Cash versus Accrual Accounting and the Availability and Cost of Small Business Debt*

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ABSTRACT: The voluntary use and provision of accrual accounting is hypothesized to provide incremental information to capital providers, thereby lowering the firm's cost of capital. We investigate the use of accrual accounting on the cost of debt using a large, generalizable sample of small business firms that have discretion in their choice of cash or accrual accounting. We find that small businesses using accrual accounting have significantly lower interest rates after controlling for many factors associated with cost of debt. The findings are robust after considering the self-selection of firms that apply for and obtain debt capital and the endogenous choice of accrual accounting by firms. However, we find limited evidence that accrual accounting decreases the likelihood of loan denial after controlling for other determinants. In addition, credit scores from external parties and past interactions between the lender and applicant are at least partial supplements to the provision of accrual accounting reports, consistent with alternative information sources being available to reduce information asymmetries between small business borrowers and lenders.

JEL Classification Codes: G12; G20; M10; M41.

Keywords: accrual accounting; cash accounting; credit denial; cost of capital; interest rates.

Data Availability: The data used in this study are publicly available from the Federal Reserve Board.

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I. INTRODUCTION

Accounting standard-setters are placing increasing emphasis on accounting methods in small, privately-held businesses. The American Institute of Certified Public Accountants and Financial Accounting Standards Board (AICPA and FASB, 2006) have established a joint committee to investigate accounting standards in private businesses, most of which are small. Similarly, the International Accounting Standards Board (IASB, 2007) has proposed new accounting standards for small- and medium-sized entities. The primary focus of these initiatives is assessing whether deviations from Generally Accepted Accounting Standards (GAAP) should be allowed in these businesses. In addressing this issue, both the AICPA/FASB committee and IASB state that they will consider whether the benefits to external accounting statement users from requiring small, privately-held businesses to follow common GAAP standards exceed the associated costs to these businesses.

We contribute to this discussion by investigating whether one of the most fundamental deviations from GAAP ─ the use of cash rather than accrual accounting ─ is associated with the availability and cost of debt in small businesses. Lenders are the primary external users of financial reports from small, privately-held firms (Nair and Rittenberg, 1983). Proponents of accrual accounting argue that the matching principle and revenue recognition rules inherent in this method provide incremental information above cash accounting, thereby offering a better indicator of company performance and financial standing, and reducing information asymmetries between borrowers and lenders. These claims suggest that lenders will be more likely to provide loans and to offer lower interest rates to firms employing accrual accounting. Others, however, contend that cash accounting is more objective than accrual accounting and better reflects a small business's solvency and ability to repay its loans. If true, the incremental information provided by accrual accounting may have no effect on the availability and cost of debt in small, privately-held businesses.

Increased availability of small business credit scores from firms such as Dun & Bradstreet and Fair Isaac may further reduce any informational advantages from accrual accounting. Credit scoring agencies gather financial data, credit history, and other information from the businesses being evaluated and other sources to assess the probability that borrowers will meet their loan obligations. Third-party credit scores provide an alternative means for reducing information asymmetries by giving lenders a cost-effective and timely method for evaluating loan applications and monitoring borrowers (Petersen and Rajan, 2002; Berger and Frame, 2007).

Studies also suggest that a lender's existing relationship with a borrower may be a better source of information about the borrower's credit worthiness than either accounting reports or credit scores (Petersen and Rajan, 1994; Cowen and Cowen, 2006). If existing lending information is more informative of the borrower's future repayment performance than other information sources and is difficult to codify or transfer, differences in accounting methods (and credit scores) may have little effect on the availability and cost of debt for borrowers with longstanding relationships with their lenders.

Despite these conflicting implications, evidence on the influence of cash or accrual accounting on small business lending decisions is limited. Although surveys indicate that lenders perceive GAAP-based financial reports to be useful decision-making tools (AICPA, 2004) and more beneficial than non-GAAP reports (Baker and Cunningham, 1993), studies also indicate that lenders frequently allow small business applicants to submit financial information that deviates from GAAP, particularly in the use of bases other than accrual accounting (AICPA, 2004; FERF, 2006). Moreover, experimental and survey-based studies provide mixed evidence on the differential effects of cash and accrual accounting on lending decisions (Riahi-Belkaoui, 1992; Baker and Cunningham, 1993; Jones, 1998; Jones and Widjaja, 1998; Sharma and Iselin, 2003; Yohn, 2007). The conflicting

implications and mixed evidence highlight the uncertain relation between this fundamental deviation from GAAP and small business debt financing.

We investigate the effects of cash versus accrual accounting on the availability and cost of debt using a sample of small, privately-held companies with fewer than 500 employees and revenues below $5 million, gathered in the Survey of Small Business Finance (SSBF) conducted by the U.S. Federal Reserve. Because these companies have no regulatory or tax requirements to use accrual accounting, our sample reflects companies making the voluntary choice to use or not use this accounting method. We find no evidence that accrual accounting reduces the likelihood of loan denial after controlling for other factors previously found to be associated with small business loan decisions. However, higher credit scores are negatively associated with loan denial, suggesting that the broad information contained in these scores is used in the initial decision to accept or deny the application, while the incremental information in accrual accounting has little influence on this decision. This evidence is consistent with experimental and qualitative studies finding that the initial decision to accept or reject a small business loan application is based on simple, aggregated accounting information and other general background data rather than on the analysis of detailed accounting information (Danos et al., 1989; Berry et al., 1993).

In contrast, both accrual accounting and credit scores are negatively associated with the initial interest rate on approved loans, consistent with these information sources reducing information asymmetries between lenders and borrowers. However, the interest rate benefits from accrual accounting are lower when credit scores are higher, and vice versa. These results suggest that accrual accounting and credit scores are substitute means for assessing borrower risk and determining interest rates, with the importance of one of these two information sources being lower (but not unimportant) when the other information source provides a similar signal of the potential borrower's credit risk. Finally, accrual accounting and higher credit scores have beneficial effects on interest rates in small

businesses that have a relatively short relationship with their lender, but have no significant effect on interest rates in those with longstanding relationships, supporting claims that the information obtained in ongoing lending relationships supersedes other sources of information for small business lending decisions.

This study makes several contributions to the accounting literature. First, we investigate financial accounting practices in small businesses, a major sector of the economy and a leading source of employment growth that has received relatively little research attention.[1] In contrast to prior small business accounting studies, we provide evidence on whether alternative information sources are substitutes for differences in these businesses' accounting methods. Second, our study responds to calls for researchers to inform the AICPA/FASB and IASB initiatives by conducting additional studies on the effects of small business GAAP deviations on the users of this information (International Federation of Accountants, 2006). Third, we extend research on the broader question of the relative informativeness of cash and accrual accounting (e.g., Dechow, 1994) by investigating a setting where accrual accounting is optional. Finally, we contribute to the growing literature on the relation between accounting accruals and the cost of debt, which to date has focused on large, public firms (e.g., Botosan 1997; Sengupta 1998; Francis et al., 2005).

