Transparency, Ownership, and Financing Constraints in Private Firms

Ole-Kristian Hope
Rotman School of Management
University of Toronto
okhope@rotman.utoronto.ca

Wayne B. Thomas
Michael F. Price College of Business
University of Oklahoma
wthomas@ou.edu

Dushyantkumar Vyas
Rotman School of Management
University of Toronto
Dushyantkumar.Vyas06@rotman.utoronto.ca

October 5, 2009

Acknowledgments

We are grateful for comments received from workshop participants at the Norwegian School of Economics and Business Administration, ESSEC, the Financial Accounting and Reporting Section Midyear Meeting (New Orleans), the International Section Midyear Meeting (St. Pete's), the LBS Transatlantic Doctoral Conference, the 2nd Annual Corporate Governance and Fraud Prevention Conference (George Mason), and the American Accounting Association Annual Meeting (New York).

Transparency, Ownership, and Financing Constraints in Private Firms

Abstract

The role that financial information plays in facilitating the flow of capital between external providers of capital and the firm is less obvious for private firms compared with public firms. We find that private firms that choose to have their financial information reviewed by an independent external auditor (our proxy for financial transparency) experience significantly lower problems with gaining access to external finance (and obtain those funds at a lower cost) than do other private firms. We further find that the effect of financial transparency in reducing financing constraints increases in the presence of a controlling shareholder, and that this joint effect is more pronounced in poorer countries with weaker institutional environments. We thus provide unique evidence on the joint role of financial transparency and ownership in a private firm setting. Our results are robust to controlling for firm-level characteristics, industry effects, and country-level variables, as well as controlling for self-selection biases related to the choice of having the financial information reviewed. Given the predominance of private firms around the world and the relatively scarce amount of research in this area, we add to the literature on the role of financial information for an important and interesting group of firms.

Keywords: Financing constraints, financial transparency, ownership concentration, private companies, institutional environment, auditing

F3, G30, G32, M41, M49

Transparency, Ownership, and Financing Constraints in Private Firms

1. Introduction

In recent years, the World Bank surveyed companies from around the world, with a particular focus on developing and emerging markets. The explicit purpose of the surveys is to "collect information about the business environment, how it is perceived by individual firms, how it changes over time, and about the various constraints to firm performance and growth." While there are inherent limitations with any survey data, the hope is that researchers will provide useful findings to the World Bank in fulfilling its mission as "a vital source of financial and technical assistance to developing countries around the world."[1] In response, a large number of recent studies employ these data in a variety of contexts.[2] We use the survey data for an extensive sample of private firms from 68 countries to investigate how firms' perceived financing constraints are affected by financial transparency. Since financing constraints limit the profitability and growth of a firm and eventually impede economic development of a country, factors affecting financing constraints are directly relevant to the World Bank's mission and reflect the intended purpose of making the survey data available.

Our investigation of the impact of financial transparency on financing constraints relates to a long line of literature that recognizes that investors require higher returns to compensate for higher risk. Recently, researchers have recognized information risk arising from information uncertainty as an important source of risk (e.g., Easley and O'Hara 2004; Lambert, Leuz, and Verrecchia 2007). As information uncertainty increases, investors restrict their flow of capital to the firm or increase their required rate of return, both of which have the effect of limiting the

[1] The survey data are publicly available (http://www.enterprisesurveys.org/).
[2] http://www.enterprisesurveys.org/ResearchPapers/.

firm's investment opportunities. This is where financial information can play a role. An intended purpose of financial information is to reduce information asymmetry by allowing external providers of capital to better assess the firm's investment opportunities and monitor managerial actions (e.g., Fama and Jensen 1983; Diamond and Verrecchia 1991; Bushman and Smith 2001). However, an important consideration in this relation is the transparency (or credibility) of the financial information. Only to the extent that external providers of capital perceive financial information to be transparent will it reduce investors' assessed information risk and the firm's financing constraints.

One means by which companies can increase the perceived transparency of their financial information is having their information reviewed by an external auditor. External auditors act as independent parties and provide their opinion of the extent to which financial information is stated accurately. It is this third-party verification that gives financial information its usefulness in reducing financing constraints. Using data from the World Bank surveys, we measure financial transparency as a firm's choice to have its financial information reviewed by an external auditor and then test its impact on the firm's perceived financing constraints.

At first, it may seem obvious that all firms will have their financial information reviewed by an auditor so as to reduce information risk and financing constraints. However, we find that approximately one-half of our sample of private firms choose *not* to have their financial information reviewed. Some researchers contend that financial information may play a limited role in private firms (e.g., Burgstahler, Hail, and Leuz 2006). In general, private firms have chosen to remain private because presumably the benefits of be being a public company (e.g., increased access to external financing, lower cost of capital) may not outweigh the costs (e.g., higher reporting costs, increased regulation, greater public scrutiny, reduced managerial

discretion). Therefore, these firms may have reasons for being private, and these reasons may reduce or make unnecessary the role of financial information in facilitating the relation between external providers of finance and the firm. Thus, there is debate regarding the usefulness of financial information for private firms, and the extent to which financial transparency impacts the financing constraints of private firms remains unanswered.

The vast majority of research on the role of financial transparency focuses on *public* firms. However, the lack of research related to private firms should not be attributed to their lack of importance. In most countries around the world, non-publicly listed firms have (in aggregate) considerably more employees, greater revenues, and more in total asset values than do publicly listed firms (e.g., Berzins, Bøhren, and Rydland 2008).[3] Instead, the likely reason for the limited attention to private firms in academic research relates to the lack of data availability. Public firms are required by securities exchanges to make available a wide array of financial information, and commercial databases typically capture these data. Thus, it is perhaps not surprising that we know relatively little about the financing constraints of private firms relative to public firms, and as discussed above, it is not clear that findings for public firms should be generalized to private firms. Fortunately, data from the World Bank's surveys now make an investigation of private firms more feasible. Thus, examining the role of financial transparency for private firms is interesting, economically important, and directly relevant to the World Bank.[4]

Financial transparency is not the only signal of interest to providers of external capital. Also of interest to our sample of private firms is their relatively high ownership concentration.

[3] According to Nagar, Petroni, and Wolfenzon (2005), in the United States there are about seven million corporate tax filers, of which only about 8,000 are public firms. As an additional example, in Burgstahler et al.'s (2006) sample of European firms, after excluding small private firms they have 368,620 private firms and 9,502 public firms.

[4] Although our focus is on private firms, Beck, Demirguc-Kunt, and Maksimovic (2008) further emphasize the fact that most prior research has focused on the largest and perhaps unrepresentative firms. In their words, "one of the important strengths of the survey is its coverage of small and medium-size enterprises (Beck et al. 2008, 468).

For our sample of firms, the largest shareholder owns on average 74% of the shares. When thinking about the effect of a controlling shareholder on agency costs (and therefore financing constraints) of the firm, there are two competing views (Morck, Shleifer, and Vishny 1988). On the one hand, a controlling shareholder is more likely to monitor managerial actions, limiting the extent of agency costs through incentive alignment. On the other hand, a controlling shareholder can take advantage of her controlling position and direct private benefits for personal consumption (i.e., the typical problem of expropriation of minority shareholders and potentially creditors). If the first agency effect dominates, a controlling shareholder will have the effect of greater incentive alignment between managers and outside investors, reducing financing constraints. On the other hand, a controlling shareholder could exacerbate information problems and potentially increase the owner's private benefits of control, thereby increasing financing constraints. Our research setting provides us with an opportunity to help understand the relation between these competing economic forces and, consequently, the ability of financial transparency to affect external financing in the presence of these forces.

We find that firm-level transparency (i.e., financial information that has been reviewed by an auditor) is associated with lower financing constraints. While this finding is not obvious for private companies in countries covered by the World Bank survey, it is consistent with theory, which suggests that information and incentive problems impede firms' access to external capital (e.g., Jensen and Meckling 1976). Enhanced transparency alleviates information problems and can also make managers more accountable to outsiders (i.e., reduce incentive problems). Our result is robust to the inclusion of numerous firm-level control variables as well as country, industry, and year fixed effects. The finding is also robust to controlling for endogeneity by using a Heckman self-selection model as well as propensity score matching. Other sensitivity

analyses, including using an alternative measure of financing constraints (i.e., the cost of financing), also yield consistent results.

With respect to controlling owners, we find that ownership and financial transparency have an interactive effect. Specifically, the ability of financial transparency to reduce financing constraints *increases* when a controlling shareholder is present. This result is far from obvious and goes beyond the straight-forward explanations offered in extant literature. While increased ownership may better align incentives of controlling shareholders and managers, it also increases the ability of controlling shareholders to expropriate private benefits. Thus, a tradeoff exists, and this is where financial transparency can play a more substantive role. Financial transparency can limit the ability of controlling shareholders to consume private benefits, making the incentive alignment effect stronger. In support of these arguments, we further find that the interaction effect is primarily evident only in poorer countries with potentially weaker institutions. Prior research suggests that expropriation of private benefits by controlling shareholders is especially pervasive in these countries (e.g., Dyck and Zingales 2004), and this is where financial transparency can play a more prominent role in reducing financing constraints of private firms.

We contribute to the literature in several ways. First, we add to and complement the extant literature on economic consequences of financial transparency. We show that financial information reviewed by an auditor is associated with a highly economically important issue (i.e., financing constraints). Financing constraints have attracted the attention of an influential body of economics and finance literature (see for example, Rajan and Zingales (1998), who argue that financing constraints have an impact on investment and growth) and thus represent an interesting and important area of study.

In addition, tests of the economic impact of financial transparency may be especially effective for a sample of private firms. For public firms, several "naturally" occurring institutional and governance features limit the typical information asymmetry problems between managers and external providers of finance. For example, most stock exchanges impose strict reporting requirements on all public firms, and stock exchanges have the ability to sanction any firm for noncompliance. Boards of public firms generally face increased accountability by politicians and the general public for their effectiveness in curtailing poor managerial behavior. The market for corporate control also serves to reduce agency problems by removing inefficient managers of public firms through proxy fights or takeovers. Private firms are less affected by these institutional and governance mechanisms and are likely to display greater variation in financial transparency. Thus, our rather unique private firm setting should offer a strong test of the economic effects of financial reporting transparency.

