Private Control Benefits and Corporate Performance and Policies

Sheng-Syan Chen
National Taiwan University

Chia-Wei Huang
Yuan Ze University

Abstract
We construct a new index for measuring managers' private control benefits (PCB) and examine how these benefits affect corporate performance and policies. Our index mitigates various potential biases associated with measurement of PCB in the literature. Consistent with theoretical predictions, firms whose CEOs enjoy more PCB experience poorer operating and stock return performance and reduced value. They use less debt financing and make fewer risky investments, resulting in higher cash holdings and lower firm risk. They also adopt more non-delay antitakeover provisions and pay more to employees. The evidence highlights the importance of PCB for firm valuation and decision-making.

JEL classification: G11; G30; G31; G32; J31
Keywords: Agency problems; private control benefits; financing policy; investment policy; antitakeover provisions; employee pay

Private Control Benefits and Corporate Performance and Policies

Corporate decision makers' pursuit of private control benefits at the expense of shareholders is an important reason for the agency problems that result from the conflicts of interest inherent in virtually all corporate activity (see, e.g., Berle and Means 1932; Jensen and Meckling 1976; Grossman and Hart 1986; Masulis, Wang, and Xie 2009). Jensen and Meckling (1976) note that managers' private control benefits include both direct and indirect financial benefits. Direct financial benefits occur when corporate assets are redirected into a personal account; indirect financial benefits involve on-the-job consumption or shirking. Control also provides intangible benefits, such as status, political influence, or power over people. We propose a new measure to estimate managers' private control benefits and analyze how it relates to a firm's various policy decisions and performance.

While by their nature the private benefits of control are difficult to measure, the finance literature has developed three approaches to estimating them. The first approach relies on a single empirical proxy, such as a block premium (see, e.g., Barclay and Holderness 1989; Albuquerque and Schroth 2010) or a voting premium (see, e.g., Lease, McConnell, and Mikkelson 1983; Zingales 1995; Nenova 2003; Doidge 2004; Guadalupe and Pérez-González 2010). One drawback of this methodology is that the block premium is relevant only for target firms engaged in block transactions and the voting premium is available only for firms with two or more classes of shares (Albuquerque and Schroth 2010; Guadalupe and Pérez-González 2010). Another drawback is that each individual proxy of private control benefits may suffer from measurement error (see, e.g., Tetlock 2007; Bharath, Sunder, and Sunder 2008; Custódio, Ferreira, and Matos 2013). To overcome these shortages, the second approach uses several individual observable characteristics that are believed to reflect various aspects of private control benefits (see, e.g., Field and Karpoff 2002; Boone, Field, Karpoff, and Raheja 2007; Wintoki 2007; Gompers, Ishii, and Metrick 2010). This approach is problematical because it typically involves interpretation of regression coefficients of correlated characteristics.[1] The third approach proposed by Eckbo and Thorburn (2003) uses a simple factor representation to summarize information in observable characteristics that could affect private control benefits. Their proxy for private control benefits is a sum of four characteristics that they identify from a sample of firms filing for auction bankruptcy, where the coefficient on each characteristic (either +1 or −1) is determined a priori by the generally available empirical evidence and economic intuition. This approach ignores the relative explanatory power of components in measurement of private control benefits.

Our measure of private control benefits is based on CEO, firm, and industry characteristics in the Standard & Poor's (S&P) 1,500 firms over 1992–2010. The determinants of these benefits are derived from theory and empirical evidence in the finance, economics, and psychology literature. Our composite index of private control benefits (PCB index) captures the common component of all the CEO, firm, and industry characteristics used in this study, extracted using principal component analysis. The PCB index thus derived mitigates the omitted variable bias. It gives more weight to the characteristics that are more likely to reflect the level of private control benefits, while it minimizes measurement error and improves the power of regression tests by avoiding

[1] In their main tests, Boone, Field, Karpoff, and Raheja (2007) estimate multivariate regressions by relying on only three variables to capture managers' opportunities for private benefits of control. In the appendix they also perform robust regressions by using principal components to transform the three variables into a factor for the scope of private control benefits. Their measure, however, still suffers from a problem of omitted variables. We examine the validity of their measure later in our paper.

multicollinearity arising from the use of characteristics that are typically correlated. Our PCB index is also not subject to a potential selection bias in that it is not confined to analysis of firms that have self-selected into firms with multiple classes of shares or of targets whose block holdings are traded.

