Bigger agency costs in smaller firms? The role of size and reporting requirements in agency conflicts

Abstract

Our paper investigates vertical agency conflicts in privately held firms and focuses on the roles of firm size and corporate reporting requirements. We demonstrate that vertical agency conflicts are more severe in smaller privately held firms because shareholders have a lower monitoring capacity and a reduced access to labour markets to hire professional managers. Additionally, vertical agency conflicts in smaller firms are amplified in countries characterized by relatively weaker reporting requirements because shareholders have less information available to assess managers' actions. We suggest for the first time that firm size and strength of auditing and reporting requirements are essential pieces of understanding agency conflicts' magnitude in privately held firms. Our analysis offers a more comprehensive understanding of the factors that explain the magnitude of agency costs in privately held firms. Our analysis has important implications for public policy, as disclosure requirements are a major issue for many countries.

Keywords: agency conflicts, firm size, firm performance, reporting requirements

Introduction

Vertical agency conflicts arise when there is a separation between ownership and control within a firm, with the risk that managers consume firm's resources to the detriment of the owners' interests. These agency conflicts lead to agency costs which harm firm performance (Jensen and Meckling, 1976). The governance literature has intensively explored vertical agency conflicts in large and publicly firms. However, the case of vertical agency conflicts in privately held firms is neglected, except for Ang et al (2000) and Gogineni et al. (2022). In particular, smaller firms, like small and medium-sized enterprises (SMEs), are rarely

investigated. Indeed, the governance literature implicitly assumes that privately held firms are owner-managed and therefore not affected by vertical agency conflicts. However, a recent study by Gogineni et al (2022) shows that a vast fraction of privately held firms are not manager-owned and that vertical agency conflicts exist in privately held firms.

Our research is motivated by the need to understand agency conflicts faced by smaller privately held firms. These firms represent a significant proportion of the economic activity in Europe. More specifically, SMEs are the "backbone of Europe's economy, representing 99% of all businesses in the European Union" (EU), represent two out of three job creations, and account for about half the value added (European Commission, 2020). As a result, agency conflicts (governance difficulties) in privately held firms constitute an important economic problem that have been relatively overlooked so far (Gogineni et al, 2022). Our work also answers the call of Kalemli-Ozcan et al (2022) to dedicate more attention to the governance of privately held firms, and particularly to the availability of financial and accounting information that help shareholders assess managerial decisions.

In this study, our goal is to push the literature on agency conflicts in privately held firms forward by examining internal and external factors that explain the magnitude of agency costs. We first examine the existence of vertical agency conflicts in privately held firms and their influence on firm performance. Privately held firms are often considered "non-complex" because "specific information relevant to decisions is concentrated in one or few agents" in contrast to large publicly listed companies (Fama and Jensen, 1983). Indeed, privately held firms are often founder-managed firms (a single owner-manager), and therefore presumably do not face agency problems (Ang et al, 2000). On the other hand, in order to be viable, these firms are often forced to evolve by separating ownership from control and hiring a professional manager (non-owner manager) at some point, leading to a transfer of decision-making power to the professional manager. This delegation of power exposes the professional manager to risks

for which s/he is not fully compensated, leading to free-riding or shirking (Ang et al, 2000; Schulze et al, 2001) to the detriment of the company's performance and the owners' wealth. We confirm previous results by highlighting a negative relationship between separation of ownership and control and firm performance in privately held firms.

To reduce the impact of these vertical agency conflicts, various governance mechanisms have been identified in the literature, such as the independence of the board of directors, access to a competitive labour market, or the disclosure of accounting and financial information. (e.g. Jensen and Meckling, 1976; Fama and Jensen, 1983; Ang et al, 2000; Schulze et al, 2001; Hope et al, 2012). However, these governance mechanisms have often little impact on smaller privately held firms. Specifically, smaller privately held firms have less access to a competitive labour market compared to large firms, risking to hire less talented, more opportunistic and less efficient managers, due to lower pay but also limited promotion opportunities (e.g. Kaplan and Sorensen, 2021). Similarly, the ability of the owner to monitor the manager in non-owner managed firms is also a mechanism to reduce vertical agency conflicts (Schulze et al, 2001). However, in smaller privately held firms, the owner often lacks the monitoring capacity and financial knowledge to effectively monitor the manager, creating an information asymmetry that may lead to higher agency costs than in larger firms (Ang et al, 2000). The second dimension of our work is thus to view firm size as a factor that explains the magnitude of agency costs. Concretely, we expect that agency costs are stronger in smaller privately held firms than in larger privately held firms.

Third, we contextualize our work in an international setting to gain insights on the role of institutional factors on agency conflicts. Specifically, we investigate whether the strictness of financial disclosure reduces agency costs. The importance of financial statement disclosure as a means for owners to control the actions of managers and reduce information asymmetry has been highlighted in the literature (Schulze et al, 2001; Hermalin and Weisbach, 2012).

However, this mechanism is highly heterogenous for privately held firms, as these firms are not subject to the discipline imposed by financial markets and the constraints of financial disclosure, unlike large firms (Burgstahler et al, 2006). For privately held firms, the strictness of financial disclosure is determined by the country in which the firm is located. Financial disclosure tends to be softer for smaller privately held firms than for large privately held firms. Therefore, we suggest that agency costs are more reduced for smaller firms than for larger firms in countries that have relatively strict financial reporting requirements. Indeed, stricter reporting rules facilitate the assessment of managers' decisions by shareholders.

Our empirical results are based on a large sample of European privately held firms. We first confirm the existence of agency conflicts in privately held firms and corroborate the findings of Gogineni et al. (2022). We further contribute to the corporate governance literature by documenting for the first time that firm size is an essential piece of understanding of the magnitude of agency conflicts in privately held firms, since we observe that agency costs are stronger in smaller firms than in larger firms. Third, with respect to the institutional context, our results show that agency costs are reduced in strict reporting environments. This effect is even more pronounced for smaller privately held firms than for larger privately held firms.

Our results have important implications for public policy, as disclosure requirements are a major issue for many countries. Corporate disclosure requirements for smaller privately held firms are less stringent than for large firms. However, our study shows that agency costs are higher for smaller privately held firms operating in weak disclosure environments. The strictness of reporting requirements for smaller privately held firms should be a matter for public policy attention to protect the interests of shareholders.

In what follows, we review the literature and develop our hypotheses. We present the data and explain the variables employed to test our hypotheses. We discuss our main results, and conclude by examining the implications of our findings.

Literature Review and hypothesis development

Based on the theoretical model developed by Jensen and Meckling (1976), vertical agency conflicts arise when the principal (the owner) entrusts some decision-making power to an agent (the manager). Indeed, transfer of power creates asymmetries of information between the manager and the owner, favouring the manager's opportunism to the detriment of the company's performance and the owners' wealth. This delegation of power exposes the owner of free-riding or shirking. In this section, we examine the influence of vertical agency conflicts on firm performance in privately held firms.

Vertical agency conflicts and firm performance

Agency theory (Jensen and Meckling, 1976) suggests that the principal source of agency costs is the separation between ownership and control. Agency costs disappear (zero agency cost assumption) when the firm is managed by a single owner (a single owner-manager) (Fama and Jensen, 1983; Schulze et al, 2001). Ang et al. (2000) point out that the theoretical model of Jensen and Meckling (1976) is closer to the specificities of privately held firms than publicly listed firms. Indeed, due to the restrictions imposed by exchange regulations (governance structure, minimum number of shareholders…), no listed company can be fully owned by the manager (Ang et al, 2000).. In contrast, privately held firms are often managed by their founder who holds all the shares, thus meeting the zero vertical agency cost assumption with the presence of a founder-manager (a single owner-manager).

On the other hand, the sustainability of privately held firms may be threatened by the lack of professionalism of the founders, leading to a transition from owner-manager to professional manager (non-owner manager) (Daily and Dalton, 1993). The owner-manager will

therefore transfer his/her decision-making power to the non-owner manager, resulting in an agency relationship between the two parties. This delegation of power therefore exposes the non-owner manager to risks for which s/he may not be fully compensated, leading to a search for additional compensation, taking the form of "preference for on-the-job perks, free-riding or shirking, making self-interested and entrenched decisions" (Ang et al, 2000; Schulze et al, 2001). This will therefore create information asymmetries allowing the manager to engage in actions that are detrimental to firm performance (Schulze et al, 2001). This situation leads to a weak protection of the owners against the opportunistic actions of the manager and ultimately to an increase in agency costs. Consistent with these arguments, Ang et al. (2000) and Gogineni et al. (2022) show empirically that agency costs are higher in non-owner managed privately held firms (vertical agency conflicts) relative to owner-managed privately held firms. In addition, Danielson and Scott's (2007) study highlights the benefits of implementing monitoring systems to limit agency costs in smaller firms.

Furthermore, privately held firms tend to have highly concentrated leadership and decision-making, often in one person (the CEO), in contrast to publicly listed companies where decision-making is more diffuse, limiting the power of a single individual (Fama and Jensen, 1983). Thus, the manager's decision-making power is all the more important in privately held firms. A non-owner managed privately held firm therefore faces higher agency costs than an owner-managed firm.

Our baseline hypothesis can thus be stated as follows:

H0: There is negative relationship between the separation of ownership and control and firm performance in privately held firms.