Second, we contribute to the literature on the moderating effects of concentrated ownership (e.g., Morck et al. 1988; McConnell and Servaes 1990; Shleifer and Vishny 1997). External providers of finance are likely to base their assessments on multiple signals about firm type, and these signals are likely to interact with each other. Hence, viewing transparency in isolation will not necessarily lead to a complete understanding of the economic forces shaping financing constraints faced by firms. Since we have detailed data on ownership, we make an important contribution by testing the joint effects of these two mechanisms – a controlling shareholder (or degree of ownership concentration in sensitivity tests) and financial transparency. Most prior research has been carried out with data on publicly listed companies for which ownership is likely to be more diffused by definition. By using the World Bank database, we are able to examine this issue using a sample for which the average ownership concentration is high

but with significant cross-sectional variation. We view this contribution as important since it enables us to better understand the joint effect of financial transparency and controlling ownership on financing constraints.

Further, we leverage the international dimension of our database and find that the joint effect of financial transparency and controlling ownership is especially important for countries with weaker institutional environments (e.g., weaker investor and creditor protection rights). Arguably, agency problems associated with controlling ownership (such as the existence of private benefits of controls) are higher in these countries. Our finding indicates that transparency plays a more important role in mitigating agency costs pertaining to controlled ownership in these enviroments. This finding contributes to the international finance literature which studies the cross-country variation in private benefits of control (e.g., Dyck and Zingales 2004).

Third, in prior research, tests for the presence of financing constraints consist mainly in adding proxies for the availability of internal funds and/or firms' net worth or cash flow sensitivities. The choice of variables used to measure financing constraints has been a subject of academic debate (for example, see the interaction between Fazzari, Hubbard, and Petersen 2000 and Kaplan and Zingales 2000). We avoid this debate to some extent by using a more direct measure of financing constraints. Specifically, we use a survey-based measure which captures a firm's self-reported financing constraints.[5]

The next section reviews prior research and develops our hypotheses. Section 3 describes our sample and data. Section 4 presents our primary multivariate results and Section 5 reports on sensitivity tests. Section 6 offers summary and concluding remarks.

[5] An additional advantage of using firm-reported survey data to measure financing constraints is avoiding problems associated with empirical estimates of investment efficiency as discussed in Bushman, Smith, and Zhang (2007).

2. Literature Review and Hypotheses Development

2.1 Brief Background on Financing Constraints

Under the Modigliani–Miller theorem (1958), a firm's capital structure is irrelevant to its value. Among other things, the theorem assumes that decision makers in the firm and external suppliers of funds have the same information about the firm's choice and use of inputs, investment opportunities, riskiness of projects, and output or profits (Hubbard 1998). These assumptions are strong and imply that there is no cost in acquiring information. In such a setting, there is no need to expend resources to identify and evaluate investment opportunities, to monitor and discipline managers who may undertake value-destroying investments or expropriate firm resources for personal consumption, or to reduce information asymmetry between investors (Levine 1997). In practice, however, managers have significantly better information than investors and creditors do about most aspects of the firm's investment and production (Hubbard 1998). In other words, in the real world, information costs are significant and can lead to difficulties in obtaining external financing (referred to hereafter as "financing constraints"). Financing constraints can impede economic growth by affecting the efficiency with which scarce resources are allocated (e.g., Levine 1997; Bushman and Smith 2003).

2.2 The Role of Financial Transparency

Rajan and Zingales (1998) argue that financial market imperfections have an impact on development and growth. Financial transparency helps alleviate market imperfections in several ways. First, high quality information can help managers identify good projects or investment opportunities, thereby aiding investment efficiency even in a world without moral hazard

(Bushman and Smith 2001).[6] Second, financial transparency helps corporate control mechanisms in preventing managers from expropriating wealth from investors or creditors (e.g., Fama and Jensen 1983). Third, financial transparency can impact economic performance by reducing adverse selection, liquidity risk, and information risk (Diamond and Verrecchia 1991; Leuz and Verrecchia 2000; Easley and O'Hara 2004). In our research setting, we expect that transparent financial information would enhance efficient capital allocation through all three mechanisms outlined above. Specifically, providers of external financing will find it easier to identify good investments, be more assured about the safety of their capital, and reduce price protection for adverse selection. All of these are likely to result in better access to (and lower cost of) external financing for firms.

Financial information is an important means of reducing information asymmetries and monitoring managers to make them more accountable (e.g., Stiglitz 1975; Holmström 1979; Fama and Jensen 1983; Diamond and Verrecchia 1991). Healy and Palepu (2001) discuss how financial information can reduce agency costs by providing principals with an effective monitoring tool. Specifically, better information improves the monitor's ability to relate managerial decisions to firm performance (Lombardo and Pagano 2002; Hope and Thomas 2008).

A number of empirical studies provide evidence of how financial information can be used by outsiders to monitor the activities of managers. For example, Biddle and Hilary (2006) find a positive association between financial reporting quality and investment efficiency (see also Bens

[6] Also, as Barry and Brown (1985) establish, reduced estimation risk can result in a lower cost of capital.

and Monahan 2004; Khurana, Pereira, and Martin 2006; Hope and Thomas 2008; and Biddle, Hilary, and Verdi 2009).[7]

A key component of high quality financial information is the external review provided by independent accountants. Levitt (2000), among others, argues that providers of capital cannot be expected to trust a company's financial information without the objectivity and fairness provided by the external auditor. Auditors lend credibility to financial information by providing independent verification of manager-reported information. Specifically, auditors provide an independent assessment of the accuracy and fairness with which financial information represents the results of operation, financial position, and cash flows of a company. Consistent with this argument, research has shown that auditors lower investors' perceived information risk (e.g., Boone, Khurana, and Raman 2008). External auditors further improve the precision of financial information (Becker, DeFond, Jiambalvo, and Subramanyam 1998), thus allowing financial information to serve as useful corporate governance mechanisms (e.g., by allowing lenders to put more faith in reported numbers). As a consequence, external auditors reduce information asymmetries and agency conflicts between the firm and its debt holders and stockholders (e.g., Jensen and Meckling 1976; Craswell, Francis, and Taylor 1995).

Although we provide compelling reasons why transparency (and auditing in particular) will be important for access to (and cost of) external financing, we note that prior literature argues and finds evidence suggesting that the usefulness of financial information is reduced in private firms compared with public firms (e.g., Ball and Shivakumar 2005; Burgstahler et al. 2006). [8,9] Thus, it is an empirical question whether financial transparency is in fact associated

[7] As an example of the importance of transparency at the economy level, Porter (1992) recommends more and better information to improve capital allocation in the interest of national competitiveness.

[8] It is not obvious whether external auditors play a lesser or a stronger role in private firms than in public firms. On the one hand, Coffee (2005) discusses how the existence of controlling shareholders can affect auditor

with financing constraints in our setting of private firms.[10] Based on the above discussion, our first hypothesis follows:

H1: Financial transparency reduces financing constraints.

2.3 The Role of Ownership

In this study, we focus on firms that are not publicly traded on stock exchanges (referred to as "private firms"). The World Bank survey provides us with firm-specific ownership information on these firms. Private firms tend to have more concentrated ownership than do public firms. In our sample, the largest shareholder owns on average 74% of the shares. However, there is considerable variation in ownership concentration also among private firms, as can be seen from our sample standard deviation of 29% (not tabulated).[11]

There is a large literature on the role of ownership (see, e.g., Shleifer and Vishny 1997 for references). Morck, Shleifer, and Vishny (1988) argue that increased ownership concentration may entrench managers, as they are increasingly less subject to governance by boards of directors and to discipline by the market for corporate control (with the latter likely not being as important for private firms). Controlling shareholders may either engage in outright

---

independence. That is, Coffee argues that it is difficult for the auditor to escape the control of the party that she is expected to monitor. On the other hand, the monitoring value of auditing may be higher in private firms because they are less vulnerable to takeovers and because they are required to disclose less non-financial information.

[9] It is also the case that prior research finds a reduced role for financial information in developing countries and countries with low investor protection than in highly developed countries with strong investor protection (Ball, Kothari, and Robin 2000; Bushman and Smith 2001; Doidge, Karolyi, and Stulz 2007). Our sample consists largely of the former countries. This further potentially confounds the expected relation between financial transparency and financing constraints for our sample of firms.

[10] If there were only benefits and no costs associated with engaging the services of an independent audit firm, all firms would hire an auditor. This is not what we observe for non-publicly listed firms. For example, an unconditional comparison for our full sample shows that 50.36% of non-publicly listed firms have their annual financial statements audited. This suggests that there are non-trivial costs related to auditing (out-of-pocket costs, reduction in ability to extract private benefits of control, etc.). In Section 5 we model the choice to have an audit, and control for this potential endogeneity in our tests.

[11] In Section 5.4 we report separately results for firms that have only one owner.

expropriation from self-dealing transactions or exercise de facto expropriation through the pursuit of objectives that are not profit-maximizing in return for personal utilities (e.g., Fan and Wong 2002).[12] In other words, a controlling owner can increase agency costs via the positive association with private benefits of control (Dyck and Zingales 2004). The presence of a controlling owner further allows firms to limit their information disclosure to outsiders. Such opacity prevents leakage of proprietary information to competitors and allows firms to avoid unwanted political or social scrutiny (Jensen and Meckling 1992). Consistent with this notion, Fan and Wong (2002) find that concentrated ownership is associated with low informativeness of financial information.

However, it is possible that the presence of a controlling shareholder may actually reduce agency costs. When ownership is dispersed, it is harder for shareholders to monitor managerial actions. When ownership is limited to one or a few individuals, it is easier and more efficient for those individuals to directly monitor managerial actions. Furthermore, controlling shareholders could enable a long investment horizon which allows the building of strong relationships between the firms and outside providers of capital (Ellul, Guntay, and Lel 2007). In fact, a controlling shareholder could increase business focus and make contracting negotiations easier.

To summarize our discussion, the presence of a controlling owner represents forces that work in opposite directions. Increased agency costs and information problems associated with a controlling owner will work to *increase* financing constraints. However, incentive alignment, investment horizon effects, focus, ease of contracting, and greater monitoring associated with a controlling owner will work to *decrease* financing constraints. Thus, it is difficult to predict the direction of the main effect of a controlling owner on financing constraints.

[12] Similarly, Burgstahler et al. (2006, 987) argue that insiders in private firms may attempt to transfer assets out of the firm, effectively expropriating the creditors.