We use our PCB index to provide a direct test of the private control benefits of CEOs on firm performance and value. When private control benefits are great enough, managers have an incentive to retain these benefits at the expense of minority shareholders (see, e.g., Reese and Weisbach 2002; Nenova 2003; Dyck and Zingales 2004a; Pinkowitz, Stulz, and Williamson 2006). Such higher agency costs will adversely affect a firm's subsequent performance and value if the market underestimates these costs (see, e.g., Gompers, Ishii, and Metrick 2003; Morck and Yeung 2012).[2] We show that the PCB index is negatively and statistically significantly associated with a firm's stock return performance. This effect is also economically significant. A quintile-spread portfolio that buys firms with a low PCB index and sells firms with a high PCB index is associated with an average monthly abnormal stock return ranging from 0.66% to 1.09% (equivalent to annualized abnormal returns of 8.21% through 13.89%), depending on the model or weighting scheme. An increase in the PCB index is associated with a statistically and economically significant reduction in Tobin's *Q*. A higher PCB is also associated with poorer operating performance. These results hold after controlling for other potentially influential factors. Our evidence indicates that a firm offering more private control benefits tends to experience poorer performance and lower value.

[2] The complicated nature and variety of managers' private control benefits suggest that investors cannot concretely measure their effects on a firm's performance and value. Thus, investors are likely slow to recognize the full costs of private control benefits. Research on cognitive behavior also suggests that investors may underreact to complex information (see, e.g., Barberis, Shleifer, and Vishny 1998; Hong and Stein 1999; Hirshleifer 2001).

The private benefits of control affect various corporate decisions. CEO turnover is abnormally high around bankruptcy (Gilson 1989; Hotchkiss 1995), and CEOs cannot derive private benefits upon bankruptcy. Thus, CEOs with a high level of private benefits of control are likely to adopt financing policies that entail a low probability of financial distress. We follow Leary and Roberts (2010) and Covas and Den Haan (2011), and use the net change in total debt as a measure of the amount that a firm raises through debt contracts. We document a statistically and economically significant negative relation between the PCB index and the change in firm debt ratio. The results do not change after controlling for other potential explanatory variables. Our evidence indicates that managers choose more conservative debt levels when they enjoy greater private control benefits.

Private control benefits can also influence CEOs' decisions to assume risk. Shleifer and Vishny (1989), Pagano and Röell (1998), Bertrand and Mullainathan (2003), and Benos and Weisbach (2004) all suggest that managers who enjoy a high level of private control benefits are likely to follow conservative and suboptimal investment strategies so as to strengthen their position in the firm. We show statistically and economically significant negative associations between the PCB index and levels of capital expenditures, research and development expenditures, and acquisitions. The results indicate that private control benefits discourage managers from making risky investments. We further show that this conservative behavior leads to significantly higher cash holdings and lower firm risk.

We also examine the effect of private control benefits on managerial incentives to adopt antitakeover provisions. The agency view argues that antitakeover provisions are harmful for shareholders to the degree that they help managers preserve private control benefits (see, e.g., Bebchuk 1999; Bebchuk, Coates, and Subramanian 2002; Gompers, Ishii, and Metrick 2003; Hannes 2005, 2006; Bates, Becher, and Lemmon 2008). The bargaining view, however, argues that antitakeover provisions are beneficial for shareholders because they lead to higher target premiums by allowing CEOs to fend off opportunistic offers (see, e.g., Ryngaert 1988; Stulz 1988; Comment and Schwert 1995; Schwert 2000). In investigation of the trade-off between agency costs and bargaining benefits, Kadyrzhanova and Rhodes-Kropf (2011) show that delay provisions designed to slow down a hostile bidder provide the firm bargaining benefits and positively affect shareholder wealth, while non-delay provisions present agency costs and negatively affect shareholder wealth. Thus, CEOs with more private control benefits are expected to adopt more non-delay provisions. Consistent with this prediction, we find significantly positive effects of the PCB index for non-delay provisions but insignificant effects for delay provisions.[3]