Vertical agency conflicts, moderating role of firm size, and firm performance

The literature highlights different governance mechanisms, both internal and external to the firm, to reduce vertical agency conflicts in large firms (e.g. Jensen and Meckling, 1976; Fama and Jensen, 1983; Ang et al, 2000). For example, the presence of internal governance mechanisms such as the board of directors helps to control the actions of the manager (Hope et al, 2012). The availability of financial information on the performance of the firm to the public imposed on large firms also helps reduce agency costs (Schulze et al, 2001). Indeed, the manager's decision making will be adjusted according to his/her perception of the costs and benefits of opportunistic behaviour (e.g Petrou and Procopiou, 2016)., These governance mechanisms limit the discretionary power of the manager. Smaller privately held firms are not subject to financial reporting requirements and are less likely to have a board of directors early on, unlike larger privately held firms. We therefore assume that the complexity of governance mechanisms will gradually increase with firm size, due to the potential of the firm in terms of its internal resources but also in terms of visibility.

Previous research shows that managers who are not monitored enough are more likely to manipulate results or make sub-optimal investment decisions (e.g. Biddle et Hillary, 2006; Hope et al, 2012), particularly by preferring a short-term view to increase their personal gain (Martin et al, 2016). With regard to the management-ownership structure of smaller privately held firms, owner monitoring is an important mechanism by which agency cost can be reduced. Smaller privately held firms are often closely held and therefore their capital providers have insider access to corporate information and take a more active role in management (Van Tendeloo and Vanstraelen, 2008; Chen et al, 2011).

But it is also crucial to consider the monitoring capacity and financial skills of the owners. Brinckmann et al (2011) highlight the importance of financial management skills for founders of new firms to improve their growth. More specifically, in non-owner managed firms, the manager is in a power position by possessing important information that does not ordinarily

flow through the firm's communication channels, to the detriment of the owners' interests (e.g. Graham, 2022). Thus, the monitoring capacity of the owners and their financial knowledge can reduce the discretionary power of the manager as well as information asymmetries. Furthermore, owners of smaller privately held firms may lack time to monitor managers' behaviour and not have sufficient financial expertise to conduct an audit, partly due to a lack of understanding of financial statements (Ang et al, 2000). This failure leads to less effective owner monitoring, resulting in information asymmetries and ultimately higher agency costs in smaller privately held firms than in large firms. In addition, smaller privately held firms are less likely to have board of directors early on, unlike larger firms.

Jensen and Meckling (1976) also highlight several external governance mechanisms that reduce the agency costs of large firms. Among these mechanisms, the competitiveness of the labour market for managers is also highlighted. Indeed, large companies have access to a competitive labour market, attracting highly qualified profiles. A competitive labour market reduces the cost to companies of recruiting talented candidates and reduces the risk of adverse selection. Indeed, the terms of the employment contract influence the profiles of the individuals applying. For example, more attractive employment conditions with promotion opportunities and higher pay attract more able profiles (Schulze et al, 2001). The risk of individuals withholding information crucial to the assessment of their application from the employer (adverse selection) is also reduced in a competitive labour market. Multiple applications (strong competition) reduce this risk (Schulze et al, 2001).

Smaller privately held firms have limited access to this labour market compared to large firms. Aldrich and Auster (1986) highlight that "the liabilities of smallness include problems of raising capital (…) and competing for labour with larger organizations". Smaller privately held firms therefore face a lack of reputation and financial resources to fully access an efficient labour market, implying different risks in relation to their governance and, by extension, for the

efficiency of management. Firstly, smaller privately held firms therefore run the risk of hiring a lower quality manager when moving to a non-owner managed firm. These firms suffer from a lack of visibility and less attractive employment contracts often leading them to be managed by less talented CEOs compared to larger companies (Adams et al., 2018; Kaplan and Sorensen, 2021), the qualities and reputation of the top management being taken into consideration by investors at the time of IPO (Certo et al., 2009). Secondly, a less competitive labour market entails the risk of hiring an opportunistic manager due to a less efficient labour market that does not protect against adverse selection (Williamson, 1985). Third, lower pay and limited promotion prospects do not encourage managers to perform effectively, and may even lead them to adopt opportunistic behaviour (Schulze et al, 2001).

We therefore suggest that vertical agency conflicts and associated costs are stronger in smaller privately held firms than in large firms because firm size reduces exposure to "pre-contractual agency threats from hidden information" and "post-contractual agency threats from hidden actions" (Schulze et al, 2001). This leads to our second hypothesis:

H1: The negative relationship between separation of ownership and control and firm performance is stronger in smaller firms.

Vertical agency conflicts, moderating role of strength of auditing and reporting requirements, and firm performance

Prior studies have highlighted the importance of firm disclosure as an external discipline mechanism to prevent the risk of expropriation by managers of owners' wealth (Stiglitz and Weiss, 1981; Kanodia and Lee, 1998). More specifically, the importance of accounting disclosure as a governance mechanism has been documented in the literature (e.g. Kaplan and Stromberg, 2003). Accounting disclosure can be used by owners to control the actions of managers (Fama and Jensen, 1983) and reduce information asymmetries. When a high level of

transparency is required for financial reporting, owners have more information about the firm's operations, allowing them to monitor the manager's behaviour more effectively. In this context, the manager's actions are more visible, thus reducing agency costs (Stiglitz and Weiss, 1981; Obeng et al, 2021).

However, this mechanism would be limited in small privately held firms as these firms free from the discipline imposed by financial markets on corporate control (Schulze et al, 2001) and financial disclosure constraints, in contrast with large firms. Smaller privately held firms typically have a weaker information disclosure environment (Burgstahler et al, 2006) and less stringent accounting and financial requirements (accounting relief measures) compared to large publicly listed companies. For example, at the European Union level, a super-simplified regime for micro-enterprises was introduced by the Accounting Directive of 2013 (2013/34/EU), allowing these enterprises to be exempted from the general obligation to publish annual accounts. These firms therefore have less obligation and incentive to report their results than larger companies, as financial and accounting information plays a less important role in reporting the performance of these firms. (Chen et al, 2011). Parum (2005) highlights that the annual reports of Danish SMEs do not give a clear picture of the company and its strategy, with room for improvement especially for financial goals.

Moreover, previous studies have shown that smaller privately held firms have lower earnings quality than large companies (Ball and Shivakumar, 2005; Burgstahler et al, 2006; Chen et al, 2011). Ball and Shivakumar (2005) point out that smaller privately held firms' financial statements are not as widely distributed to the public and are more likely to be influenced by taxation, dividend, and other objectives.

We suggest that a weak disclosure environment and lower quality of financial and accounting information leads to higher agency costs for smaller privately held non-owner managed firms than for smaller privately held owner-managed firms. Strong auditing and

reporting requirements improve the quality of financial and accounting information and reduce the information asymmetries between owners and managers, ultimately reducing agency costs (improving firm performance), but do so in a stronger manner for smaller firms than for larger firms.

This leads to our third hypothesis:

H2: The moderating effect of firm size on the relationship between separation of ownership and control and firm performance is stronger in weaker auditing and reporting requirements countries.

Methodology

Sample description and data sources

We use the Amadeus database to gather financial information at the firm level. Amadeus is a commercial database distributed by Bureau Van Dijk that provides access to financial information for European privately held and publicly listed firms. Amadeus is commonly used in corporate governance research and is considered a high-quality source of information. However, it is important to acknowledge that Amadeus has several limitations as well. For instance, the coverage of firms is highly heterogenous across countries and sometimes poor for small and micro firms (Kalemli-Özcan et al., 2022). This means that the proportion of owner-managed firms we identify in this study is highly conservative. We extract data for all privately held firms available in Amadeus in the following countries: Austria, Belgium, Denmark, Germany, Greece, Finland, France, Italy, Luxembourg, Netherlands, Portugal, Spain, and Finland. We exclude publicly listed firms[1] because our focus is on agency conflicts in privately held firms. We exclude firms that operate in the finance industry as in Gogineni et al. (2022). During the extraction process, we also require firms to have available information for some key

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[1] In unreported results, we run our estimations on a sample that includes publicly listed companies as well and obtain similar results as those presented here.

accounting variables (total assets, sales, cash, financial debt) for at least one of the last four years.

Our second source of information is the World Bank from which we obtain information about GDP per capita, rule of law, and, importantly, the strength of auditing and reporting requirements. Strength of auditing and reporting requirements is an index that ranges from 1 (almost no requirements) to 7 (strongest requirements) and is part of the World Economic Forum Global Competitiveness Index that assesses the roles of institutions broadly defined in building a business-friendly environment. Concretely, the index is constructed through of survey send to entrepreneurs and managers who assess their perception of the strength of auditing and reporting requirements in their home-country business environment[2]. The index is available only until 2018 when we prepare the paper. We thus extract firm-level data from Amadeus over the period 2010-2018. We deliberately exclude data for the years 2009 to avoid the effect of the 2008 Global Financial Crisis. One year of data is lost to calculate one of our control variables (sales growth), so the final sample covers the period 2011-2018. The final sample is made of 144,946 firms that represent 789,273 firm-year observations.

Variables

In this study, we examine agency costs in privately held firms. Our dependent variable is thus operating performance and we can only use accounting-based measures of performance and not stock price-based measures. Consistent with past research (Gogineni et al., 2022; Ang et al., 2000), we use two measures of agency costs: the ratio of total operating expenses to sales and the ratio of EBITDA to total assets (as a robustness test). The rationale for the use of these ratios is that managerial opportunism and related self-serving actions should result in larger operating expenses as managers divert firm's resources to their own private interests. Thus, in

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[2] Importantly, this means that the reporting standards measured are not specific of those applied to large and publicly listed firms but account for the various country-specific reporting requirements.

the presence of agency conflicts, we expect the operating performance to be lower than when firms are manager-owned[3]. Our independent variable is a dummy variable called "Vertical agency conflicts" that equals to one if a firm is non-owner managed and zero otherwise. Information about managerial ownership is directly available from Amadeus. Managerial ownership corresponds to contexts where the manager has at least 50% of the firm shares.

