Buying Products and Services from Whom You Know

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Abstract

This paper investigates whether interpersonal linkages among executives affect the choice of suppliers and the resulting shareholder wealth effect. We find that executive social connections increase the likelihood of a firm becoming a supplier. This effect is stronger among firms in a less competitive product market and with lower institutional ownership. We also find that the effect of social ties on supplier choice has a measurable negative effect on firm future performance.

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I. Introduction

One of the cornerstones of the economic sociology literature on embedded market (e.g., Granovetter 1985; 1992) is that economic transactions take place within the structure of social relations. The growing number of studies of the effect of networks of corporate executives such as CEOs and directors provide evidence of the role of social relations in enhancing information in financing and investment decisions. Fracassi (2010) finds that firms sharing board members invest more similarly, and that death of such a director severs this link. Duchin and Sosyura (2013) provide evidence that social connections between division managers and CEOs in conglomerates improve capital allocation and increase investment efficiency when information asymmetry is high within the conglomerate but reduce investment efficiency when corporate governance is weak. Finally, Engleberg, Gao, and Parsons (2012) show that when bankers share social ties with their borrowers, interest rates are lower, and subsequent firm performance is improved. The general message conveyed in these studies is that social ties may reduce information asymmetry and create a surplus to be shared between the transacting parties.

Other studies highlight the value of social connections to individuals and firms that possess them. Engleberg et al. (2012) suggest that managers are compensated for their rolodex. Do el al. (2012, a, b) and Faccio (2006) suggest that firms benefit from social connections to politicians. The evidence on the benefit to connected firms of political connections points indirectly to the cost of social connections to the party granting preferential treatment, that of the agency costs. Agency costs of social connections can also take a more benign form of connected

parties unintentionally ignoring the flaws of member of the social network as was noted for example in Engleberg et al. (2012) .

In this study we analyze the economic effect of social connections in an important operational decision-making context, namely, customers' choice of suppliers. In a competitive product market, when a customer is not financially distressed, the power to choose the counterparty likely resides with the customer side. Therefore, we focus on the customer's decision in selecting a supplier. In the context of customer-supplier relationships, Wilson (1995) notes that social relations evolve through social interaction between buyers and account managers. We predict that pre-existing social connections play a role in customers' choice of supplier. We further investigate whether the role that social connections play in customer-supplier relations is value enhancing in the form of reducing information asymmetries, value destroying by way of preferential treatment or both.

To provide evidence on the economic effects of social ties on the choice of suppliers by customers, we obtain a sample from the COMPUSTAT Segment file, which contains information on major customers identity. Building on actual customer – supplier relationships, we expand the sample to include all customer-potential supplier pairs. We construct our main interest variable, social ties, using BoardEx, a proprietary database that reports the past and current business relationships, affiliations with charitable or volunteer organizations, boards on which the executives had served, and past universities attended. For each customer-actual/potential supplier pair in our sample, we construct the measure of ex-ante social connections as the total number of connections between executives of the two firms predating the relation between the customer and actual supplier. In a pooled panel Probit regression of the likelihood of a potential supplier becoming an actual supplier is increasing with the number of

social connections between the customer and a potential supplier. After establishing that social connections affect customers' choice of suppliers, we investigate whether the tendency to choose a personally connected supplier is driven by the desire to reduce information asymmetry and thus likely value increasing, or by granting preferential treatment to executives within the social network and thus value decreasing. Analyses provide evidence consistent with customers' executives carrying favors to members in their social network. We do not find evidence consistent with reduction of information asymmetries. Specifically, we find that whereas the social ties effect on supplier choice is stronger for firms with weaker corporate governance, measured by institutional ownership and level of product market competitiveness, it is not affected by proxies for level of information asymmetry. Finally, we analyze whether the documented favoritism in choice of supplier is indeed value destroying for customers. We find that firms that have ex-ante social connections with their suppliers experience inferior future performance relative to their unconnected counterparts in terms of both stock returns and accounting earnings. Collectively, our evidence suggests that social ties are likely being used opportunistically in the product market.

Our study makes two contributions. First, it broadens our understanding of the impact of social connections on economic activities. Though prior research in finance largely suggests that social connections mitigate information asymmetry in financing and investing decisions, thus contributing to a social surplus, our findings suggest that they are used opportunistically in the product market resulting in a decrease in shareholder value.

Second, choosing suppliers is a very important operating decision made by a firm on a regular basis as eventual success of a firm in the product market hinges critically on the quality of its supply chain. As such, unlike the case where politicians are assumed to carry favor for the

social network (Do et al. 2012 a,b, and Faccio, 2006), inefficient decisions driven by social ties made by customer executives are likely to incur a direct monetary cost on firm and on the executive, thus intensifying the tension of such decisions. Our study provides evidence that in spite of the direct cost to executives, social network likely exerts a negative influence on the quality of the supplier selection process. In this sense, our findings have implication for both shareholders and directors who care about corporate governance.

The rest of the paper is organized as follows. The next section develops testable hypothesis. Section 3 discusses sample selection and research methodology. Section 4 presents empirical results and additional analysis. Section 5 concludes.