More pertinent to our study, we are primarily interested in the moderating effect of financial transparency on the association between a controlling owner and financing constraints. When there is a controlling shareholder, financial transparency can play a greater role in reducing *costs* associated with agency and information problems. In other words, financial transparency matters more when there is a stronger need for it (i.e., high agency cost setting such as a controlling shareholder). In addition, there is no reason to expect increased financial transparency to reduce the *benefits* associated with a controlling owner. In fact, financial transparency may further improve monitoring and incentive alignment when a controlling owner exists. Therefore, regardless of whether the agency costs of a controlling owner outweigh the benefits (i.e., whether there is a positive or negative direct relation between controlling ownership and financing constraints), we unambiguously predict that financial transparency will have a greater effect on reducing financing constraints when a controlling owner exists. We state this as our second hypothesis.

H2: The ability of financial transparency to reduce financing constraints increases when a controlling owner exists.

As discussed above, controlling ownership can affect financing constraints through incentive alignment or through reduction of private benefits of control. Recent cross-country literature in finance has placed considerable emphasis on the adverse effects of private benefits of control (e.g., Dyck and Zingales 2004). Countries which have better institutional properties (e.g., investor protection, legal enforcement, etc.) are better equipped to curb costs associated with private benefits of control. Hence, if agency costs related to private benefits of control are

considered important by providers of external finance, then we expect the mitigating role of transparency to be more pronounced in regimes with weaker institutions. In other words, financial transparency matters more when agency problems are more severe. Since private benefits of a controlling shareholder are less severe in countries with stronger institutions, there is less concern for these agency costs, and financial transparency is expected to have less of an effect. We thus predict that the interaction effect between transparency and a controlling owner will be more pronounced (significant) in countries with weaker institutions. We state our third hypothesis as follows:

H3: The joint role (interaction effect) of transparency and a controlling owner in reducing financing constraints is more pronounced in countries with weaker institutions.

3. Sample and Data

3.1 Data Source

We obtain our data from the World Bank's Enterprise Surveys which contain detailed firm-level data on the quality of the institutional environment in which firms operate. The World Bank has undertaken large numbers of firm-level surveys with the express intention of measuring the quality of the "business environment" or the "investment climate" and thus the surveys seek managers' opinions on the main constraints in the business environment and a variety of productivity measures. The methodology section of the Enterprise Surveys website provides details of how the surveys are conducted. [13] These surveys are conducted by private contractors on behalf of the World Bank. According to the World Bank website, the World Bank

[13] http://www.enterprisesurveys.org/Methodology/

"ensures that confidentiality of the data is never compromised (through the use of private contractors). This enables the greatest degree of participation, integrity and confidence in the quality of the data." Cooperation of business organizations and government agencies is also solicited in conducting the surveys. The survey is completed by managing directors, accountants, human resource managers, and other company staff. The surveys sample from the universe of registered businesses and follow a stratified random sampling methodology. This database from which we draw has information on 49,584 manufacturing and service firms from 71 countries around the world for 2002-2005, of which 46,429 are not publicly traded on stock exchanges.[14]

3.2 Proxy for Financing Constraints

The dependent variable in our tests, financing constraints, is based on a survey in which managers are asked to use ordinal response categories to answer questions on investment climate constraints. Specifically, our main proxy for financing constraints (*FinCon*) is on a scale from 0 (no problems with access to finance) to 4 (most severe constraints). The variable thus measures managers' perceptions of how constrained their firms are with respect to external financing.

This is a different approach to measuring financing constraints from the one typically followed in the literature. A potential limitation of this measure could be that some managers simply tend to have a high propensity to complain about financing constraints, regardless of which actual constraints they may face (e.g., Bertrand and Mullainathan 2001). However, as long as this propensity is not correlated with our variables of interest, firm-level transparency and controlling ownership, there is no reason to believe that it would bias our results. Moreover, Carlin, Shaffer, and Seabright (2007, 32) conclude that the World Bank survey data "are indeed useful measures of the constraints to development across a wide range of countries." Other

[14] Note that the identity of the firms is kept anonymous in the database.

proxies used in the literature likely have limitations as well. In particular, they tend to be quite indirect, often cash flows or the sensitivity of investment to availability of internal funds. Since extant research has questioned the meaning of the cash flow sensitivities of investment on theoretical and empirical grounds (e.g., Alti 2003; Cleary 1999; Erickson and Whited 2000; Kaplan and Zingales 1997; Bushman, Smith, and Zhang 2007), we are able to sidestep these issues by focusing on the impact of transparency and ownership on managers' perceptions of the financing constraints they face.[15]

Because our measure of financing constraints has not been extensively used in prior research, we conduct a validity test to increase the confidence in our measure. Specifically, we compute the median and mean scores by country and then correlate these aggregate scores with two widely used measures of financing constraints from the finance literature (La Porta, Lopez-de-Silanes, and Shleifer 2008): (1) stock market capitalization divided by GDP and (2) private credit divided by GDP (with the latter likely to be more relevant for private firms).[16] Note that these are inverse proxies for financing constraints (i.e., lower values are indicative of restricted access to external financing). We find that that our measure is negatively and significantly correlated with both these alternative measures, which provides some external assurance that the measure captures what we want it to capture.[17]

Finally, although our main tests employ *access* to financing as the key independent variable, we provide corroborative evidence in additional analyses by using an alternative measure, *cost* of financing.

---

[15] Note that we are not criticizing the use of cash flow sensitivities; we are merely pointing out that although our measure has certain limitations, so do alternative approaches.

[16] We believe that financing constraints perceived by individual firm managers will be greatly influenced by the overall external macro-economic and financial context in which they operate. Hence, it is highly likely that perceived firm-level measures of financing constraints are derivatives of the more primitive macro-level construct outlined above.

[17] Based on medians (means) the Pearson correlations are -0.34 (-0.27) and -0.33 (-0.28), respectively.

3.3 Proxy for Financial Transparency

For our measure of financial transparency (*Auditor*), we use an indicator variable that takes the value one (zero otherwise) if the firm managers answered "yes" to the following question: "Does your establishment have its annual financial statements reviewed by an external auditor"?[18] The choice of engaging an external auditor is likely to be shaped by firm characteristics, and in subsequent analyses we control for this potential self-selection bias.

3.4 Sample

As detailed in Table 1, we start with the full sample of 49,584 observations in the database. We then remove the publicly traded firms from the sample for a sample of 46,429 private firm observations. After losing observations for missing values on perceived access to financing, whether financial statements are reviewed by an auditor, and control variables (described below), we have data for 30,871 observations for 29,829 unique firms in 68 countries. Later samples are smaller as we introduce additional firm-level control variables. We note here that firm-level indentifiers such as names are not available, and hence we are unable to intersect the data with other firm-level databases. However, as will be evident later, the choice of firm-level variables within the World Bank data itself is rich and we do not view this as a significant empirical constraint. The appendix provides definitions of the variables used. Panel A of Table 2 provides descriptive statistics for these variables.

In Panel B we report the number of observations by country. Countries from around the world are represented, with Turkey, Brazil, Poland, and Vietnam contributing the largest number

[18] Specifically, the survey does not distinguish between audits and reviews. Audits involve more work by auditors than do reviews, but clearly having the financial statements either audited or reviewed will imply higher credibility and quality than not having an independent auditor examine the statements at all.

of firms. With the exception of a few countries such as Germany and Ireland, most of the firms in the sample are from developing countries. Panel C shows that the sample is also spread across a number of industries, with the heaviest concentration in retail, metals, garments, and food.[19]

3.5 Correlations

Table 3 provides Pearson correlations among the main variables. As predicted, our main proxy for financing constraints (*FinCon*) is negatively correlated with financial transparency (*Auditor*) with a correlation coefficient of –0.12 (significant at the one percent level). Similarly, as expected we observe a significant negative correlation between financing costs *(FinCost)* and *Auditor*. *FinCon* is also negatively correlated with *Control*, but the magnitude of the correlation coefficient is small (–0.04). Financing constraints are moderately (but significantly) negatively correlated with *Employ* and *Age*, and moderately (but significantly) positively correlated with *Invest* (variables defined below). As expected, our two proxies for financing constraints (*FinCon* and *FinCost*) are positively and significantly correlated (coefficient of 0.71). We also note the strong positive correlation between *FinCon* and *Corrupt* (0.33), suggesting that corruption hinders access to financing (and also that this variable is an important control variable for our tests). Correlation results should, however, be interpreted cautiously as they do not control for differences in firm, industry, or country characteristics. Consequently, in the next section we turn to multivariate test results.

4. Research Design and Results

4.1 Empirical Model

Our basic model is:

[19] Our empirical tests include both country and industry fixed effects.

$$FinCon_{i,t} = \beta_0 + \beta_1 Auditor_{i,t} + \beta_2 Control_{i,t} + \beta_3 Auditor_{i,t}*Control_{i,t} + \beta_n ControlVariables_{n,i,t} + \varepsilon_{i,t} \quad (1)$$

To the extent that *Auditor* reduces a firm's financing constraints (H1), β_1 is expected to be negative. To test H2, we use an indicator variable that takes the value one if the largest shareholder owns more than 50% of the outstanding shares in the company (*Control*), and zero otherwise. The coefficient on the interaction of *Auditor* and *Control* (β_3) measures the moderating effect of the presence of a controlling shareholder on the relation between *Auditor* and *FinCon*. If *Auditor* is increasingly important in reducing financing constraints in the presence of a controlling shareholder (H2), then β_3 is expected to be negative.

Firm size is a natural control variable under the presumption that size is highly correlated with the fundamental factors that determine the probability of being constrained (Schiantarelli 1996; Whited and Wu 2004). Smaller firms are more likely to suffer from idiosyncratic risks, may have lower collateral relative to their liabilities, and face higher unit bankruptcy costs.[20] Consistent with Abdel-Khalik (1993), we use the number of employees (*Employ*) as our (primary) size variable. This is also the most widely available size variable in the database.[21] To account for possible size non-linearities, we also include the square of *Employ* (*Employ*^{2}). We further include firm age (*Age*) as a control for the track record that helps investors to distinguish between good and bad firms (Schiantarelli 1996).[22] We include the firm's expansion initiatives (i.e., developing a new product line or opening a new plant, *Invest*) in the last three years to capture growth needs (e.g., Whited and Wu 2004). Finally, we use a firm-level measure of the

[20] Clementi and Hopenhayn (2006) further show that the sensitivity of investment to cash decreases with age and size.
[21] The sample size (and hence generalizability) is greatly reduced when using sales or total assets as alternative size proxies. Nevertheless, we later document that using these alternative size proxies does not change any inferences.
[22] Inferences are not affected if we use log transformations of *EMPLOY* and *AGE*.

perceived degree of corruption in the country (*Corrupt*). Since prior research shows that financing constraints vary across countries and industries (e.g., Love 2003), we include both country and industry fixed effects. Finally, we control for time period effects through year indicators. Reported significance levels are based on two-tailed tests and with Huber/White standard errors that are adjusted for clustering by country.