We also use two moderating variables, namely firm size and the strength of auditing and reporting requirements. We use two measures of firm size, namely sales, in the main estimations, and total assets, as a robustness test, and obtain similar results in our estimations. Sales and total assets are commonly considered as good proxies for firm size (Dang et al., 2018). We use the natural logarithm of sales and total assets in our estimations. We already described the strength of auditing and reporting requirements index that we take from the World Bank in the previous section.

We use a set of control variables based on past research on agency costs in privately held firms to reduce the risk that our results are driven by omitted variables. We include control variables at the firm level and the country level. At the firm level, we control for the presence of horizontal agency conflicts. Horizontal agency conflicts correspond to conflicts between minority and majority shareholders and are known to affect privately held firms (Gogineni et al., 2022). We create a dummy variable "Horizontal agency conflicts" that equals to one if a firm has at least two shareholders (presence of horizontal agency conflicts) and zero otherwise and include this variable in our model. We also control for firm age, because older firms are less likely to be manager-owned and more profitable because they are less affected by the liabilities of newness (Aldrich and Auster, 1986). Age is the number of years since firm

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[3] We acknowledge that in the case of small firms, lower operating performance also likely results from lower economies of scale associated with a smaller size. Thus, we include sales growth as a control variable and use a matching algorithm as a robustness tests to alleviate the issue that our results are driven by economies of scale and not by agency conflicts.

creation. We control for cash holdings (cash and equivalents divided by total assets) because firms that accumulate cash often have stronger operating performance (Mikkelson and Partch, 2003). We also include leverage as a control variable (short term debt plus financial debt divided by total assets) because leverage negatively affects performance (Chen et al., 2019). We further control for sales growth, because rapidly growing firms commonly have increased performance due to economies of scale. Sales growth is the annual percentage change in sales. We control for operating working capital (inventories plus receivables less payables divided by sales) because investment in working capital affects profitability (Aktas et al., 2015). At the country level, we control for the degree of economic development with (the natural logarithm) of GDP per capita and the rule of law which captures the extent to which individuals comply to the institutional rules in a country. Control for rule of law is especially important to distinguish between the role played by auditing and reporting requirements and the general tendency people have to comply to the law.

We also include three sets of dummy variables in all our regressions to account for (1) macroeconomic conditions (year-dummies), (2) industry time-invariant characteristics (two-digit NACE codes dummies), and (3) other country-specific factors (country dummies).

Econometric design

A standard problem in a study like ours is the joint determination of ownership and performance that raises endogeneity issues. We thus follow the approach of Gogineni et al. (2022) and use instrumental variables to account for endogeneity. Specifically, we create two instruments based on the industry and the region in which a firm operates that equal to the mean proportion of owner-managed in a region or in an industry. To determine geographic location, we use NUTS (Nomenclature des Unités Territoriales Statistiques) codes with two digits and to determine industry affiliation, we use two digits NACE (Nomenclature des Activités Economiques) codes. Our rationale is as follows. The proportion of owner-managed firms in a

given industry or region likely drives the likelihood that a given firm is owner-managed but is unlikely to drive operating performance at the firm-level. The decisions to locate a firm in a region and to operate in an industry is taken when the firm is first created and are thus exogenous to subsequent firm performance. The use of geography-based and industry-based instruments is common in the corporate governance literature (Becker et al., 2011; Knyazeva et al., 2013; Karpoff et al., 2017). For each regression, we perform multiple tests to ensure that (1) our instruments are not weak, (2) potentially endogenous variables are not exogenous, and (3) our instruments are correlated with ownership structure. Specifically, we report the Stock-Wright and difference-in-J Hansen test statistics (in the regression tables) and the first-stage regressions results (in the additional document for the reviewers).

Results

Univariate analysis

We begin the empirical analysis with descriptive statistics. Table 1 below displays the main descriptive statistics for the variables used in the analysis. We first observe that 50.7% of our observations correspond to privately held firms that are not manager-owned and thus likely to be affected by vertical agency conflicts. By comparison, Gogineni et al. (2022) report that 82.7% of their sample of private firms correspond to non-owner-managed firms. The higher proportion of owner-managed firms we observe likely comes from the fact that we did not exclude very small firms from our sample while Gogineni et al. (2022) did. 56.2% of our observations correspond to firms held by at least two minority shareholders. The average firm is 19.6 years old (median is 18), holds 1.074M€ (1.139M€) of total assets, and generates 1.340M€ (1.458M€) of sales. On average, our sample firms are very small. Cash represents 14.7% of the average firm's total assets (median is 8.3%), financial debts represent 21.1% (14.9%) of the average firm's total assets, and working capital represents 26.8% of the average

firm's total assets (16.8%). The average growth rate is 17.1% but the median is 3.8% so a small number of rapidly growing firms drive the distribution of growth rates.

[Insert table 1 around here]

Next, we perform a mean-comparison t-test and a rank-sum median-comparison test for our two measures of agency costs, namely the operating expenses on sales ratios and the EBITDA on assets ratio. The results are displayed in table 2 below. For owner-managed firms, the mean operating expenses to sales ratio is 96.1% (median is 96.90%), and for non-owner-managed firms the mean operating expenses to sales ratio is 97% (median is 96.94%). Both the mean and the median operating expenses to sales ratio are statistically significantly lower in the case of owner-managed firms than in the case of non-owner-managed firms. We observe similar results for the EBITDA on assets ratio. For owner-managed firms, the mean EBITDA on assets ratio is 9.6% (median is 7.7%), and for non-owner-managed firms the mean EBITDA on assets ratio is 8.8% (median is 7.4%). Both the mean and the median EBITDA on assets ratios are statistically significantly higher in the case of owner-managed firms than in the case of non-owner-managed firms. These results are consistent with the presence of vertical agency conflicts in our sample.

[Insert table 2 around here]

Then, we present a correlation matrix in table 3. There is a positive correlation between vertical agency problems and the operating costs on sales ratio and a negative correlation between vertical agency problems and the EBITDA on assets ratio. This observation is again consistent with the presence of vertical agency conflicts. Interestingly, we also observe that firm age is negatively correlated with the presence of vertical agency conflicts. This observation is important because it suggests that the separation between ownership and control does not necessarily take place when firms are mature and well established. We also calculate the

variance inflation factors (VIF) to check the presence of multicollinearity that could affect our result. The mean VIF is 2.00 and the highest VIF is 5.38 which is below the commonly accepted threshold of 10 above which multicollinearity is an issue. It appears thus that multicollinearity is not a severe problem in our case.

[Insert table 3 around here]

Multivariate analysis

In this section, we present the results of our instrumental variables regressions. In each regression, we cluster the errors at the firm-level. We first use the operating costs on sales ratio as a dependent variable (table 4) and then the EBITDA on assets ratio (table 5). As will be seen, the results obtained are close. Model 1 in table 4 includes the control variables and the Vertical agency conflicts independent variable. We observe a positive and statistically significant relationship between the presence of vertical agency conflicts and the operating costs on sales ratio. In non-owner-managed firms, the operating costs on sales ratio is 1.2% higher than in owner-managed firms. In other words, we find support for H0. Model 2 in table 4 includes the interaction term between the presence of vertical agency conflicts and firm size (sales). The interaction term is negative and statistically significant, so we observe that vertical agency costs are stronger in small firms and decrease with firm size. We thus find support for hypothesis 1.

Model 3 in table 4 includes the interaction term between the presence of vertical agency conflicts and the strength of auditing and reporting requirements. The interaction term is negative and statistically significant, so stronger auditing and reporting requirements reduce agency conflicts. Model 4 in table 4 includes the interaction terms between the presence of vertical agency conflicts and firm size and between the presence of vertical agency conflicts and the strength of auditing and reporting requirements. We observe, like in models 2 and 3,

that the interaction term between the presence of vertical agency conflicts and firm size and the strength of auditing and reporting requirements are negative and statistically significant.

Model 5 in table 4 is the fully specified model that includes in addition the three-way interaction term between the presence of vertical agency conflicts, firm size, and the strength of auditing and reporting requirements.. We observe that the two-way interaction term between the presence of vertical agency conflicts and firm size is negative and statistically significant. We also observe that the two-way interaction term between the presence of vertical agency conflicts and the strength of auditing and reporting requirements is negative and statistically significant. We finally observe that the three-way interaction term is positive and statistically significant, which means that we find support for hypothesis 2.

To help visualize these results, figure 1 below displays the marginal impact of the presence of vertical agency conflicts on the operating expenses on sales ratio in four configurations depending on firm size and the strength of auditing and reporting requirements when holding all the other variables at their mean. Soft auditing and reporting requirements correspond to the first quartile of this variable and strong auditing and reporting and requirements correspond to the last quartile of this variable. A one-standard deviation in size is associated with a 1.2% decrease in the operating expenses on sales ratio in soft auditing and reporting requirements countries in the presence of vertical agency conflicts and a 0.07% increase in the absence of vertical agency conflicts. A one-standard deviation in size is associated with a 1.5% decrease in the operating expenses on sales ratio in soft auditing and reporting requirements countries in the presence of vertical agency conflicts and a 0.31% decrease in the absence of vertical agency conflicts. In other words, the strength of auditing and reporting requirements contributes to attenuate vertical agency conflicts, but does so in a stronger manner for smaller firms than for larger firms.