We finally examine how the private control benefits of CEOs influence employee pay. CEOs may pay employees more to pursue their own self-interest, such as devoting less effort to wage bargaining, improving social relations with employees, generating a management-worker alliance, and turning firms into an unattractive takeover target (Jensen and Meckling 1976; Thaler 1989; Pagano and Volpin 2005; Cronqvist, Heyman, Nilsson, Svaleryd, and Vlachos 2009). We find statistically and economically significant positive relations between our PCB index and both non-executive pay and non-CEO

[3] Following Kadyrzhanova and Rhodes-Kropf (2011), the 24 antitakeover provisions developed by Gompers, Ishii, and Metrick (2003) are divided into the delay and the non-delay subgroups, where the delay subgroup includes classified board, blank check, special meeting, and written consent provisions, and the non-delay subgroup includes the remaining 20 provisions. The results are similar when we exclude state antitakeover laws from non-delay provisions.

executive pay. The results support the hypothesis that managers with more private control benefits tend to pay their employees more.

We conduct several additional tests to address the robustness of our results. First, we use a difference-in-differences method that relies on a quasi-natural experiment using a court ruling on July 2, 1999, which generates a plausibly exogenous variation in managers' private control benefits. A ruling of the U.S. Court of Appeals for the Ninth Circuit makes it more difficult for investors to file class actions against firms headquartered in the Ninth Circuit and hence provides more incentives for managers to extract private benefits (see, e.g., Donelson and Yust 2014). We show that, following that ruling, firms headquartered in the Ninth Circuit states tend to be valued less, experience poorer operating performance, use less debt financing, undertake fewer risk-taking activities, adopt more non-delay antitakeover provisions, and pay more to employees.[4] Second, our results may suffer from a potential dynamic endogeneity problem as discussed in Wintoki, Linck, and Netter (2012), the same type of problem encountered in other research on private control benefits. To address this concern, we use a dynamic panel generalized method of moments (GMM) estimator as proposed by Arellano and Bover (1995) and Blundell and Bond (1998). Our conclusions remain valid. Finally, we note that our results may also suffer from a potential look-ahead bias, as we use the full sample period to estimate the private benefits of control. Out-of-sample analysis, however, produces similar findings.

The paper is organized as follows. We first review relevant prior literature and develop our hypotheses. Section 2 describes the sample and the measure of private

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[4] The states covered by the Ninth Circuit decision include Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, Oregon, and Washington.

control benefits. Section 3 states our identification strategy. Section 4 presents our empirical results. Section 5 provides additional robustness checks. The final section concludes.

1. Literature Review and Hypotheses Development

1.1 Determinants of private control benefits

1.1.1 CEO characteristics

CEO ownership. There are competing hypotheses concerning the effect of CEO ownership on the private benefits of control. According to the incentive alignment hypothesis developed by Jensen and Meckling (1976), ownership gives managers monetary incentives to maximize firm profits and thus increases the cost of CEOs pursuing their private benefits. La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2002) suggest that there are direct wealth consequences from CEO decisions through cash flow ownership, so the private benefits of control become costly to them and will be reduced. Denis, Denis, and Sarin (1997) also indicate that firms with low CEO ownership may engage in value-reducing diversification because managers extract private benefits that exceed their private costs. Morck, Shleifer, and Vishny (1988), Stulz (1988), and Holderness (2003), however, argue that ownership by CEOs promotes their entrenchment, which enables them to easily extract the private benefits of control. These competing theoretical arguments suggest that the relation between CEO ownership and private control benefits is undetermined a priori.