The remainder of this paper is organized as follows. The following section reviews related literature and develops our hypotheses. Section three outlines our research design. Empirical results are presented in section four. Section five concludes.

II. HYPOTHESIS DEVELOPMENT

The Effects of Cash versus Accrual Accounting on Lending Decisions

[1] See Botosan et al. (2006) and International Federation of Accountants (2006) for reviews of studies on financial accounting practices in small businesses.

Lenders base loan granting and pricing decisions on the assessed probability of applicants' ability to repay approved loans. However, information asymmetries between firm managers and external parties, such as lenders, generally result in insiders having better information on the firm's past and future economic performance and, consequently, on firm default risk (Sengupta 1998). Information asymmetries tend to be greater in small, private businesses, which often have little institutional history and are not required to publicly disclose company-specific information (Butler et al. 2007). As a result, these businesses tend to be more informationally opaque than larger, publicly-listed firms, increasing information risk and potentially influencing debt decisions.

One way to reduce information asymmetries is for small businesses to provide more informative financial reports. Lenders require small businesses to submit at least some financial information, such as tax returns or financial statements, with their loan applications. This information can be prepared using cash or accrual accounting.[2] Much of the accounting literature assumes that accrual accounting is more informative than cash accounting, and survey finds that small business lenders rate accrual accounting as their preferred source of financial information for decision-making (Baker and Cunningham, 1993; AICPA, 2004).

Since economic transactions are often separate and distinct from their associated cash flows, accrual accounting allows firms to overcome timing and matching problems that make cash accounting a noisy measure of performance (Riahi-Belkaoui, 1992; Dechow, 1994). Through the use of accruals, non-cash economic transactions can be reflected in financial reports in a more timely manner that better matches revenues and costs, thereby providing a better indication of enterprise performance (FASB Statement of Financial Accounting Concepts No.1, paragraph 44). The use of accrual accounting may also provide a positive signal of firm management since this method is

[2] In the US, small, private businesses are not required to use accrual accounting for securities regulation purposes, and do not need to use accrual accounting for tax purposes unless their sales exceed $5 million. In some other

typically assumed to reflect greater management sophistication and higher accounting quality, and management may be able to signal private information through the use of accruals. If these potential benefits reduce information asymmetries between applicants and lenders and signal greater credit worthiness, loan denials and interest rates should be lower in small businesses using accrual accounting.[3]

In contrast, some argue that cash accounting provides more informative information on small business applicants' ability to meet their loan obligations, which is the primary financial question facing lenders. For information beyond cash flows to be incorporated into accounting reports, management requires discretion to determine accruals levels. While discretion can be used by management to reflect private information and non-cash transactions of the firm, management may also use their discretion to distort the financial performance and position of the firm reflected in the accounting information for self-interested purposes. Survey evidence from loan officers and financial analysts suggests that cash flow statements provide valuable information to access firm performance and default, with the authors asserting that the objective nature of cash over accruals is an important benefit (Jones, 1998; Jones and Widjaja, 1998). If the net effect of managerial discretion from using accrual accounting is providing less or uninformative accounting information, then accrual accounting use should not be associated with greater loan acceptance and lower interest rates.

Accounting numbers based on cash flows may also provide sufficient information to evaluate solvency and the probability of small business default. Jones et al. (1995) and Lee (1993) summarize the arguments that cash flow information and cash accounting is more beneficial than accrual

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countries, even small, private firms are legally required to use accrual accounting for financial reporting purposes (International Federation of Accountants, 2006).

[3] An analogous literature has investigated the role of auditing on perceived financial statement properties and found that bank loan officers generally regard audited financial statements to be more credible and reliable than non-audited financial statements (McKinley, Pany, and Reckers 1985; Strawser 1991). Consequently, the increased perceived quality of audited financial statements has been shown to improve the likelihood of loan granting and lower the interest rates offered to firms (Blackwell, Noland, and Winters 1998; Pittman and Fortin 2004).

accounting for lending decisions. In addition to the arbitrary nature of accruals, these arguments include cash accounting being more predictive of future cash flows and dimension of company financial distress; providing a relatively unambiguous measure of managerial performance, and emphasizing the primary importance of cash resources relevant to liquidity and solvency evaluation. Supporting the notion that cash accounting may be sufficient for many small lending decisions, an AICPA (2004) survey of private business lending found that 57.7% of lenders did not require accrual accounting by borrowers.

Although considerable debate exists over the relative benefits of cash and accrual accounting when making the decision to lend to small, privately-held firms, empirical evidence is limited.[4] An experimental study by Riahi-Belakaoui (1992) found than loan officers examining financial statements for the same company using either cash or accrual accounting showed a clear preference for accrual accounting when determining the firm's ability to repay its loans, loan acceptance, and interest rate. Sharma and Iselin's experiment (2003), on the other hand, indicated that bankers' judgments regarding solvency were more accurate using cash flow information than using accrual accounting. Similarly, Jones' experiment (1998) concludes that cash flow statements, compared to accrual-base financial statements, have comparable or greater decision-making influence as across a broad variety of lending decisions.

In a contemporaneous study using the SSBF data, Yohn (2007) examines the determinants and lending consequences of financial statement preparation in small businesses, where her financial statement variable is defined as the use of a balance sheet and income statement for answering the

[4]Evidence from listed firms, which are required to use accrual accounting suggests that analysts find cash flows more important in assessing firm value among highly levered firms, and that analysts are more likely to disseminate cash flow forecasts when the firm is in poor financial health (DeFond and Hung 2003; Previts et al. 1994), both of which may be true of many small businesses.

questions in the survey on firm finances.[5] As part of her analysis, she incorporates a single indicator variable measuring whether firms that report using financial statements to answer the survey questions *and* using accrual accounting have lower probability of loan denial and lower interest rates. She finds support for these predictions. However, her sample includes firms with sales greater than $5 million (which are required to use accrual accounting for tax purposes and therefore did not make the voluntary choice to use accruals) and excludes firms that use accrual accounting but did not use financial statements when responding to the survey. In fact, in our sample of firms that have applied for loans, 26.1% of respondents reported using accrual accounting but not using financial statements for the survey, and only 10.2% reported using accruals *and* financial statements. Thus, Yohn's study provides only a partial analysis of the influence of accrual accounting on small business lending decisions.

In sum, whether accrual accounting is associated with debt availability and lower interest rates remains an empirical question. We therefore examine the following hypothesis:

> H1: Accrual accounting is negatively related to loan denial and interest rates in small, private businesses.