[Insert table 4 around here]

[Insert figure 1 around here]

In table 5 below, we present the results obtained when we use the EBITDA on assets ratio as a dependent variable. As can be seen, the results are largely comparable to those obtained in table 4 and confirm that (1) non-owner managed firms have lower EBITDA on assets ratio, (2) vertical agency costs are stronger for smaller firms, (3) strictness of auditing and reporting requirements contribute to attenuate vertical agency costs more for smaller firms than for larger firms. Interestingly, the results obtained in model 3 of table 5 show that the two-way interaction effect between the presence of vertical agency conflicts and the strength of auditing and reporting requirements is not statistically significant.

[Insert table 5 around here]

Additional estimations and robustness tests

Results obtained on a matched sample

An important causality issue in our study is the possibility that firms are not manager-owned because of their low performance. For instance, one could argue that an owner-manager can decide to hire a professional manager to replace herself/himself because the performance of the company has declined recently. If this were true, the negative correlation we observe between the non-owner-manager status and firm performance would not necessarily reflect vertical agency conflicts. To mitigate this issue, we decide to match firms based on their ex-ante probability to be owner-managed or not.

Concretely, we used a propensity score-matching (PSM) approach (Dehejia and Wahba, 2002; Caliendo and Kopeinig, 2008). We use as a propensity score the positive predicted probability that a firm is not owner-managed in year 2011 (the beginning of our observation period) that results from a first-stage logistic regression. In this logistic regression, the dependent variable is the dummy variable that equals to one if a firm is not owner-managed

(presence of vertical agency conflicts) and zero otherwise. The regressors are firm age, size, cash holdings, leverage, operating working capital and two sets of dummy variables for industry affiliation and country location. After the matching[4], only non-owner-managed firms for which at least one comparable owner-managed firm has been identified in terms of propensity scores are kept. Last, we run the instrumental variables regressions on the matched sample and present the results below in table 6. The results obtained are fully consistent with those of table 4 and confirm all our hypotheses. We present in appendices C and D the results of the first-stage logit regressions and the post-hoc balancing property tests that show that the matching is correctly performed because the mean and median biases are below the 5% threshold.

[Insert table 6 around here]

Firms fully owned by a single shareholder

Gogineni et al. (2022) document that vertical and horizontal agency conflicts often coexist and that their joint effect on firm performance is stronger than their individual effects. In unreported results, we did not observe a joint effect of vertical and horizontal agency conflicts on firm performance. However, it seems useful to verify whether the previous results hold when we consider separately firms fully owned by a single shareholder in which, by definition, no horizontal agency conflicts exist and firms held by at least two distinct shareholders. In firms fully owned by a single shareholder (concentrated ownership), it is accepted in the literature that vertical agency costs are reduced because the single owner has better access to information, internalizes monitoring costs and thus reduces information asymmetry (Ang et al., 2000). We therefore seek to verify that our main results are not driven by a firm's ownership threshold. Table 7 below summarizes the results of the instrumental

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[4] We use the software Stata 16 and the "psmatch2" command with the "common" and "no replacement" options to perform the matching.

variables estimations obtained on the subsample of firms fully owned by a single shareholder (based on the previous matched sample). As can be seen, the results are comparable to those obtained in table 6. The statistical significance of the three-way interaction term is however lower than in table 6. We do not report the results obtained on the subsample made of firms owned by at least two shareholders for brevity, but they were totally comparable to those obtained in table 6 once again.

[Insert table 7 around here]

Confounding role of income taxes

The role played by corporate income taxes is a potential confounding factor in our study. In the case of small owner-managed firms, there is a great overlap between the owner-manager's personal wealth and the firm's wealth. Thus, owner-managers likely arbitrate between personal expenses and business expenses depending on the difference between the firm's income tax rate and their own personal tax rate, because business-induced expenses are associated with tax deductions (Ang, 1992 Harju et al., 2022). It follows that firms' operating performance and the existence of agency costs are likely driven by (variations in) the corporate income tax rates. While we cannot observe owner-manager's personal income tax rate, we can control for variations in countries' statutory corporate income tax rates. We acknowledge that the national statutory corporate income tax rate is not a perfect proxy of a firm's marginal corporate income tax rate, especially in the case of small firms that often have distinct tax rates than large firms. However, the statutory income tax rate remains an acceptable proxy of a country's tax intensity to assess the extent to which owner-managers use business-related expenses rather than personal expenses. We thus run our estimations and include a country's statutory income tax rates as an additional control. Data for statutory income tax rates comes from OECD. The results are reported in table 8 below and they are fully comparable to those obtained in the main estimations. It appears that corporate income taxes do not drive our results.

[Insert table 8 around here]

Conclusion and discussion

Discussion of the results and practical implications

Our main goal in this paper was to investigate the presence and magnitude of vertical agency conflicts in privately held firms, a context that received little attention in the corporate governance literature. Consistent with past research, we observe that separation between ownership and control is relatively common in privately held firms and leads to vertical agency costs (Ang et al., 2000; Gogineni et al., 2022). Our findings further reveal that agency costs are more severe in smaller privately held firms and reduced in environments characterized by strong disclosure requirements. The strength of auditing and reporting requirement leads to a decrease in vertical agency conflicts, and does so in a stronger manner for smaller firms than for larger firms. We thus shed empirical light on internal and external factors that explain agency costs. The fact that agency costs are stronger in smaller firms is consistent with the idea that small firms' owners are less capable to efficiently monitor managers' decisions. The transition from owner-management administration to professional management administration is complex, challenging, and requires multiples adjustments in the roles of each stakeholder (Gedaljovic et al., 2004; Kaehr Serra and Tiel, 2019). Thus, small firms' owners should be aware of the risk of agency costs when recruiting (external) professional managers and the need to carefully monitor managers' actions and decisions.

Our results have important implications for public policies as well because corporate reporting requirements represent a major issue in all countries. Lots of efforts have been dedicated to the convergence of reporting systems in an attempt to facilitate the assessment of public listed firms performance across countries to ensure that shareholders have comparable information worldwide. However, corporate reporting requirements are softer for smaller privately held firms than for larger firms. Our results show that agency costs are higher for

smaller firms that operate in relatively weak reporting requirements environments. Thus, it appears that public policies should more carefully consider the strictness of reporting requirements for smaller privately held firms to protect shareholders' interests. Of course, there are limits to the strictness of disclosure requirements because excessively strict requirements can be value-destroying as well (Hermalin and Weisbach, 2012). Reporting requirements should balance the administrative costs of disclosure with the agency costs associated with separation of ownership and control that appears more common than usually assumed in smaller firms.

Limitations and directions for future research

Our work has of course limitations that open up avenues for future research. First, as a limitation of our dataset, we were not able to study explicitly the transition from owner-management status to external, professional management status and if this transition corresponds to the apparition of agency costs. Future research could investigate the key transitions in a firm's lifecycle that correspond to changes in management and ownership structures to examine changes in agency costs (Latham and Braun, 2010). Second, the interplay of horizontal and vertical agency conflicts in privately held firms and their effects on firm performance may also be the subject of future research (Gogineni et al., 2022). Indeed, it seems important to acknowledge that various governance structures exist between the owner-manager status in small privately held firms and the board of large, publicly listed entities. How governance mechanisms form and evolve in small, privately held firms, and how, in turn, these mechanisms affect agency conflicts is a promising direction for future governance research. These issues could be addressed using a theoretical framework other than agency theory as upper echelon theory (Hambrick and Mason, 1984), in order to approach these aspects from a different perspective (e.g. Cuevas-Rodriguez et al., 2012; Kumar and Zattoni, 2015, Foss and Stea, 2014).

References

Adams, R., Keloharju, M., & S. Knüpfer, 2018, "Are CEOs born leaders? Lessons from traits of a million individuals". Journal of Financial Economics, 130: 392-408

Aktas, N., Croci, E., & D. Petmezas, 2015, "Is working capital management value-enhancing? Evidence from firm performance and investments". Journal of Corporate Finance, 30: 98-113

Aldrich, H.R., & E.R. Auster, 1986, "Even dwarfs started small: Liabilities of age and size and their strategic implications". Research in Organizational Behavior, 8: 165-198

Ang, J.S. 1992, "On the theory of finance for privately held firms". Journal of Small Business Finance, 1(3): 185-203

Ang, J.S., Cole, R.A., & J.W. Lin, 2000, "Agency costs and ownership structure". Journal of Finance, 55(1): 81-106

Ball, R., & L. Shivakumar, 2005, "Earnings quality in UK private firms: Comparative loss recognition timeliness". Journal of Accounting and Economics, 39(1): 83-128

Becker, B., Cronqvist, H., & R. Fahlenbrach, 2011, "Estimating the effects of large shareholders using a geographic instrument". Journal of Financial and Quantitative Analysis, 46(4): 907-942

Biddle, G.C., & G. Hilary, 2006, "Accounting quality and firm-level capital investment". Accounting Review, 81(5): 963-982

Brinckmann, J., Salomo, S., & H.G. Gemuenden, 2011, "Financial management competence of founding teams and growth of new technology-based firms". Entrepreneurship Theory and Practice, 35(2): 217-243

Burgstahler, D.C., Hail, L., & C. Leuz, 2006, "The importance of reporting incentives: Earnings management in European private and public firms". Accounting Review, 81(5): 983-1016