II. Literature Review and Hypothesis Development

The role of social connections in affecting economic decisions was long viewed as insignificant by classical and neoclassical economists (e.g. Adam Smith 1776). They took the view that the social world and the business world are parallels. Participants in the business (market) world are modeled as self-interested stand-alone players (atomized) such that economic decision making is rarely disturbed by concrete past and on-going social relations. To the extent that social connections existed in the discussion, they were viewed as a friction on perfect competition. Later year economists, though acknowledging the effect of individual social background on economic decisions (e.g Becker, 1976 and Leibenstein, 1976), described a world in which individuals subject their economic decisions to a social contracts. That in turn resulted in a generalized predicted effect of belonging to a large social/cultural group (e.g. poor, minorities). However, the specific context of a concrete past or on-going social connection was still ignored.

Sociologists and economic historians starting with Polanyi (1944) suggest that economic behavior is embedded in concrete past and on-going social relations. Granovetter (1985) reviews the literature in the field and suggests a refined notion of embeddedness, in which economic decisions are embedded in concrete ongoing systems of social relations which serves to foster the trust but also fraud.

Economic literature started recognizing the effect of concrete social relations on economic decisions with studies such as Ellison and Fudenberg (1993, 1995) that provide theory suggesting that individuals base economic decisions on their neighbors experience and on informal communication such as word of mouth communication. Recent years have seen a proliferation in economic research investigating the effect of social ties on economic and business decisions. One line of research focuses on firm investment and funding decisions. Engelberg et al. (2012) document statistically significant lower interest rates charged by banks on loans extended to firms with management socially connected to bank management. They further find that the lower rates are a reflection of either superior information or better monitoring but not of preferential treatment. Fracassi (2012) provides evidence that social ties influence corporate investment decisions such that firms with more social ties between them exhibit more similar levels and changes of investments. Cohen et al. (2008) provide evidence on information transfers between fund managers and board members that share education networks leading to greater bets and better investment performance in the firms in which the latter serve on the board. Another line of research investigates the value of social ties to the managers and to the firms they serve. Engelberg et al. (2012) find that managers are compensated for the social ties to senior managers and directors outside the firm and the compensation is increasing with the importance of the outside social connection. Do et al. (2012, a, b) provide evidence that political

connections enhance firm value and that the size of firm benefit is conditional on the politician's seniority and clout. Faccio (2006) finds that when a firm officer or large shareholder is elected to a political position the firm enjoys an increase in value and that increase is especially large if the political position is of prime minister. Bertrand et al. (2007) provide evidence that social ties with politicians can also be costly to the firm.

In this study we extend this line of research by investigating the role personal links play in the relation between customers and suppliers. Specifically, we are interested in whether social connections affect customers' choice of suppliers. Customer-supplier relation is widely recognized as a very important aspect of a firm's operations, which may extend beyond the pure provision of the product or the service (e.g. Kale and Shahrur, 2007). Unlike social ties with politicians, where the monetary cost, if exists, of suboptimal decisions motivated by a personal relation is not directly born by the politician carrying the favor, but by society as a whole, in the context of customer-supplier relationship, choice of suppliers motivated by a personal relation could have a direct cost on the manager carrying the favor through the link between his firm's performance and his compensation. Academic literature in marketing suggests that interpersonal relationship between buyers and suppliers serve as a barrier to switching suppliers (Wathne et al., 2001). Given theory and empirical evidence that business decisions are embedded in concrete past and on-going social relations, we expect social relations to affect the choice of suppliers by customers. Our first testable hypothesis is therefore:

H1: The likelihood of a potential supplier to become a supplier of a firm increases in the presence of interpersonal relations between the potential supplier and the customer.

Next, we analyze the drivers of the observed association between social network and the choice of suppliers. Two, non- mutually exclusive, drivers with opposite implications to

customer performance come to mind. The first is that the social network connections facilitate trust and an informal information channel between the potential supplier and the customer that reduces the risk and uncertainty at the customer side and thus increases the likelihood of picking the potential supplier within the social network. This explanation is supported by recent work by Engelberg et al (2012) who find lower cost of debt for personally related borrower that is associated with better performance of the borrower suggesting better information flow or better monitoring. Similar inference could be made from Cohen et al. (2008). They find that information flow from board members to socially connected fund managers improves decision-making by fund managers and thus results in higher returns for connected firms held by the fund than for non-connected firms held by the fund. The second is that customer executives, aware of the potential supplier flaws, decide to grant him preferential treatment because of the pre-existing personal relations with its executives and choose it over better candidate. Alternatively, personal relations could subconsciously cause customer executives to ignore the potential supplier's weaknesses and chose him over stronger potential suppliers.

We conjecture that if the first explanation (efficient flow of information) holds true the effect of personal relations on the choice of supplier by the customer should increase with the level of supplier's information asymmetry. If, however, the choice of supplier is not driven by better flow of information we do not expect the relation to be effected by suppliers' information asymmetry. We also conjecture that if preferential treatment, deliberate or unintentional, is a driver of the increased likelihood of a connected firm to become a supplier, then the strength of the effect should decrease with the quality of customer's corporate governance. If, however, preferential treatment does not drive the relation we do not expect to see cross-sectional differences when partitioning on quality of corporate governance.