4.2 Tests of Hypotheses

Results are presented in Table 4. Columns I and II show results of OLS with and without the interaction between *Auditor* and *Control*. For both columns, we find results consistent with H1. The estimated coefficient on *Auditor* is negative (and significant at the one percent level), suggesting that firms that provide more transparent and more credible financial information are rewarded through lower financing constraints. Everything else remaining constant, the coefficient on *Auditor* indicates that on a scale from 0 to 4, the level of financing constraint reduces by 0.185 (or 4.6 percent) for firms that have an external auditor (and hence have more transparent financial information). Both firm size (*Employ*) and firm age are negatively and significantly related to financing constraints. The significantly positive coefficient on $Employ^2$ suggests that size non-linearities are present in the data. *Invest* is significant at approximately the 0.15 level (two-tailed). In later models, we find *Invest* significant at the 0.05 level. *Corrupt* is positive and highly significant, suggesting that managers' perceived level of corruption in the country increases their perceived financing constraints. The fact that control variables are significant in the predicted direction further validates the World Bank's survey-based measure of financing constraints and increases confidence in our conclusions. Untabulated F-tests indicate that the fixed effects for country, industry, and year are all significant at the one percent level.

In column II, we test H2. The interaction of *Auditor* and *Control* is negative and significant at the five percent level (using a two-tailed test). In other words, the effect of transparency on reducing financing constraints is increasingly important in the presence of a controlling shareholder. This result is intuitive; external audits can either increase the credibility of incentive alignment between owners and outside investors, or reduce the ability of owners to consume private benefits of control. Under either explanation, *Auditor* will have a greater financing constraint-reducing effect in presence of a controlling shareholder.[23] We also note that *Auditor* (H1) remains significant. Thus, we conclude that financial transparency matters when no controlling shareholder is present, but based on the significance of *Auditor*Control* (H2), financial transparency matters even more when a controlling shareholder is present. Finally, we note that whereas the main effect of *Control* is negative and significant in column I (when the interaction term is excluded), it is no longer significant once we control for the interaction effect between financial transparency and controlling ownership. This finding suggests that controlling ownership is important, but only as a mediating variable in the relation between access to external financing and transparency.

Since the dependent variable ranges between 0 and 4 (and thus violates the standard OLS assumptions), we repeat the analysis using ordered probit and show results in columns III and IV. The results are consistent with those estimated using OLS. Thus, for brevity we present only OLS results for remaining tests.[24]

[23] Note that, although we do not know the identity of the firms, the World Scope database makes it possible to track firms from year to year. We observe that we have very limited overlap of firms across years in our sample. Specifically, we have 29,829 distinct firms in our sample of 30,871 observations. As explained, our results are based on clustering by country. If we do not cluster by country we obtain stronger results than those reported in the paper. For example, in column II of Table 4 the (absolute value of robust) t-statistics for *Audit* and *Audit*Control* are 4.99 and 2.34, respectively. Thus, we view the reported results as conservative.

[24] Another reason for presenting OLS results is the complexity associated with interpreting interaction effects in probit models (e.g., Ai and Norton 2003).

As discussed, in this study, we view *Auditor* as capturing both transparency and credibility (or certification effect) of financial information. For simplicity, we refer to this enhanced credibility as a signal of financial transparency, and it is not our aim to separate these effects. However, as an additional (untabulated) test we have attempted to distinguish the effects. Specifically, we make use of the fact that the survey also asks whether the firm has received an ISO (International Organization for Standardization) certification. We consider ISO to be a indication of credibility of the firm. We thus orthogonalize *Auditor* against ISO to isolate the transparency aspect of *Auditor* and use this orthogonalized measure in our tests. No inferences are affected.

4.3 Effect of Variation in Institutional Environment

As discussed, our sample comprises companies from 68 countries that are different in many interesting respects.[25] Perhaps most importantly, countries differ in how they protect the interests of shareholders and creditors (e.g., La Porta et al. 1998). Since data on investor protection are only available for one-third of our sample we instead condition our test on gross national income per capita (GNI), which is available for the entire sample. The correlation between GNI and "investor protection" from La Porta et al. (1998) is 0.84 and significant at the 0.01 level, suggesting that GNI is a good proxy for the strength of institutional governance mechanisms in a country.[26]

[25] We include country fixed effects in all tests. This is a common approach for controlling country-specific effects and addressing correlated omitted country-level variable problems (Doidge et al. 2007). However, as an alternative to country fixed effects, we include controls for legal origin (common law versus code law) or gross national income per capita and continue to find that transparency and its interaction with ownership are significantly related to financing constraints.

[26] La Porta et al.'s (1998) investor protection variable has been used in several studies and is measured as the mean score across three legal variables: (1) the efficiency of the judicial system, (2) an assessment of the rule of law, and (3) the corruption index.

In Table 5 we report results for lower and higher income countries separately, using the median to split the sample.[27] As the table shows, *Auditor* is negative and significant in both subsamples. This suggests that, in the absence of a controlling shareholder, transparency is important in reducing financing constraints in all countries. However, the interaction between *Auditor* and *Control* is significantly negative only in low income countries. Finding a significant interaction effect in poorer countries suggests that, in the presence of a controlling shareholder, transparency is increasingly important in these countries. Given that agency problems associated with controlling ownership, such as private benefits of control, are expected to be more severe in poorer countries (e.g., Dyck and Zingales 2004), financial transparency can play a greater role in reducing financing constraints.

5. Robustness Tests

We perform several analyses to test the robustness of our results: (1) endogeneity tests, (2) an alternative proxy for financing constraints (i.e., cost of financing), (3), sensitivity to outliers and additional firm-level control variables, (4) separate examinations when ownership concentration is equal to or less than 100%, and (5) mandatory audits.

5.1 Controlling for Self-Selection Bias

Our sample consists of firms that are not publicly traded. For many private firms, it is a choice to elect to have their financial information reviewed by an external auditor, and firms that choose to do so are the ones for which the benefits exceed the incremental costs. It is thus

[27] The difference in mean income between the two groups is highly economically and statistically significant. Specifically, the means of GNI per capita for the low and high groups are 1,123 and 9,161, respectively. In addition, note that we continue to control for variations in other country-level characteristics in these test through the inclusion of country fixed effects.

potentially important to control for factors that influence firms to employ an external auditor (i.e., self-selection bias), as otherwise it is possible that the effect we pick up relates to these other factors and not to financial transparency per se. Since no single method is likely to fully mitigate all endogeneity concerns, we use two different approaches to address and control for the potential endogeneity of auditor choice: a Heckman two-step model (Heckman 1979) and propensity score matching.

5.1.1 Heckman Self-Selection Test

In the first-stage equation, we first include instruments included in the main equation that have been shown to relate to auditor choice (including country, industry, and year fixed effects). In particular, prior research has shown that the choice of auditing is associated with firm size (e.g., Abdel-Khalik 1993; Carey, Simnett, and Tanewski 2000), firm age (Mansi, Maxwell, and Miller 2004), ownership concentration (Fan and Wong 2005), and industry (Ettredge et al. 1994). As always, the challenge with a Heckman model is to identify instruments that are correlated with the potentially endogenous variable (i.e., *Auditor*) but not correlated with the dependent variable in the main equation (i.e., *FinCon*). Our first such instrument is an indicator variable for whether the firm is an exporter (*Export*), with the expectation that exporters are more likely to be employ an auditor and be more transparent (in part due to demand from their foreign customers). The second instrument is the percent of the workforce that is unionized (*Union*). Since unions' negotiated contract terms in part depend on the firm's reported profitability, unions are likely to demand high-quality financial information that are less likely to be subject to management bias (D'Souza, Jacob, and Ramesh 2000). Both these variables have insignificant Pearson correlations with *FinCon* but are significantly correlated with *Auditor* (correlation coefficients of 0.18 and

0.07, respectively, both significant at less than the one percent level). Unfortunately, requiring data on these variables (and especially *Union*) results in a smaller sample (N = 12,432).[28] The auditor choice model is thus (with country, industry, and year fixed effects omitted):

$$Prob(Auditor_{i,t} = 1) = \alpha_0 + \alpha_1 Export_{i,t} + \alpha_2 Union_{i,t} + \alpha_3 Employ_{i,t} + \alpha_3 Age_{i,t} + \alpha_n Controls_{n,i,t} + v_{i,t} \quad (2)$$

The first stage results are reported in Panel A of Table 6. The pseudo R^2 is 0.297, and *Auditor* is positively and significantly related to our instruments *Export* and *Union. Auditor* is further positively associated with *Employ* and *Age* and negatively correlated with *Control*.[29] We also find that year and country fixed effects are significant (untabulated). More importantly, the second stage regression shows that, after controlling for the Inverse Mills ratio, we continue to find *Auditor* strongly negatively associated with financing constraints, supporting H1.[30] In addition, the interaction between *Auditor* and *Control* remains significantly negative, supporting H2. Untabulated analysis further shows that the interaction term is significantly more negative in poorer countries, supporting H3.

5.1.2 Propensity Score Matching

As an alternative method to address endogeneity, we employ Propensity Score Matching (PSM). PSM is an econometric method that allows for efficient matching of treatment firms with a set of control firms (Rosenbaum and Rubin 1983). In our study, the treatment is the review of

[28] Note that we later present results with additional controls included.
[29] We also evaluate the robustness of the first stage by testing for potential weak instruments. First, we observe that the pseudo-R^2 is quite high (0.30). Next, we observe that the Cragg-Donald minimum eigenvalue statistic is 53.57 and exceeds the critical value of 24.58 (for a nominal 5% Wald test with a maximum rejection rate of 10%). In other words, we are able to reject the null hypothesis that the instruments are weak.
[30] We have also repeated the analysis using OLS with *Export* and *Union* employed as additional control variables (untabulated). No inferences are affected.

financial information by an external auditor. PSM is useful in our setting because the likelihood of review by an auditor depends upon multiple dimensions. PSM matches based on a "propensity score" – defined as the probability that the firm is in the treatment group conditional on the observed firm variables.