Caliendo, M., & S. Kopeinig, 2008, "Some practical guidance for the implementation of propensity score matching". Journal of Economic Survey, 22(1): 31-72

Certo, S.T., Holcomb, T.R., & R.M. Holmes, 2009, "IPO Research in management and entrepreneurship: Moving the agenda forward". Journal of Management, 35(6): 1340-1378

Chen, F., Hope, O.-K., Li, Q., & X. Wang, 2011, "Financial reporting quality and investment efficiency of private firms in Emerging markets". Accounting Review, 86(4): 1255-1288

Chen, Z., Harford, J., & A. Kamara, 2019, "Operating leverage, profitability, and capital structure". Journal of Financial and Quantitative Analysis, 54(1): 369-392

Cuevas-Rodriguez, G., Gomez-Mejiea, L.R., & R.M. Wiseman, 2012, "Has agency theory run its course?: Making the theory more flexible to inform the management of reward systems". Corporate Governance: An International Review, 20(6): 526-546

Daily, C.M., & D.R. Dalton, 1993, "Board of directors leadership and structure: Control and performance implications". Entrepreneurship Theory and Practice, 17(3): 65-81

Dang, C., Li, Z., & C. Yang, 2018, "Measuring Firm size in empirical corporate finance". Journal of Banking & Finance, 86: 159-176

Danielson, M.G., & J.A. Scott, 2007, "A note on agency conflicts and the small firm investment decision". Journal of Small Business Management, 45(1): 157-175

Dehejia, R.H., & S. Wahba, 2002, "Propensity score-matching methods for nonexperimental causal studies". The Review of Economics and Statistics, 84(1): 151-161

European Commission,2020, "User guide to the SME definition".https://ec.europa.eu/docsroom/documents/42921, 07/09/2020

Fama, E.F., & M.C. Jensen, 1983, "Separation of ownership and control". Journal of Law and Economics, 26(2): 301-325

Foss, N., & D. Stea, 2014, "Putting a realistic theory of mind into agency theory: implications for reward design and management in principal-agent relations". European Management Review, 11: 101-116

Gedajlovic, E., Lubatkin, M.H., & W.S. Schulze, 2004, "Crossing the threshold from founder management to professional management: a governance perspective". Journal of Management Studies, 41(5): 899-912

Gogineni, S., Linn, S.C., & P.K. Yadav, 2022, "Vertical and horizontal agency conflicts in private firms: Ownership structure and operating performance". Journal of Financial and Quantitative Analysis, 57(4): 1237-1278

Graham, J.R. 2022, "Presidential address: Corporate Finance and reality". Journal of Finance, 77(4): 1975-2049

Hambrick, D.C., & P. A. Mason, 1984, "Upper echelons: the organization as a reflection of its top managers". The Academy of Management Review, 9(2): 193-206

Harju, J., Koivisto, A., & T. Matikka, 2022, "The effects of corporate taxes on small firms". Journal of Public Economics, 212: 104704

Hermalin, B.E., & M.S. Weisbach, 2012, "Information disclosure and corporate governance". Journal of Finance, 67(1): 195-233

Hope, O.-K., Langli, J.C., & W.B. Thomas, 2012, "Agency conflicts and auditing in private firms". Accounting, Organizations and Society, *37*(7): 500-517

Jensen, M.C., & W.H. Meckling, 1976, "Theory of the firm: Managerial behavior, agency costs, and ownership structure". Journal of Financial Economics, 3(4): 305-360

Kaehr Serra, C., & J. Thiel, 2019, "Professionalizing entrepreneurial firms: Managing the challenges and outcomes of founder-CEO succession". Strategic Entrepreneurship Journal, 13(3): 379-409

Kalemli-Özcan, S., Sorensen, B., Villegas-Sanchez, C., Volosovych, V., & S. Yesiltas, 2022, "How to construct nationally representative firm level data from the Orbis database: New facts and aggregate implications". NBER Working paper 21558. DOI: 10.3386/w21558.

Kanodia, C., & D. Lee, 1998, "Investment and disclosure: The disciplinary role of periodic performance reports". Journal of Accounting Research, 36(1): 33-55

Kaplan, S., & P. Stromberg, 2003, "Financial contracting theory meets the real world: An empirical analysis of venture capital contracts". Review of Economic Studies, 70(2): 281-315

Kaplan, S.N., & M. Sorensen, 2021, "Are CEOs different?" Journal of Finance, 76(4): 1773-1811

Karpoff, J.M., Schonlau, R.J., & E.W. Wehrly, 2017, "Do takeover defense indices measure takeover deterrence"? The Review of Financial Studies, 30(7): 2359-2412

Knyazeva, A., Knyazeva, D., & R.W. Masulis, 2013, "The supply of corporate directors and board independence". The Review of Financial Studies, 26(6): 1561-1605

Kumar, P., & A. Zattoni, 2015, "In search of a greater pluralism of theories and methods in governance research". Corporate Governance: An International Review, 23(1): 1-2

Latham, S., & M.R. Braun, 2010, "To IPO or not to IPO: risks, uncertainty and the decision to go public". British Journal of Management, 21(3): 666-683

Martin, G.P., Wiseman, R.M., & L.R. Gomez-Mejia, 2016, "Going short-term or long-term? CEO stock options and temporal orientation in the presence of slack". Strategic Management Journal, 37(12): 2463-2480

Mikkelson, W., & H. Wayne, 2003, "Do persistent large cash reserves hinder performance"? The Journal of Financial and Quantitative Analysis, 38(2): 275-294

Obeng, V.A., Ahmed, K., & S.F. Cahan, 2021, "Integrated reporting and agency costs: International evidence from voluntary adopters". European Accounting Review, 30(4): 645-674

Parum, E. 2005, "Does disclosure on corporate governance lead to openness and transparency in how companies are managed"? Corporate Governance: An International Review, 13(5): 702-709

Petrou, A., & A. Procopiou, 2016, "CEO shareholdings and earnings manipulation: a behavioural explanation". European Management Review, 13: 137-148

Schulze, W.S., Lubatkin, M.H., Dino, R.N., & A.K. Buchholtz, 2001, "Agency relationships in family firms: Theory and evidence". Organization Science, 12(2): 99-116

Stiglitz, J.E., & A. Weiss, 1981 "Credit rationing in markets with imperfect information". The American Economic Review, 71(3): 393-410

Van Tendeloo, B., & A. Vanstraelen, 2008 "Earnings management and audit quality in Europe: Evidence from the private client segment market". European Accounting Review, 17(3): 447-469

Williamson, O. 1985, "The Economic Institutions of Capitalism". The Free Press, Boston, MA.

Figure 1. Impact of firm size and strength of auditing and reporting requirements on vertical agency conflicts

Legend:
- ▲ Vertical agency conflics in soft auditing and reporting requirements countries
- ◆ Vertical agency conflics in strong auditing and reporting requirements countries
- ● No vertical agency conflics in soft auditing and reporting requirements countries
- ■ No vertical agency conflics in strong auditing and reporting requirements countries
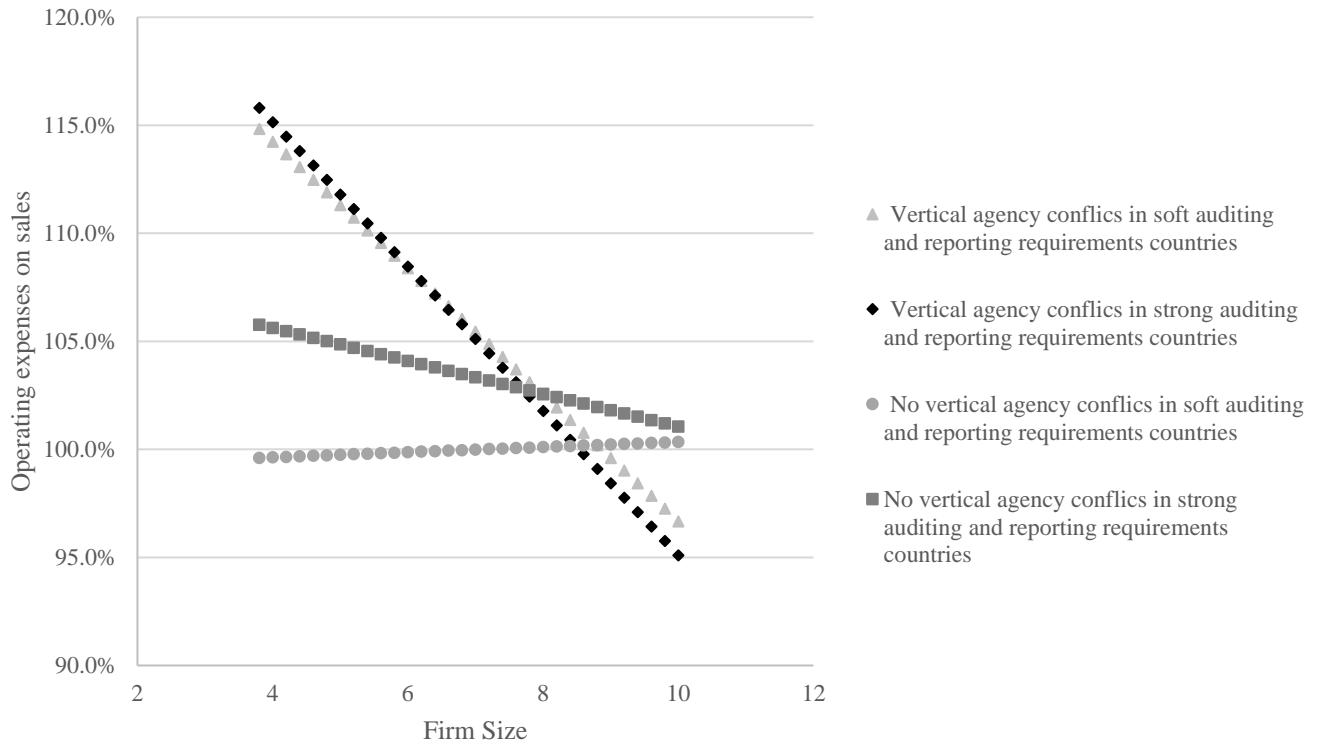
Table 1. Summary statistics