Other Information Sources and Lending Decisions

Accounting reports are not the only potential source of information lenders can use to evaluate the financial condition of potential borrowers. Credit scores are increasingly available for small businesses. These scores, which can be purchased from credit rating firms such as Dun & Bradstreet and Fair Isaac, incorporate a broad set of information on financial condition (often provided by the small business itself and not required to be prepared using accrual accounting), past credit history, business demographics, and other public information such as court judgments or liens.

[5] A concern with this categorization is that use the use of financial statements for answering the survey does not necessarily imply that the firm does or does not prepare financial statements, as a firm can prepare financial statements and rely on other information, such as tax forms or bank statements, or simply rely on memory to respond to the survey.

The economics literature on small business lending suggest that credit scores provide a cost effective method for lenders to evaluate loan applications and monitor borrowers (e.g., Cowan and Cowan, 2006; Berger and Frame, 2007). If credit scores provide an alternative method for reducing information asymmetries between lenders and small, private businesses, then higher credit scores may provide a substitute for an potential informational advantages offered by accrual accounting.

In addition, much of the information on small businesses may be "soft," in the sense that they are hard to communicate to others, let alone capture in written documents (Berger and Udell, 1995; Peterson and Rajan, 1994). As a result, past dealings with a borrower may provide superior information for assessing credit worthiness. If the accuracy of the information obtained regarding a potential borrower increases the longer the relationship between the parties exists, and thereby reduces information asymmetries, loan denials and interest rates are expected to be lower (Peterson and Rajan, 1994). Moreover, if longer relationships are superior information sources, they may substitute for any incremental information contained in accrual accounting. The availability of other information sources leads to our second hypothesis:

> H2: The association between accrual accounting and loan decisions is lower when credit scores are higher and the prior relationship with the lender is longer.

III. RESEARCH DESIGN

Sample

We test our hypotheses using data from the 2003 Survey of Small Business Finance (SSBF) administrated by the U.S. Federal Reserve and Small Business Administration. The 2003 SSBF is a nationally representative sample of 4,240 nonfarm, nonsubsidiary business enterprises with fewer than 500 employees. A stratified random sampling procedure based on employment size, urban/rural status, and census divisions (as reported in Dun's Market Identifier file) was employed. The survey used a two-stage collection process. First, an initial interview assessed firm eligibility for the SSBF

based on the preceding criteria. Second, a main telephone interview of eligible establishments was conducted, with an average duration of 59 minutes.

We remove publicly-held entities (n = 5) and those with missing or non-positive assets, sales, or shareholders (n = 508). We also remove 351 corporations that were not S-corporations or were partnerships with annual gross receipts above $5 million since these entities are prohibited from using cash accounting for tax purposes. We eliminate these observations to focus on firms that have no regulatory requirement to use accrual accounting for any purpose. As a result, the sample reflects firms that have voluntarily chosen to use cash or accrual accounting. We remove 83 entities that did not provide a response to the accounting choice question.

We further restrict the sample to firms that recently applied for a loan, provided the outcome of the application, and provided non-missing responses to the survey questions on the factors predicted to be associated with loan denial. These criteria reduce the sample to 1,393. Finally, in tests examining the determinants of interest rates, we restrict the sample to the subset of firms with recent debt financing that provided the interest rate on their most recent loan and had no missing responses to the questions used for our independent variables. These criteria reduce the number of firms in our interest rate analyses to 1,194.

Table 1 summarizes the sample selection process for the study, and Table 2 provides descriptive statistics for the dependent and independent variables used in our analyses. The mean (median) firm has assets of $1,581,371 ($144,544), with 92% managed by an owner of the firm and 85% family owned.

Variables

Availability and Cost of Debt

Respondents that applied for at least one loan in the previous three years were asked whether their loan applications were approved. We assess the availability of debt using the variable *Loan denial*, which equals one if the entity was denied credit on any loan requests during this period, and zero otherwise. 11% of the firms that applied for loans were denied in the previous three years.

We measure the cost of debt using the variable *Interest rate*, which equals the original interest rate on the most recently approved loan or line of credit. The mean (median) initial interest rate is 5.97% (5.90%) on a mean (median) loan amount of $862,542 ($100,000).

Cash Versus Accrual Accounting

We examine the influence of accounting choice on the availability and cost of debt using responses to the question: "Did the business use cash or accrual accounting to prepare its financial records for the fiscal year ending [DATE]?" Detailed explanations of cash and accrual accounting were provided to ensure respondents understood the differences between these methods. If respondents were uncertain about their use of cash or accrual accounting, they were referred to the relevant lines in their tax returns requiring them to indicate whether they used cash or accrual accounting when completing their tax forms. 36% of our sample reported using accrual accounting.[6] [7] The variable *Accrual* equals one if the firm used accrual accounting, and zero otherwise.

Credit Scores

The Federal Reserve purchased credit scores for the respondents' businesses from Dun & Bradstreet. Like most third-party credit scoring methods, the Dun & Bradstreet commercial credit scores are based on information regarding the firm's historical and current payment behavior,

[6] We examined the correspondence between accrual use, the presence of accounts receivable, and use of financial statements to complete the survey. We found a 63.9 percent (2,087/3,265) correspondence between accrual use and the presence of accounts receivable for those firms available for analysis. This suggests that firms that allow customers to pay on account may still choose to use cash accounting to prepare their financial records, and consequently, that accrual use and receivables on account are not equivalent.

[7] The question on the choice between cash and accrual accounting allowed respondents to select "both." Of the 1,402 firms that applied for loans and met our sample criteria, 9 (0.64%) selected the use of both cash and accrual

financial strength and performance, other publicly-available data that may influence loan payment delinquency (e.g., liens or open lawsuits), and business demographics. The scores range from 0 (highest risk) to 100 (lowest risk).

Relationship Banking

We proxy for the influence of relationship banking on the availability and cost of debt using the number of years the firm has been with the lender. We assume that information asymmetries are lower when the firm has conducted business with the lending institution for a longer period of time.

Several variables are used to control for other potential determinants of loan denial and interest rates. These variables are drawn from small business financing research using an earlier version of the SSBF (e.g., Cavalluzzo, Cavalluzzo, and Wolken, 2002; Petersen and Rajan, 1994; Petersen and Rajan, 2002). Control variables from the SSBF survey include firm leverage, size, use of collateral, and loan characteristics such as loan type, amount, and whether the loan interest rate is fixed or floating. These data are supplemented with information from Federal Reserve Reports, namely: 1) prime rate, which equals the prime rate at the start of the loan; 2) duration spread, defined as the difference between a Baa bond and yield on 10-year treasury bonds at the time of the loan; and 3) term premium, which equals the difference between the yield on a government bond with similar maturity and the yield on a treasury bill at the start of the loan. If the loan does not have a fixed maturity, the term premium equals zero.

