The Real Effect of Customer Accounting Quality- Trade Credit and Suppliers' Cash Holdings

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Current Draft: January, 2012

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Abstract

To understand the implications of accounting quality on firms' liquidity and financing policy, we investigate the relation between a customer's accounting quality and its use of trade credit and study whether major customers' accounting quality is linked to their supplier's cash holdings through the use of trade credit. Theory predicts that customers with high information asymmetry tend to rely on trade credit. As high quality financial information reduces information asymmetry, we find evidence that the use of trade credit is decreasing in accounting quality. Moreover, we find that this relation is more pronounced when firms are financially constrained. Next, we show that the accounting quality of a major customer is negatively associated with its supplier's cash holdings and this relation is stronger for financially constrained suppliers and for suppliers from a competitive industry. Taken together, our results demonstrate that accounting quality plays an important role in a firm's financing decision and it has an interrelated effect on a supplier's liquidity policy.

Key words: accounting quality; trade credit; cash holdings.

JEL: G32; M41;

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1.Introduction

We investigate the effect of a firm's accounting quality on its financing decision to use trade credit and the chain effect on its supplier's cash holdings when the firm is a major client of the supplier. Trade credit is a significant source of financing in the United States. Fisman and Love (2003) show that trade credit accounts for 9 percent of total assets on average in the 1980s. Based on our sample from 1988 to 2007, trade credit accounts for 11 percent of total assets. In comparison, short-term (long-term) debt accounts for 7.1 (18) percent of total assets. Due to its importance, various theories provide explanations for the provision of credit by suppliers. One theory of particular interest and relevance is the financing advantage argument that firms rely more on trade credit when they are informationally opaque. The rationale is that suppliers have an information advantage over financial institutions regarding their customers' credit worthiness.[1] Prior studies show that high quality financial information decreases information asymmetry between financial institutions and borrowers and therefore firms with high quality financial information are less financially constrained (Biddle and Hilary, 2006; Biddle et al., 2009; Beatty et al., 2010; and Garcia Lara et al., 2011). Hence, we predict that firms with low quality financial information have greater

[1] Additional financing advantages for suppliers are: (1) suppliers can liquidate customers' assets more efficiently; and (2) suppliers have an implicit equity stake in the customers.

propensity to use trade credit due to their difficulty of obtaining external source of financing.[2]

Customers' propensity to use trade credit can have significant implications for their suppliers' cash holdings in at least two ways. First, though suppliers have a financing advantage over financial institutions in providing credit to customers, they are also exposed to customers' liquidity risk. In other words, the liquidity risk of customers can be transmitted to suppliers through the use of trade credit. If so, suppliers' cash cycle is expected to be more volatile as a result of financing customers with low financial reporting quality given that it is costly for suppliers to hedge customers' liquidity risk. Second, prior studies argue that firms with short cash conversion cycle are expected to hold less liquid assets. As customers' poor quality financial information limits the ability of suppliers to use alternative accounts receivable management policies (e.g., factoring or securitization of accounts receivable) to accelerate the conversion of receivables to cash, we expect that suppliers hold more cash when transacting with these customers. Wall Street Journal (Jan 12, 2012) reported that while CIT Group decided to stop financing Sears' vendors, other factoring agents of Sears' suppliers started to be concerned about their own financial exposure to Sears as they cannot assess the value of Sears' assets due to limited access to financial information. This story highlights that customers' financial transparency plays an important role in their suppliers' liquidity management policy.

To test the relation between accounting quality and the use of trade credit, we use a sample of 94,755 firm-year observations spanning between 1989 and 2007 obtained

[2] Alternatively, the costs of other source of financing are prohibitively high compared to trade credit obtained from suppliers. The cost of trade credit is the forgone discount if paid within a pre-determined time period.

from the annual Compustat Industry file. Following Bharath et al. (2008) and Beatty et al. (2010), we measure accounting quality by the first principal component of three standardized accrual-based accounting quality metrics. We document two key findings. First, low accounting quality is associated with more use of trade credit, consistent with the argument that poor quality financial information increases the need for trade credit financing. Second, we find this relation to be stronger for financially constrained firms measured by the availability of S&P long-term credit rating or dividend payment.

To evaluate the relation between suppliers' cash holdings and the accounting quality of their major customers, we merge the Compustat Segment file on customers with the annual Compustat Industry file. The final sample constitutes of 29,745 supplier-customer-year observations spanning between 1989 and 2007. Based on this sample we find that the accounting quality of top customers is significantly negatively associated with the level of suppliers' cash holdings, suggesting that customers' accounting quality has a real economic effect on suppliers. In addition, this effect is stronger for financially constrained suppliers and suppliers with weak bargaining power as proxied by industry concentration ratio. A falsification test shows that this effect is non-existent for suppliers who have shorter receivable cycles. These results suggest that the effect of customers' accounting quality on suppliers' cash holdings is transmitted through trade credit and such effect might emerge from competing with industry rivals for customers. Next, when we decompose customer accounting quality into innate and discretionary compoents, we find that they have similar effect on suppliers' cash holdings though the innate component has a stronger effect on customers' use of trade credit. Last, our results are

robust to an alternative of measure of accounting quality that is less likely to be mechanically related with trade credit and an array of control variables.

Given the important role of cash assets on a firm's balance sheet, researchers have devoted significant effort to investigate the determinants of cash holdings (Kim et al.; 1998 Opler et al., 1999; Faulkender and Wang, 2006; Dittmar and Mahrt-Smith, 2007; Liu and Mauer, 2011; among others). Our findings are important to this stream of literature by demonstrating the hedging and closely related precautionary savings motives for cash holdings (Kim et al., 1998; Opler et al., 1999). We show that suppliers hold more cash when transacting with poor accounting quality customers. In this sense, our paper is a natural extension to the recent paper by Bae and Wang (2010) who find that a firm holds more cash when its business depends on a small number of major customers.

This study contributes to our understanding regarding the role of accounting quality in credit trade financing. Our findings show that firms with poor accounting quality are likely to be financed by their suppliers. Thus, accounting information can affect a firm's debt structure given that trade credit is a significant component of customers' liabilities on the balance sheet. In this sense, our study complements Beatty et al. (2010) who document that financial reporting quality affects a firm's propensity to lease, an alternative form of financing for long-term assets.

Finally, our results add to the evidence in the accounting and finance literature on the effects of economic ties along supply chains. For example, Cohen and Frazzini (2008) find that value-relevant information diffuses between suppliers and customers and their stock returns cross-predict each other's returns. Similarly, Pandit et al. (2011) document a

positive association between the returns of suppliers and their major customers at the time of customers' quarterly earnings announcements. Hertzel et al. (2008) examine the effects of distress and bankruptcy filing for firms linked along supply chains and show that bankruptcy has valuation consequences for these firms. Ramam and Shahrur (2008) find that earnings management is used opportunistically to influence the perception of suppliers/customers about the firm's prospects. More related paper by Murfin and Njoroge (2011) examines how smaller and often credit constrained suppliers are affected by their large and likely financially unconstrained customers. They find that financially constrained suppliers cut capital expenditures when their large customers delay payment for trade credit and their explanation for such late payment by customers is uncertainty regarding product quality. Our findings extend this literature by documenting the transmittal effect of financial reporting quality of customers along supply chains. Our paper also corroborates the findings documented in prior studies that cash reserves are valuable in a competitive industry as they lead to systematic future market share gains at the expense of industry rivals (Fresard, 2010; Alimov, 2011).

The rest of the paper is organized as follows. Section 2 develops testable hypotheses. Sample collection and research method are discussed in section 3. Section 4 reports empirical results. Section 5 provides additional analysis and robustness tests. We conclude in section 6.

2. Hypothesis development

2.1.The relation between accounting quality and trade credit

Previous studies argue that information asymmetry impedes firms from obtaining external financing (Myers and Majluf, 1984; Barnea et al., 1980). As suppliers have a financing advantage over traditional lenders to overcome information asymmetry (Schwartz and Whitcomb, 1974; Petersen and Rajan, 1997), we argue that firms with high information asymmetry are expected to use more trade credit to meet their daily need of working capital. More specifically, Petersen and Rajan (1997, page 663) note that "the supplier may visit the buyer's premises more often than financial institutions would. The size and timing of the buyer's order also give him an idea of the condition of the buyer's business. The buyer's inability to take advantage of early payment discounts may serve as a trip wire to alert the supplier of deterioration in the buyer's creditworthiness. While financial institutions may also collect similar information, the supplier may be able to get it faster and at lower cost because it is obtained in the normal course of business." [3]

Financial statements are an important source of information that financiers rely on to assess the credit worthiness of borrowers (FASB statement No. 1). High quality financial information reduces information asymmetry between the firm and the financiers. Therefore studies show that high accounting quality is associated with a lower cost of capital (Francis et al., 2008; Bharath et al., 2008) while poor accounting quality is associated with greater reliance on operating lease, a substitutive source of financing for capital investments (Beatty et al., 2010). As suppliers have a cost advantage over other financiers in resolving information asymmetry problem, low quality accounting

[3] Petersen and Rajan (1997) find empirical support to the financing advantage argument. Other explanations to why suppliers are willing to provide trade credit include price discrimination and lower transaction costs. Please refer to Petersen and Rajan (1997) for detailed discussion.

information is therefore less important to suppliers than it is to other financial institutions in supplying credit. Based on this line of reasoning, our first hypothesis is stated as follows:

H1: There is a negative association between accounting quality and the level of trade credit.

One maintained assumption in H1 is that trade credit is more costly than other source of financing for firms with low information asymmetry. Otherwise trade credit will be the first financing choice and we will not expect a relation between information asymmetry and the usage of trade credit. This assumption is consistent with the observation by Petersen and Rajan (1997) who find that an increase in the banking relationship lowers a firm's use of trade credit. In other words, if a firm can secure enough credit from its financial institution, it does not stretch out its accounts payable as long, suggesting that borrowing from trade creditors, at least for longer periods of time, is a more expensive form of credit. It is also consistent with Cuňat (2004) who argues that relatively high implicit interest rates of trade credit are the result of insurance and default premiums.

A necessary condition in H1 is customers' demand for trade credit , which depends on whether they are financially constrained. Hence the relation between accounting quality and trade credit is likely to be stronger when the source of firms' external financing from capital market is limited. Based on this line of reasoning, Hypothesis 2 is formally stated below:

H2: The negative association between accounting quality and the level of trade credit is stronger for financial constrained firms.