In the first step, a logit model is estimated to predict the probability that the firm employs an auditor, conditional on firm specific characteristics. We use the following variables to estimate the aforementioned probability: being an exporter (*Export*), firm size (*Employ*), and country indicator variables.[31] We then match, without replacement, firms that do and firms that do not employ an auditor based on closeness to the predicted value from the first step. Specifically, we use a caliper distance of 0.0001. The resultant matched sample includes 15,114 observations.[32] Panel B of Table 6 displays the results of the PSM procedure. The table shows that, even after matching on important dimensions likely to affect the demand for an auditor, our conclusions remain unaltered.

In sum, although we acknowledge the difficulty associated with controlling for self-selection bias, the Heckman and PSM findings suggest that our results are robust to controlling for factors that influence firms to employ an auditor and hence have more transparent financial information. Thus, controlling for potential self-selection bias does not impact the inferences regarding our hypotheses. Nevertheless, we provide additional arguments and tests to provide further assurance about the likely direction of causality. First, we introduce additional control variables below and results continue to be robust. Second, the result that financial transparency

[31] In additional analysis, we repeat the test by including *Union* as an additional matching dimension in the first stage. However, the sample size reduces drastically (N = 4,374). Even with the reduced sample size, *Auditor* and *Auditor*Control* remain significant.

[32] We also conduct tests to check whether the matched sample is balanced. Specifically, we check for difference in means of *Export* and *Employ* between the two groups. We find that the difference in means is statistically insignificant for both of these variables, implying that the matched sample is well balanced along these dimensions.

reduces financing constraints is consistent with economic theory as described above. Third, we focus not only on *Auditor* per se but on the interaction between *Auditor* and *Control*. We observe that the estimated coefficient on this interaction term has the predicted sign and is statistically significant. We further show that the association between this interaction term and financing constraints varies predictably across countries. It would be more difficult to envision a consistent theory in which causality is reversed yet the subsample results hold (e.g., Lang, Lins, and Maffett 2009).

5.2 Alternative Dependent Variable (Financing Cost)

As discussed above, the literature measures financing constraints in various ways, suggesting that no measure is perfect in all circumstances. To mitigate concerns both over construct validity and potential measurement error related to our main variable, financing constraints, we repeat the test using financing costs (*FinCost*). Financing cost is an intuitively appealing alternative measure, as regardless of circumstances, a higher cost of financing should be detrimental to the firm. We conjecture based on intuition that firms with difficulties in accessing financing are also likely to face a higher financing cost. Consistent with this notion, the Pearson correlation between the two measures is 0.71 (Table 3), suggesting that financing constraints and financing costs are positively related (as expected) but not identical measures.

We report results of using cost of financing as the dependent variable in the first column of Table 7. When not controlling for the interaction between *Auditor* and *Control* (not tabulated), we find that *Auditor* is negatively associated with cost of financing (significant at the one percent level and consistent with the results using *FinCon*). When we add the interaction, we find a significantly negative interaction, but the main effect of *Auditor* is no longer significant. This

result further corroborates our argument that signals such as transparency and controlling ownership should be viewed simultaneously and not in isolation.

5.3 Sensitivity to Outliers and Additional Firm-Level Control Variables

To mitigate the possibility that our results are driven by extreme observations, we delete observations for which the absolute value of studentized residuals exceeds two (N = 30,091).[33] Results are presented in the second column of Table 7. These results are consistent with the main results and suggest that outlying observations do not drive the observed effects.

Although we control for several important factors related to financing constraints above, it is always possible that there is some omitted (and correlated) variable. To address such concerns, we add three additional control variables that potentially impact firms' access to financing. These variables were not included in the initial results because they are missing for several observations. Specifically, we include an indicator variable denoting whether the firm is located in the country's capital (*Capital*), with the expectation that financing is more available in the capital than elsewhere. We further control for the contribution of bank loan financing to working capital investments (*BankLoan*) and the percentage of sales to multinationals (*MultiSales*). All these additional variables are from the World Bank survey. We tabulate both OLS (N = 27,217) and second-stage Heckman (N = 10,534) results in the last two columns. We note the intuitive finding that *BankLoan* is positive and significant. Again, both *Auditor* and its interaction with *Control* continue to be negative and significant. In summary, the results in Table 7 alleviate additional concerns over possible correlated omitted variables from the analysis.[34,35]

[33] As an alternative method to control for outliers, in untabulated analysis, we eliminate observations with a Cook's D value greater than 4/n, where n is the number of observations in the sample. Inferences are unchanged.

[34] In sensitivity analyses, we have replaced *Employ* with sales revenues or total assets as size controls (reducing the sample sizes to 9,395 and 7,868, respectively). No inferences are affected. We have also added the interest coverage

5.4 Alternative Tests for Controlling Ownership

Firms that are owned by a single owner may differ substantially from other firms. We provide separate results for firms with a single owner (i.e., 100% ownership concentration) versus firms with more than one owner. These results are provided in Table 8 (using both OLS and Heckman approaches). We first note that our results for both *Auditor* and the interaction effect hold when one owner does not own the entire firm (in this subsample, the median and mean ownership concentration are 50% and 53%, respectively). Second, financial transparency is at least as important for firms with single owners.

Our tabulated results are based on using an indicator variable equal to one if the firm has a controlling shareholder (*Control*). As an alternative, we repeat tests with a continuous measure of ownership concentration measured as the percentage stake held by the largest shareholder. In untabulated tests we continue to find evidence that financing transparency reduces financing constraints and that the constraint-reducing effect of financial transparency increases with ownership concentration.

5.5 Controlling for Potential Mandatory Audits

Our hypotheses use *choice* to employ an auditor as an underlying construct, but in some countries audits are mandatory for private firms when firm size exceeds a certain threshold. Thus, certain private firms in our sample may not have a choice of whether to receive an external

---

ratio and leverage as additional control variables. Although inferences are still unchanged, the resulting sample size is only 3,841 and hence likely not representative of the full sample.

[35] In further analysis, we have also included the level of higher education of the top manager (indicator variable that takes on a value of one if the top manager at least has some university training) as an additional instrument for the choice of audit (with the assumption that more educated managers are more likely to be amenable to external audit). We find that education is positively and significantly related to the choice of audit. More importantly, no inferences in the second stage are altered.

audit. However, this fact does not negate the validity of our hypotheses or inferences from our tests. In settings where audits are required in one country (or for one set of firms) but not in others, the same predictions for H1-H3 would hold.[36] Using a variety of control variables and correcting for self-selection effects (including firm size and country fixed effects which relate to mandated audits), we test whether financial transparency affects financing constraints and whether this relation is moderated in settings with a controlling shareholder. Nonetheless, we acknowledge that including some firms with mandatory audits could bias the results in some unknown manner.

We control for this possible bias in two ways. First, we rerun all tests after excluding observations from countries with mean auditor rates above 80%, since in these countries are more likely to mandate audits (at least for a large number of firms).[37] Second, we repeat the analyses after excluding the largest ten percent of firms, either in the pooled sample or by country. For all tests (untabulated), we find that our inferences remain.

6. Conclusion

Agency theory posits that information asymmetry between a principal and an agent creates a moral hazard problem – the possibility that an agent will pursue her self-interest at the expense of the principal. The theory predicts that both agents and principals recognize that it can be beneficial to reduce the moral hazard and will devise arrangements to align their self-interests. Transparent and credible financial information is one means by which agency costs can be reduced. Auditors reduce the misreporting of financial information and thus represent a valuable

[36] In other words, our predictions do not rely on the choice of audit being made at the firm level, but only that some firms employ an auditor while others do not.

[37] Twelve countries comprising 4,096 observations are excluded when using a cut-off of 80%. We have also performed this test using cut-offs of 75%, 85%, 90%, or 95%. Note that none of our sample countries have audit rates of 100%.

form of monitoring used by firms to reduce agency costs with debt holders and stockholders (Jensen and Meckling 1976). External auditors also have the potential to reduce information asymmetries that exist between managers and firm stakeholders by allowing outsiders to verify the validity of financial information.

In this study, we examine the role of financial transparency (proxied for by the review of financial information by external auditors) in mitigating financing constraints for a large sample of private firms from 68 countries. Private firms are predominant in most countries, but there is limited prior research on the role of financial transparency in such firms. We find strong evidence that increased transparency does in fact reduce external financing constraints (both perceived constraints to financing and cost of financing). Furthermore, this negative relation increases in the presence of a controlling shareholder, especially in poor countries with weaker investor protection rights. Our results are robust to the inclusion of firm-level control variables, industry and country fixed effects, and tests that address the potential endogeneity related to the choice to have financial information reviewed by an external auditor.

We contribute to the economics and finance literature on financing constraints by documenting the role that firm-level financial transparency plays. At the macro level, there is a large body of literature which studies the impact of financial development on growth. For example, Rajan and Zingales (1998) argue that in the context of financing constraints, financial market imperfections have an impact on investment and growth. Given that institutional structures evolve slowly over time, it has been a challenge for researchers to isolate the exact mechanism through which financial development and financing contraints affect growth and investment. Researchers such as Rajan and Zingales (1998) have appealed to micro-level data to better understand these macro-phenomena. While these researchers have documented the link

between (macro-level) financing constraints (or conversely, in a macro-context, financial development) and growth, more primitively we need to understand the underlying factors that affect financing constraints. We argue based on economic theory that financial information transparency is one such mechanism through which firms can attempt to reduce financing constraints. As such, our paper provides a firm-level understanding of the forces that drive the phenomena that macro-economists are interested in.

Our study also adds to the extant research on the role of ownership. We find that the ability of financial transparency to reduce financing constraints is even greater in the presence of a controlling owner. In other words, financial transparency enhances the credibility of the incentive alignment signal and constrains the ability of controlling owners to consume private benefits of control. This contribution is important because it highlights the fact that market participants assess firms using multiple signals (in our case financial transparency and controlling ownership), rather than one single signal in isolation. Further, our cross-country analysis indicates that the role of transparency in mitigating the agency costs related to private benefits of control is more important in poor countries with weaker institutional environments. This finding contributes to the stream of international finance literature that analyzes cross-country variations in private benefits of control.