Finally, since the implications of the alternative explanations of customer's choice of a supplier on firms' performance and value are in opposite directions, we analyze the effect of personal connections in actual customer-supplier relations on customers' operating performance and stock returns. If both drivers play a role in the choice, customer operating performance and stock returns analyses should help provide evidence on which effect is stronger in the cross section.

III Sample Selection and Sample Selection

Sample selection

To construct our sample, we start with the Compustat Industry Segment file to identify actual supplier-customer relations among US public companies between the years 2000-2011, for which there are Compustat and CRSP data available. The Compustat Industry Segment file contains information about sales to customers representing more than 10% of the firm's total sales reported by the firm in the footnotes under SFAS 14 and SFAS 131. We then exclude from the sample firms not covered by BoardEx database[1]. BoardEx reports work histories, educational backgrounds and current participation in social organizations for C-level executives, lower level executives, and current directors. It is widely used in academic studies to examine the economic role of social network (e.g., Engelberg et al., 2012; Schmidt, 2008; Cohen et al., 2008; Fracassi and Tate, 2009). In total our sample holds 4,097 actual supplier-customer years, representing 370 unique suppliers and 753 unique customers. We focus on the period 2000-2011 because prior to 2000, BoardEx's coverage of US public companies is very limited (Engelberg et al., 2012; Fracassi and Tate, 2012).

[1] We thank Joseph Engelberg for providing us with the CRSP-COMPUSTAT-BoardEx link file.

We then expand our sample to include potential suppliers (also referred to as pseudo suppliers). For each customer-year, we select potential suppliers from the Compustat industry file as those firms that are 1) in the same 4 digit SIC industry as at least one of the customer's actual suppliers and 2) covered by BoardEx. The expanded sample include 63,775 customer-potential supplier pairs, among them 4,097 are actual customer-supplier years identified above (*SUP_CUST_REL*=1) and the remaining are pseudo-supplier years (*SUP_CUST_REL*=0*).* We also obtain data on firm characteristics from Compustat, stock return data from CRSP and institutional ownership data from Thomson Reuters 13F.

Research design

To test our hypothesis that social ties between executives of customer their potential suppliers increases the likelihood of the potential supplier to become an actual supplier, we estimate a probit model based on the regression as follows.

$$Prob(SUPPLIER_{i,j,t}=1)=\beta_0+\beta_1*CONNECTED_{i,j,t}+\beta_l*CUSTOMER\ CHARACTERISTICS_{l,i,t}+\beta_m*SUPPLIER\ CHARACTERISTICS_{m,i,t}+\gamma_l*CUSTOMER\ FE_{,}+\delta_l*YEAR_n+\varepsilon_{,i,j,t} \quad (1)$$

Where $SUPPLIER_{i,j}$ is a dummy variable, equal to 1 if a potential supplier j is also an actual supplier of the customer i and 0 otherwise. i, j, and t index for customer i, supplier j, and fiscal year t. Our main variable of interest is $Connected_{i,j}$, which captures social ties among management between a potential supplier-customer pair. Following Engelberg et al. (2012), it is measured as the natural logarithm of the number of pre-existing social connections (for example, if the executives of the two firms− a pair of customer-potential supplier− attended the same college or worked for the same company in their past). To avoid reverse causality, we focus on the pre-existing social connections two years removed from the first time an actual customer-

supplier relation appears in the database. In other words, we define pre-existing connections as the one that existed at least 2 years before the year that customer-actual supplier relation was first established. We use the same year to measure number of social relations between a customers and potential suppliers that did not become actual suppliers (for these pairs we do not have a year in which customer-supplier relation started).[2] Based on H1, the coefficient on $CONNECTED_{i,j}$ is expected to be positive.

Customer characteristics considered as control variables include firm size, defined as the natural logarithm of total assets; customer fixed effects are included to control for time invariant customer characteristics. Supplier characteristics considered are supplier firm size, firm performance measured as ROA, leverage, cash holdings, tangibility (net PPE scaled by total assets), and product market share (LARGEST) measured by an indicator variable, equal to 1 if the supplier is among the top three firms in terms of firm size in that industry, and 0 otherwise. Firms with greater product market share will be mechanically, positively associated with the likelihood of being chosen as the actual supplier, so we expect a positive coefficient on LARGEST. Firm performance (leverage) is expected to be positively (negatively) associated with the likelihood of being a supplier because higher profitability (leverage) reduces (increases) the risk of switching suppliers from the customer point of view. Firms with more cash holdings and tangible assets are more willing to offer trade credit to customers, thereby increasing the probability of being chosen as the supplier. We also control for year fixed effects to account for macro-economic factors that shift the demand or supply in the product market.

[2] For example, if A and B operate in the same 4-digit industry, A is a supplier of C and B is not, and the customer supplier relationship between A and C started in 2007 we will identify for both A and B social relation with C that started before 2005.