2.2.The relation between customers' accounting quality and suppliers' cash holdings

The implications of customers' propensity to use trade credit for their suppliers' cash holdings are at least two folds. First, though suppliers have a financing advantage over financial institutions while providing credit to customers with low accounting quality, they are also exposed to these firms' liquidity risk. The liquidity risk of informationally opaque customers can be transmitted to suppliers through the use of trade credit. This is particularly true for top customers who represent a significant portion of the suppliers' sales. To the extreme if all transactions between the two parties are cash-based, then the supplier will not need to worry about the customer's liquidity need. As a result of exposure to customers' liquidity risk through the link of trade credit, suppliers' cash cycle is expected to be more volatile if hedging top customers' liquidity risk is costly. Kim, Mauer, and Sherman (1998) note that firms with more variable cash cycles must maintain larger balances of cash to hedge uncertain transactional demand for liquidity. If this is the case, we predict that suppliers hold more cash when customers have low quality financial information.

Second, as noted in Mian and Smith (1992) and Klapper (2010) it is common for suppliers to factor or securitize accounts receivable to accelerate the conversion of receivables to cash. However, as factoring agents find it difficult to assess the credit worthiness of customers with poor quality financial information and thus the likelihood of collecting trade credit from these firms, the ability of suppliers to use alternative accounts receivable management policies is limited. For example, Klapper (2010, page 3) notes that "factoring may be particularly well suited for financing receivables from large or foreign firms when those receivables are obligations of companies who are more

creditworthy than the factoring client itself." This line of reasoning predicts that the length of suppliers' cash conversion cycle will increase as customers' accounting quality declines, which implies that suppliers will have a higher likelihood of cash shortfall and thus tend to hold more cash.

H3: There is a negative association between the accounting quality of customers and the suppliers' cash holdings.

In a world of perfect capital markets, holdings of liquid assets such as cash are irrelevant. For example, if cash payment by customers turns out to be unexpectedly low, the supplier can always finance at zero cost from capital market to maintain normal operating and investing activities. However, due to capital market frictions, firms have to trade off the marginal cost of holding liquid assets against the marginal benefit of holding those assets. Therefore, when external financing is costly or even less accessible, suppliers will hold more cash in anticipation of a higher likelihood of cash shortfall. Accordingly, we expect the negative relation between customers' accounting quality and suppliers' cash holdings is stronger for financially constrained suppliers. Our hypothesis 4 is stated as follows:

H4: The negative association between customer accounting quality and the supplier cash holdings is stronger for financially constrained suppliers.

Higher level of cash holdings may be a response of suppliers to transacting with poor accounting quality customers. The cost of holding cash likely reflects a trade off against the benefits of maintaining these customers. When suppliers are from a competitive industry, their pressure of maintaining a major customer is likely to be greater than when they are from a concentrated industry (see Stigler, 1964; Scherer and

Ross, 1990). Thus, a firm that faces a concentrated supplier industry is at a bargaining disadvantage, whereas the presence of numerous alternative suppliers empowers the firm because it can make a credible threat to withhold future business from its existing suppliers (see, e.g., Holmstrom and Roberts, 1998). Therefore, we expect the relation between customer accounting quality and the supplier's cash holdings to be more pronounced for suppliers from competitive industries. Our hypothesis 5 is stated as follows:

H5: The negative association between the accounting quality of customers and the suppliers' cash holdings is more pronounced for suppliers from competitive industries.

3. Sample selection and research method

3.1 Sample selection

Our sample used to test the trade credit hypotheses is comprised of firms in the annual Compustat Industry file from 1989 to 2007. We require firms to have valid data to calculate all the variables in the empirical analysis, and we obtain 94,755 firm years for 12,181 unique firms (referred to as trade credit sample). To test the cash holding hypothesis, we merge the Compustat Industry file with the Compustat Segment file to identify each firm's major customers. 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 identify each customer by its name as appears on the Segment file and match each customer's name to a firm listed on the Compustat Industrial and CRSP files. We exclude customers not covered by the Compustat or the CRSP such as foreign, private firms, or the U.S. government. After this procedure, 29,745 supplier-customer years remain in the sample

(referred to as cash holdings sample) with 4,414 unique suppliers and 1,897 unique customers. Following the literature, we exclude financial firms and winsorize all the continuous variables at the 1st percentile and 99th percentile to ensure that outliers are not influencing the results.

3.2 Empirical method

3.2.1 Testing trade credit hypotheses:

To test hypothesis 1 (H1), we regress the trade credit on firm accounting quality and a vector of variables to control for firms' demand for and the willingness of suppliers to provide trade credit. Therefore, the estimates are reduced form coefficients that include both supply and demand effects. Specifically, we estimate the following regression:

$$\begin{aligned} Log\_TradeCredit_{ijt} = {} & \beta_0 + \beta_1 \times AQ_{ijt} + \beta_2 \times Log(Asset)_{ijt} + \beta_3 \times Log(Age+1)_{ijt} \\ & + \beta_4 \times [Log(Age+1)_{ijt}]^2 + \beta_5 \times Leverage_{ijt} + \beta_6 \times DIV_{ijt} + \beta_7 \times Rating_{ijt} \\ & + \beta_8 \times CR_{it} + \beta_9 \times ROA_{ijt} + \beta_{10} \times ChgSale\_AT_{ijt} + \beta_{11} \times MTB_{ijt} \\ & + \beta_{12} \times Liquidation_{ijt} + \beta_{13} \times OpCycle_{ijt} + \sum_{j=1}^{48} INDUSTRY_j \\ & + \sum_{t=1989}^{2007} YEAR_t + \varepsilon_{ijt} \quad (1) \end{aligned}$$

The subscript *i, j, t* stands for firm *i*, industry *j*, and year *t*. *Log_TradeCredit* is the amount of credit firms borrow from their suppliers, and it is measured as the natural logarithm of one plus the ratio of accounts payable to cost of goods sold (Petersen and Rajan, 1997). From the demand side, we include the following variables. *AQ* is the measure of accounting quality computed as the first principal component of three standardized accrual-based accounting quality metrics as discussed in Bharath et al. (2008) and Beatty et al. (2010). Detailed information on the computation of this measure is provided in Appendix A. A higher value of *AQ* represents better accounting quality. As hypothesized in H1, we expect the coefficient β_1 to be negative because low accounting

quality limits firms' ability to finance from traditional financiers and thus creates greater demand for trade credit. As large firms are less risky and they can obtain external financing easily, we expect the coefficient on *Log(Asset)* to be negative. Following Petersen and Rajan (1997), we include the natural logarithm of firm age plus one, *Log(age+1)*, and its squared value to account for the non-linear relationship between firm age and the demand for trade credit. We expect that the coefficient on firm age to be negative because as a firm matures, its demand for trade credit decreases. *Leverage* is the firm leverage ratio calculated as total debt scaled by the book value of total assets. Firms with a high leverage ratio are more risky, therefore we expect these firms to rely more on their suppliers for working capital financing. *DIV* is a dummy variable equal to one if a firm pays common dividends and zero otherwise. Firms paying dividends are more than likely to be abundant in cash; hence, their demands for trade credit are less. *Rating* is a dummy variable equal to one if a firm has a credit rating and zero otherwise. A firm with a credit rating is less financially constrained (Faulkender and Petersen, 2006) and is therefore expected to rely less on trade credit. Hence, the coefficient on *Rating* should be negative. *CR* is the ratio of non-cash current assets to total assets. As firms become more liquid, they are less likely to rely on trade credit and the coefficient on *CR* is expected to be negative. *ROA* is the return on assets calculated as the earnings before extraordinary item over book value of assets. More profitable firms can access external financing easily and their demand for trade credit is lower. Therefore, the coefficient on *ROA* should be negative. *OpCycle* is operating cycle, equal to the sum of the firm's day's accounts receivable and day's inventory. Firm may coordinate payment of trade credit

with their receivable and inventory cycles. Hence we expect a positive coefficient on this variable.

We include three variables to control for the supply of trade credit. *ChgSale_AT* is the change in sales scaled by the book value of total assets. On the one hand, because suppliers have future stake in the customers, we expect their willingness to supply trade credit increases in customers' sales growth. On the other hand, firms' demand for trade credit may also increase in their growth. Consequently, both the supply and demand predict a positive coefficient on *ChgSale_AT. MTB* is the market value of equity to book value of net assets, where net asset is defined as the book value of total assets minus cash and marketable securities.[4] We include *MTB* as an alternative control for future growth. *Liquidation* is the liquidation costs of inventory by suppliers measured as the ratio of finished goods over total inventory. We include *Liquidation* to partially control for the supply of trade credit. Petersen and Rajan (1997) argue that suppliers have an advantage over other lenders to repossess and resell the inventory. However, once the customer has transformed its inputs into outputs, it will be more costly for the suppliers to do so and hence their incentives to supply trade credit to customers diminish. Therefore, we expect the coefficient on *Liquidation* to be negative.

We also include industry dummy variables based on 48 Fama and French industry classifications and year dummies to account for industry specific and year specific effects on trade credit. In particular, the basic interest rate charged by banks likely varies with credit market condition and may also affect the decision for a firm to finance with trade credit. Year fixed effects, to some extent, control for the inter-temporal variation in credit

[4] The reason we use net assets rather total assets as the scaler for calculating MTB in the trade credit analysis is to be consistent with that used in the cash holdings analysis where we follow prior studies for model specification. Our results are robust if we use total assets as the scaler.

market condition. We estimate Equation (1) using pooled ordinary least square with standard errors clustered at the firm level to correct serial correlation in the error terms.

To test H2 we follow the literature and use credit rating and dividend payout as two proxies for financial constraints. Faulkender and Petersen (2008) demonstrate that firms with credit ratings have higher leverage because credit rating increases a firm's debt capacity. Faulkender and Wang (2006) find that cash is valued higher for firms without dividend payment, consistent with the argument that cash value is higher for financially constrained firms. To implement the tests, we specifically partition our sample into two subsamples based on whether a firm has an S&P long-term credit rating or whether a firm pays out dividend. If H2 holds, we expect the negative relation between accounting quality and trade credit is stronger for firms without credit rating or firms without dividend payment.

3.2.2 Test of cash holdings hypotheses

We test the cash holdings hypothesis by estimating the following regression:

$$\begin{aligned} Log\_CashHold_{ijt} = {} & \beta_0 + \beta_1 \times AQ\_Customer_{cjt} + \beta_2 \times AQ_{ijt} + \beta_3 \times Log(NumCust + 1)_{ijt} \\ & + \beta_4 \times Log(Asset)_{ijt} + \beta_5 \times MTB_{ijt} + \beta_6 \times CashFlow\_NAT_{ijt} \\ & + \beta_7 \times NWC\_NAT_{ijt} + \beta_8 \times Capx\_NAT_{ijt} + \beta_9 \times RD\_Sale_{ijt} \\ & + \beta_{10} \times Leverage_{ijt} + \beta_{11} \times INDSIGMA_{jt} + \beta_{12} \times DIV_{jt} + \beta_{13} \times AQC\_NAT_{jt} \\ & + \sum_{j=1}^{48} \text{INDUSTRY}_j + \sum_{t=1989}^{2007} \text{YEAR}_t + \varepsilon_{ijt} \end{aligned} \quad (2)$$

where the subscript *i, c, j, t* stands for supplier *i*, customer *c*, industry *j*, and year *t*. Following Liu and Mauer (2011), *Log_CashHold* is the amount of cash held by a firm and is defined as the natural logarithm of one plus the ratio of cash plus marketable securities over net assets (assets – cash and cash equivalent). *AQ_Customer* is the accounting quality of major customers of a firm as reported in the Segment file.