IV. RESULTS

Correlations

Table 3 provides correlations between the variables from the main model of the determinants of loan denial in Panel A and the cost of debt in Panel B. All the control variables are significantly

accounting. We classify these 9 firms as accrual users. All study findings are invariant to removing these firms from the

correlated with the loan denial and cost of debt consistent with previous research. Consistent with predictions, the correlation between accrual use and loan denial is r = -0.11 (p < 0.0001) and the correlation between accrual use and cost of debt is r = -0.20 (p < 0.0001). Obviously, inference for the use of accrual accounting on loan acceptance and interest rates should control for the other determinants, which is undertaken below.

Econometric issues

It is argued that the cost and access to debt financing are a function of the accounting choice used by the firm. However, this relationship may also result in firms' use of accruals being a function of wanting to obtain debt financing and at a lower interest rate. Given both of these relationships are possible, resulting in accrual use and cost of capital being jointly-determined, this may result in ordinary least squares producing biased coefficients. To address the potential correlation in the error term of the loan denial or cost of debt regression and accrual use, we also instrument accrual use through two-stage least squares (2SLS).

To appropriately address endogeneity concerns we require an instrumental variable that is correlated with the use of accrual accounting and uncorrelated with the error in the loan denial or cost of debt model. We consider the presence of accounts receivable and days in inventory as potential instruments of accrual accounting use. As the length of time widens between economic events and their associated cash flows, the greater the role of accrual accounting and its revenue recognition and matching principle (Dechow 1994). The presence of accounts receivable and increasing days in inventory should result in a greater need for the firm to address these timing and matching problems, increasing the benefits of, and consequently the likelihood of adopting accrual accounting.

Table 4 provides the estimation results for the instrumented use of accrual accounting. The left-columns display the model of just the instruments, while the right-most columns display the

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sample.

model with the instruments and other variables associated with loan denial. Consistent with our conjectures, in both models the presence of accounts receivable and days in inventory is positively related to accrual use. Larcker and Rusticus (2005) suggest that only under certain conditions will 2SLS provide superior results to OLS. We evaluate these conditions and the validity of our instrument below. We determine the partial R-squared and partial F-statistic of our instrument when included in a model with all other exogenous variables. For loan denial we observe a partial R-squared of 0.0540 and partial F-statistic of 36.88 ($p < 0.0001$). For cost of debt we observe a partial R-squared of 0.0464 and partial F-statistic of 28.49 ($p < 0.0001$). In both models the explanatory power of the instrument is significant and above recommended magnitudes for adopting our instrument in a 2SLS specification (Stock, Wright, and Yogo, 2002).

Sample selection

Only a subset of our sample firms applied for debt financing. Sample selection may affect the study inferences as the choice to apply for financing may be correlated with the factors associated with loan denial or cost of debt. We model the firms' decision to apply for debt capital as a function of the entity's demand for debt capital. The results of the probit estimations are presented in Table 5. We observe that firms that apply for loans have more assets, more owners, are owner managed, and have lower cash to asset ratios. Given the presence of potential endogeneity and sample selection we estimate a probit model to obtain the inverse mills ratio for the sample selection, and then we include the inverse mills ratio in the second-stage regression. To address endogeneity of accounting choice, we then instrument accrual use with the inverse mills ratio as one of the exogenous variables (Amemiya 1985).

Determinants of loan denial

Table 6 provides the analysis predicting denial of debt capital to firms. The dependent variable is a dichotomous variable based on whether the firm was denied debt in the past three years. Therefore only those firms that applied for loans from the 2003 SSBF are included in this analysis. We control for variables that are likely associated with the denial of debt capital based on previous research, in addition to the inverse mills ratio for self-selection. These variables include: firm size and age, profitability, leverage, previous credit history, and credit score. While the coefficient on accrual use is negative, it is not significantly associated with loan denial (β = -0.147, $p < 0.22$). The control variables are generally consistent with their expected signs, with firm size, profitability, firm age, and credit score significantly reducing loan denial, and firm leverage, previous delinquencies significantly increasing loan denial. Overall, the loan denial model has reasonable predictive power, with a Pseudo R2 of 0.183.

Sample selection for the endogenous choice of those firms that have recently applied for debt financing does appear to be a significant predictor of loan denial ($\chi^2 = 8.83$, $p < 0.01$) suggesting that firms that applied for debt financing were less likely to be denied debt financing than those firms that did not apply for debt financing. The right most columns display the coefficients using an instrumented variable for accrual use. The association between accrual use and loan denial is again negative and not significant. Overall, these results provide limited support for an association between accrual accounting use and loan denial.

To examine the relationship between accrual accounting use and loan denial further, we model an interaction between accrual accounting use and credit score to observe if the accrual use benefits differ across firm creditworthiness. We expect that the loan denial benefits of accrual accounting would be greater for firms that are less creditworthy. A positive coefficient on the interaction would be consistent with this conjecture. The results of the probit regressions with the

interaction term are presented in the columns to the right of the original models. As shown, there is little support for this conjecture, with the interaction term between accrual accounting use and loan denial not significant at conventional levels.[8]

Determinants of interest rates

Table 7 provides the determinants of the firms' interest rate on the most recent loan. Again, we control for many factors associated with firms' cost of debt using variables from previous research that has investigated similar firms. These variables are defined in Table 2. Examining the left most column we observe that accrual use is significantly negatively associated with firm's cost of debt (β = -0.356, p < 0.01). The economic magnitude of accrual use and interest rates of approximately half a point is substantial. Overall, the R^2 of the cost of debt model is 0.184. The explanatory power of the cost of debt model is of a similar magnitude to previous research that has modeled variations in firms' cost of debt (Cavalluzzo, Cavalluzzo, and Wolken, 2002; Petersen and Rajan, 1994; Petersen and Rajan, 2002). The control variables for the firms' cost of debt are generally consistent with their conjectured relations, with leverage and fixed rate loans positively related to cost of debt, and the amount of the loan negatively associated with cost of debt. Other control variables, while not significant in the multivariate model, were found to be significantly associated in univariate correlations.

The right-most columns provide similar analysis but using an instrumented variable for accrual use. The use of an instrumented variable results in similar findings regarding the association between accrual accounting and cost of debt (β = -1.451, p < 0.07). To examine the role of sample

[8] Ai and Norton (2003) note that the sign of the coefficient on the interaction term in a dichotomous model need not be the same statistical significance or sign as the marginal effect for each observation. To investigate this concern, we investigate these marginal effects. We observe for model 2 68.7 percent of the individual marginal effects to be positive, with none being statistically significant at 0.05. For model 4 we observe 53.8 percent of the individual marginal effects to be positive, with two being statistically significant at 0.05. Overall, these results corroborate the insignificant association observed between the interaction term and loan denial presented in Table 6.

selection on the inferences found, we repeated the analyses after controlling for self- in the firms that have: 1) recently applied for debt financing; and 2) recently obtained debt financing. The sample selection bias was not found to be significant for either applying for or obtaining debt financing. The coefficients and statistical significance for accrual accounting were similar with or without sample selection and consequently are not reported. Consequently, we conclude that accrual use is associated with lower firm cost of debt.