Finally and importantly, our study enhances our understanding of private firms. Private firms provide the main vehicle for economic growth in most countries. However, there is limited extant research on private firms in general (likely due to data availability problems) and almost no prior research related to financial transparency of such firms. We leave it for future research to examine other interesting consequences of financial transparency beyond financing constraints

in an international setting. Such alternative outcome variables could include investments, growth, profitability, etc.

References

Abdel-Khalik, A. R. 1993. "Why do private companies demand an audit? A case for organizational loss of control." *Journal of Accounting, Auditing and Finance* Vol. 8 No. 1: 31–52.

Ai, C., and E.C. Norton. 2003. "Interaction terms in logit and probit models." *Economics Letters* Vol. 80: 123-129.

Alti, A. 2003. "How Sensitive is Investment to Cash Flow When Financing is Frictionless?" *Journal of Finance* Vol. 58: 707-722.

Ball, R., S.P. Kothari, and A. Robin. 2000. "The effect of international institutional factors on properties of accounting earnings." *Journal of Accounting and Economics* Vol. 29 No. 1: 1-51.

Ball, R., and L. Shivakumar. 2005. "Earnings quality in UK private firms: comparative loss recognition timeliness." *Journal of Accounting and Economics* Vol. 39 No. 1: 83 – 128.

Barry, C., and S. Brown. 1985. "Differential information and security market equilibrium." *Journal of Financial and Quantitative Analysis* Vol. 20 No. 4:.407-422.

Beck, T., A. Demirguc-Kunt, and V. Maksimovic. 2008. "Financing Patterns around the World: Are Small Firms Different?" *Journal of Financial Economics* Vol. 89: 467-487.

Becker, C., DeFond, M., Jiambalvo, J., Subramanyam, K. R. 1998. "The Effects of Audit Quality on Earnings Management." *Auditing: A Journal of Practice and Theory* Vol. 15: 1-24.

Bens, D.A., and S.J. Monahan. 2004. "Disclosure quality and the excess value of diversification." *Journal of Accounting Research* 42 No. 4: 691-730.

Bertrand, M., and S. Mullainathan. 2001. "Do People Mean What They Say? Implications for Subjective Survey Data," *American Economic Review* Papers and Proceedings, 91 No. 2: 67-72.

Berzins, J., Ø. Bøhren, and P. Rydland. 2008. "Corporate finance and governance in firms with limited liability: Basic characteristics." Working paper, Norwegian School of Management.

Biddle, G., and G. Hilary. 2006. "Accounting Quality and Firm-level Capital Investment." *The Accounting Review* Vol. 81: 963-982.

Biddle, G., G. Hilary., and R.S. Verdi. 2009. "How does financial reporting quality improve investment efficiency?" Forthcoming, *Journal of Accounting and Economics*.

Boone, J.P., I.K. Khurana, and K.K. Raman. 2008. "Audit firm tenure and the equity premium." *Journal of Accounting, Auditing and Finance* Vol. 23 No. 1: 115-140.

Burgstahler, D.C., L. Hail, and C. Leuz. 2006. "The importance of reporting incentives: Earnings management in European private and public firms." *The Accounting Review* Vol. 81 No. 5: 983-1016.

Bushman R.M., and A.J. Smith. 2001. "Financial Accounting Information and Corporate Governance." *Journal of Accounting and Economics* Vol. 32: 237-333.

Bushman R.M., and A.J. Smith. 2003. Transparency, financial accounting information and corporate governance. *Federal Reserve Bank of New York's Economic Policy Review* Vol. 9 No. 1: 65-87.

Bushman R.M., A.J. Smith, and F. Zhang. 2007. "Investment-Cash Flow Sensitivities are Really Investment-Investment Sensitivities." Working paper, University of North Carolina, University of Chicago, and Yale University.

Carey, P., R. Simnett, and G. Tanewski. 2000. "Voluntary demand for internal and external auditing by family businesses." *Auditing: A Journal of Practice & Theory* Vol. 19: 37-51.

Carlin, W., M.E. Schaffer, and P. Seabright. 2007. "Where are the real bottlenecks? Evidence from 20,000 firms in 60 countries about the shadow costs of constraints to firm performance." Working paper, CEPR.

Cleary, S. 1999. "The Relationship between Firm Investment and Financial Status." *Journal of Finance* Vol. 54: 673-692.

Clementi, G.L. and H. A. Hopenhayn. 2006. "A Theory of Financing Constraints and Firm Dynamics**.**" *The Quarterly Journal of Economics* Vol. 121 No. 1: 229-265.

Coffee Jr., J.C. 2005. "A theory of corporate scandals: Why the USA and Europe differ." *Oxford Review of Economic Policy* Vol. 21 No 2: 198 – 211.
Craswell, A.T., J. R. Francis, and S. L. Taylor. 1995. "Auditor brand name reputations and industry specializations." *Journal of Accounting and Economics* Vol. 20 No. 3: 297-322.
Diamond, D.W., and R.E. Verrecchia. 1991. "Disclosure, liquidity, and the cost of capital." *Journal of Finance* Vol. 46 No. 4: 1325-1359.
Doidge, C., A. Karolyi, and R. Stulz. 2007. "Why Do Countries Matter So Much For Corporate Governance?" *Journal of Financial Economics* Vol. 86: 1-39.
D'Souza, J., J. Jacob, and K. Ramesh. 2000. "The use of accounting flexibility to reduce labor renegotiation costs and manage earnings." *Journal of Accounting and Economics* Vol. 30 No. 2: 187-208.
Dyck, A., and L. Zingales. 2004. "Private benefits of control: An international comparison." *Journal of Finance* Vol. 59: 537-600.
Easley, D., and M. O'Hara. 2004. "Information and the cost of capital." *Journal of Finance* Vol. 59 No. 4: 1553-1583.
Ellul, A., L. Guntay, and U. Lel. 2007. "External Governance and Debt Agency Costs of Family Firms." Working paper, Board of Governors of the Federal Reserve System.
Erickson, T., and T. Whited. 2000. "Measurement Error and the Relationship between Investment and Q." *Journal of Political Economy,* Vol. 108: 1027-1057.
Ettredge, M., D. Simon, D. Smith, and M. Stone. 1994. "Why do companies purchase timely quarterly reviews?" *Journal of Accounting and Economics* Vol. 18: 131-155.
Fama, E. F., and M.C. Jensen. 1983. "Separation of ownership and control." *Journal of Law and Economics* Vol. 26: 301-325.
Fan, J.P.H., and T.J. Wong. 2002. "Corporate ownership structure and the informativeness of accounting earnings in East Asia." *Journal of Accounting and Economics* Vol. 33: 401-425.
Fan, J.P.H., and T.J. Wong. 2005. "Do external auditors perform a corporate governance role in emerging markets? Evidence from East Asia." *Journal of Accounting Research* Vol. 43 No. 1: 35-72.
Fazzari, S., R.G. Hubbard and B. Petersen. 2000. "Investment-Cash Flow Sensitivities are Useful: A Comment on Kaplan and Zingales," *Quarterly Journal of Economics* Volume 115: 695-705.
Healy, P.M., and K.G. Palepu. 2001. "Information Asymmetry, Corporate Disclosure, and the Capital Markets: A Review of the Empirical Disclosure Literature." *Journal of Accounting and Economics* Vol. 31: 405-440.
Heckman, J.J. 1979. "Sample selection bias as a specification error." *Econometrica* Vol. 47 No. 1: 153-162.
Holmström, B. 1979. "Moral hazard and observability." *Bell Journal of Economics* Vol. 10: 74-91.
Hope, O.-K., and W.B. Thomas. 2008. "Managerial empire building and firm disclosure." *Journal of Accounting Research* Vol. 46 No. 3: 591-626.
Hubbard, G.R. 1998. "Capital-market imperfections and investment." *Journal of Economic Literature* Vol. XXXVI: 193-225.
Jensen, M.C., and W.H. Meckling. 1976. "Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure." *Journal of Financial Economics* Vol. 3: 305-360.
Jensen, M.C., and W.H. Meckling. 1992. "Specific and general knowledge, and organizational structure." In: L. Werin and H. Wijkander (Eds.), *Contract Economics.* Blackwell, Oxford: 251–274.
Kaplan, R., and L. Zingales. 1997. "Do Investment-Cash Flow Sensitivities Provide Useful Measures of Financing Constraints?" *Quarterly Journal of Economics* Vol. 112: 169-215.
Kaplan, R., and L. Zingales. 2000. "Investment-cash flow sensitivities are not valid measures of financing constraints." *Quarterly Journal of Economics* Vol. 115: 707-712
Khurana, I., R. Pereira, and X. Martin. 2006. "Firm growth and disclosure: An empirical analysis." *Journal of Financial and Quantitative Analysis* Vol. 41 No. 2: 357-380.
La Porta, R., F. Lopez-De-Silanes, A. Shleifer, and R. W. Vishney. 1998. "Law and finance." *Journal of Political Economy* 106 (6): 1113-1155.

La Porta, R., F. Lopez-de-Silanes, and A. Shleifer. 2008. "The Economic Consequences of Legal Origins." *Journal of Economic Literature* Vol. 46 No. 2: 285–332.

Lambert, R., C. Leuz., and R. Verrecchia. 2007. Accounting Information, Disclosure and the Cost of Capital. *Journal of Accounting Research* 45: 385-420.

Lang, M., K.V. Lins, and M. Maffett. 2009. "Transparency, Liquidity, and Valuation: International Evidence." Working paper, University of North Carolina and University of Utah.

Leuz, C., and R. Verrecchia. 2000. "The economic consequences of increased disclosure." *Journal of Accounting Research* Vol. 38: 91–124.

Levine, R. 1997. "Financial development and economic growth." *Journal of Economic Literature* Vol. 35: 688-726.

Levitt, A. 2000. Speech by the SEC Chairman at New York University Center for Law and Business: *Renewing the Covenant with Investors*.

Li, S. 2009. "Does Mandatory Adoption of International Accounting Standards Reduce the Cost of Equity Capital?" *The Accounting Review* (Forthcoming).

Lombardo, D., and M. Pagano. "Law and Equity Markets: A Simple Model." In *Corporate governance regimes: Convergence and diversity*, edited by L. Renneboog, J. McCahery, P. Moerland, and T. Raaijmakers, Oxford University Press: 343-362, 2002.