AQ_Customer is computed as the first principal component of three standardized accrual-based accounting quality metrics as discussed in Bharath et al. (2008) and Beatty et al. (2010). Appendix A includes a detailed description of the computation of this measure. A higher value of *AQ_Customer* represents better accounting quality. Hypothesis 3 predicts that the coefficient β_1 is negative and significant, indicating that firms tend to hold less cash when its major customers have high accounting quality. We include the natural logarithm of the number of major customers plus one (*Log(NumCust + 1)*) to control for the effect of customer concentration on firm cash holdings. We expect that the customer concentration is positively related to a supplier's cash holdings due to the increased financial risk from concentrated customer base. .

We also include other control variables used in Liu and Mauer (2011) and Bates et al. (2009). Large firms have easy access to credit, and they tend to hold less cash. Hence the coefficient on *Log(Asset)* should be negative. *MTB* is the market value of equity to book value of net assets. Firms with better investment opportunities tend to hold more cash for future investments. Hence, we expect a positive relation between *MTB* and cash holdings. *CashFlow_NAT* is measured as the ratio of earnings after interest, dividends, and taxes but before depreciation to the book value of net assets. We expect the coefficient on *CashFlow_NAT* to be positive as firms with higher cash flow tend to have more cash. *NWC_NAT* is the ratio of net working capital minus cash plus marketable securities to the book value of net assets. A negative relation is expected between cash holding and net working capital. *Capx_NAT* is the ratio of capital expenditures to the book value of net assets. On the one hand, if capital expenditures create assets that can be used as collateral, capital expenditures could increase debt

capacity and reduce the demand for cash. On the other hand, capital expenditures could proxy for investment opportunities, and firms with high capital expenditures tend to hold more cash. Hence, the coefficient on *Capx_NAT* can be either positive or negative. *RD_SALE* is the ratio of research and development expense to sales. It is set to zero when research and development expense is missing. Firms with more research and development expenses are likely to grow faster. Hence such firms tend to hold more precautionary cash.

Firms with high leverage may save more cash to reduce debt level, resulting in a positive association between leverage and cash holding. At the same time, the positive association is also consistent with the hedging argument by Acharya et al. (2007). Firms paying dividends tend to be less concerned about financial distress, thus they will hold less cash. *INDSIGMA* is the mean of the standard deviations of *CashFlow_NAT* over 10 years for firms in the same industry, as defined by Fama and French 48 industry. We expect firms to hold more cash in industries with a high volatility of cash flows. *AQC_NAT* is the ratio of expenditures on acquisitions to the book value of net assets. Since acquisition expenditures can proxy for firm investment opportunity similarly to capital expenditures, firms with high expenditures on acquisitions hold more cash. We also control for industry wise and economy wise shocks by including industry and year fixed effects. Pooled ordinary least square is used to estimate Equation (2) with standard errors clustered at the firm level to correct serial correlation in the error terms.

Likewise, we use the availability of S&P long-term credit rating and dividend payment as two proxies to measure suppliers' financial constraints. We expect that the negative relation between *AQ_Customer* and *CashHold* is stronger for firms with no

credit rating or for firms without dividend payment as predicted in hypothesis 4 (H4).

To test hypothesis 5 (H5), we follow Kale and Shahrur (2007) and proxy for the competitiveness of an industry by Herfindahl index, where higher values represent a greater concentration, thus less competitiveness or greater bargaining power. The literatures find strong support for the use of Herfindahl index as a proxy for supplier bargaining power. Researchers argue that more concentrated suppliers have greater power over their customers (see Stigler, 1964; Scherer and Ross, 1990 for a review of this literature). Thus, a firm with a supplier in a concentrated supplier industry faces a bargaining disadvantage, whereas the presence of numerous alternative suppliers empowers the firm because it can make a credible threat to withhold future business from its existing suppliers (see, e.g., Holmstrom and Roberts, 1998). We measure sales-based Herfindahl index as follows.[5]

$$\text{Herfindahl}_{\text{j}} = \sum_{i=1}^{I} s_{ij}^2 , \qquad (3)$$

where s_{ij} is the market share of firm i in industry (three-digit SIC membership) j. We perform the above calculations each year for each industry. To test H5, we partition the sample into two subsamples depending on whether a supplier is in a high or low Herfindahl-index industry. We expect that the negative relation between *AQ_Customer* and *CashHold* is stronger for suppliers in the low Herfindahl index group.

4. Empirical results

4.1 Summary statistics

[5] Our results are both quantitatively and qualitatively similar if we measure industry herfindahl index at fama-french 48 industry level. Our results are also similar if we use industry 5 firm concentration ratio as the measure of bargaining power.

We first report the industry profile for our two samples. Firms in the trade credit sample cover 44 industries out of the Fama and French 48 industries with the business service industry heavily represented, which comprises 13 percent of the entire sample. Most industries account for less than 5 percent of the sample observations, suggesting a wide spread distribution within our sample firms. The cash holdings sample shows a similar pattern of industry distribution with the highest frequency (12.59%) coming from the electronic equipment industry.

[Insert Table 1 Here]

Panel A table 2 reports descriptive statistics for the variables used in testing trade credit hypotheses. The average trade credit (*TradeCredit*) is 26 percent of the cost of goods sold. Figure 1 plots the temporal change in trade credit over our sample period. It shows that trade credit climbs gradually from 0.21 in 1989 to 0.31 in 2007, a nearly 50 percent increase. It also demonstrates that trade credit increases significantly during credit booms such as from 1998 to 2000 and from 2002 to 2006. We observe a dip in 2007 right around the 2008 financial crisis. The measure of accounting quality (*AQ*) is right skewed as the median value of *AQ* is more positive than the mean. The means and medians of our three measures of abnormal accruals are very close to those reported in Bharath et al. (2008). Panel B reports the empirical distribution of the variables used in the cash holdings analysis. On average, the amount of cash and marketable securities held by firms (*CashHold*) accounts for 24 percent of firm total net assets. The average *AQ* of major customers and suppliers are both larger (0.69 and 0.096, respectively) than that reported in Panel A. On average, each firm discloses 3 major customers in footnotes as indicated in the logged value of the number of customers each supply reports.

[Insert Table 2 Here]

Table 3 reports the correlation coefficient matrix. Panel A shows that *AQ* is negatively correlated with *TradeCredit* (the correlation coefficient is -0.225), providing an initial support that firms with low accounting quality are more likely to borrow from suppliers. In addition, large and older firms, firms with credit rating, and more profitable firms use less trade credit, which are consistent with the notion that firms with low credit risk have easy access to external financing and therefore rely less on trade credit. On the supply side, suppliers tend to provide more credit to firms with high growth as proxied by *MTB* and to firms with low liquidation costs as predicted. We, however, find a negative correlation between sales growth and trade credit, which is opposite to our prediction. As discussed in the next section, this negative correlation is mainly attributable to firms with negative sales growth.[6] Furthermore, our measure of accounting quality is positively correlated with firm size, firm age, dividend payment, credit rating, and *ROA*, but negatively correlated with leverage, sales growth, and operating cycle.

Panel B provides correlation coefficient matrix for the variables used in the cash holdings Analysis. Suppliers' cash holdings are negatively correlated with customers' accounting quality (*AQ_Customer*): the correlation coefficient is -0.085 and significant at the level of less than 1 percent. In addition, cash holdings are positively associated with customer's use of trade credit, market-to-book ratio, capital and R&D expenditure, industry cash flow volatility, while negatively correlated with firm size, net working capital, and firm leverage, all of which are consistent with the findings in prior studies (e.g. Bae and Wang, 2010; Liu and Mauer, 2011).

[Insert Table 3 Here]

[6] Petersen and Rajan (1997) find similar results.

4.2 Results of testing trade credit hypotheses

4.2.1 Multivariate analysis of the relation between accounting quality and trade credit

Table 4 provides results of testing H1. In the first column, the coefficient on *AQ* is -0.009 and statistically significant with a p-value less than 1 percent. This negative coefficient is consistent with H1 that firms with low quality accounting information relies more on trade credit even after controlling for other factors associated with the use of trade credit. To ensure the robustness of our results, we also examine the relationship between the three different measures of abnormal accruals and trade credit. As shown in columns (ii) to (iv), the coefficients on the three measures of abnormal accruals (*AA*) are all negative and significant, corroborating the results in column (i). This relation is both statistically and economically significant. A one standard deviation (std. dev. = 1.5862) increase in accounting quality (*AQ*) is associated with a reduction of 0.014 in trade credit, which is about 7 percent of the average trade credit.

Firm size is negatively associated with trade credit while firm age has a non-linear "U" shape relation with the use of trade credit. These results are consistent with our prediction that firms with low credit risk tend to borrow less from suppliers because they have easy access to external financing. More profitable firms have less demand for trade credit, which is evidenced by the negative coefficient on *ROA*. The signs of the coefficients on liquidation costs (*Liquidation*) and market to book value (*MTB*) are both consistent with our prediction. *ChgSale_AT* is negatively correlated with trade credit. Unreported results show that this negative association is driven by firms with negative sales growth. For firms with positive sales growth we find that sales change is positively correlated with trade credit. Firm operating cycle (*OpCycle*) is positively associated with

trade credit suggesting that firms coordinate payment of trade credit with their receivable and inventory cycles. All these results are consistent with those in the univariate analysis reported in table 3.

[Insert Table 4 Here]

4.2.2 Cross-sectional analysis of the relation between accounting quality and trade credit

In table 5 Panel A, we report the results of testing H2. We estimate Equation (1) conditioning on the level of firms' financial constraints. H2 predicts that the negative association between trade credit and accounting quality is more pronounced for firms that are financially constrained: firms without credit ratings or pay no dividend. Consistent with our prediction, for non-rated firms (column (ii)), the coefficient on *AQ* is negative (-0.006) and statistically significant with a p-value less than 1 percent. In contrast, the same coefficient for rated firms is -0.001 and is not statistically different from zero. The difference in the coefficient estimate between the two groups is statistically significant at the five percent level. Likewise, the coefficient on *AQ* is more negative for non-dividend paying firms than for dividend paying firms, and the difference is significant at the one percent level. The coefficients on the control variables are similar to those reported in table 4. Collectively, we find empirical evidence that the accounting quality effect on trade credit is stronger for financially constrained firms.