To investigate whether the social network effect on the choice of supplier is driven in part by superior information that results from personal relations, we test whether the effect is accentuated in suppliers characterized by greater information asymmetries. If personal relations mitigate information asymmetries, they are likely to play a larger role when information asymmetries are more pronounced. We consider two variables to measure information asymmetry of the potential supplier firm: bid-ask spread and accounting quality. Suppliers's bid-ask spread is the average daily bid-ask spread calculated as (bid-ask) / [(bid+ask)/2] over the fiscal year (source of calculation CRSP). Suppliers's accounting quality is measured following Bharath et al. (2008) – principal component analysis of the following three standardized abnormal accruals measures: Dechow and Dichev (2002), Teoh et al. (1998) and the modified Jones model as developed in Dechow et al. (1995).

Both of these two variables have been used in prior studies to proxy for information environment. Bagehot et al. (1971) suggests information-based trading affects the spread between bid and ask prices offered by market specialists. Particularly, the higher the information asymmetry, the larger the bid-ask spread (Amihud and Mendelson, 1986). Leuz and Wysocki (2008) provide a review of the literature on financial reporting and disclosure and its effects on the information environment of the firm. Accounting quality has been shown to be shown to explain firm information asymmetries (Wittenberg-Moerman, 2008, and Biddle and Hilary, 2006) and that high accounting quality can reduce information asymmetries between insiders and outsiders.

To investigate whether the social relations effect on the choice of supplier is driven in part by customers' executive intentionally or unintentionally by ignoring their connected suppliers' flaws, we test whether the social network effect changes with the quality of corporate

governance at the customer. If the greater likelihood of choosing a supplier from within the social network is driven by the desire to carry favors, this desire should be less pronounced in customers with better corporate governance. To measure agency problem, we employ institutional ownership and product market competition, where the intensity of institutional ownership is computed as the ratio of institutional ownership to total share outstanding (*INST_H*) and the product market competition is measured by the Herfindhal-Hirshman index at the customer 2-digit SIC industry code (*HHI_C*). Institutional investors play a monitoring role, which can reduce agency costs (Shleifer and Vishny, 1997; Ashbaugh, Collins and LaFond, 2004). Product market competition was used by classical and neoclassical economists as a disciplinary mechanism against pervasive self-serving fraudulent economic actions. Shleifer and Vishny (1997) argue that product market competition disciplines managers and forces them to maximize shareholder value by making value enhancing decisions. Hence firms in competitive product market have lower agency costs (Giroud and Mueller, 2009). We interact the two information asymmetry proxies at the potential supplier firm and the two agency costs proxies at the customer firm with *CONNECTED* and expand model (1) by including each interaction term and the corresponding main variable. If social ties reduce information asymmetry, we expect the coefficient on the interaction term to be negative for the accounting quality proxy and positive for the bid-ask spread proxy. If agency costs are the main driver for the social relations effect, then we expect the coefficient on the interaction term to be negative for the institutional ownership proxy and positive for the product market competition proxy.

IV Empirical Analysis

Descriptive statistics

Table 1 reports summary statistics of our sample. The sample includes 4056 observations of actual customer-supplier relations and 59719 observations of customer-potential suppliers. In 28.9 percent of the total 63775 pairs at least one social relation exists. Average number of connections is 1.58. When we condition on at least 1 social relation, the average number of connections is 5.45. Table 2 reports summary statistic for the sample partitioned to actual and potential customer-supplier. In this table we also provide descriptive statistic on supplier characteristics that serve as control variable in the analysis. Because actual suppliers in the sample are suppliers that make more than 10% of their sales to a single customer, they are significantly smaller than the customers though they are larger and more profitable (ROA of 1.8% vs -0.8%) than their counterparts potential suppliers. Actual suppliers are on average more levered and more cash constrained and somewhat larger in size. With regards to the variable of interest, descriptive statistic provide a univariate evidence on the positive relation between pre-existing social ties and the formation of customer-supplier relations. Personal connections at all executive levels exist for 28.5 percent of our customer- potential supplier pairs compared to 35.8 percent of our actual customer-supplier pairs. The difference between the two groups is significant at the 1% level. Average number of social connections conditional on at least 1 social connection is also larger for actual customer-supplier pairs with a mean of 7.58 compared with 5.27 for customer-potential supplier pairs. Overall, our univariate results provide preliminary evidence that customers gravitate towards buying goods from whom they know. Pairwise

correlations in Table 3 demonstrate the same positive relation between personal connection variables and the likelihood of a potential customer being the actual customer.

Regression analysis

The effect of social relations on the choice of suppliers

Table 4 column 1 reports the results of a probit regression estimating the effect of social ties on the probability that a potential supplier becomes an actual one. The coefficients on control variables are largely consistent with our expectation. That is, larger product market share, better performance and proximity to the customer all increase the likelihood of a customer to buy goods from the firm. More importantly, the coefficient on the pre-existing social connections is positive and significant at the 1% level (coefficient=0.136, t-stat=5.58), suggesting that pre-existing social networks among executives at different firms promote transactions between these firms at the product market.

