (0.16)	0.012 (1.34)
CC	-0.141 (-5.68) ***	-0.207 (-4.9) ***	-0.408 (-5.7) ***	-0.768 (-7.35) ***	-0.659 (-7.54) ***	-0.277 (-7.15) ***
CC * FC dummy	0.115 (2.8) ***	0.151 (2.21) **	0.312 (2.19) **	0.386 (2.62) ***	0.388 (3.01) ***	0.102 (1.7) *
logSize	0.031 (18.33) ***	0.066 (20.09) ***	-0.072 (-10.97) ***	0.049 (9.86) ***	0.057 (13.64) ***	0.015 (5.65) ***
logAge	0.027 (9.09) ***	0.056 (9.88) ***	0.110 (7.99) ***	0.106 (11.48) ***	0.071 (9.23) ***	0.005 (0.94)
Leverage	-0.094 (-8.41) ***	-0.500 (-19.64) ***	0.604 (12.66) ***	-0.113 (-2.99) ***	-0.055 (-1.84) *	-0.192 (-10.43) ***
Sales Growth	0.073 (11.01) ***	0.116 (8.75) ***	0.185 (8.96) ***	0.082 (2.99) ***	0.085 (4.08) ***	0.030 (3.09) ***
Intercept	-0.065 (-5.39) ***	-0.201 (-9.03) ***	1.071 (22.86) ***	-0.440 (-11.57) ***	-0.324 (-9.96) ***	0.360 (19.51) ***
Industry fixed effects	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes
Adj_Rsq.	0.274	0.265	0.337	0.212	0.245	0.181
F-value	37.95	43.24	26.46	18.28	20.31	14.90
No. Obs.	11,389	11,408	11,408	11,408	11,389	11,408

Table 6: Interaction between family customer presence and relative difference in firm size, and supplier firm performance

Panel A

	(1) ROA	(2) ROE	(3) ATO	(4) PM	(5) OM	(6) GM
FC dummy	0.015 (2.89) ***	0.020 (2.06) **	0.098 (4.35) ***	0.058 (3.76) ***	0.042 (3.3) ***	0.029 (3.71) ***
logRelSize	-0.004 (-2.63) ***	-0.004 (-1.38)	0.002 (0.35)	-0.006 (-1.24)	-0.006 (-1.39)	-0.020 (-8.17) ***
logSize	0.030 (13.38) ***	0.066 (15.19) ***	-0.063 (-7.19) ***	0.057 (8.07) ***	0.062 (10.88) ***	0.002 (0.68) **
logAge	0.029 (9.67) ***	0.059 (10.31) ***	0.115 (8.27) ***	0.117 (12.11) ***	0.080 (9.98) ***	0.009 (1.92) *
Leverage	-0.084 (-7.08) ***	-0.488 (-18.37) ***	0.613 (12.5) ***	-0.078 (-1.93) *	-0.026 (-0.79) **	-0.147 (-7.54) ***
Sales Growth	0.068 (9.93) ***	0.108 (8.01) ***	0.176 (8.29) ***	0.062 (2.18) **	0.067 (3.12) ***	0.012 (1.24)
Intercept	-0.062 (-3.61) ***	-0.209 (-6.53) ***	0.974 (13.53) ***	-0.558 (-10.23) ***	-0.419 (-9.15) ***	0.458 (17.86) ***
Industry fixed effects	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes
Adj_Rsq.	0.266	0.261	0.337	0.181	0.211	0.174
F-value	38.35	43.77	25.26	16.59	18.98	15.24
No. Obs.	11,285	11,303	11,303	11,303	11,285	11,303

Panel B

	(1)	(2)	(3)	(4)	(5)	(6)
	ROA	ROE	ATO	PM	OM	GM
FC dummy	-0.026 (-2.47) **	-0.022 (-1.08) **	-0.021 (-0.48)	-0.110 (-3.44) ***	-0.102 -3.82 ***	-0.031 (-1.74) *
logRelSize	-0.007 (-4.26) ***	-0.007 (-2.24) **	-0.007 (-1.00)	-0.019 (-3.38) ***	-0.017 -3.52 ***	-0.025 (-8.46) ***
logRelSize * FC dummy	0.008 (4.14) ***	0.008 (2.13) **	0.024 (2.81) ***	0.034 (5.49) ***	0.029 5.7 ***	0.012 (3.74) ***
logSize	0.030 (13.32) ***	0.066 (15.15) ***	-0.064 (-7.26) ***	0.056 (7.98) ***	0.062 10.8 ***	0.002 (0.6)
logAge	0.029 (9.78) ***	0.059 (10.37) ***	0.115 (8.33) ***	0.118 (12.27) ***	0.081 (10.13) ***	0.010 (1.98) **
Leverage	-0.085 (-7.14) ***	-0.488 (-18.41) ***	0.612 (12.51) ***	-0.080 (-1.99) **	-0.027 (-0.85) **	-0.147 (-7.62) ***
Sales Growth	0.068 (9.96) ***	0.108 (8.01) ***	0.176 (8.30) ***	0.061 (2.18) **	0.067 (3.13) ***	0.012 (1.24) **
Intercept	-0.043 (-2.46) ***	-0.190 (-5.75) ***	1.027 (13.77) ***	-0.483 (-8.6) ***	-0.355 (-7.46) ***	0.485 (18.29) ***
Industry fixed effects	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes
Adj_Rsq.	0.269	0.262	0.338	0.185	0.216	0.177
F-value	37.52	42.33	24.58	16.44	18.92	14.75
No. Obs.	11,285	11,303	11,303	11,303	11,285	11,303