[Insert Table 5 Here]

4.3 Results of testing cash holding hypotheses

4.3.1 Multivariate analysis of the relation between customers' accounting quality and suppliers' cash holdings

To test H3, we use the Compustat Industry Segment file to identify customer and supplier relationship. Equation (2) is estimated at the supplier-customer-year level. The results of testing H3 are reported in table 6. The first column uses OLS estimation. Consistent with the hypothesis, we find that the coefficient on *AQ_Customer* is negative and statistically significant at the one percent level, suggesting that suppliers tend to hold more cash when customers' accounting quality is low. A one standard deviation decrease in customer AQ (std. dev. = 0.647) is associated with one percent increase in supplier cash holdings. The coefficients on the control variables are all consistent with previous studies except for the coefficient on the cash flow (*CashFlow_NAT*) and *Leverage*. We find negative and significant coefficients on both variables, indicating that when our sample firms have a high level of cash flow or high level of debt, they hold less cash.

The argument in H3 assumes that customer accounting quality affects supplier cash holdings through trade credit as hypothesis 1 argues that poor customer accounting quality leads to the use of trade credit. To explicitly test this maintained assumption, we first use an OLS estimation to investigate the relation between customer trade credit and supplier cash holdings and the results are reports in column (ii). Next, we instrument customer trade credit using its accounting quality and then estimate the relation between customer trade credit and supplier cash holdings using 2SLS. The results of this analysis are reported in column (iii). For both sets of results, the coefficient on customer trade credit (*TradeCredit_Customer*) is positive and statistically significant at the one percent level, suggesting that indeed customers' accounting quality can affect suppliers' cash holdings through their use of trade credit.

[Insert Table 6 Here]

4.3.2 The effect of suppliers' financial constraints on the relation between customers' accounting quality and suppliers' cash holdings

In table 7, we examine whether the negative association between customers' accounting quality and suppliers' cash holdings is more pronounced for suppliers facing financial constraints. Similarly to testing H2, we use two measures, credit rating and dividend payment, as proxies for financial constraints. Consistent with H4, we find that financially constrained suppliers tend to manage liquidity by holding more cash in response to customers' demand for trade credit due to their low accounting quality. For example, the coefficient on *AQ_Customer* is -0.011 with a p-value of 0.001 when the supplier doesn't have a credit rating. In contrast, the coefficient on *AQ_Customer* is 0.001 and not statistically significant when a supplier has a credit rating. The difference in this coefficient estimate across the two groups is statistically significant at the 10 percent level. Likewise, cash holdings of dividend paying suppliers don't depend on the customers' accounting quality whereas cash holdings of non-dividend paying suppliers do. However, we find no statistically difference in the coefficient estimate on *AQ_Customer* between these two groups. Taken together, the results in this table are largely consistent with the argument that financially constrained firms use cash holdings to manage liquidity (Sufi, 2009). In our case, the liquidity demand comes from major customers with low accounting quality.

[Insert Table 7 Here]

4.3.3 The effect of suppliers' industry competition on the relation between customers' accounting quality and suppliers' cash holdings

In table 8, we test H5 of whether the negative association between customers' accounting quality and suppliers' cash holdings is more pronounced for suppliers from a competitive industry. We proxy the competitiveness of an industry by Herfindahl index as discussed in section 3.2.2. Consistent with H5, we find that suppliers from a competitive industry tend to manage liquidity by holding more cash when major customers have low accounting quality. For example, the coefficient on *AQ_Customer* is -0.013 with a p-value of 0.000 when the supplier is from competitive industry. In contrast, the coefficient on *AQ_Customer* is -0.003 and not statistically significant when a supplier is from concentrated industry. The difference in this coefficient estimate across the two groups is statistically significant at the 2 percent level. The results in Table 8 suggest that industry competition is a key driver of suppliers' cash holding decisions when transacting with informationally opaque customers. These results corroborate Fresard (2011) who argues and documents that cash reserves are more relevant for firms from competitive market because it allows them to maintain or expand market share.

[Insert Table 8 Here]

5. Additional analysis and robustness tests

5.1 Innate and discretionary accounting quality

Francis et al. (2004) and Francis et al. (2008) argue that earnings quality are jointly determined intrinsic (innate) factors, such as firms' business models and operating environments, and by management's (discretionary) reporting and implementation decisions. Francis et al. (2004) document that both innate and discretionary accounting quality are associated with the cost of capital. In this section, we investigate how each of these two components is related with the use of trade credit and affects suppliers' cash

holdings. Following Francis et al. (2004) we estimate innate AQ based on firm size, cash flow variability, sales variability, incidence of negative earnings realizations, intangiblyes intensity and capital intensity using all firms from the Compustat universe. The difference between customer AQ and its innate AQ is customer discretionary AQ. We don't include operating cycle as an innate factor because it is argued to be related with trade credit turnover, our dependent variable. Instead, we include this variable as a control in our analysis. Cash flow variability, sales variability and incidence of negative earnings realizations are measured over a five-year window on a rolling basis.

Table 9 Panel A and Panel B report the results of trade credit analysis and supplier cash holdings analysis, respectively. We find that both accounting quality components are related with trade credit and supplier cash holdings. In both regressions, the absolute magnitude of the coefficient is larger for the innate AQ component though it is only statistically different from the discretionary component in the trade credit analysis. Overall, the results suggest that accounting quality determined by both firms' business models and management's discretion is related with firms' use of trade credit and suppliers' cash holdings. A natural question to ask is why managers will take some actions that decrease accounting quality, thus limiting their ability to obtain external financing. We believe that managers will do so if the net pay-off of those actions is positive to them.

[Insert Table 9 Here]

5.2 Robustness tests

One concern in our empirical analysis is that accounts payable is part of accruals, which is used to measure accounting quality, and it may cause a mechanical relation

between accounting quality measure and trade credit. To address this concern, we exclude accounts payable in computing abnormal accruals measure. The mean and median of *AQ* is 0.093 and 0.602 respectively and the results remain robust. The coefficient on the new measure of *AQ* for Equation (1) is -0.006, and the coefficient on *AvgAQ_Customer* for Equation (2) is -0.005. The p-values are less than 5 percent for both coefficients.

For the reported results, we use cost of goods sold as the deflator to compute the dependent variable of accounts payable. To show that our results are not merely driven by the particular scalor chosen, we scale accounts payable by total assets and sales. The unreported results are robust to these alternative scalors. For example, the coefficient on *AQ* for Equation (1) is -0.008 with a p-value smaller than 1 percent when scaled by both assets and sales.

6. Conclusion

Does accounting quality matter for external financing? This has been a long standing question in the accounting research. Using different measures of accounting quality, voluminous papers demonstrate that accounting quality affects cost of equity (Francis et al., 2008), cost of debt (Ahmed et al., 2002), the choice between bank debt and public debt (Bharath et al., 2008), and how accounting quality affects the role of lead arrangers in the loan syndicate (Ball et al., 2008). However, as pointed out by Armstrong et al. (2010), firms with low quality accounting information may be credit rationed and this inquiry cannot be answered by aforementioned studies. Our paper attempts to fulfill this goal and examines one important source of working capital financing – trade credit provided by suppliers. Theory postulates that trade credit can substitute bank credit for

informationally opaque firms because suppliers have an information advantage over other financial institutions to assess firms' credit worthiness. Based on the theory we predict and find that accounting quality is negatively associated with the use of trade credit. In addition, we find this relation is stronger for financially constrained firms as proxied by the availability of S&P long-term credit ratings and dividend payment.

We further explore the cost of supplying trade credit resulting from customers' poor accounting quality. To this end, we evaluate the relation between the accounting quality of major customers and their suppliers' cash holdings. We find that the accounting quality of top customers is significantly negatively associated with the level of suppliers' cash holdings, suggesting that customers' accounting quality has a real economic impact on suppliers. This effect is stronger for financially constrained suppliers implying that financially constrained suppliers bear a significant cost of transacting with informationally opaque customers albeit they have a financing advantage over other credit suppliers. Last, we show that one important reason that suppliers bear these costs is their weak bargaining power – high level of cash reserves is possibly an equilibrium outcome of financial market frictions at both ends.

Collectively, this paper extends our understanding of the role of financial information in a firm's choice of financing. In particular, we demonstrate that trade credit can substitute financial information towards alleviating financial constraints. However, providing trade credit is costly for financially constrained suppliers and suppliers in a competitive industry, as evidenced in the higher level of cash holdings. Therefore, the effect of accounting quality can transmit from the customer to the supplier along supply chains.

References

Acharya, V., Almeida, H., Campello, M., 2007, Is cash negative debt? A hedging perspective on corporate financial policies. Journal of Financial Intermediation 16, 515-554.

Ahmed, A., Billings, B., Morton, R., Stanford, M., 2002. The Role of accounting conservatism in mitigating bondholder-shareholder conflicts over dividend policy and in reducing debt costs, The Accounting Review 77, 867-890.

Alimov, A., 2011, Competition and the value of corporate cash. Working paper. City University of Hong Kong.

Armstrong, C. S., Wayne, G., Weber., D., 2010. The role of information and financial reporting in corporate governance and contracting. Journal of Accounting and Economics 50, 179-224.

Bae, K., Wang, J. 2010. Why do firms in customer-supplier relationships hold more cash? Unpublished working paper. York University.

Ball, R., Bushman, R., Vasvari, F., 2008. The debt-contracting value of accounting information and loan syndicate structure. Journal of Accounting Research 46, 247–287.

Barnea, A., Haugen, R., Senbet, L., 1980, A rationale for debt maturity structure and call provisions in the agency theoretic framework. Journal of Finance 35, 1223-1234.

Bates, T. W., Kahle, K. M. Stulz, R., 2009, Why do U.S. firms hold so much more cash than they used to?, Journal of Finance 64, 1985-2021.

Beatty, A., Liao, S., Weber, J. 2010. Financial reporting quality, private information, monitoring, and the lease-versus-buy decision. The Accounting Review, 85, 1215-1238.

Bharath, S. T., Sunder, J., Sunder, S. 2008. Accounting quality and debt contracting The Accounting Review 83, 1-28.

Biddle, G., Hilary, G., 2006. Accounting quality and firm-level capital investment. The Accounting Review 81, 963–982.

Biddle, G. C., Hilary, G., Verdi, R. S. 2009. How does financial reporting quality relate to investment efficiency? Journal of Accounting and Economics 48,112-131.

Cohen, L., Frazzini, A., 2008. Economic links and predictable returns. Journal of Finance 2008, 1977-2011.

Cuňat, V., 2006. Trade credit: Suppliers as debt collectors and insurance provides. Review of Financial Studies 20, 491-527.

Dechow, P. M., Dichev, I. D. 2002. The quality of accruals and earnings: The role of accrual estimation errors. The Accounting Review 77 (Supplement: Quality of Earnings Conference), 35-59.

Dechow, P., Sloan, R., Sweeney, A. 1995. Detecting earnings management. The Accounting Review 70, 193–225.

Faulkender, M., Petersen, M. A., 2006. Does the source of capital affect capital structure? Review of Financial Studies 19, 45–79.