In order to corroborate our evidence on the effect of social ties on the choice of suppliers, we test whether social ties affect the likelihood of a supplier to land a potential customer as an actual customer. Note that conceptually the type of decision made by a customer is different from the one made by supplier. While, customers typically, unless the supplier possess a monopsony in the market (not likely in our study setting) have the bargaining power, and can effectively choose a supplier, suppliers do not typically choose their customers and will make the sale to almost anyone willing to buy the services and the products regardless of pre-existing social ties. Therefore, from a supplier perspective, social ties play a role of "opening the door" at the connected customer for the connected supplier, and thus likely increase their likelihood of landing a potential customer as an actual one.

We employ the same procedure of identifying potential customers who are in the same 4 digit industry as the actual customer. Table 4 column 2 reports results. Consistent with the results on the choice of suppliers reported in column1, the likelihood of a potential customer to become an actual customer increases with the pre-existing social ties. Overall, the evidence suggests that social networks promote transactions between firms at the product market.

Next, we analyze whether the effect of social ties on the choice of suppliers is driven by the desire to lower information asymmetry via social ties, by executives carrying favors to the parties in their social network, or both. If it is the former, we expect the social ties effect to be stronger when suppliers have higher level of information asymmetries. By the same token, if it is the latter, we expect the effect of social ties to be more pronounced when firms' corporate governance is weak.

These tests also serve us to alleviate the concern of reverse causality in the analysis in Table 3. If indeed the measure we employ to identify social connections that occur at least two years before the first appearance in the customer-supplier database is inadequate, and the relation we document is driven by reverse causality (i.e. social relations were formed as a result of the customer-supplier relation), then we expect no variation of the documented effect in either corporate governance or information asymmetry. In addition, these cross-sectional analyses help address endogeneity concerns, where the formation of both customer-supplier relation and social connections can be jointly determined by some correlated omitted variables.

Corporate Governance

Table 5 reports results for the effect of corporate governance on the relation between social ties and customers' choice of suppliers. Column 1 focuses on the interaction of social tiers

with institutional ownership. The coefficient on the interaction term between INST_H and CONNECT is negative and significant at the 1% level (coefficient=-0.35, t-stat=-2.72), suggesting that institutional ownership likely mitigates the effect of social connections on the choice of suppliers. At the extreme when shareholders are all institutional investors the social ties effect is completely diminished. Column 2 reports results on the effect of customer's product market competition. The coefficients on the interaction between product market competition and pre-existing social relations are positive and significant at the 5% level (coefficient=0.374, t-stat=2.48). Since HHI_C is decreasing in product market competition intensity, these results suggest that competition in the product market constrains the choice of suppliers that is driven by social ties. Market competition has been used by classical and neoclassical economists to assume away the effects of concrete past and on-going social ties on individuals' economic decisions. Interestingly even when the product market is perfectly competitive (HHI_C close to 0) the main effect, though much weaker, is still positive and significant. This result suggests that even in very competitive market condition concrete social ties play a role in economic decisions. Taken together, the evidence is consistent both with and agency problem explanation to the positive association between the number of social connections and the likelihood of a potential supplier to become an actual.

As noted earlier agency explanation is consistent both with social connections customers executive intentionally granting preferential treatment to supplier socially connected to them, and with a more benign explanation that the effect of social ties reflects naïve tendency to overlook the flaws of people we know and sympathize of rather than a willful conscious bias favoring people in our social network. When attempting to separate alternative explanation, institutional ownership results could be interpreted as supporting both explanations market competition

results lend credence to the intentional favoring explanation. High proportion of institutional investors can prevent executives from choosing suppliers with whom they have social connections, even when they believe that the supplier with the social connections is at par or slightly better than other potential suppliers. The evidence from the product market competition test - that the role of social ties in the choice of suppliers when the product market is extremely competitive - suggests that at least part of the bias in favor of supplier with social connections is driven by willful preferential treatment to members of the social network. The positive and significant coefficient on the main effect in the regression reported in column 2 – that the social ties effect is not completely eliminated even in a perfect competition environment - suggest that at list part of the effect could be explained by naïve tendency to ignore the flaws of individual one knows and likes.

Information Asymmetries

Prior section shows that managers use social connections opportunistically in the product market. In this section, we examine whether social ties can mitigate information asymmetry between buyers and sellers. Table 5 column 3 and 4 report results for the two measures of information asymmetries we employ in this study (supplier bid-ask spread and supplier accounting quality). While the coefficient on CONNECTED remain significant at the 1 percent level, neither of the interaction variables with the information asymmetry proxies is significant at conventional level. Though any inference from "no results" is always subject to the lack of power possibility, analysis can provide no evidence that the positive association between the choice of suppliers and pre-existing social ties is driven by the desire of customers executives to reduce information asymmetries between customer and supplier.