To examine the association between accrual accounting and cost of debt further we model an interaction between accrual accounting use and credit score to observe if the accrual-cost of debt relationship differs across firm creditworthiness. A positive coefficient on the interaction term would suggest that accrual accounting use reduces cost of debt to a greater extent for less creditworthy firms. The results of the regressions with the interaction term are presented in the columns to the right of the original models. Consistent with our conjectures, for both the OLS and 2SLS, the interaction terms are positive and statistically significant. Therefore, the results are consistent with conjectures that less creditworthy firms achieve greater cost of debt benefits from using accrual accounting then more creditworthy firms.

Determinants of interest rates by partitioned samples

We posit that the association between accrual accounting use and cost of debt will be stronger for firms with greater information asymmetry. To examine the affect of information asymmetry on the association between accrual accounting and cost of debt, we partition our sample by the median of two variables: 1) loan amount; and 2) years with the financier. Firms with smaller loans and shorter relationships with their financiers should have greater potential information asymmetries. Consequently, we predict smaller loan amounts and shorter relationships will have a stronger association between accrual accounting and cost of debt.

Table 8 provides the OLS regressions of the firms' cost of debt partitioned by information asymmetry. Models 1 and 2 provide the results of the determinants of cost of debt partitioned by the amount of the loan. As observed in model 1, we find in the small loan amount sample there is a strong negative association between accrual use and the firms' cost of debt. This is consistent with the full sample findings. The interaction term for the small loan amount sample is no longer statistically significant; however, the economic magnitude of the effect is very similar to the full sample findings. In contrast, the results for the large loan amount sample failed to provide any support for an association between accrual accounting and cost of debt.

Models 3 and 4 provide the results of the determinants of cost of debt partitioned by the length of the relationship with the lender. As observed in model 3, we again find that more informationally opaque firms, as represented by shorter relationships with their financier, have a stronger negative association between accrual accounting use and cost of debt. Further, the interaction term between accrual accounting and credit score for the short relationship sample is significantly positive, consistent with accrual accounting use having greater effect in lowering the cost of debt for less creditworthy firms in this subsample. Again, and in contrast, examining the longer relationship firms failed to find a relationship between accrual accounting and cost of debt. Overall, these findings suggest that the benefit of accrual accounting on the firms' cost of debt is primarily observed for the most informationally opaque firms.

Robustness

To ensure that our results are not driven by sample selection or variable specification we subjected all the analyses above to several tests of robustness, which are discussed below.

First, provisions in the US tax code regulate the use of accrual and cash accounting for tax purposes. Corporations other than S-corporations, or partnerships with these corporations cannot use

the cash method for tax reporting unless their annual gross receipts are below $5 million (Pub 538, April 1999). To ensure that the exclusion of these firms does not affect the study findings, we repeated the analysis including firms that are required to use accrual accounting based on the decision rule above. The results are invariant to the inclusion of these firms.

Second, the SSBF provides imputed data for most missing values in the original survey, which is provided in the publicly available datasets in 5 implicates (SSBF). Approximately 1.8% of all values collected in the SSBF were missing, with 30% percent of the sample firms having no missing values, and 79% percent having less than 3 percent missing. The reported analyses in the paper classified all imputed data as missing. The analyses were reestimated for all observations that had non-imputed values for the primary dependent variables (accounting choice, interest rate, and loan denial). The inclusion of imputed values for the independent variables resulted in 131 (106) more observations for the loan denial (cost of debt) regressions, yielding a total of 1,524 (1,300) observations. The analyses were performed using these additional observations, incorporating statistical procedures to correct standard errors for multiple implicates (Rubin 1996). The results using imputed data resulted in findings consistent with those reported.

We recognize that there are several other potential variables associated with both loan denial and interest rates. However, the inclusion of more control variables also results in a reduction of the number of observations available for analysis. To address potential omitted correlated variable bias we performed the denial regression including several additional controls including: log of employment, dummies for education, years of experience, whether the firm was owner managed, gender dummy, race dummies, sales scope, relationship length and distance with institution, dummies for firm and owner bankruptcy and judgment, banking concentration, and corporate form. The coefficient on accrual accounting from the loan denial estimation model for the 1,185 firms with non-missing data was (β = -0.294, p <0.09). Similarly for the interest model, we performed the estimation

including additional variables for region, year, log of employment, rural location, education, years experience, whether the firm is owner managed, log of firm age, sales scope, loan-type, whether the firm has a checking (savings) account and also with the lender, type of financial institution, if the firm was denied a loan, relationship length and distance with institution, whether a guarantee was used, type of collateral, inverse of loan maturity, loan fees, percentage to close loan, sales growth, asset turnover, profit margin, return on assets, firm and owner bankruptcy and judgment, banking concentration, and corporate form. The coefficient for the 972 firms with non-missing values was (β = -0.391, p <0.04). These results are consistent with the reduced form models. While we cannot rule out omitted correlated variable bias, the scope of variables tested decreases the likelihood that an omitted variable is spuriously causing the results.

Cavalluzzo and Yohn (2004) investigated the provision of financial statements on the cost of debt and the loan denial using the 1993 National Survey of Small Business Finances (NSSBF). The presence of financial statements was measured by whether the respondent used financial statements to answer the questions in the survey. A concern with this categorization is that use for the survey does not necessarily imply whether the firm prepares financial statements, as a firm can prepare financial statements and rely on other information, such as tax forms or bank statements, or simply rely on memory to respond to the survey. The analyses were repeated using a financial statement variable consistent with the definition of Cavalluzzo and Yohn (2004), namely those respondents that used financial statements to help when answering survey questions. The concordance between the use of accrual accounting and the financial statement measure was 63 percent (σ = 0.13, p < .0001), suggesting that while both measures are related, they are capturing different outcomes. Replacing accrual use with the financial statement variable in the above analyses resulted in no statistically significant relation between this alternative measure and interest rates or loan denial.

Several of the independent variables to model loan denial, cost of debt, or sample selection in this study are financial ratios based on accounting values. The use of these ratios is consistent with previous research that has examined a similar population of firms. However, the accounting values obtained may be a function of the choice of accounting method used, which may alter the financial ratios observed in a systematic manner (Guenther, Maydew, and Nutter 1997). To address the potential of the financial ratios being correlated with accounting choices and affecting the study inferences we performed the analyses replacing all total asset based values, such as the log of total assets and cash to assets, with number of employees. Further, we remove all financial ratios that rely on accounting profit. All the study inferences are consistent after reducing the reliance on accounting values.