Faulkender, M., Wang, R., 2006. Corporate financial policy and the value of cash. Journal of Finance 61, 1957-1990.

Fisman, R., Love, I., 2003. Trade credit, financial intermediary development, and industry growth. Journal of Finance 58, 353-374.

Francis, J., LaFond, R., Olsson, P., Schipper, K., 2004. Costs of equity and earnings attributes. The Accounting Review 79, 967-1010.

Francis, J., Nanda, D., Olsson, P., 2008. Voluntary disclosure, earnings quality, and cost of capital. Journal of Accounting Research 46, 53-99.

Fresard, L., 2010 Financial strength and product market behavior: the real effects of corporate cash holdings. Journal of Finance 65, 1097-1122

Garcia Lara, J. M., Garcia Osma, B., Penalva, F., 2011. Conditional Conservatism and Cost of Capital. Review of Accounting Studies 16, 247-271.

Hertzel, M. G., Li, Z., Officer, M. S., Rodgers., K. J., 2008. Inter-firm linkages and the wealth effects of financial distress along the supply chain. Journal of Financial Economics 87, 374-387.

Holmstrom, B., Roberts, J., 1998. The boundaries of the firm revisited. Journal of Economic Perspectives 12, 73–94.

Jones, J. J., 1991. Earnings management during import relief investigations. Journal of Accounting Research 29, 193-228.

Kale, J. R., Shahrur, H., 2007. Corporate capital structure and the characteristics of suppliers and customers. The Journal of Financial Economics, 321 - 365.

Kim, C., Mauer, D. C., Sherman, A. E., 1998. The determinants of corporate liquidity: Theory and evidence, Journal of Financial and Quantitative Analysis 33, 305-334.

Klapper , L., 2010. The role of "reverse factoring" in supplier financing of small and medium sized enterprises. Working paper, World bank.

Liu, Y., Mauer, D., 2011. Corporate cash holdings and CEO compensation incentives. Journal of Financial Economics, 34, 279-294.

Mian, L., Smith, C. W., 1992. Accounts receivable management policy: theories and evidence. Journal of Finance 47, 169-200.

Murfin, J., Njoroge, K., 2011. Small lending big: the real effects of trade credit demands on constrained suppliers. Working paper, Yale University.

Myers, S., Majluf, N., 1984. Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics 13, 157-187.

Opler, T., Pinkowitz, L., Stulz, R., Williamson, R., 1999. The determinants and implications of cash holdings, Journal of Financial Economics 52, 3-46.

Pandit, S., Wasley, C. E., Tzachi, Z., 2011. Information externalities along the supply chain: the economic determinants of suppliers' stock price reaction to their customers' earnings announcements. Contemporary Accounting Research 28, 1304-1343.

Petersen, M., Rajan, R., 1997. Trade credit: Theories and evidence, Review of Financial Studies 10, 661-691.

Scherer, F.M., Ross, D., 1990. Industrial Market Structure and Economic Performance. Houghton-Mifflin, Boston.

Schwartz, R. A., Whitcomb, D., 1974. An economic model of trade credit, Journal of Financial and Quantitative Analysis 9, 643-657.

Stigler, G.J., 1964. A theory of oligopoly. Journal of Political Economy 72, 44–61.

Sufi, A., 2009. The Real Effects of debt certification: Evidence from the introduction of bank loan ratings, Review of Financial Studies 22, 1659-1691.

Teoh, S. H., Welch, I., Wong, T. J., 1998. Earnings management and the underperformance of seasoned equity offerings. Journal of Financial Economics 50, 63–99.

Appendix A: Measures of Accounting Quality

Following previous studies (Bharath et al., 2008; Beatty et al., 2010), we measure accounting quality using the first principle component of three standardized abnormal accruals estimated based on three different accruals models widely used in the accounting literature. Specifically, we estimate three accrual models to obtain the normal level of accruals for each Fama and French 48 industries every year. We then subtract normal accruals from total accruals, take the absolute value and multiply it by negative one to arrive at abnormal accruals. To make it comparable across the three measures, we further standardize each measure by subtracting its mean and then dividing this difference by its standard deviation.

The first model is based on Dechow and Dichev (2002), the second model is based on the model in Teoh et al. (1998), and the third model is the modified Jones (1991) model by Dechow et al. (1995). Following Bharath et al. (2008) and Beatty et al. (2011), we estimate the three accruals model cross-sectionally, where for each year we estimate the model for every industry classified based on Fama and French 48 industry groups. Thus, this approach partially controls for industry-wide changes in economic conditions that affect accruals while allowing the coefficients to vary across time.

We derive total accruals (*TA*) as the difference between earnings before income and tax and cash flow from operations. Current accruals are computed as follow:

$$TCA_{i,t} = -(\Delta AR_{i,t} + \Delta INV_{i,t} + \Delta AP_{i,t} + \Delta TAX_{i,t} + \Delta OCA_{i,t})$$

where $\Delta AR_{i,t}$ is the changes in accounting receivable, $\Delta INV_{i,t}$ is the changes in inventory, $\Delta AP_{i,t}$ is the changes in accounts payable, $\Delta TAX_{i,t}$ is the changes in tax, and $\Delta OCA_{i,t}$ is the change in other current accruals.

The first accruals model is the Dechow and Dichev's (2002) model, which is based on the extent to which current accruals map into realized cash flows from operations.

$$\frac{TCA_{i,t}}{Asset_{j,t}} = \varphi_{1,t}\frac{CFO_{i,t-1}}{Asset_{i,t}} + \varphi_{2,t}\frac{CFO_{i,t}}{Asset_{i,t}} + \varphi_{3,t}\frac{CFO_{i,t+1}}{Asset_{i,t}} + e_{i,t} \quad \text{(A1)}$$

We take the absolute value of the firm's residual from Equation (A1), multiply it by negative one, and then standardize it as the measure of our first abnormal accruals, denoted as $AA1_{i,t}$.

In the second accruals model, we regress total current accruals on the changes in firm revenue:

$$\frac{TCA_{i,t}}{Asset_{i,t-1}} = k_{1,t}\frac{1}{Asset_{i,t-1}} + k_{2,t}\frac{\Delta REV_{i,t}}{Asset_{i,t-1}} + e_{i,t} \quad \text{(A2)}$$

where $\Delta REV_{i,t}$ is the change in revenues. The coefficient estimates from Equation (A2) are used to estimate the firm-specific normal current accruals ($NCA_{i,t}$) for the sample firms:

$$NCA_{i,t} = \hat{k}_{1,t}\frac{1}{Asset_{j,t-1}} + \hat{k}_{2,t}\frac{(\Delta REV_{i,t} - \Delta AR_{i,t})}{Asset_{i,t-1}} \quad \text{(A3)}$$

In turn, our second abnormal accruals is measured as

$$AA2_{i,t} = \text{standardized}[-\left|\frac{TCA_{i,t}}{\text{Asset}_{\text{i,t}-1}} - \text{NCA}_{\text{i,t}}\right|]$$

Our third abnormal accruals are the modified Jones model:

$$\frac{TA_{i,t}}{Asset_{i,t-1}} = k_{1,t}\frac{1}{Asset_{i,t-1}} + k_{2,t}\frac{\Delta REV_{i,t}}{Asset_{i,t-1}} + k_{3,t}\frac{PPE_{i,t}}{Asset_{i,t-1}} + e_{i,t} \quad \text{(A4)}$$

where $PPE_{j,t}$ is the gross value of property, plant, and equipment. The coefficient estimates from Equation (A4) are used to estimate the firm-specific normal total accruals ($NTA_{j,t}$) for the sample firms:

$$NTA_{i,t} = \hat{k}_{1,t}\frac{1}{Asset_{j,t-1}} + \hat{k}_{2,t}\frac{(\Delta REV_{i,t} - \Delta AR_{i,t})}{Asset_{i,t-1}} + \hat{k}_{3,t}\frac{PPE_{i,t}}{Asset_{i,t-1}} \quad \text{(A5)}$$

and our third abnormal accruals are:

$$AA3_{i,t} = standardized[-\left|\frac{TA_{i,t}}{Asset_{i,t-1}} - NTA_{i,t}\right|]$$

To obtain a parsimonious measure of accounting quality, we use principal component analysis to isolate the common component of the three measures of abnormal accruals. The first principal component explains 73% of the sample variance and we therefore use the first principle component to obtain our combined measure of accounting quality. More specifically, we calculate *AQ* for each firm for each fiscal year as follows:

$AQ = -1 \times (0.69 \times AA1 + 0.84 \times AA2 + 0.67 \times AA3)$,

where larger values of this combined measure represent higher accounting quality.

Appendix B: Variable Definition

Variables for testing trade credit hypotheses:

TradeCredit: Natural logarithm of one plus the ratio of accounts payable to costs of goods sold;

AQ: Accounting quality measured as the first principle component of AA1, AA2, and AA3 multiplied by negative 1;

Innate AQ: Innate accrual quality measured based on firm size, cash flow variability, sales variability, incidence of negative earnings realizations, intangible intensity and capital intensity using all firms from the Compustat universe;

Disc AQ: Discretionary accrual quality measured as the difference between AQ and the innate accrual quality;

AA1: Abnormal accruals computed as the absolute residual from the regression of changes in working capital accruals on past, present and future cash flow realizations as per Dechow and Dichev (2002) model. The absolute residual is then multiplied by negative one and standardized;

AA2: Abnormal accruals computed based on the methodology in Teoh et al. (1998). This measured is then multiplied by negative one and standardized;

AA3: Abnormal accruals computed using the modified Jones model from Dechow et al. (1995). This measured is then multiplied by negative one and standardized;

Log(Asset): Natural logarithm of the book value of total assets;

Log(Age+1): Natural logarithm of firm age plus 1;

$Log(Age +1)^2$: Squared Value of log(Age +1);

Leverage: Ratio of long-term debt and debt in current liabilities to the book value of total assets;

DIV: Dummy variable equal to 1 if a firm paid common stock dividends and 0 otherwise;

Rating: Dummy variable equal to 1 if a firm has a debt rating and 0 otherwise;

CR: Ratio of non-cash current assets to the book value of total assets;

ROA: Return on assets, calculated as the ratio of income before extraordinary items to the book value of total assets;

ChgSale_AT: Changes in sales scaled by the book value of total assets;

MTB: Ratio of market value of equity to the book value of net assets;

Liquidation: Liquidation costs calculated as the ratio of finished goods to total inventory;

OpCycle: Operating cycle. It is computed as the natural logarithm of 1 plus the sum of day's accounts receivables and day's inventory.