Does Preferential Treatment Destroy Value

Having documented that the positive relation between pre-existing social ties and the choice of suppliers is driven in part by preferential treatment to members of the social network, we turn to analyze whether these arguably inefficient economic decisions are costly to customers. The analysis is interesting for reasons beyond corroborating our initial results. Current literature documenting economic inefficient effects of social ties focuses on political ties (e.g. Do et al. 2012 a,b, and Faccio, 2006). Though not directly tested in these studies, it is assumed that there is a cost to society that the politician is willing to incur because this cost is born by society as a whole when the politician stands to benefit or at least not to lose from the decisions associated with firms connected to him. In the customers suppliers context cost of inefficient decisions motivated by social connections, however, is likely costly directly to the executive. Be it through reduced firm performance that serves a proxy to measure executive performance for the purpose of compensation or through stock performance that affect the value of its stock holdings.

Analyzing the effect of pre-existing social connections in actual customer-supplier relations on customers' operating performance (ROA) and firm stock return, we constrain the sample to actual customer-supplier pairs and run an event-study focusing on the first time date in which customer-actual supplier pair appears in the data. Using a difference in difference mechanism we estimate the effect of the customer-supplier relation formation on firm ROA and stock returns. Our treatment group in the analysis is customer-supplier pairs, in which social ties preceded business relation and the control group is pairs in which no social ties preceded the business relation. In order to ensure that our analysis is not dominated by large customers who have many suppliers in the analysis and therefore are part of multiple customer-supplier pairs we estimate the regression using weighted least squares procedure which effectively guaranty that

each customer receives equal weight in the regression. We control for the known variables commonly used in the literature for similar analysis such as customers, market to book ratio and customer leverage. We also control for number of customer-supplier relations formed in a year for each customer. The higher the number of new relations the less likely it is that a single relation will have an impact on customer performance. We also include an interaction with the social connections. Results are reported in Table 6.

Consistent with results suggesting that the source of the effect of social connections on the formation of customer-supplier business relation is executive at the customer granting preferential treatment to members of their social network, we find some evidence suggesting a negative economic effect pre-existing social connections have on the formation of customer-supplier relations. We document a negative significant effect on ROA and stock returns post formation of customer-supplier for all level executives when social relations between parties' executives preceded the business relations.

V **Conclusion**

The role of concrete past and on-going social connections in economic decisions has been debated among academics in multiple disciplines. This study adds to the evidence that concrete pre-existing social ties play an important role in the product market, specifically in the formation and maintenance of customer-supplier relations. We provide evidence that social ties increase the likelihood for a potential supplier to become an actual supplier and that this increased likelihood to become an actual supplier is the result of preferential treatment members of the social network receive from other members of the networks. We also provide evidence that choice of suppliers that is driven by social connections bares an economic cost to customers.

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APPENDIX A –Variable Definition

$SUPPLIER_{i,j}$	Dummy variable - coded 1 for a potential customer – potential supplier observation which displays a material business relationship in year t.
$CUSTOMER_{i,j}$	Dummy variable - coded 1 for a potential customer – potential supplier observation which displays a material business relationship in year t.
$CONNECTED_{i,j}$	Log of the number of social connection between any manager in a potential supplier's firm and any manager in a potential customer's firm.
SAME_STATE	Dummy variable – coded 1 for a potential customer - potential supplier who operate in the same state (COMPUSTAT $STATE_t$)
Log(ASSETS_C/S)	Log total assets of the potential customer/supplier (COMPUSTAT AT_t)
ROA_C/S	Return on assets – potential customer/supplier (COMPUSTAT $OIBDP_t$ / average $AT_{t,t-1}$)
LEVERAGE_C/S	Leverage – potential customer/supplier (COMPUSTAT $(DLC_t+DLTT_t)/AT_t$)
CASH_C/S	Cash to total assets – potential Customer/supplier (COMPUSTAT CHE_t/AT_t)
TANGIBILITY_C/S	Net PPE to total assets – potential supplier (COMPUSTAT $PPNT_t/AT_t$)
LARGEST	One of three largest sellers in a 4-digit SIC industry (calculated as $SALE_t$/sum($SALE_t$) in a 4-digit SIC industry)
INST_H	Institutional ownership ratio of potential customers in year t (defined as the fraction of institutional ownership of total ownership). Source: WRDS
SPREAD_S	Suppliers's bid-ask spread - average daily bid-ask spread calculated as (bid-ask) / [(bid+ask)/2] over the fiscal year (source of calculation CRSP). Only calculated for firms with at least 150 days of trade during the year.
AQ_S	Suppliers's accounting quality measure calculated following Bharath et al. (2008) – principal component analysis of the following three standardized abnormal accruals measures: Dechow and Dichev (2002), Teoh et al. (1998) and the modified Jones model as developed in Dechow et al. (1995).

POST	Dummy variable which separates the 12-year time period for each customer to before a customer-supplier relationship and after (period t to last observation is coded 1)
SUM_NEWSC	Number of new customer-supplier connections each customer has during the 12-year period investigated.
AB_RET	Yearly abnormal buy-and-hold return adjusted to ff3 factor model returns (source of calculation: CRSP)

Table 1: Summary Statistics

Variable	Mean	StDev	Q1	Median	Q3	N
REAL_SC	0.064	0.244	0	0	0	63775
CONNNECTED_BINARY	0.289	0.453	0	0	1	63775
CONNECTED	1.58	6.60	0	0	1	63775
CONNECTED (conditional on CONNECTED_BINARY=1)	5.45	11.37	1	2	4	18452

Table 2: Summary Statistics – sample partitioned by actual/potential customer-supplier relations

This table reports descriptive statistics for the sample partitioned by whether the supplier in a customer-supplier pair is an actual supplier or a potential one.