All the analyses presented above were performed using unweighted econometric techniques. The SSBF sample is constructed from a stratified random sample based on firm size, geographic region, and urbanization. Sample weights are provided to allow parameter estimates to be based on the population of firms in the sample frame of the SSBF. All the analyses were performed using weighted least squares based on the sample weights provided. The study findings using weighted analyses are consistent with the reported findings, with the only exception being a stronger association in both economic and statistical significance between accrual use and cost of debt capital (β = -1.020, $p < 0.01$), consistent with the hypothesized arguments.

V. CONCLUSION

The use and provision of accrual accounting is hypothesized to provide incremental information to capital providers, thereby increasing the firm's access to capital and lowering the firm's cost of capital. We investigate the use of accrual accounting on the cost of debt capital using a large generalizable sample of privately-held firms that have discretion in their choice of cash or accrual accounting. We find that firms using accrual accounting have significantly lower interest

rates after controlling for many factors associated with cost of debt. However, we do no find evidence that accrual accounting decreases the likelihood of loan denial after controlling for other determinants. Both findings are robust after considering the self-selection of firms that apply for and obtain debt and considering the endogenous choice of cash or accrual accounting by firms.

By documenting a lower cost of debt for firms that use accrual accounting we provide a specific benefit from accrual use. While standard setters have argued the benefits of accrual accounting, evidence of benefits for firms that have the choice of whether to use accrual accounting, or simply rely on cash accounting, has been limited to experimental surveys of users of financial statements, such as loan officers. Consequently, these results are of interest to managers of firms as they provide inputs that can be used to more accurately evaluate the net benefits from accrual accounting use.

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APPENDIX A
Descriptive Definition of Cash and Accrual Accounting in Survey of Small Business Finances

Provided as verbal prompt if respondent asks what "cash or accrual accounting" means:

The distinction between the cash basis of accounting and the accrual basis of accounting lies in the time at which revenues and expenses are recognized. Under cash basis accounting, revenue is recorded when payment is collected from the customer, rather than when a sale is actual made. Under accrual basis accounting, however, revenue is recorded at the time of the sale even if cash has not yet been collected.

Similarly, expenses are recorded under cash basis when payment is made, rather than when related goods or services are used. Expenses are recognized when the related goods or services are used, rather than when payment is made, under the accrual basis of accounting.

For example, for a business with a fiscal year ending December 31st, interest incurred for the month of December will be recorded as an expense under the accrual basis of accounting, even if payment is not made until the following year. Under the cash basis, however, interest incurred but not paid is not recognized as an expense.

Tax form info: Sole Proprietorship: 1040 Schedule C Line F, Partnership: 1065 Line H, S-Corporation: 1120S Schedule B Line 1; C-Corporation: 1120 Schedule K Line 1 or 1120A Line F

TABLE 1
Sample Selection

	Number
Responding entities	4,240
Minus	
Entities with non-positive assets, sales, shareholders	508
Publicly traded entities	5
Corporations (other than S) with annual receipts above $5 million	351
Respondents with missing accounting choice	83
Entities available for analysis	3,293
Entities that recently applied for debt financing	1,402
Respondents with missing responses to any independent variable	17
Final sample used in loan denial analysis	1,385
Entities with recent debt financing	1,309
Respondents with missing interest rate	88
Respondents with missing responses to any independent variable	30
Final sample used in cost of debt analysis	1,191

TABLE 2
Descriptive Statistics and Variable Definitions

Panel A: Descriptive Statistics, full sample

Variable	N	Mean	Std. dev	First quartile	Median	Third quartile
Accrual	3,293	0.36	0.48	0.00	0.00	1.00
Credit score	3,271	58.97	29.55	38.00	63.00	88.00
Log number of sites	3,292	0.11	0.24	0.00	0.00	0.00
Inventory	3,293	0.57	0.50	0.00	1.00	1.00
Log total assets	3,290	5.17	1.02	4.49	5.16	5.89
Owner manager	3,272	0.92	0.28	1.00	1.00	1.00
Log number of owners	3,293	0.22	0.29	0.00	0.30	0.30
Family owned	3,290	0.85	0.36	1.00	1.00	1.00
Corporation	3,293	0.59	0.49	0.00	1.00	1.00
Trade credit	3,293	0.69	0.46	0.00	1.00	1.00
Accounts Receivable	3,293	0.61	0.49	0.00	1.00	1.00

Panel B: Descriptive Statistics, denial sample

Variable	N	Mean	Std. dev	First quartile	Median	Third quartile
Denied	1,385	0.11	0.31	0.00	0.00	0.00
All Denied	1,385	0.04	0.19	0.00	0.00	0.00
Accrual	1,385	0.49	0.50	0.00	0.00	1.00
Credit score	1,385	59.20	29.78	38.00	63.00	88.00
Log total assets	1,385	5.64	0.90	5.03	5.67	6.27
Debt-to-assets	1,385	0.87	1.08	0.28	0.60	0.97
Asset turnover	1,385	4.86	7.08	1.42	2.84	5.00
Return on assets	1,385	0.66	1.83	0.01	0.15	0.57
Firm age	1,385	16.86	12.35	8.00	15.00	23.00
Bankrupt	1,385	0.01	0.12	0.00	0.00	0.00
Judgment	1,385	0.05	0.21	0.00	0.00	0.00
Personal delinquency	1,385	0.08	0.27	0.00	0.00	0.00
Firm delinquency	1,385	0.20	0.40	0.00	0.00	0.00

Panel C: Descriptive Statistics, loan sample

Variable	n	Mean	Std. dev	First quartile	Median	Third quartile
Cost of debt	1,191	5.97	2.81	4.50	5.90	7.00
Accrual	1,191	0.50	0.50	0.00	1.00	1.00
Credit score	1,191	60.70	29.34	38.00	63.00	88.00
Prime rate	1,191	4.39	0.74	4.00	4.22	4.58
Duration spread	1,191	2.41	0.42	2.11	2.28	2.68
Term premium	1,191	0.60	0.95	0.00	0.00	1.00
Debt-to-assets	1,191	0.82	0.99	0.28	0.59	0.95
Fixed rate	1,191	0.49	0.50	0.00	0.00	1.00
Log amount	1,191	5.09	0.80	4.48	5.00	5.60
Corporation	1,191	0.74	0.44	0.00	1.00	1.00
Collateral	1,191	0.53	0.50	0.00	1.00	1.00
Primary institution	1,191	0.74	0.44	0.00	1.00	1.00
Log total assets	1,191	5.69	0.89	5.08	5.70	6.32