Variables for testing the cash holding hypotheses:

CashHold: Natural logarithm of one plus the ratio of cash and marketable securities to net assets (book value of total assets minus cash and marketable securities);

AQ_Customer: AQ of major customers;

Trade Credit_Customer: Ratio of accounts payable to cost of goods sold of a majorcustomer;

Log(NumCust+1): Natural logarithm of number of major customers as reported in Compustat Segment file plus 1;

CashFlow_NAT: Ratio of earnings after interest, dividends, and taxes but before depreciation to the book value of net assets;

NWC_NAT: Ratio of net working capital minus cash plus marketable securities to the book value of net assets;

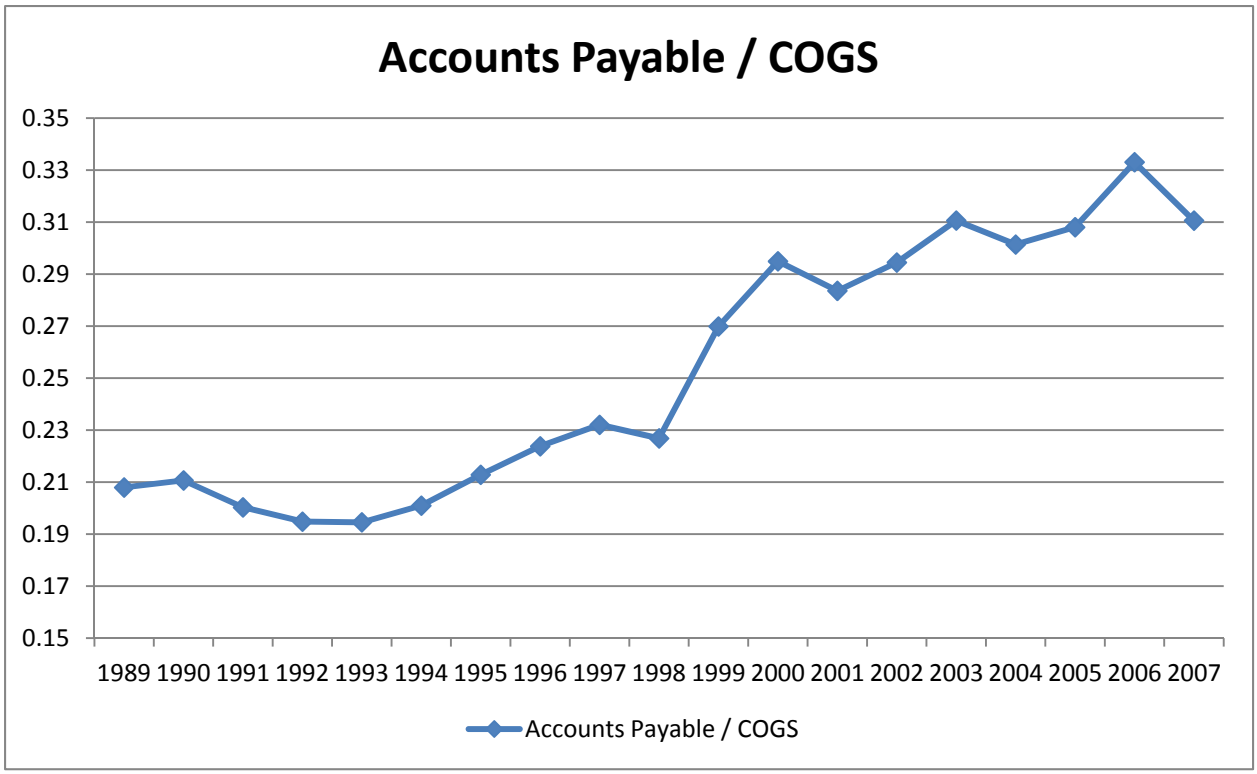
Capex_NAT: Ratio of capital expenditures to the book value of net assets;

RD_Sales: Ratio of research and development expense to sales. it is set to 0 when research and development expense is missing;

IndSigma: Mean of the standard deviations of CashFlow_NAT over 10 years for firms in the same industry, as defined by Fama and French 48 industry classification;

ACQ_NAT: Ratio of expenditures on acquisitions to the book value of net assets.

Figure 1: Temporal change in trade credit



This figure presents temporal change of trade credit (accounts payable/COGS) over the sample period 1989- 2007.

Table 1: Industry Profile

Panel A: Trade credit sample (N=94755)

Code	Industry Name	Freq	Perct	Code	Industry Name	Freq.	Perct
1	Agriculture	362	0.38%	23	Automobiles and Trucks	1,546	1.63%
2	Food Products	1,724	1.82%	24	Aircraft	508	0.54%
3	Candy & Soda	255	0.27%	25	Shipping and Rairoad Equipment	213	0.22%
4	Beer & Liquor	370	0.39%	26	Defense	196	0.21%
5	Tobacco Products	103	0.11%	27	Precious Metals	885	0.93%
6	Recreation	1,001	1.06%	28	Non-Metallic and Industrial Metal Mining	880	0.93%
7	Entertainment	1,728	1.82%	29	Coal	183	0.19%
8	Printing and Publishing	893	0.94%	30	Petroleum and Natural Gas	4,663	4.92%
9	Consermer Goods	1,882	1.99%	31	Utilities	3,076	3.25%
10	Apparel	1,466	1.55%	32	Communication	3,493	3.69%
11	Healthcare	1,981	2.09%	33	Personal Services	1,144	1.21%
12	Medical Equipment	3,690	3.89%	34	Business Services	12,654	13.35%
13	Pharmaceutical Products	5,675	5.99%	35	Computers	4,764	5.03%
14	Chemicals	1,959	2.07%	36	Electronic Equipment	6,566	6.93%
15	Rubber and Plastic Products	1,098	1.16%	37	Measuring and Control Equipment	2,483	2.62%
16	Textiles	569	0.60%	38	Business Supplies	1,413	1.49%
17	Construction Materials	2,111	2.23%	39	Shipping Containers	296	0.31%
18	Construction	1,082	1.14%	40	Transportation	2,593	2.74%
19	Steel Works Etc	1,665	1.76%	41	Wholesale	4,027	4.25%
20	Fabricated Products	459	0.48%	42	Retail	4,907	5.18%
21	Machinery	3,577	3.77%	43	Restaurant, Hotels, and Motels	1,958	2.07%
22	Electrical Equipment	1,761	1.86%	48	Other	896	0.95%

Table 1 (continued)

Panel B: Cash holding sample (N=29745)

Code	Industry Name	Freq	Perct	Code	Industry Name	Freq	Perct
1	Agriculture	55	0.18%	23	Automobiles and Trucks	1,415	4.76%
2	Food Products	482	1.62%	24	Aircraft	306	1.03%
3	Candy & Soda	51	0.17%	25	Shipping and Rairoad Equipment	44	0.15%
4	Beer & Liquor	17	0.06%	26	Defense	119	0.40%
5	Tobacco Products	4	0.01%	27	Precious Metals	26	0.09%
6	Recreation	660	2.22%	28	Non-Metallic and Industrial Metal Mining	92	0.31%
7	Entertainment	193	0.65%	29	Coal	119	0.40%
8	Printing and Publishing	141	0.47%	30	Petroleum and Natural Gas	1,775	5.97%
9	Consermer Goods	765	2.57%	31	Utilities	785	2.64%
10	Apparel	1,131	3.80%	32	Communication	1,151	3.87%
11	Healthcare	114	0.38%	33	Personal Services	145	0.49%
12	Medical Equipment	595	2.00%	34	Business Services	3,510	11.80%
13	Pharmaceutical Products	2,333	7.84%	35	Computers	2,229	7.49%
14	Chemicals	372	1.25%	36	Electronic Equipment	3,744	12.59%
15	Rubber and Plastic Products	595	2.00%	37	Measuring and Control Equipment	863	2.90%
16	Textiles	322	1.08%	38	Business Supplies	409	1.38%
17	Construction Materials	458	1.54%	39	Shipping Containers	123	0.41%
18	Construction	265	0.89%	40	Transportation	690	2.32%
19	Steel Works Etc	443	1.49%	41	Wholesale	975	3.28%
20	Fabricated Products	252	0.85%	42	Retail	167	0.56%
21	Machinery	1,116	3.75%	43	Restaurant, Hotels, and Motels	35	0.12%
22	Electrical Equipment	472	1.59%	48	Other	187	0.63%

This table presents industry distribution for the two samples used in the empirical analysis. Industries are classified based on Fama and French 48 industry groups. Our trade credit sample is comprised of firms from the Compustat Industry file over the period 1989- 2007. Our cash holding sample is comprised of firms from the Compustat Segment file over the period 1989 - 2007. Financial firms are excluded from both samples. Panels A and B present the results based on the trade credit sample and the cash holding sample, respectively.

Table 2: Descriptive Statistics

Panel A: Trade Credit Sample (N = 94755)

	N	Mean	Median	Lower Quartile	Upper Quartile	Std Dev
TradeCredit	94,755	0.255	0.119	0.074	0.201	0.626
Log_TradeCredit	94,755	0.180	0.113	0.071	0.183	0.248
AQ	94,755	0.112	0.636	-0.065	0.980	1.586
AA1	94,755	0.043	0.343	-0.096	0.559	0.886
AA2	94,755	0.047	0.337	-0.016	0.502	0.892
AA3	94,755	0.044	0.298	0.000	0.450	0.890
Log(Asset)	94,755	4.812	4.709	3.167	6.414	2.408
Log(Age + 1)	94,755	2.428	2.398	1.792	3.045	0.818
Log(Age + 1)2	94,755	6.567	5.750	3.210	9.269	4.065
Leverage	94,755	0.262	0.198	0.030	0.372	0.332
DIV	94,755	0.279	0.000	0.000	1.000	0.449
Rating	94,755	0.143	0.000	0.000	0.000	0.350
CR	94,755	-0.134	-0.063	-0.176	-0.018	0.178
ROA	94,755	-0.136	0.024	-0.085	0.068	0.631
ChgSale_AT	94,755	0.184	0.080	-0.017	0.266	0.523
MTB	94,755	2.726	1.098	0.534	2.414	5.557
Liquidation	94,755	0.194	0.000	0.000	0.363	0.282
OpCycle	94,755	4.599	4.742	4.249	5.181	1.003

Table 2 (Continued)

Panel B: Cash Holding Sample (N = 29745)

	N	Mean	Median	Lower Quartile	Upper Quartile	Std Dev
CashHold	29,745	0.241	0.071	0.016	0.225	0.561
Log_CashHold	29,745	0.168	0.068	0.017	0.203	0.264
AQ_Customer	29,745	0.690	0.855	0.464	1.092	0.647
TradeCredit_Customer	29,745	0.162	0.098	0.127	0.175	0.196
AQ	29,745	0.096	0.547	-0.139	0.938	1.442
Log(NumCust + 1)	29,745	1.469	1.099	1.386	1.609	0.505
Log(Age + 1)	29,745	4.927	3.483	4.786	6.401	2.115
Log(asset)	29,745	4.927	3.483	4.786	6.401	2.115
MTB	29,745	2.332	0.405	0.968	2.206	5.458
CashFlow_NAT	29,745	-0.056	-0.018	0.066	0.123	0.620
NWC_NAT	29,745	0.140	0.000	0.159	0.349	0.470
Capx_NAT	29,745	0.076	0.025	0.049	0.094	0.084
RD_Sale	29,745	0.224	0.000	0.011	0.109	0.933
Leverage	29,745	0.254	0.027	0.194	0.373	0.294
IndSigma	29,745	0.554	0.382	0.518	0.718	0.264
DIV	29,745	0.230	0.000	0.000	0.000	0.421
AQC_NAT	29,745	0.022	0.000	0.000	0.002	0.065
HIndex	29,745	0.167	0.121	0.068	0.204	0.141

This table presents descriptive statistics for the two samples-the trade credit and the cash holdings, used in the empirical analysis. The trade credit sample is comprised of firms from the Compustat Industry file over the period 1989- 2007. Our cash holding sample is comprised of firms from the Compustat Segment file over the period 1989-2007. Financial firms are excluded from both samples. Panels A and B report summary statistics for variables used in testing trade credit hypotheses based on the trade credit sample and cash holding hypotheses based on the cash holding sample, respectively. All variables are defined in Appendix B.