Variable	*Potential C_S Relation*						*Actual C_S Relation*						DIFF
	Mean	StDev	25%	Med	75%	N	Mean	StDev	25%	Med	75%	N	
CONNNECTED_BINARY	0.285	0.451	0	0	1	59719	0.358	0.48	0	0	1	4056	-0.074***
CONNNECTED	1.5	6.37	0	0	1	59719	2.71	9.25	0	0	1	4056	-1.215***
CONNNECTED (conditional on CONNECTED=1)	5.27	11.07	1	2	3	16999	7.58	14.21	1	2	5	1453	-2.308***
SAME_STATE	0.151	0.358	0	0	0	59719	0.172	0.378	0	0	0	4056	-0.021***
Log(ASSETS_C)	9.632	1.845	8.614	9.782	10.778	59719	10.044	1.682	9.061	10.131	11.15	4056	-0.413***
Log(ASSETS_S)	5.428	1.981	3.952	5.257	6.893	59719	5.942	1.886	4.581	5.83	7.178	4056	-0.515***
ROA_S	-0.008	0.077	-0.031	0.017	0.038	59719	0.018	0.049	0.009	0.029	0.043	4056	-0.026***
LEVERAGE_S	0.172	0.234	0	0.064	0.27	59719	0.212	0.225	0.006	0.162	0.342	4056	-0.040***
CASH_S	0.338	0.284	0.077	0.281	0.551	59719	0.23	0.24	0.034	0.143	0.37	4056	0.108***
TANGIBILITY_S	0.2	0.239	0.044	0.102	0.248	59719	0.219	0.212	0.07	0.152	0.288	4056	-0.019***
LARGEST	0.049	0.216	0	0	0	59719	0.182	0.386	0	0	0	4056	-0.133***

Table 3 – Pairwise correlations

This table reports Spearman (Pearson) correlations at the top (bottom) diagonal of the table. Correlations in bold are significant at the 5% level.

	1	2	3	4	5	6	7	8	9	10	11
ACTUAL C_S RELATION		**0.041**	**0.046**	**0.015**	**0.060**	**0.064**	**0.088**	**0.065**	**-0.096**	**0.062**	**0.137**
CONNNECTED_BINARY	**0.041**		**0.982**	**0.129**	**0.149**	**0.238**	**0.069**	**0.013**	**0.056**	**0.029**	**0.112**
CONNNECTED	**0.054**	**0.757**		**0.142**	**0.158**	**0.256**	**0.079**	**0.016**	**0.053**	**0.033**	**0.126**
SAME_STATE	**0.015**	**0.129**	**0.148**		**-0.094**	**0.053**	0.007	-0.002	**0.015**	**0.066**	**-0.039**
Log(ASSETS_C)	**0.056**	0.147	**0.146**	**-0.095**		**0.027**	**0.060**	-0.005	**-0.043**	-0.005	**0.052**
Log(ASSETS_S)	**0.064**	**0.247**	**0.271**	**0.050**	**0.039**		**0.486**	**0.323**	**-0.353**	**0.172**	**0.307**
ROA_S	**0.084**	**0.053**	**0.068**	**0.011**	**0.063**	**0.484**		**0.119**	**-0.408**	**0.296**	**0.192**
LEVERAGE_S	**0.043**	**-0.012**	-0.007	0.007	-0.007	**0.259**	**0.071**		**-0.552**	**0.285**	**0.122**
CASH_S	**-0.094**	**0.051**	**0.021**	**0.027**	**-0.048**	**-0.348**	**-0.468**	**-0.398**		**-0.420**	**-0.177**
TANGIBILITY_S	**0.020**	**-0.011**	-0.005	**0.122**	**-0.034**	**0.196**	**0.215**	**0.263**	**-0.457**		**0.107**
LARGEST	**0.137**	**0.112**	**0.145**	**-0.039**	**0.047**	**0.336**	**0.152**	**0.050**	**-0.181**	**0.017**	

Table 4 – Choice of suppliers and probability to land a customer

Column 1 reports results where the sample of actual customer-supplier pairs is expanded to include potential suppliers. The dependent variable in the regression is a dummy variable that takes the value 1 if the supplier in the customer supplier pair is an actual one and zero otherwise. Column 2 reports results where the sample of actual customer-supplier pairs is expanded to include potential customers. The dependent variable in the regression is a dummy variable that takes the value 1 if the customer in the customer supplier pair is an actual one, and zero otherwise. Control variable names ending with S/C denote alternative a supplier control where suppliers are expanded and customer control when customers are expanded.