Love, I. 2003. "Financial development and financing constraints: International evidence from the structural investment model." *Review of Financial Studies* Vol. 16 No. 3: 765-791.

Mansi, S. A., W. F. Maxwell, and D. P. Miller. 2004. "Does Auditor Quality and Tenure Matter to Investors? Evidence from the Bond Market." *Journal of Accounting Research* Vol. 42 No. 4: 755-793.

McConnell, J., and H. Servaes. 1990. "Additional evidence on equity ownership and corporate value." *Journal of Financial Economics* Vol. 27 No. 1: 595-612.

Modigliani, F., and M. H. Miller. 1958. "The Cost of Capital. Corporation Finance, and the Theory of Investment," *American Economic Review* Vol. 48 No. 3: 261-97.

Morck, R., A. Shleifer, and R.W. Vishny. 1988. "Management ownership and market valuation: an empirical analysis." *Journal of Financial Economics* Vol. 20: 293–315.

Nagar, V., K. Petroni, and D. Wolfenzon. 2005. "Governance problems in close corporations." Working paper, University of Michigan, Michigan State University, and New York University.

Porter, M. 1992. "Capital choices: Changing the way America invests in industry." A research report presented to the Council on Competitiveness and co-sponsored by the Harvard Business School."

Rajan, R., and L. Zingales. 1998. "Financial Dependence and Growth". *The American Economic Review* Vol. 88: 559-586.

Rosenbaum, P.R., and D.R. Rubin. 1983. "The central role of the propensity score in observational studies for causal effects." *Biometrika* Vol. 70 No. 1: 41-55.

Schiantarelli, F. 1996. "Financial constraints and investment: Methodological issues and international evidence." *Oxford Review of Economic Policy* Vol. 12 No. 2: 70-89.

Shleifer, A., and R.W. Vishny., 1997. "A survey of corporate governance." *Journal of Finance* Vol. 52: 737–783.

Stiglitz, J. 1975. "Incentives, risk and information: Notes towards a theory of hierarchy." *Bell Journal of Economics* Vol. 6 No. 2: 552-579.

Whited, T.M., and G. Wu. 2004. "Financial Constraints Risk." *Review of Financial Studies* Vol. 19 No. 2: 531-559.

APPENDIX
Definitions of Main Variables

Variable	Definition
FinCon	Response to a question of whether "Access to Financing" is a problem for the operation and growth of the firm's business. Takes values from 0 (no obstacle) to 4 (very severe obstacle)
FinCost	Response to a question of whether "Cost of Financing" is a problem for the operation and growth of the firm's business. Takes values from 0 (no obstacle) to 4 (very severe obstacle)
Auditor	Indicator variable indicating whether annual financial statements reviewed by external auditor
Control	Indicator variable indicating whether the largest shareholder owns more than 50% of the shares
Employ	Number of employees
Age	Age of the firm in years
Invest	Sum of responses to questions regarding whether the firm has (1) developed a major new product line or (2) opened a new plant in the last three years (i.e., *Invest* takes values of 0,1, or 2)
Corrupt	Response to question of whether corruption is a problem for the operation and growth of the business. Takes values from 0 (no obstacle) to 4 (very severe obstacle)
GNI	Gross National Income per Capita (Atlas method)
Export	An indicator variable that takes the value one if the firm is an exporter (zero otherwise)
Union	The percent of the workforce that is unionized
Capital	An indicator variable that takes the value one if the firm is headquartered in the country's capital city (zero otherwise)
BankLoan	The contribution of bank loan financing to working capital investments
MultiSales	The percentage of sales to multinationals

All variables are sourced from the World Bank Enterprise Survey.

Table 1
Sample selection.

All firm-years in WBES database (2002 – 2005 time period)	49,584
Less publicly traded companies	3,155
Non-publicly traded (i.e., private) companies	46,429
Missing data on *FinCon*	4,243
Missing data on *Auditor*	2,356
Missing data on main control variables for Table 4	8,959
Sample size for main tests	30,871
Missing data on instruments for Heckman model (Table 6)	18,439
Sample size for Heckman model test	12,432

Table 2
Descriptive statistics and sample composition.

Panel A: Descriptive statistics for aggregate sample

	25%	50%	75%	Mean	Std. Dev.
FinCon	0	1	3	1.46	1.36
FinCost	0	2	3	1.68	1.37
Auditor	0	1	1	0.50	0.50
Control	0	1	1	0.69	0.46
Employ	8	23	77	129.18	451.83
Age	11	15	24	20.67	18.49
Invest	0	0	1	0.42	0.56
Corrupt	0	1	3	1.48	1.44
GNI	960	2,510	4,910	5,075	7,469
Export	0	0	1	0.20	0.40
Union	0	0	100	21.27	37.0
Capital	0	0	1	0.29	0.45
BankLoan	0	0	100	15.77	27.74
MultiSales	0	0	100	5.70	17.59

The number of observations equals 30,871 for *FinCon* through *GNI*, 12,432 for *Export* and *Union*, and 27,217 for *Capital*, *BankLoan*, and *MultiSales*. Variables are defined in the appendix

Table 2 (continued)
Descriptive statistics and sample composition.

Panel B: Number of observations by country

Country	Obs.	Country	Obs.
Albania	301	Lithuania	501
Algeria	402	Madagascar	243
Armenia	457	Malawi	136
Azerbaijan	393	Mali	68
Bangladesh	110	Mauritius	151
Belarus	495	Moldova	508
Benin	170	Montenegro	47
Bosnia & Herzegovina	237	Nicaragua	417
Brazil	1,462	Oman	273
Bulgaria	445	Pakistan	112
Cambodia	332	Philippines	430
Chile	791	Poland	1,317
Croatia	260	Portugal	436
Czech Republic	508	Romania	733
Ecuador	163	Russia	873
Egypt	690	Senegal	221
El Salvador	434	Serbia	261
Estonia	321	Serbia & Montenegro	385
Ethiopia	19	Slovakia	270
Macedonia	259	Slovenia	344
Georgia	319	South Africa	533
Germany	1,076	South Korea	539
Greece	485	Spain	568
Guatemala	432	Sri Lanka	342
Guyana	109	Syria	463
Honduras	407	Tajikistan	349
Hungary	741	Tanzania	217
Indonesia	579	Thailand	549
Ireland	463	Turkey	2,062
Kazakhstan	660	Uganda	244
Kenya	192	Ukraine	898
Kosovo	28	Uzbekistan	530
Kyrgyzstan	399	Vietnam	1,234
Latvia	305	Zambia	175
		Total	30,871

Table 2 (continued)
Descriptive statistics and sample composition.

Panel C: Number of observations by industry

Industry	Obs.	Industry	Obs.
Retail	4,826	Advertising	816
Metals	3,320	Paper	689
Garments	2,667	Real	666
Food	2,521	Other	598
Construction	2,237	Agro-industry	543
Wood	1,880	Leather	451
Textiles	1,582	IT	431
Non-metallic	1,464	Electronics	284
Hotels	1,274	Auto	200
Beverages	1,234	Mining	186
Chemicals	1,138	Telecommunications	164
Transport	1,070	Other	631
		Total	30,871

Table 3
Pearson correlations among main variables.

	FinCon	*FinCost*	*Auditor*	*Control*	*Employ*	*Age*	*Invest*
FinCon	1.00						
FinCost	0.71	1.00					
	0.00						
Auditor	–0.12	–0.08	1.00				
	0.00	*0.00*					
Control	–0.04	–0.04	–0.08	1.00			
	0.00	*0.00*	*0.00*				
Employ	–0.05	–0.03	0.15	0.00	1.00		
	0.00	*0.00*	*0.00*	*0.65*			
Age	–0.03	0.00	0.14	–0.04	0.15	1.00	
	0.00	*0.39*	*0.00*	*0.00*	*0.00*		
Invest	0.03	0.06	0.05	–0.02	0.10	0.02	1.00
	0.00	*0.00*	*0.00*	*0.00*	*0.00*	*0.00*	
Corrupt	0.33	0.38	–0.05	–0.04	–0.01	0.00	0.11
	0.00	*0.00*	*0.00*	*0.00*	*0.11*	*0.88*	*0.00*

Variables are defined in the appendix. The numbers in italics are two-sided p-values.

Table 4
Effect of financial transparency and controlling ownership on financing constraints.

$$FinCon_{i,t} = \beta_0 + \beta_1 Auditor_{i,t} + \beta_2 Control_{i,t} + \beta_3 Auditor_{i,t}*Control_{i,t} + \beta_n ControlVariables_{n,i,t} + \varepsilon_{i,t}$$

Variable	Pred.	I.		II.		III.		IV.	
Auditor (H1)	–	–0.185	***	–0.135	***	–0.158	***	–0.111	***
		–6.97		*–3.37*		*–6.84*		*–3.01*	
Control	?	–0.051	**	–0.012		–0.043	**	–0.007	
		–2.3		*–0.34*		*–2.07*		*–0.20*	
*Auditor*Control* (H2)	–			–0.072	**			–0.068	**
				–1.96				*–1.99*	
Employ	–	–0.001	***	–0.001	***	–0.001	***	–0.001	***
		–4.02		*–3.99*		*–3.85*		*–3.82*	
$Employ^2$	+	0.001	***	0.001	***	0.001	***	0.001	***
		4.74		*4.71*		*4.50*		*4.47*	
Age	–	–0.002	***	–0.002	***	–0.002	***	–0.002	***
		–3.88		*–3.85*		*–3.64*		*–3.61*	
Invest	+	0.027		*0.027*		*0.031*	**	*0.031*	**
		1.49		*1.52*		*1.97*		*2.01*	
Corrupt	+	0.25	***	0.25	***	0.222	***	0.222	***
		25.99		*26.04*		*21.29*		*21.34*	
Intercept		1.062	***	1.034	***				
		14.42		*13.22*					
Country fixed effects		Yes		Yes		Yes		Yes	
Industry fixed effects		Yes		Yes		Yes		Yes	
Year fixed effects		Yes		Yes		Yes		Yes	
Adj. R^2 (pseudo R^2 for probit)		0.197		0.197		0.074		0.074	
N		30,781		30,781		30,781		30,781	

Variables are defined in the appendix. Columns I and II are OLS regressions using the full sample. Columns III and IV are identical to Column I and II respectively, but ordered probit is used instead of OLS. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively, using two-tailed tests (t-statistics for OLS and z-statistics for ordered probit in italics). Huber/White robust standard errors (not reported) are adjusted for clustering at the country level.