Table 3: Correlation Coefficient

Panel A: Trade Credit Sample (N=94755)

Variable	AQ	Log (Asset)	Log (Age+1)	Log (Age + 1)2	Lev.	DIV	Rating	CR	ROA	ChgSale_AT	MTB	Liquida.	OpCycle
Log_TradeCredit	**-0.225**	**-0.196**	**-0.154**	**-0.151**	**1.410**	**-0.132**	**-0.058**	**-0.097**	**-0.288**	**-0.028**	**-0.059**	**-0.060**	**0.251**
AQ		**0.424**	**0.240**	**0.232**	**-0.196**	**0.237**	**0.165**	**0.160**	**0.470**	**-0.274**	**0.032**	**0.033**	**-0.086**
Log(Asset)			**0.364**	**0.390**	**-0.071**	**0.489**	**0.528**	**0.220**	**0.412**	**-0.030**	**0.047**	**0.048**	**-0.108**
Log(Age + 1)				**0.983**	**0.030**	**0.401**	**0.256**	**0.193**	**0.149**	**-0.213**	**0.095**	**0.096**	**-0.045**
$Log(Age + 1)^2$					**0.026**	**0.437**	**0.277**	**0.191**	**0.152**	**-0.187**	**0.093**	**0.093**	**-0.046**
Leverage						**-0.038**	**0.128**	**0.202**	**-0.405**	**-0.076**	**-0.034**	**-0.035**	**-0.063**
DIV							**0.237**	**0.188**	**0.189**	**-0.063**	**-0.150**	**0.062**	**-0.082**
Rating								**0.134**	**0.099**	**-0.063**	**-0.115**	**0.062**	**-0.085**
CR									**0.142**	**-0.040**	**-0.509**	**0.044**	**0.009**
ROA										**0.085**	**-0.419**	**0.058**	0.001
ChgSale_AT											**0.122**	**-0.028**	**-0.045**
MTB												**-0.049**	**0.015**
Liquidation													**0.238**

Table 3 (Continued)

Panel B: Cash Holding Sample (N=29745)

Variable	AQ_ Customer	AQ	TradeCredit _Customer	Log(Num Cust + 1)	Log (asset)	MTB	CashFlow _NAT	NWC _NAT	Capx _NAT	RD _Sale	Leverage	IndSigma	DIV	AQC _NAT
Log_CashHold	**-0.085**	**-0.171**	**0.093**	-0.010	**-0.212**	**0.564**	**-0.365**	**-0.074**	**0.118**	**0.256**	**-0.252**	**0.317**	**-0.188**	**-0.055**
AQ_Customer		**0.097**	**-0.049**	**-0.024**	**0.070**	**-0.056**	**0.411**	-0.014	-0.012	-0.019	**0.038**	**-0.061**	**0.089**	0.009
TradeCredit_Customer			**0.040**	0.012	-0.017	**0.053**	**-0.046**	-0.018	**0.049**	**0.095**	**-0.032**	**0.118**	**-0.059**	-0.004
AQ				0.000	**0.355**	**-0.179**	**0.252**	**0.189**	-0.008	**-0.063**	**-0.039**	**-0.116**	**0.200**	0.010
Log(NumCust + 1)					**0.147**	**-0.030**	**0.045**	0.000	**-0.050**	**-0.063**	**0.017**	**0.089**	**-0.049**	**0.043**
Log(asset)						**-0.150**	**0.278**	**0.102**	-0.011	**-0.099**	**0.039**	**-0.050**	**0.414**	**0.120**
MTB							**-0.390**	**-0.068**	**0.109**	**0.239**	**-0.127**	**0.236**	**-0.111**	**-0.040**
CashFlow_NAT								**0.457**	**-0.054**	**-0.366**	**-0.191**	**-0.180**	**0.108**	**0.052**
NWC_NAT									**-0.121**	0.006	**-0.501**	0.019	-0.009	-0.006
Capx_NAT										0.013	**-0.028**	**-0.066**	0.010	**-0.082**
RD_Sale											**-0.039**	**0.323**	**-0.118**	**-0.043**
Leverage												**-0.152**	-0.006	**0.033**
IndSigma													**-0.278**	**0.031**
DIV														0.000

This table presents the Pearson correlation matrix among variables used in testing trade credit hypotheses based on the trade credit sample (Panel A) and cash holding hypotheses based on the cash holding sample (Panel B). All Variables are defined in Appendix B. The correlation coefficients that are significant at the 5% or better are in bold.

Table 4: Trade Credit and Accounting Quality

	Predicted Sign	Coeff	p value		Coeff	p value		Coeff	p value		Coeff	p value
		(i)			(ii)			(iii)			(iv)	
Intercept		0.050	0.038		0.052	0.033		0.048	0.049		0.055	0.021
AQ	-	-0.009	0.000									
AA1	-				-0.004	0.008						
AA2	-							-0.016	0.000			
AA3	-										-0.016	0.000
Log(Asset)	-	-0.005	0.000		-0.006	0.000		-0.005	0.000		-0.006	0.000
Log(Age + 1)	-	-0.063	0.000		-0.067	0.000		-0.062	0.000		-0.064	0.000
Log(Age + 1)2		0.009	0.000		0.009	0.000		0.008	0.000		0.009	0.000
Leverage	+	0.055	0.000		0.058	0.000		0.055	0.000		0.057	0.000
DIV	-	0.001	0.654		-0.001	0.224		-0.001	0.660		0.001	0.595
Rating	-	0.001	0.922		-0.001	0.548		-0.001	0.793		-0.001	0.970
CR	-	-0.019	0.071		-0.020	0.081		-0.019	0.040		-0.021	0.057
ROA	-	-0.056	0.000		-0.062	0.000		-0.058	0.000		-0.053	0.000
ChgSale_AT	+	-0.016	0.000		-0.010	0.000		-0.018	0.000		-0.017	0.000
MTB	+	0.004	0.003		0.004	0.000		0.004	0.000		0.004	0.000
Liquidation	-	-0.029	0.000		-0.027	0.000		-0.027	0.000		-0.027	0.000
OpCycle	+	0.051	0.000		0.052	0.000		0.051	0.000		0.052	0.000
Industry Dummy		Yes			Yes			Yes			Yes	
Year Dummy		Yes			Yes			Yes			Yes	
N		94,755			94,755			94,755			94,755	
R^2		0.26			0.25			0.26			0.26	

This table reports the results of testing the relation between trade credits and accounting quality. The dependent variable is *Log_TradeCredit*, which is the natural logarithm of one plus the ratio of accounts payable to costs of goods sold. We use four different measures of accounting quality: AQ, AA1, AA2, and AA3 as reported in column (i), (ii), and (iii) and (iv), respectively. All variables are defined in Appendix B. Industry is defined based on Fama and French 48 industry classifications. Standard errors are clustered at the firm level to correct for serial correlation and the p-value is based on a two-tailed test.

Table 5: The Effect of Financial Constraints on the Relation between Trade Credit and Accounting Quality

	Predicted	Credit Rating =1		Credit Rating = 0		DIV=1		DIV=0	
	Sign	**Coeff**	**p value**	**Coeff**	**p value**	**Coeff**	**p value**	**Coeff**	**p value**
		(i)		(ii)		(iii)		(iv)	
Intercept		-0.104	0.078	0.054	0.036	-0.042	0.277	0.051	0.087
AQ	-	0.001	0.805	-0.006	0.000	0.000	0.969	-0.009	0.000
Log(Asset)	-	0.008	0.001	-0.006	0.000	0.008	0.000	-0.009	0.000
Log(Age + 1)	-	0.002	0.916	-0.057	0.000	-0.015	0.242	-0.056	0.000
Log(Age + 1)2		0.000	0.497	0.006	0.000	0.000	0.871	0.005	0.010
Leverage	-	0.000	0.978	0.061	0.000	-0.015	0.270	0.062	0.000
DIV	-	-0.003	0.587	-0.002	0.476				
Rating						0.002	0.716	-0.003	0.578
CR	-	-0.093	0.021	-0.011	0.285	-0.048	0.062	-0.011	0.355
ROA	-	-0.014	0.208	-0.054	0.000	-0.119	0.001	-0.049	0.000
ChgSale_AT	+	-0.011	0.017	-0.016	0.000	-0.004	0.217	-0.017	0.000
MTB	+	0.003	0.120	0.004	0.000	0.003	0.108	0.004	0.000
Liquidation	+	-0.040	0.000	-0.027	0.000	-0.027	0.000	-0.027	0.000
OpCycle	+	0.083	0.000	0.050	0.000	0.074	0.000	0.051	0.000
P-value of difference		0.014				0.002			
Industry Dummy		Yes		Yes		Yes		Yes	
Year Dummy		Yes		Yes		Yes		Yes	
N		13,511		81,244		26,437		68,318	
R^2		0.28		0.26		0.26		0.25	

This table presents the results of testing the effect of financial constraints on the relation between accounting quality and trade credit. The dependent variable *Log_TradeCredit*, which is the natural logarithm of one plus the ratio of accounts payable to costs of goods sold. Columns (i) and (ii) report the results of testing the relation conditioning on whether a firm has an S&P long-term credit rating, and columns (iii) and (iv) report the results of testing the relation conditioning on whether a firm pays dividend. All variables are defined in Appendix B. Industry is defined based on Fama and French 48 industry classifications. Standard errors are clustered at the firm level to correct for serial correlation and the p-value is based on a two-tailed test.