Variables	Mean	Standard deviation	Minimum	25th percentile	Median	75th percentile	Maximum
EBITDA ratio	0.092	0.127	-0.330	0.037	0.075	0.138	0.504
Operating expenses ratio	0.965	0.144	0.598	0.930	0.969	0.990	1.501
Vertical agency conflicts	0.507	0.500	0.000	0.000	1.000	1.000	1.000
Horizontal agency conflicts	0.562	0.496	0.000	0.000	1.000	1.000	1.000
Firm Age	19.627	12.474	1.000	10.000	18.000	27.000	62.000
Firm Cash ratio	0.147	0.169	0.000	0.023	0.083	0.213	0.742
Firm Leverage	0.211	0.222	0.000	0.020	0.149	0.336	0.964
Firm Sales growth	0.171	0.829	-0.568	-0.060	0.038	0.167	4.122
Firm Operating working capital	0.268	0.426	-0.299	0.047	0.168	0.341	2.728
GDP per capita	10.316	0.250	9.865	10.155	10.317	10.478	10.825
Rule of law	0.981	0.449	0.269	0.490	1.032	1.139	2.089
Strength of auditing and reporting standards	4.713	0.628	3.893	4.216	4.611	4.909	6.571
Firm Size (sales)	7.201	1.457	3.761	6.159	7.285	8.247	10.114
Firm Size (total assets)	6.979	1.481	3.466	5.966	7.038	8.026	9.968

N=789,273

Table 2. Univariate analysis

Variables	Vertical agency conflicts (mean)	No vertical agency conflicts (mean)	Difference	Vertical agency conflicts (median)	No vertical agency conflicts (median)	Difference
EBITDA ratio	0.088	0.096	-0.86%***	0.074	0.077	-0.25%***
Operating expenses ratio	0.970	0.961	0.85%***	0.969	0.969	0.04%***

***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels.

Table 3. Correlation matrix

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13
1 EBITDA ratio													
2 Operating expenses ratio	-0.595												
3 Vertical agency conflicts	-0.034	0.030											
4 Horizontal agency conflicts	-0.017	0.004	0.012										
5 Firm Age	-0.091	-0.014	-0.037	0.144									
6 Firm Cash ratio	0.225	-0.122	0.043	-0.020	-0.045								
7 Firm Leverage	-0.136	0.115	0.017	-0.044	-0.075	-0.291							
8 Firm Sales growth	0.071	-0.030	0.030	-0.014	-0.149	0.021	0.015						
9 Firm Operating working capital	-0.153	0.079	0.031	0.018	0.115	-0.222	0.084	-0.034					
10 GDP per capita	0.118	-0.027	-0.284	0.178	0.027	0.046	-0.100	-0.013	-0.132				
11 Rule of law	0.083	0.038	0.047	-0.091	-0.135	0.157	0.096	-0.001	-0.046	0.254			
12 Strength of auditing and reporting standards	0.092	0.036	-0.050	-0.006	-0.096	0.139	0.045	-0.016	-0.072	0.489	0.858		
13 Firm Size (sales)	0.069	-0.146	-0.171	0.213	0.273	-0.127	-0.118	-0.031	-0.144	0.289	-0.451	-0.263	
14 Firm Size (total assets)	-0.030	-0.098	-0.131	0.242	0.351	-0.222	-0.040	-0.054	0.150	0.215	-0.469	-0.296	0.840

N=789,273. Correlation coefficients larger than 0.003 in absolute value are statistically significant at the 0.05 level.

Table 4. Instrumental variables regression results

Operating expenses on sales is the dependent variable	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error
Firm Age	0.000 ***	0.000	0.000 ***	0.000	0.000 ***	0.000	0.000 ***	0.000	0.000 ***	0.000
Firm Cash ratio	-0.092 ***	0.002	-0.093 ***	0.002	-0.092 ***	0.002	-0.093 ***	0.002	-0.096 ***	0.002
Firm Leverage	0.046 ***	0.002	0.046 ***	0.002	0.046 ***	0.002	0.046 ***	0.002	0.044 ***	0.002
Firm Sales growth	-0.005 ***	0.000	-0.005 ***	0.000	-0.005 ***	0.000	-0.005 ***	0.000	-0.005 ***	0.000
Firm Operating working capital	0.007 ***	0.001	0.007 ***	0.001	0.007 ***	0.001	0.007 ***	0.001	0.007 ***	0.001
GDP per capita	-0.219 ***	0.015	-0.226 ***	0.015	-0.194 ***	0.016	-0.195 ***	0.016	-0.174 ***	0.016
Rule of law	0.022 ***	0.005	0.024 ***	0.005	0.002	0.006	-0.001	0.006	-0.002	0.006
Strength of auditing and reporting standards	0.012 ***	0.001	0.011 ***	0.001	0.039 ***	0.005	0.045 ***	0.005	0.137 ***	0.011
Firm Size (sales)	-0.023 ***	0.000	-0.015 ***	0.001	-0.023 ***	0.000	-0.015 ***	0.001	0.055 ***	0.007
Strength of auditing and reporting standards * Firm Size									-0.013 ***	0.001
Horizontal agency conflicts	0.009 ***	0.001	0.009 ***	0.001	0.009 ***	0.001	0.010 ***	0.001	0.009 ***	0.001
Vertical agency conflicts	0.012 **	0.006	0.122 ***	0.017	0.172 ***	0.024	0.318 ***	0.029	0.691 ***	0.089
Firm Size * Vertical agency conflicts			-0.015 ***	0.002			-0.016 ***	0.002	-0.059 ***	0.012
Vertical agency conflicts * Strength of auditing					-0.035 ***	0.006	-0.043 ***	0.005	-0.100 ***	0.018
Firm Size * Vertical agency conflicts * Strength of auditing									0.007 ***	0.003
Constant	3.369 ***	0.161	3.378 ***	0.160	2.992 ***	0.171	2.921 ***	0.170	2.197 ***	0.179
Industry, country, and year fixed effects	YES		YES		YES		YES		YES	
Number of observations	828,823		828,823		828,823		828,823		828,823	
F statistics	131.02 ***		130.02 ***		130.05 ***		129.37 ***		127.10 ***	

R-squared	0.0773	0.0768	0.0717	0.0716	0.0678
Anderson Rubin Wald test	36.49 ***	39.63 ***	31.18 ***	43.16 ***	54.15 ***
Stock-Wright statistic	77.13 ***	201.57 ***	136.53 ***	324.04 ***	566.73 ***

This table provides the results of instrumental variables firm- and year-fixed effects regressions of firm performance on agency conflicts. Firm performance is measured as the ratio of operating expenses to sales. Vertical agency conflicts denotes a dummy variable that equals to one for non-owner-managed firms and zero otherwise. Firm size is the natural logarithm of sales turnover. Strength of auditing is a country-level measure of the strength of auditing and reporting requirements. Firm age is the number of years since firm creation. Firm cash ratio is the ratio of cash and equivalents to total assets. Firm leverage is short term financial debt plus long-term financial debt divided by total assets. Firm sales growth is the annual percentage change in sales. Firm Operating working capital is inventories plus accounts receivable less accounts payable divided by sales. GDP per capita is the annual country-level GDP per capita. Rule of law is an index that measures the strength of institutions. All variables are defined in appendix A. Standard errors are clustered at the firm-level. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels respectively. Tests for weak instruments are based on the Anderson-Rubin test and the Stock-Wright statistics.