Table 5
Effect of financial transparency and controlling ownership on financing constraints based on country-level income.

$$FinCon_{i,t} = \beta_0 + \beta_1 Auditor_{i,t} + \beta_2 Control_{i,t} + \beta_3 Auditor_{i,t}*Control_{i,t} + \beta_n ControlVariables_{n,i,t} + \varepsilon_{i,t}$$

Variable	Pred.	Below Median	Above Median
Auditor (H1)	–	–0.090 *	–0.162 **
		–1.73	*–2.65*
Control	?	–0.009	*–0.011*
		–0.18	*–0.20*
*Auditor*Control* (H2)	–	–0.105 **	*–0.050*
		–2.11	*–0.89*
Employ	–	–0.001 **	–0.001 ***
		–2.36	*–4.53*
$Employ^2$	+	0.001 ***	0.001 **
		3.12	*2.59*
Age	–	–0.001 **	–0.003 ***
		–2.11	*–4.27*
Invest	+	–0.013	0.065 ***
		–0.50	*3.55*
Corrupt	+	0.226 ***	0.262 ***
		18.00	*16.92*
Intercept		1.021 ***	0.485 ***
		9.82	*3.58*
Country fixed effects		Yes	Yes
Industry fixed effects		Yes	Yes
Year fixed effects		Yes	Yes
Adj. R^2		0.159	0.241
N		15,670	15,201

Variables are defined in the appendix. Column I (II) presents OLS regression results for below (above) median income countries. Income is Gross National Income per capita. Variables are defined in the appendix. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively, using two-tailed tests (t-statistics for OLS). Huber/White robust standard errors (not reported) are adjusted for clustering at the country level.

Table 6
Effect of financial transparency and controlling ownership on financing constraints, controlling for self-selection bias.

Panel A: Two-stage Heckman model

First stage:

$$Prob(Auditor_{i,t} = 1) = \alpha_0 + \alpha_1 Export_{i,t} + \alpha_2 Union_{i,t} + \alpha_3 Employ_{i,t} + \alpha_3 Age_{i,t} + \alpha_n ControlVariables_{n,i,t} + \nu_{i,t}$$

Second stage:

$$FinCon_{i,t} = \beta_0 + \beta_1 Auditor_{i,t} + \beta_2 Control_{i,t} + \beta_3 Auditor_{i,t} * Control_{i,t} + \beta_n ControlVariables_{n,i,t} + \varepsilon_{i,t}$$

First stage	Pred.			Second stage	Pred.		
Export	+	0.606	***	*Auditor* (H1)	–	–0.131	**
		18.54				*–2.13*	
Union	+	0.004	***	*Control*	?	0.054	
		8.99				*0.94*	
Employ	+	0.001	**	*Auditor*Control* (H2)	–	–0.140	**
		11.87				*–2.24*	
Age	+	0.002	***	*Employ*	–	–0.001	**
		3.09				*–2.35*	
Control	–	–0.068	**	$Employ^2$	+	0.001	***
		–2.42				*3.07*	
Intercept		6.404	***	*Age*	–	–0.003	**
		32.66				*–2.62*	
				Invest	+	0.065	**
						2.66	
				Corrupt	+	0.230	***
						17.84	
				Mills ratio (*lambda*)		0.081	
						0.74	
				Intercept		2.996	***
						35.07	
Pseudo R^2		0.297		Adjusted R^2		0.207	
Country fixed effects		Yes		Country fixed effects		Yes	
Industry fixed effects		Yes		Industry fixed effects		Yes	
Year fixed effects		Yes		Year fixed effects		Yes	
N		12,432		N		12,432	

Variables are defined in the appendix. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively, using two-tailed tests (z-statistics for first stage and t-statistics for second stage are in italics). For the second stage, Huber/White robust standard errors (not reported) are adjusted for clustering at the country level.

Table 6 (Continued)
Effect of financial transparency and controlling ownership on financing constraints, controlling for self-selection bias.

Panel B: Propensity score matching

$$FinCon_{i,t} = \beta_0 + \beta_1 Auditor_{i,t} + \beta_2 Control_{i,t} + \beta_3 Auditor_{i,t}*Control_{i,t} + \beta_n ControlVariables_{n,i,t} + \varepsilon_{i,t}$$

Variable	Pred.	I.	
Auditor (H1)	–	–0.115	**
		–2.53	
Control	?	–0.026	
		–0.86	
*Auditor*Control* (H2)	–	*–0.080*	**
		–2.04	
Employ	–	–0.001	***
		–4.58	
Employ^2	+	0.001	***
		5.13	
Age	–	–0.003	***
		–2.73	
Invest	+	0.028	
		1.27	
Corrupt	+	0.252	***
		21.37	
Intercept		1.074	***
		13.95	
Country fixed effects		Yes	
Industry fixed effects		Yes	
Year fixed effects		Yes	
Adj. R^2		0.186	
N		15,114	

Variables are defined in the appendix. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively, using two-tailed tests (t-statistics in italics). Huber/White robust standard errors (not reported) are adjusted for clustering at the country level.

Table 7
Additional sensitivity tests.

$$FinCon\ (or\ FinCost)_{i,t} = \beta_0 + \beta_1 Auditor_{i,t} + \beta_2 Control_{i,t} + \beta_3 Auditor_{i,t} * Control_{i,t} + \beta_n ControlVariables_{n,i,t} + \varepsilon_{i,t}$$

Variable	Pred.	I.		II.		III.		IV.	
Auditor (H1)	–	–0.024		–0.136	***	–0.130	***	–0.132	*
		–0.78		*–3.90*		*–3.06*		*–2.00*	
Control	?	0.001		–0.018		–0.001		0.087	
		0.04		*–0.56*		*–0.02*		*1.57*	
*Auditor*Control* (H2)	–	*–0.107*	***	–0.07	**	*–0.072*	*	*–0.153*	**
		–3.33		*–2.01*		*–1.81*		*–2.44*	
Employ	–	–0.001	*	–0.001	***	–0.001	***	–0.001	*
		–1.71		*–4.55*		*–3.41*		*–1.76*	
Employ^2	+	0.001	**	0.001	***	0.001	***	0.001	**
		1.98		*4.93*		*4.09*		*2.44*	
Age	–	–0.001		–0.002	***	–0.002	***	–0.003	**
		–1.61		*–4.13*		*–3.97*		*–2.52*	
Invest	+	0.031		*0.018*		0.031	*	0.075	***
		1.65		*1.08*		*1.70*		*2.92*	
Corrupt	+	0.272	***	0.3	***	0.25	***	0.222	***
		22.29		*26.74*		*25.38*		*16.75*	
Capital	–					–0.024		0.003	
						–0.78		*0.01*	
BankLoan	+					*0.003*	***	*0.004*	***
						6.63		*5.77*	
MultiSales	–					–0.001		0.001	
						–1.05		*0.08*	
Inverse Mills Ratio	?							0.021	
								0.20	
Intercept		1.291	***	0.915	***	1.02	***	1.913	***
		17.95		*11.65*		*11.85*		*13.16*	
Country fixed effects		Yes		Yes		Yes		Yes	
Industry fixed effects		Yes		Yes		Yes		Yes	
Year fixed effects		Yes		Yes		Yes		Yes	
Adj. R^2		0.264		0.262		0.208		0.205	
N		30,913		30,091		27,217		10,063	

Variables are defined in the appendix. Column I presents the OLS results using an alternative measure of financing constraints (Financing Cost). Columns II presents the financing constraints OLS results with outlier removals. Column III is identical to Column II but includes additional control variables. Column IV is identical to Column III but includes correction for self-selection. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively, using two-tailed tests (t-statistics are in italics). Huber/White robust standard errors (not reported) are adjusted for clustering at the country level.

Table 8
Effect of financial transparency and controlling ownership on financing constraints for firms with multiple owners versus single owners.

$$FinCon_{i,t} = \beta_0 + \beta_1 Auditor_{i,t} + \beta_2 Control_{i,t} + \beta_3 Auditor_{i,t}*Control_{i,t} + \beta_n ControlVariables_{n,i,t} + \varepsilon_{i,t}$$

		Multiple Owners		Single Owner	
Variable	Pred.	I.	II.	III	IV.
Auditor (H1)	–	–0.135 ***	–0.146 **	–0.209 ***	–0.265 ***
		–3.61	*–2.58*	*–6.55*	*–4.03*
Control	?	0.029	0.104 **		
		0.67	*2.34*		
*Auditor*Control* (H2)	–	*–0.08* *	*–0.138* **		
		–1.79	*–2.41*		
Employ	–	–0.001 ***	–0.001 **	–0.001 ***	0.001
		–3.84	*–2.39*	*–3.25*	*1.35*
Employ^2	+	–0.001 ***	0.001 ***	0.001 ***	0.001
		–4.59	*3.08*	*2.81*	*0.91*
Age	–	–0.003 ***	–0.003 ***	–0.002 **	–0.002
		–4.07	*–3.12*	*–2.01*	*1.43*
Invest	+	0.026	0.073 ***	0.021	0.037
		1.21	*2.75*	*0.8*	*0.91*
Corrupt	+	0.241 ***	0.228 ***	0.259 ***	0.236 ***
		25.17	*17.50*	*19.95*	*13.20*
Inverse Mills Ratio	?		0.063		0.203 *
			0.40		*1.89*
Intercept		1.012 ***	3.315 ***	0.986 ***	0.343 ***
		12.64	*34.11*	*10.18*	*3.90*
Country fixed effects		Yes	Yes	Yes	Yes
Industry fixed effects		Yes	Yes	Yes	Yes
Year fixed effects		Yes	Yes	Yes	Yes
Adj. R^2		0.208	0.198	0.189	0.214
N		17,002	8,121	13,869	4311

Variables are defined in the appendix. Columns I presents the OLS results with less than 100% ownership concentration. Column II is identical to Column I but includes correction for self-selection. Column III presents the OLS results for a sample with 100% ownership concentration. Column IV is identical to Column III but includes correction for self-selection. *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively, using two-tailed tests (t-statistics are in italics). Huber/White robust standard errors (not reported) are adjusted for clustering at the country level.