Table 6: Suppliers' Cash Holdings and Customers' Accounting Quality

	Predicted	OLS		OLS		2SLS	
	Sign	**Coeff**	**p value**	**Coeff**	**p value**	**Coeff**	**p value**
		(i)		(ii)		(ii)	
Intercept		0.183	0.000	0.165	0.000	0.161	0.000
AQ_Customer	-	-0.010	0.000				
Trade Credit_Customer				0.103	0.000	1.446	0.010
AQ	**?**	0.001	0.493	0.001	0.517	-0.003	0.178
Log(NumCust+1)	+	0.000	0.989	0.000	0.964	-0.001	0.836
Log(Asset +1)	-	-0.007	0.000	-0.007	0.000	-0.008	0.000
MTB	+	0.019	0.000	0.019	0.000	0.019	0.000
CashFlow_NAT	+	-0.060	0.000	-0.060	0.000	-0.059	0.000
NWC_NAT	-	-0.058	0.000	-0.057	0.000	-0.054	0.000
Capx_NAT	+/-	0.248	0.000	0.245	0.000	0.180	0.000
RD_Sale	+	0.014	0.001	0.013	0.002	0.002	0.811
Leverage	+	-0.217	0.000	-0.216	0.000	-0.195	0.000
IndSigma	+	0.086	0.026	0.078	0.042	0.005	0.923
DIV	-	-0.034	0.000	-0.033	0.000	-0.019	0.022
AQC_NAT	+/-	-0.055	0.033	-0.055	0.036	-0.031	0.335
Industry Dummy		Yes		Yes		Yes	
Year Dummy		Yes		Yes		Yes	
N		29,745		29,745		29,745	
R^2		0.45		0.45		-	

This table reports the results of testing the relation between customers' accounting quality and the amount of cash holdings by suppliers. The dependent variable is *Log_CashHold*, which is the natural logarithm of one plus the ratio of cash and marketable securities to net assets (book value of total assets minus cash and marketable securities). All variables are defined in Appendix B. Industry is defined based on Fama and French 48 industry classifications. Standard errors are clustered at the firm level to correct for serial correlation and the p-value is based on a two-tailed test.

Table 7: Cash Holding, Customer Accounting Quality, and Financial Constraints

	Predicted	Credit Rating =1		Credit Rating = 0		DIV=1		DIV=0	
	Sign	**Coeff**	**p value**	**Coeff**	**p value**	**Coeff**	**p value**	**Coeff**	**p value**
		(ii)		(iii)		(iv)		(iii)	
Intercept		0.119	0.008	0.191	0.000	0.145	0.000	0.194	0.000
AQ_Customer	-	0.001	0.878	-0.011	0.000	-0.006	0.183	-0.010	0.001
AQ	?	0.001	0.767	-0.001	0.662	0.001	0.903	-0.001	0.573
Log(NumCust+1)	+	0.003	0.683	-0.002	0.774	-0.001	0.887	-0.001	0.841
Log(Asset +1)	-	-0.012	0.004	-0.005	0.005	-0.008	0.000	-0.006	0.004
MTB	+	0.026	0.000	0.019	0.000	0.020	0.000	0.019	0.000
CashFlow_NAT	+	-0.260	0.000	-0.059	0.000	-0.103	0.004	-0.056	0.000
NWC_NAT	-	-0.061	0.022	-0.067	0.000	-0.025	0.403	-0.063	0.000
Capx_NAT	+/-	0.028	0.579	0.262	0.000	0.054	0.395	0.273	0.000
RD_Sale	+	0.003	0.716	0.014	0.002	-0.036	0.546	0.014	0.001
Leverage	+	-0.049	0.016	-0.248	0.000	-0.145	0.000	-0.225	0.000
IndSigma	+	0.082	0.036	0.095	0.063	0.049	0.194	0.077	0.147
DIV	-	-0.005	0.446	-0.038	0.000				
AQC_NAT	+/-	-0.043	0.093	-0.071	0.026	-0.071	0.006	-0.064	0.041
P-value of difference		0.075				0.420			
Industry Dummy		Yes		Yes		Yes		Yes	
Year Dummy		Yes		Yes		Yes		Yes	
N		4,312		25,433		6,828		22,917	
R^2		0.52		0.45		0.47		0.43	

This table reports the results of testing the effect of supplier financial constraints on the relation between customer accounting quality and the amount of cash holdings by suppliers. The dependent variable is *Log_CashHold*, which is the natural logarithm of one plus the ratio of cash and marketable securities to net assets (book value of total assets minus cash and marketable securities). Credit Rating is set to 1 if a supplier has an S&P long-term credit rating and 0 otherwise. DIV is equal to 1 if a supplier pays dividend and 0 otherwise. All variables are defined in Appendix B. Industry is defined based on Fama and French 48 industry classifications. Standard errors are clustered at the firm level to correct for serial correlation, and the p-value is based on a two-tailed test.

Table 8: Cash Holding, Customer Accounting Quality, and Industry Competition

	Predicted	Concentrated Industry		Competitative Industry	
	Sign	**Coeff**	**p value**	**Coeff**	**p value**
		(i)		(ii)	
Intercept		0.204	0.000	0.196	0.000
AQ_Customer	-	-0.003	0.329	-0.013	0.000
AQ	**?**	0.001	0.742	-0.003	0.255
Log(NumCust+1)	+	-0.004	0.453	0.003	0.705
Log(Asset +1)	-	-0.005	0.010	-0.005	0.021
MTB2	+	0.025	0.000	0.017	0.000
CashFlow_NAT	+	-0.031	0.047	-0.067	0.000
NWC_NAT	-	-0.049	0.000	-0.056	0.000
Capx_NAT	+/-	0.088	0.031	0.400	0.000
RD_Sale	+	0.027	0.010	0.012	0.008
Leverage	+	-0.286	0.000	-0.375	0.000
IndSigma	+	0.025	0.586	0.053	0.369
DIV	-	-0.025	0.000	-0.040	0.000
AQC_NAT	+/-	-0.061	0.016	-0.031	0.471
P-value of difference		0.020			
Industry Dummy		Yes		Yes	
Year Dummy		Yes		Yes	
N		14,873		14,872	
R^2		0.43		0.47	

This table reports the results of testing the effect of industry competition of a supplier on the relation between customer accounting quality and the amount of cash holdings by suppliers. The dependent variable is *Log_CashHold*, which is the natural logarithm of one plus the ratio of cash and marketable securities to net assets (book value of total assets minus cash and marketable securities). Industry competition is proxied by The Herfindahl index. The Herfindahl index is constructed based on three-digit SIC industry membership. The full sample is partitioned into high Herfindahl-index group (concentrated industry) and low Herfindahl-index group (competitive industry). All variables are defined in Appendix B. Industry is defined based on Fama and French 48 industry classifications. Standard errors are clustered at the firm level to correct for serial correlation, and the p-value is based on a two-tailed test.

Table 9: Customer Trade Credit, Supplier Cash Holdings, and Decomposition of Customer Accounting Quality

Panel A: Customer trade credit analysis

	Predicted Sign	Coeff	p value		Coeff	p value		Coeff	p value
		(i)			(ii)			(iii)	
Intercept		0.070	0.004		0.044	0.068		0.074	0.002
INNATE AQ	-	-0.017	0.000					-0.022	0.000
DISC AQ	-				-0.007	0.000		-0.009	0.000
Log(Asset)	-	0.005	0.000		-0.006	0.000		-0.004	0.000
Log(Age + 1)	-	-0.078	0.000		-0.060	0.000		-0.072	0.000
Log(Age + 1)2		0.012	0.000		0.008	0.000		0.010	0.000
Leverage	+	0.057	0.000		0.057	0.000		0.055	0.000
DIV	-	0.000	0.960		-0.002	0.530		0.000	0.935
Rating	-	-0.001	0.786		-0.007	0.841		-0.001	0.761
CR	-	-0.015	0.182		-0.022	0.041		-0.015	0.154
ROA	-	-0.056	0.000		-0.060	0.000		-0.051	0.000
ChgSale_AT	+	-0.012	0.000		-0.014	0.000		-0.018	0.000
MTB	+	0.004	0.000		0.004	0.000		0.004	0.000
Liquidation	-	-0.028	0.000		-0.028	0.000		-0.028	0.000
OpCycle	+	0.053	0.000		0.055	0.000		0.052	0.000
Industry Dummy		Yes			Yes			Yes	
Year Dummy		Yes			Yes			Yes	
N		94,755			94,755			94,755	
R^2		0.26			0.26			0.26	

Table 9 (Continued)

Panel B: Supplier cash holdings analysis

	Predicted Sign	Coeff	p value	Coeff	p value	Coeff	p value
		(ii)		(iii)		(iv)	
Intercept		0.178	0.000	0.182	0.000	0.183	0.000
INNATE AQ_Customer	-	-0.016	0.044			-0.017	0.028
DISC AQ_Customer	-			-0.008	0.002	-0.009	0.001
AQ	?	0.001	0.551	0.001	0.512	0.001	0.495
Log(NumCust+1)	+	0.000	0.951	0.000	0.983	0.000	0.987
Log(Asset +1)	-	-0.007	0.000	-0.007	0.000	-0.007	0.000
MTB2	+	0.019	0.000	0.019	0.000	0.019	0.000
CashFlow_NAT	+	-0.060	0.000	-0.060	0.000	-0.060	0.000
NWC_NAT	-	-0.058	0.000	-0.058	0.000	-0.058	0.000
Capx_NAT	+/-	0.248	0.000	0.249	0.000	0.248	0.000
RD_Sale	+	0.014	0.001	0.014	0.001	0.014	0.001
Leverage	+	-0.217	0.000	-0.217	0.000	-0.217	0.000
IndSigma	+	0.083	0.033	0.087	0.026	0.085	0.028
DIV	-	-0.034	0.000	-0.034	0.000	-0.034	0.000
AQC_NAT	+/-	-0.056	0.030	-0.056	0.033	-0.056	0.033
Industry Dummy		Yes		Yes		Yes	
Year Dummy		Yes		Yes		Yes	
N		29,745		29,745		29,745	
R^2		0.45		0.45		0.45	

This table reports the results of testing the relation between trade credits and accounting quality in Panel A and the relation between supplier cash holdings and customer accounting quality in Panel B, whiling decomposing accounting quality into an innate component (INNATE AQ) and a discretionary component (DISC AQ). INNATE AQ is the predicted value obtained from regressing AQ on a set of variables (the standard deviation of operating cash flows over past five years, standard deviation of sales over past five years, number of years with losses over the past five years, capital expenditure intensity and R&D intensity) based on the Compustat Universe sample. DISC AQ is the difference between AQ and INNATE AQ. In Panel A the dependent variable is *Log_TradeCredit* defined as the natural logarithm of one plus the ratio of accounts payable to costs of goods sold. In Panel B the dependent variable is *Log_CashHold* defined as the natural logarithm of one plus the ratio of cash and marketable securities to net assets (book value of total assets minus cash and marketable securities). All other variables are defined in Appendix B. Industry is defined based on Fama and French 48 industry classifications. Standard errors are clustered at the firm level to correct for serial correlation and the p-value is based on a two-tailed test.