Panel D: Variable Definitions

Accrual	= 1 if the firm uses accrual accounting, 0 otherwise
Credit score	= Dun & Bradstreet credit score
Log number of sites	= Log 10 of the number of firm sites
Inventory	= 1 if the firm has inventory or merchandise or production material, 0 otherwise
Log total assets	= Log 10 of the firm's total assets
Owner manager	= 1 if the firm is managed by an owner, 0 otherwise
Log number of owners	= Log 10 of the number of owners/partners/shareholders
Family owned	= 1 if more than 50% of equity is owned by a single family, 0 otherwise
Corporation	= 1 if the entity was a corporation, 0 otherwise
Trade credit	= 1 if the firm records purchases on account, 0 otherwise
Accounts Receivable	= 1 if the firm records sales on account, 0 otherwise
Denied	= 1 if firm was denied credit at least one in the last three years, 0 otherwise
All denied	= 1 if firm was always denied credit in the last three years, 0 otherwise
Asset turnover	= Sales divided by total assets
Return on assets	= Profit divided by total assets
Firm age	= Age of the firm in years
Bankrupt	= 1 if the firm or owner declared bankruptcy in the past 7 years, 0 otherwise
Judgment	= 1 if the firm or owner has any judgments against it in the past three years, 0 otherwise
Personal delinquency	= 1 if the owner was delinquent on personal obligations one or more times in the past three years, 0 otherwise
Firm delinquency	= 1 if the firm was delinquent on obligations one or more times in the past three years, 0 otherwise
Cost of debt	= interest rate
Prime rate	= The prime rate at the start of the loan
Duration spread	= Difference between Baa bond and yield on 10-year treasury bonds at the time of the loan
Term premium	= Difference between yield on government bond with similar maturity and yield on treasury bill
Debt-to-assets	= Total debt divided by total assets
Fixed rate	= 1 if the interest rate on the loan is fixed (rather than variable), 0 otherwise
Log amount	= Log 10 of the loan amount
Collateral	= 1 if collateral is provided for the loan, 0 otherwise
Primary institution	= 1 if the debt is obtained from the firm's primary financial institution, 0 otherwise

All ratios are winsorized at 2.5% and 97.5%.

TABLE 3
Correlations Among Selected Variables

Panel A: Descriptive Statistics, denial sample

Variable	Denied	Accrual	Credit score	Log total assets	Asset turnover	Return on assets	Debt-to-assets	Firm age	Bankrupt	Judgment	Personal delinquency
Denied											
Accrual	-0.10**										
Credit score	-0.24**	0.06*									
Log total assets	-0.16**	0.45**	0.12**								
Asset turnover	0.00	-0.12**	0.04	-0.45**							
Return on assets	-0.01	-0.15**	-0.02	-0.31**	0.54**						
Debt-to-assets	0.12**	-0.04	-0.08**	-0.31**	0.41**	0.17**					
Firm age	-0.13**	0.07**	0.16**	-0.24**	-0.05	-0.02	-0.13**				
Bankrupt	0.11**	-0.07**	-0.12**	-0.09**	-0.02	0.01	0.02	-0.01			
Judgment	0.14**	-0.04	-0.11**	-0.02	0.03	-0.00	0.09**	-0.02	0.09**		
Pers. delinquency	0.27**	-0.11**	-0.20**	-0.16**	-0.01	-0.02	0.07**	-0.10**	0.10**	0.28**	
Firm delinquency	0.16**	0.08**	-0.33**	0.02	-0.04	-0.03	0.13**	-0.03	0.05	0.19**	0.30**

** p < 0.01; * p < 0.05; n = 1,385

Panel B: Descriptive Statistics, loan sample

Variable	Cost of debt	Accrual	Credit score	Prime rate	Duration spread	Term premium	Debt-to-assets	Fixed rate	Log total assets	Log amount	Collateral
Cost of debt											
Accrual	-0.20**										
Credit score	-0.09**	0.06*									
Prime rate	0.06*	-0.01	0.00								
Duration spread	0.07*	-0.03	-0.02	0.21**							
Term premium	0.15**	-0.09**	-0.04	-0.05	0.09**						
Debt-to-assets	0.10**	-0.03	-0.08**	-0.04	0.01	-0.02					
Fixed rate	0.27**	-0.10**	-0.04	0.12**	0.13**	0.65**	-0.03				
Log total assets	-0.31**	0.44**	0.10**	0.04	-0.12**	-0.14**	-0.29**	-0.26**			
Log amount	-0.33**	0.36**	0.12**	-0.06	-0.09**	-0.18**	-0.05	-0.39**	0.74**		
Collateral	-0.12**	0.12**	-0.01	0.02	0.07*	0.10**	0.02	-0.04	0.20**	0.29**	
Primary institution	-0.07*	0.14**	0.04	-0.04	-0.05	-0.19**	-0.01	-0.18**	0.13**	0.18**	0.03

** p < 0.01; * p < 0.05; n = 1,191

TABLE 4
Probit Prediction Model for the Use of Accrual Accounting

	Instruments Only		All Exogenous Variables	
Independent variables	Coefficient	Std. error	Coefficient	Std. error
Days in inventory	0.003***	0.001	0.002***	0.001
Receivables account	1.041***	0.051	0.629***	0.059
Log of total assets			0.671***	0.035
Return on assets			-0.007	0.014
Asset turnover			0.015***	0.004
Debt to assets			0.140***	0.025
Firm age			-0.003	0.002
Bankrupt			0.096	0.185
Judgment			-0.188*	0.133
Personal delinquency			-0.188*	0.100
Firm delinquency			0.146*	0.076
Credit score			0.000	0.001
Intercept	-1.108***	0.046	-4.532***	0.198
n	3,292		3,197	
Log likelihood	-1913.13		-1603.85	
Pseudo R^2	.113		.234	
χ^2	487.09***		978.34***	

[a] Dependent variable is coded 1 if the entity uses accrual accounting, and 0 otherwise. Independent variables are defined in Table 2. * denotes significance at p = 0.10 (based on a two-tailed test), ** denotes significance at p = 0.05, *** denotes significance at p = 0.01.

TABLE 5
Probit Regression Results: Sample Selection of Applying for a Loan

Independent variables	Coefficient	Std. error
Log total assets	0.484***	0.033
Owner manager	0.202**	0.089
Log number of owner	0.271***	0.099
Cash to assets	-0.745***	0.103
Return on assets	0.006	0.012
Sales change (1 year)	0.153***	0.056
Sales change (3 year)	0.043	0.056
Firm age	-0.001	0.002
Intercept	-2.861***	0.203
n	3,090	
Log likelihood	-1,792.64	
Pseudo R^2	0.149	
χ^2	632.02	

[a] Dependent variable is coded 1 if the entity has applied for a loan in the last three years, and 0 otherwise. Independent variables are defined in Table 2. * denotes significance at p = 0.10 (based on a two-tailed test), ** denotes significance at p = 0.05, *** denotes significance at p = 0.01.