	Choice of Supplier	Probability to Land a Customer
Intercept	-1.815***	-4.746***
	(-3.66)	(-7.44)
CONNECTED	0.136***	0.285***
	(5.58)	(6.68)
SAME_STATE	0.336***	0.318***
	(5.09)	(3.03)
Log(ASSETS_C)	0.079*	0.423***
	(1.76)	(12.60)
Log(ASSETS_S)	-0.043***	-0.070**
	(-2.77)	(-2.30)
ROA_S/C	2.322***	-0.949
	(6.15)	(-0.59)
LEVERAGE_S/C	0.178*	0.321
	(1.84)	(1.45)
CASH_S/C	-0.346***	0.625***
	(-3.15)	(2.60)
TANGIBILITY_S/C	0.173	0.922**
	(1.16)	(2.40)
LARGEST	0.468***	1.035***
	(5.42)	(8.46)
Year fixed effects	Yes	Yes
Customer firm fixed effects	Yes	Yes
N	63775	65519
Pseudo R^2	0.107	0.565

Table 5 – Corporate Governance and Information Asymmetry

This table reports results for a probit regression in which the dependent variable is a dummy variable that takes the value 1 if the supplier in the customer supplier pair is an actual one and zero otherwise. Each column adds an interaction of the main variable CONNECTED with a corporate governance/information asymmetry proxy. Column 1 reports results for customers' percentage institutional investors. Column 2 reports results for customer product market competition. Column 3 reports results for supplier's bid-ask spread. Colum 4 reports results for supplier's accounting quality. Control variable names ending with S/C denote alternative a supplier control where suppliers are expanded and customer control when customers are expanded.

	Institutional Investors	**Market Competition**	**Bid-ask spread**	**Accounting Quality**
Intercept	-1.669***	-1.653***	-1.809***	-1.809***
	(-2.88)	(-3.32)	(-3.17)	(-3.34)
CONNECTED	0.357***	0.092***	0.136***	0.138***
	(4.02)	(3.17)	(4.96)	(5.36)
INST_H	0.249*			
	(1.68)			
*CONNECTED*INST_H*	-0.354***			
	(-2.72)			
HHI_C		0.263		
		(0.73)		
*CONNECTED*HHI_C*		0.374**		
		(2.48)		
SPREAD_S			-2.185	
			(-1.31)	
SPREAD_S CONNECTED*			0.123	
			(0.07)	
AQ_S				-0.033**
				(-2.10)
AQ_S CONNECTED*				-0.004
				(-0.25)
SAME_STATE	0.335***	0.338***	0.346***	0.352***
	(4.71)	(5.12)	(4.92)	(4.78)
Log(ASSETS_C)	0.051	0.065	0.110**	0.072
	(0.93)	(1.42)	(2.17)	(1.47)
Log(ASSETS_S)	-0.041**	-0.043***	-0.074***	-0.042**
	(-2.49)	(-2.77)	(-3.42)	(-2.51)
ROA_S	2.511***	2.315***	2.468***	2.646***
	(6.37)	(6.14)	(5.73)	(5.78)
LEVERAGE_S	0.204**	0.180*	0.230*	0.227**
	(2.01)	(1.85)	(1.91)	(1.98)
CASH_S	-0.358***	-0.345***	-0.413***	-0.338***
	(-3.13)	(-3.14)	(-3.49)	(-2.76)
TANGIBILITY_S	0.150	0.169	0.264	0.183

	(0.96)	(1.13)	(1.59)	(1.04)
LARGEST	0.480***	0.463***	0.468***	0.392***
	(5.40)	(5.34)	(5.10)	(4.25)
Year fixed effects	Yes	Yes	Yes	Yes
Customer firm fixed effects	Yes	Yes	Yes	Yes
N	56672	63680	52344	49729
Pseudo R^2	0.111	0.108	0.110	0.104

TABLE 6 – Returns and ROA Analysis

This table reports results for the change in ROA and abnormal returns for a sample of only actual customer supplier pairs. The variable of interest is an interaction between CONNECTED and POST. POST is an indicator variable that takes the value 1 if the year is post the initiation of the customer-supplier relation.

	ROA	**ABNORMAL RETURNS**
Intercept	0.020	0.142***
	(1.48)	(2.97)
CONNECTED	0.001	0.047**
	(0.81)	(2.26)
POST	-0.001	-0.046**
	(-0.41)	(-1.98)
*CONNECTED *POST*	-0.003*	-0.058**
	(-1.70)	(-2.09)
LOG_NEW RELATIONS	0.006	-0.010
	(0.58)	(-0.73)
POST LOG_NEW RELATIONS*	-0.001	-0.001
	(-0.76)	(-0.04)
CONNECTED LOG_NEW RELATIONS*	-0.001	-0.025
	(-1.15)	(-1.60)
*CONNECTED*POST* LOG_NEW RELATIONS*	0.002**	0.034*
	(2.09)	(1.64)
BTM_C	-0.012***	
	(-11.20)	
LEVERAGE_C	-0.029***	-0.102**
	(-8.16)	(-2.57)
LOG(ASSESTS_C)	0.004***	-0.002
	(4.15)	(-0.30)
Year fixed effects	Yes	Yes
Customer firm fixed effects	Yes	Yes
N	2929	2737
Adj. R^2	0.669	0.013