Table 5. Instrumental variables regression results

EBITDA on assets ratio is dependent variable	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error
Firm Age	-0.001 ***	0.000	-0.001 ***	0.000	-0.001 ***	0.000	-0.001 ***	0.000	-0.001 ***	0.000
Firm Cash ratio	0.137 ***	0.002	0.138 ***	0.002	0.137 ***	0.002	0.138 ***	0.002	0.139 ***	0.002
Firm Leverage	-0.048 ***	0.001	-0.049 ***	0.001	-0.048 ***	0.001	-0.049 ***	0.001	-0.048 ***	0.001
Firm Sales growth	0.008 ***	0.000	0.008 ***	0.000	0.008 ***	0.000	0.008 ***	0.000	0.008 ***	0.000
Firm Operating working capital	-0.013 ***	0.001	-0.013 ***	0.001	-0.013 ***	0.001	-0.013 ***	0.001	-0.013 ***	0.001
GDP per capita	0.187 ***	0.011	0.193 ***	0.011	0.186 ***	0.012	0.188 ***	0.012	0.180 ***	0.012
Rule of law	-0.017 ***	0.004	-0.018 ***	0.004	-0.016 ***	0.005	-0.014 ***	0.005	-0.013 ***	0.005
Strength of auditing and reporting standards	-0.016 ***	0.001	-0.015 ***	0.001	-0.016 ***	0.004	-0.020 ***	0.004	-0.070 ***	0.006
Firm Size (sales)	0.016 ***	0.000	0.008 ***	0.001	0.016 ***	0.000	0.007 ***	0.001	-0.028 ***	0.004
Strength of auditing and reporting standards * Firm Size									0.007 ***	0.001
Horizontal agency conflicts	-0.003 ***	0.001	-0.003 ***	0.001	-0.003 ***	0.001	-0.004 ***	0.001	-0.003 ***	0.001
Vertical agency conflicts	-0.051 ***	0.005	-0.161 ***	0.010	-0.053 ***	0.019	-0.192 ***	0.022	-0.436 ***	0.049
Firm Size * Vertical agency conflicts			0.015 ***	0.001			0.015 ***	0.001	0.045 ***	0.007
Vertical agency conflicts * Strength of auditing					0.001	0.004	0.007	0.004	0.049 ***	0.010
Firm Size * Vertical agency conflicts * Strength of auditing									-0.005 ***	0.001
Constant	-1.823 ***	0.118	-6.112 ***	2.288	-1.817 ***	0.129	-1.760 ***	0.129	-1.410 ***	0.131
Industry, country, and year fixed effects	YES		YES		YES		YES		YES	
Number of observations	789,273		789,273		789,273		789,273		789,273	
F statistics	346.17 ***		332.53 ***		345.45 ***		332 ***		320.84 ***	

R-squared	0.107	0.1019	0.1091	0.1044	0.094
Anderson Rubin Wald test	110.44 ***	109.77 ***	58.91 ***	77.11 ***	81.90 ***
Stock-Wright statistic	224.25 ***	471.79 ***	239.11 ***	494.8 ***	723.79 ***

This table provides the results of instrumental variables firm- and year-fixed effects regressions of firm performance on agency conflicts. Firm performance is measured as the ratio of EBITDA to total assets. Vertical agency conflicts denotes a dummy variable that equals to one for non-owner-managed firms and zero otherwise. Firm size is the natural logarithm of sales turnover. Strength of auditing is a country-level measure of the strength of auditing and reporting requirements. Firm age is the number of years since firm creation. Firm cash ratio is the ratio of cash and equivalents to total assets. Firm leverage is short term financial debt plus long-term financial debt divided by total assets. Firm sales growth is the annual percentage change in sales. Firm Operating working capital is inventories plus accounts receivable less accounts payable divided by sales. GDP per capita is the annual country-level GDP per capita. Rule of law is an index that measures the strength of institutions. All variables are defined in appendix A. Standard errors are clustered at the firm-level. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels respectively. Tests for weak instruments are based on the Anderson-Rubin test and the Stock-Wright statistics.

Table 6. Results obtained on a matched sample

Operating expenses on sales ratio is the dependent variable	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error
Firm Age	0.000 ***	0.000	0.000 ***	0.000	0.000 ***	0.000	0.000 ***	0.000	0.000 ***	0.000
Firm Cash ratio	-0.101 ***	0.003	-0.103 ***	0.003	-0.101 ***	0.003	-0.102 ***	0.003	-0.104 ***	0.003
Firm Leverage	0.026 ***	0.002	0.026 ***	0.002	0.026 ***	0.002	0.026 ***	0.002	0.024 ***	0.002
Firm Sales growth	-0.013 ***	0.001	-0.013 ***	0.001	-0.013 ***	0.001	-0.013 ***	0.001	-0.013 ***	0.001
Firm Operating working capital	0.007 ***	0.002	0.006 ***	0.002	0.007 ***	0.002	0.007 ***	0.002	0.007 ***	0.002
GDP per capita	-0.137 ***	0.017	-0.143 ***	0.017	-0.096 ***	0.019	-0.089 ***	0.019	-0.065 ***	0.019
Rule of law	0.015 **	0.007	0.016 **	0.007	-0.004	0.007	-0.009	0.007	-0.020 **	0.008
Strength of auditing and reporting standards	0.019 ***	0.002	0.019 ***	0.002	0.049 ***	0.006	0.058 ***	0.006	0.199 ***	0.030
Firm Size (sales)	-0.017 ***	0.001	-0.009 ***	0.002	-0.017 ***	0.001	-0.008 ***	0.002	0.078 ***	0.017
Strength of auditing and reporting standards * Firm Size									-0.018 ***	0.004
Horizontal agency conflicts	0.005 ***	0.001	0.005 ***	0.001	0.005 ***	0.001	0.006 ***	0.051	0.005 ***	0.001
Vertical agency conflicts	0.010 *	0.006	0.137 ***	0.035	0.204 ***	0.040	0.401 ***	0.004	1.195 ***	0.225
Firm Size * Vertical agency conflicts			-0.016 ***	0.004			-0.017 ***	0.009	-0.121 ***	0.029
Vertical agency conflicts * Strength of auditing					-0.043 ***	0.009	-0.057 ***		-0.227 ***	0.049
Firm Size * Vertical agency conflicts * Strength of auditing									0.022 ***	0.006
Constant	2.436 ***	0.188	2.435 ***	0.187	1.894 ***	0.213	1.721 ***	0.211	0.811 ***	0.266
Industry, country, and year fixed effects	YES		YES		YES		YES		YES	
Number of observations	459,980		459,980		459,980		459,980		459,980	
F statistics	68.58 ***		67.74 ***		67.58 ***		67.10 ***		65.91 ***	
R-squared	0.0745		0.0718		0.0665		0.0654		0.0618	
Anderson Rubin Wald test	12.46 ***		11.45 ***		17.95 ***		19.23 ***		17.26 ***	
Stock-Wright statistic	22.96 ***		62.13 ***		68.98 ***		151.25 ***		186.20 ***	

This table provides the results of instrumental variables firm- and year-fixed effects regressions of firm performance on agency conflicts obtained on a sample of matched owner-managed and non owner-managed firms. Firm performance is measured as the ratio of operating expenses to sales. Vertical agency conflicts denotes a dummy variable

that equals to one for non-owner-managed firms and zero otherwise. Firm size is the natural logarithm of sales turnover. Strength of auditing is a country-level measure of the strength of auditing and reporting requirements. Firm age is the number of years since firm creation. Firm cash ratio is the ratio of cash and equivalents to total assets. Firm leverage is short term financial debt plus long-term financial debt divided by total assets. Firm sales growth is the annual percentage change in sales. Firm Operating working capital is inventories plus accounts receivable less accounts payable divided by sales. GDP per capita is the annual country-level GDP per capita. Rule of law is an index that measures the strength of institutions. All variables are defined in appendix A. Standard errors are clustered at the firm-level. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels respectively. Tests for weak instruments are based on the Anderson-Rubin test and the Stock-Wright statistics.

Table 7. Results obtained on the subsample made of firms fully owned by a single shareholder

Operating expenses on sales ratio is the dependent variable	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error
Firm Age	0.001 ***	0.000	0.000 ***	0.000	0.001 ***	0.000	0.000 ***	0.000	0.000 ***	0.000
Firm Cash ratio	-0.092 ***	0.005	-0.093 ***	0.005	-0.092 ***	0.005	-0.093 ***	0.005	-0.094 ***	0.005
Firm Leverage	0.026 ***	0.003	0.026 ***	0.003	0.026 ***	0.003	0.026 ***	0.003	0.024 ***	0.003
Firm Sales growth	-0.014 ***	0.001	-0.014 ***	0.001	-0.014 ***	0.001	-0.014 ***	0.001	-0.014 ***	0.001
Firm Operating working capital	0.003	0.003	0.003	0.003	0.002	0.003	0.003	0.003	0.003	0.003
GDP per capita	-0.198 ***	0.027	-0.204 ***	0.027	-0.216 ***	0.030	-0.207 ***	0.030	-0.175 ***	0.030
Rule of law	0.036 ***	0.010	0.037 ***	0.010	0.046 ***	0.012	0.039 ***	0.012	0.029 **	0.012
Strength of auditing and reporting standards	0.021 ***	0.003	0.021 ***	0.003	0.010	0.008	0.019 **	0.008	0.138 ***	0.032
Firm Size (sales)	-0.018 ***	0.001	-0.010 ***	0.002	-0.018 ***	0.001	-0.010 ***	0.002	0.064 ***	0.018
Strength of auditing and reporting standards * Firm Size									-0.015 ***	0.004
Vertical agency conflicts	0.025 ***	0.008	0.158 ***	0.046	-0.042	0.048	0.151 **	0.059	0.715 ***	0.267
Firm Size * Vertical agency conflicts			-0.017 ***	0.005	0.016	0.012	-0.018 ***	0.005	-0.088 **	0.037
Vertical agency conflicts * Strength of auditing							0.003	0.011	-0.116 **	0.057
Firm Size * Vertical agency conflicts * Strength of auditing									0.015 *	0.008
Constant	3.048 ***	0.294	3.051 ***	0.292	3.275 ***	0.333	3.091 ***	0.325	2.196 ***	0.374
Industry, country, and year fixed effects	YES		YES		YES		YES		YES	
Number of observations	167,354		167,354		167,354		167,354		167,354	
F statistics	214.27 ***		212.48 ***		207.02 ***		207.69 ***		203.03 ***	
R-squared	0.0765		0.0727		0.0709		0.0691		0.0686	
Anderson Rubin Wald test	14.77 ***		11.83 ***		7.81 ***		8.97 ***		13.24 ***	
Stock-Wright statistic	52.57 ***		86.19 ***		53.9 ***		104.21 ***		121.47 ***	

This table provides the results of instrumental variables firm- and year-fixed effects regressions of firm performance on agency conflicts obtained on a sample of matched owner-managed and non owner-managed firms. The sample is limited to firms owned at 100% by a single shareholder. Firm performance is measured as the ratio of operating expenses to sales. Vertical agency conflicts denotes a dummy variable that equals to one for non-owner-managed firms and zero otherwise. Firm size is the natural logarithm

of sales turnover. Strength of auditing is a country-level measure of the strength of auditing and reporting requirements. Firm age is the number of years since firm creation. Firm cash ratio is the ratio of cash and equivalents to total assets. Firm leverage is short term financial debt plus long-term financial debt divided by total assets. Firm sales growth is the annual percentage change in sales. Firm Operating working capital is inventories plus accounts receivable less accounts payable divided by sales. GDP per capita is the annual country-level GDP per capita. Rule of law is an index that measures the strength of institutions. All variables are defined in appendix A. Standard errors are clustered at the firm-level. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels respectively. Tests for weak instruments are based on the Anderson-Rubin test and the Stock-Wright statistics.