Table 7: Propensity score matching results

Panel A							
Family Firms' Supplier	<u>Prematch</u>			<u>PostMatch</u>			
	0	1	t-value	0	1	t-value	
logSize	5.092	5.431	-8.94 ***	5.101	5.216	-2.51 **	
logAge	2.281	2.330	-2.93 ***	2.300	2.278	1.04	
Leverage	0.156	0.129	4.37 ***	0.130	0.140	-1.24	
Sales Growth	0.428	0.476	-11.17 ***	0.439	0.449	-1.79 *	

Panel B				
	<u>PreMatch</u>		<u>PostMatch</u>	
logSize	0.053		0.024	
	(57.97)	***	(7.12)	***
logAge	0.005		-0.025	
	(0.1)		(1.7)	
Leverage	0.450		0.089	
	(63.66)	***	(1.51)	
Sales Growth	-0.171		0.037	
	(19.38)	***	(0.54)	
Intercept	-1.042		-0.278	
	(174.75)	***	(6.87)	***
Industry fixed effects	Yes		Yes	
Year fixed effects	Yes		Yes	
Prob > chi2	0.000		0.871	
Pseudo R ²	0.0835		0.0058	
No. Obs.	11,408		6,688	

Table 8: Family customer presence and supplier firm performance: A subsample analysis

	(1) ROA	(2) ROE	(3) ATO	(4) PM	(5) OM	(6) GM
FC dummy	0.012 (2.2) **	0.020 (1.91) *	0.103 (4.42) ***	0.056 (3.37) ***	0.042 (3.09) ***	0.023 (2.79) ***
logSize	0.033 (17.45) **	0.069 (17.63) ***	-0.066 (-9.15) ***	0.056 (9.62) ***	0.062 (13.29) ***	0.016 (5.78) ***
logAge	0.031 (9.17) **	0.068 (10.87) ***	0.122 (7.83) ***	0.119 (11.06) ***	0.081 (9.43) ***	0.012 (2.21) **
Leverage	-0.080 (-6.03) **	-0.390 (-12.98) ***	0.656 (11.65) ***	-0.073 (-1.62)	-0.017 (-0.47)	-0.181 (-8.53) ***
Sales Growth	0.086 (9.31) **	0.143 (7.84) ***	0.207 (7.3) ***	0.102 (2.58) ***	0.099 (3.31) ***	0.037 (2.71) ***
Intercept	-0.103 (-6.86) **	-0.445 (-14.57) ***	0.946 (16.78) ***	-0.602 (-12.70) ***	-0.468 (-11.57) ***	0.283 (12.75) ***
Industry fixed effects	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes
Adj_Rsq.	0.265	0.257	0.311	0.172	0.200	0.165
F-value	32.69	31.83	22.56	13.18	15.13	8.74
No. Obs.	6,673	6,688	6,688	6,688	6,673	6,688

Table 9: Difference-in-difference analysis of supplier firm performance

	from $t-3$ to $t+3$		from $t-2$ to $t+2$		from $t-1$ to $t+1$	
	(1) ROA	(2) ROE	(3) ROA	(4) ROE	(5) ROA	(6) ROE
FC dummy	-0.022 (-1.73) *	-0.035 (-1.50)	-0.026 (-1.85) *	-0.046 (-1.76) *	-0.024 (-1.61)	-0.053 (-1.84) *
Post dummy	-0.011 (-1.34)	-0.015 (-0.95)	-0.012 (-1.39)	-0.015 (-0.91)	-0.005 (-0.57)	-0.001 (-0.04)
FC * Post	0.030 (2.46) **	0.039 (1.70) *	0.037 (2.71) ***	0.053 (2.05) **	0.029 (1.89) *	0.054 (1.80) *
logSize	0.049 (19.62) ***	0.097 (20.67) ***	0.051 (18.85) ***	0.101 (19.86) ***	0.050 (16.66) ***	0.099 (17.34) ***
logAge	0.030 (7.15) ***	0.047 (6.02) ***	0.028 (6.49) ***	0.043 (5.14) ***	0.026 (5.64) ***	0.039 (4.35) ***
Leverage	-0.162 (-10.16) ***	-0.460 (-13.33) ***	-0.160 (-8.80) ***	-0.471 (-11.82) ***	-0.153 (-6.75) ***	-0.447 (-9.28) ***
Sales Growth	0.039 (4.32) ***	0.063 (3.89) ***	0.034 (3.30) ***	0.050 (2.67) ***	0.035 (2.55) ***	0.055 (2.27) ***
Intercept	-0.274 (-6.61) ***	-0.393 (-4.54) ***	-0.266 (-7.41) ***	-0.446 (-5.46) ***	-0.261 (-7.90) ***	-0.422 (-5.60) ***
Industry fixed effects	yes	yes	yes	yes	yes	yes
Year fixed effects	yes	yes	yes	yes	yes	yes
Adj_Rsq.	0.316	0.317	0.315	0.321	0.299	0.306
F-value	22.97	23.51	20.38	20.67	16.72	16.59
No. Obs.	5,862	5,862	4,157	4,157	2,200	2,200