TABLE 6
Probit Prediction Model For Loan Denial

	Model 1		Model 2		Model 3		Model 4	
Independent variables	Coefficient	Std. error	Coefficient	Std. error	Coefficient	Std. error	Coefficient	Std. error
Accrual	-0.147	0.116	-0.067	0.201				
Accrual × Credit score			-0.002	0.004				
Accrual_hat					-0.608	0.444	-0.041	0.214
Accrual_hat × Credit score							-0.004	0.003
Credit score	-0.010***	0.002	-0.009***	0.002	-0.009***	0.002	-0.011***	0.002
Log of total assets	-0.689***	0.167	-0.685***	0.167	-0.553***	0.210	-0.584***	0.198
Return on assets	-0.029	0.033	-0.029	0.033	-0.034	0.033	-0.026	0.033
Asset turnover	-0.005	0.009	-0.005	0.009	-0.001	0.009	-0.003	0.009
Debt to assets	0.100**	0.046	0.101**	0.046	0.117**	0.047	0.126**	0.052
Firm age	-0.011**	0.005	-0.011**	0.005	-0.011**	0.005	-0.011**	0.005
Bankrupt	0.456	0.319	0.464	0.319	0.423	0.319	0.496	0.319
Judgment	0.138	0.213	0.136	0.212	0.081	0.218	0.127	0.215
Personal delinquency	0.651***	0.157	0.651***	0.156	0.612***	0.164	0.641***	0.159
Firm delinquency	0.152	0.130	0.146	0.131	0.202	0.134	0.154	0.136
Inverse mills ratio	-1.373***	0.422	-1.367***	0.422	-1.370***	0.416	-1.435***	0.426
Intercept	4.195***	1.207	4.141***	1.211	3.906***	1.310	3.559***	1.350
n	1,308		1,308		1,307		1,307	
Log likelihood	-370.40		-370.28		-369.05		-368.35	
Pseudo R^2	0.183		0.184		0.182		0.184	
χ^2	166.19		166.42		164.03		165.88	

[a] Dependent variable is coded 1 if the entity was denied credit on a loan application in the last three years, and 0 otherwise. Accrual_hat is an instrumental variable of voluntary accrual use is based on probit model from Table 4. Inverse Mills Ratio is based on probit model for applying for a loan from Table 5. All remaining independent variables are defined in Table 2. * denotes significance at p = 0.10 (based on a two-tailed test), ** denotes significance at p = 0.05, *** denotes significance at p = 0.01.

TABLE 7
Regression Results: Effect of Accrual Accounting on Cost of Debt Capital

	Model 1		Model 2		Model 3		Model 4	
Independent variables	Coefficient	Std. error	Coefficient	Std. error	Coefficient	Std. error	Coefficient	Std. error
Accrual	-0.356**	0.168	-0.950***	0.351				
Accrual × Credit score			0.010*	0.005				
Accrual_hat					-1.451*	0.790	-0.835***	0.314
Accrual_hat × Credit score							0.006*	0.003
Credit Score	-0.003	0.003	-0.008**	0.004	-0.003	0.003	-0.002	0.003
Prime rate	0.128	0.105	0.132	0.105	0.126	0.106	0.134	0.105
Duration spread	0.076	0.186	0.084	0.186	0.105	0.189	0.147	0.190
Term premium	0.034	0.117	0.024	0.117	-0.014	0.123	-0.0001	0.120
Debt-to-assets	0.155*	0.082	0.157*	0.082	0.216**	0.093	0.228**	0.092
Fixed rate	1.190***	0.217	1.208***	0.217	1.278***	0.228	1.271***	0.224
Log total assets	-0.176	0.142	-0.180	0.142	0.080	0.230	0.127	0.238
Log amount	-0.746***	0.162	-0.739***	0.161	-0.686***	0.169	-0.739***	0.162
Collateral	-0.262	0.162	-0.258	0.163	-0.246	0.165	-0.218	0.164
Primary institution	0.030	0.175	0.027	0.175	0.122	0.189	0.104	0.185
Intercept	9.955***	0.999	10.184***	0.906	8.514***	1.362	7.620***	1.615
Loan Type Dummies	Yes		Yes		Yes		Yes	
n	1,189		1,189		1,188		1,188	
R^2	0.184		0.186		0.183		0.185	
F-stat	16.47***		15.76***		16.42***		15.66***	

[a] Dependent variable is the interest rate on the entity's most recent loan. Accrual_hat is an instrumental variable of voluntary accrual use is based on probit model on the presence of accounts receivable, days in inventory and the remaining independent variables in the table. All remaining independent variables are defined in Table 2. * denotes significance at p = 0.10 (based on a two-tailed test), ** denotes significance at p = 0.05, *** denotes significance at p = 0.01.

TABLE 8
Partitioned Regression Results: Effect of Accrual Accounting on Cost of Debt Capital

	Small Amount		Large Amount		Short Relationship		Long Relationship	
Independent variables	Coefficient	Std. error	Coefficient	Std. error	Coefficient	Std. error	Coefficient	Std. error
Accrual	-1.124**	0.599	-0.035	0.403	-1.647***	0.537	-0.222	0.446
Accrual × Credit score	0.010	0.009	-0.008	0.006	0.019**	0.008	-0.0005	0.006
Credit Score	-0.010	0.005	0.003	0.004	-0.017***	0.006	0.003	0.004
Prime rate	0.086	0.181	0.247**	0.114	0.068	0.167	0.162	0.126
Duration spread	-0.125	0.306	0.158	0.212	0.102	0.296	0.052	0.225
Term premium	-0.117	0.197	0.275**	0.132	-0.175	0.181	0.203	0.144
Debt-to-assets	0.117	0.124	0.185*	0.105	0.103	0.126	0.166	0.103
Fixed rate	1.383***	0.369	0.889***	0.242	1.703***	0.348	0.772***	0.257
Log total assets	-0.048	0.220	-0.337*	0.179	-0.174	0.230	-0.138	0.170
Log amount	-1.875***	0.395	-0.360*	0.214	-0.674***	0.260	-0.840***	0.193
Collateral	-0.463*	0.278	-0.034	0.180	-0.475*	0.268	-0.011	0.189
Primary institution	-0.140	0.274	0.154	0.213	-0.132	0.269	0.522**	0.251
Relationship in years					-0.033	0.072	-0.015*	0.009
Intercept	15.833***	2.035	7.163***	1.184	10.840***	1.437	9.534***	1.101
Loan type dummies	Yes		Yes		Yes		Yes	
n	557		632		598		591	
R^2	0.161		0.200		0.209		0.203	
F-stat	6.09***		9.04***		8.52***		8.11***	

[a] Dependent variable is the interest rate on the entity's most recent loan. Entities are partitioned by whether the financing amount and years with the financiers are above or below the sample median respectively. All remaining independent variables are defined in Table 2. * denotes significance at p = 0.10 (based on a two-tailed test), ** denotes significance at p = 0.05, *** denotes significance at p = 0.01.