Table 8. Role of income taxes

Operating expenses on sales is dependent variable	Model 1		Model 2		Model 3		Model 4		Model 5	
	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error	Coef.	St. Error
Firm Age	0.000 ***	0.000	0.000 ***	0.000	0.000 ***	0.000	0.000 ***	0.000	0.000 ***	0.000
Firm Cash ratio	-0.092 ***	0.002	-0.093 ***	0.002	-0.092 ***	0.002	-0.093 ***	0.002	-0.096 ***	0.002
Firm Leverage	0.046 ***	0.002	0.046 ***	0.002	0.046 ***	0.002	0.046 ***	0.002	0.044 ***	0.002
Firm Sales growth	-0.005 ***	0.000	-0.005 ***	0.000	-0.006 ***	0.000	-0.005 ***	0.000	-0.006 ***	0.000
Firm Operating working capital	0.007 ***	0.001	0.007 ***	0.001	0.007 ***	0.001	0.007 ***	0.001	0.007 ***	0.001
GDP per capita	-0.181 ***	0.017	-0.186 ***	0.017	-0.173 ***	0.017	-0.176 ***	0.017	-0.143 ***	0.017
Rule of law	0.015 ***	0.005	0.016 ***	0.005	0.000	0.006	-0.003	0.006	-0.005	0.006
National income tax rate	0.097 ***	0.017	0.101 ***	0.017	0.063 ***	0.019	0.057 ***	0.019	0.089 ***	0.018
Strength of auditing and reporting standards	0.016 ***	0.001	0.015 ***	0.001	0.038 ***	0.005	0.044 ***	0.005	0.137 ***	0.011
Firm Size (sales)	-0.023 ***	0.000	-0.015 ***	0.001	-0.023 ***	0.000	-0.015 ***	0.001	0.055 ***	0.007
Strength of auditing and reporting standards * Firm Size									-0.013 ***	0.001
Horizontal agency conflicts	0.009 ***	0.001	0.009 ***	0.001	0.009 ***	0.001	0.010 ***	0.001	0.009 ***	0.001
Vertical agency conflicts	0.014 **	0.005	0.124 ***	0.017	0.151 ***	0.025	0.298 ***	0.030	0.664 ***	0.089
Firm Size * Vertical agency conflicts			-0.015 ***	0.002			-0.015 ***	0.002	-0.059 ***	0.012
Vertical agency conflicts * Strength of auditing					-0.030 ***	0.006	-0.038 ***	0.006	-0.094 ***	0.019
Firm Size * Vertical agency conflicts * Strength of auditing									0.007 ***	0.003
Constant	2.915 ***	0.181	2.909 ***	0.181	2.750 ***	0.184	2.706 ***	0.184	1.844 ***	0.192
Industry, country, and year fixed effects	YES		YES		YES		YES		YES	
Number of observations	828,823		828,823		828,823		828,823		828,823	
F statistics	131.14 ***		130.24 ***		129.98 ***		129.34 ***		127.09 ***	
R-squared	0.0772		0.0768		0.073		0.073		0.0688	
Anderson Rubin Wald test	38.72 ***		40.78 ***		30.19 ***		42.10 ***		51.70 ***	

Stock-Wright statistic	81.73 ***	206.44 ***	132.23 ***	316.64 ***	543.31 ***

This table provides the results of instrumental variables firm- and year-fixed effects regressions of firm performance on agency conflicts. Firm performance is measured as the ratio of operating expenses to sales. Vertical agency conflicts denotes a dummy variable that equals to one for non-owner-managed firms and zero otherwise. Firm size is the natural logarithm of sales turnover. Strength of auditing is a country-level measure of the strength of auditing and reporting requirements. Firm age is the number of years since firm creation. Firm cash ratio is the ratio of cash and equivalents to total assets. Firm leverage is short term financial debt plus long-term financial debt divided by total assets. Firm sales growth is the annual percentage change in sales. Firm Operating working capital is inventories plus accounts receivable less accounts payable divided by sales. GDP per capita is the annual country-level GDP per capita. Rule of law is an index that measures the strength of institutions. National income tax rate is a country annual average income tax rate. All variables are defined in appendix A. Standard errors are clustered at the firm-level. ***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels respectively. Tests for weak instruments are based on the Anderson-Rubin test and the Stock-Wright statistics.

Appendix A. Variables definitions and sources

Variables	Variable definition	Source
EBITDA ratio	EBITDA divided by total assets	Amadeus database
Operating expenses ratio	Operating expenses divided by sales	Amadeus database
Vertical agency conflicts	Dummy variable that equals to one if the firm is non-owner managed	Amadeus database
Horizontal agency conflicts	Dummy variable that equals to one if the firm has two or more shareholders	Amadeus database
Firm Age	Number of years since firm's creation	Amadeus database
Firm Cash ratio	Cash and equivalents divided by total assets	Amadeus database
Firm Leverage	Short term debt plus long-term debt divided by total assets	Amadeus database
Firm Sales growth	Annual percentage change in sales	Amadeus database
Firm Operating working capital	Inventories plus receivables less payables divided by sales	Amadeus database
GDP per capita	Natural logarithm of GDP per capita	World Bank
Rule of law		World Bank
National income tax rate	Annual statutory income tax rate by countries	OECD
Strength of auditing and reporting standards		World Bank
Firm Size (sales)	Natural logarith of sales	Amadeus database
Firm Size (total assets)	Natural logarithm of total assets	Amadeus database

Appendix B. Sample distribution

Panel A: Country distribution	Vertical agency conflicts	No vertical agency conflicts	Total
Austria	491	186	677
Belgium	1,658	597	2,255
Denmark	252	139	391
Germany	5,193	2,740	7,933
Greece	10,898	1,589	12,487
France	51,565	35,547	87,112
Finland	9,049	37,581	46,630
Italy	74,517	124,116	198,633
Luxembourg	641	518	1,159
Netherlands	9	0	9
Portugal	141,821	12,925	154,746
Spain	102,812	173,407	276,219
Sweden	1,014	8	1,022
Total	399,920	389,353	789,273

Panel B: Industry distribution	Vertical agency conflicts	No vertical agency conflicts	Total
Agriculture, forestry, and fishing	13,815	9,756	23,571
Mining	1,707	1,402	3,109
Construction	43,292	47,159	90,451
Transport, storage, and communication	32,751	26,385	59,136
Manufacturing	92,377	112,642	205,019
Trade	135,859	137,842	273,701
Services	49,947	38,383	88,330
Total	399,920	389,353	789,273

Appendix C. Results of the logistic regression used to determine the propensity scores

Vertical agency conflicts is the dependent variable	Coef.		St. Error
Firm Age	0.000		0.001
Firm Cash ratio	-0.045		0.060
Firm Leverage	-0.156	***	0.045
Firm Sales growth	0.065	***	0.010
Firm Operating working capital	0.169	***	0.024
Firm Size	0.068	***	0.008
Constant	0.211	*	0.125
Industry and country dummies		Yes	
Number of observations		64,952	
Pseudo R-squared		0.0874	
LR Chi-squared	7811.35	***	

***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels respectively.

Appendix D. Balancing properties for the PSM algorithm

Variables	Sample	Treated	Control	% bias	t	p-value
Firm Age	Unmatched	18.253	18.268	-0.100	-0.150	0.878
	Matched	18.254	18.401	-1.200	-1.450	0.146
Firm Cash ratio	Unmatched	0.142	0.125	10.700	13.580	0.000
	Matched	0.142	0.129	8.500	10.110	0.000
Firm Leverage	Unmatched	0.200	0.210	-4.700	-5.910	0.000
	Matched	0.200	0.203	-1.200	-1.430	0.152
Firm Sales growth	Unmatched	0.191	0.163	3.400	4.290	0.000
	Matched	0.190	0.178	1.500	1.720	0.086
Firm Operating working capital	Unmatched	0.266	0.251	3.600	4.590	0.000
	Matched	0.266	0.257	2.100	2.460	0.014
Firm Size	Unmatched	7.435	7.568	-10.000	-12.700	0.000
	Matched	7.435	7.610	-13.200	-15.890	0.000
Distribution of the absolute bias:						
Mean absolute bias %	Unmatched	5.4				
	Matched	4.6				
Median absolute bias %	Unmatched	4.1				
	Matched	1.8				
LR Chi² (p-value)	Unmatched	364.32	***			
	Matched	322.90	***			

***, **, and * denote statistical significance at the 0.01, 0.05, and 0.1 levels.