CEO tenure. Field and Karpoff (2002) and Eckbo and Thorburn (2003) argue that CEOs who are in their positions longer have more opportunity to extract private control benefits. Hermalin and Weisbach (1998) suggest that longer-tenured CEOs are likely to be more influential in the selection of new directors and have more control of a board. Thus, CEOs' private control benefits are positively related to their tenure with the firm.

CEO gender. Previous economics and psychology literatures find that women are more risk-averse than men. Women are hence likely to put a higher cost on private benefits and to discount future private benefits more heavily (Bebchuk and Zingales 2000; Cairns and van der Pol 2000; Croson and Gneezy 2009). There is also a large body of literature that reports gender differences in possession attachment. For example, Kamptner (1989) notes that men value possessions for utilitarian and self-interest reasons while women value them primarily for social reasons. Taken together, female CEOs are more risk-averse and less self-interested, implying that they are less likely to pursue private control benefits.

CEO age. Jensen and Smith (1985) argue that the shorter horizons for managers than for shareholders are an important source of agency problems in the firm. Managers with a shorter decision horizon are likely to pursue their own interests. As younger CEOs tend to have a longer decision horizon, there is a positive relation between CEO age and private control benefits. Li, Low, and Makhija (2011) also suggest that younger managers have a stronger desire to establish their reputations in the market than older managers. Because of such reputation concerns, younger CEOs are less likely to exhibit opportunistic behavior by reaping private control benefits. Field and Karpoff (2002) argue to the contrary that older CEOs tend to have fewer working years over which to enjoy any private benefits of control, resulting in a negative relation between the present value of private benefits and CEO age. Kalyta (2009) also suggests that CEOs near retirement may curtail their private benefits in order to improve firm performance and to obtain a better retirement package. Because of the competing theoretical arguments, CEO age has an undetermined effect on private control benefits.

CEO cash pay. The simplest type of private control benefits is perhaps excessive manager cash pay (see, e.g., Barclay and Holderness 1989; Field and Karpoff 2002; Smart and Zutter 2003; Core, Guay, and Verdi 2006). Edmans, Gabaix, and Landier (2009) also argue that CEOs' utility gains from shirking increase with compensation, because shirking allows them to enjoy consuming goods and services that they can purchase with their salary. Thus, CEO cash pay tends to be positively correlated with the private benefits of control.

1.1.2 Firm characteristics

Firm size. Several studies argue that there is a negative relation between firm size and managers' pursuit of private control benefits. CEOs of small firms are often required to carry out many different tasks, hence providing a great scope for extracting private control benefits (Eckbo and Thorburn 2003). Small firms are also likely to be family controlled (Faccio and Lang 2002). Family ownership is a common way to extract private benefits (Franks and Mayer 2001; Anderson and Reeb 2003; Goergen and Renneboog 2003), and CEOs in small firms tend to enjoy a high level of private benefits of control. The private control benefits of the CEOs in large firms, on the other hand, are usually small relative to the firm's monetary returns, making it unlikely that protection of these benefits is an overriding consideration for large firms (Bolton and von Thadden 1998). Other studies, however, suggest a positive relation between firm size and private control benefits. CEOs may have incentives to engage in empire building by growing their firms to gain power and prestige, and not necessarily acting to maximize shareholder value (see, e.g., Jensen 1986; Jensen and Murphy 1990; Aghion and Bolton 1992; Zwiebel 1996;

Tirole 2006). Taken together, the relation between firm size and the private benefits of control is undetermined a priori.

Firm age. Older firms, which have likely developed longer histories of relationships, tend to receive more favors from governments (see, e.g., Kroszner and Stratmann 1998). Older firms' extensive experience in gaining political access also helps CEOs use their political connections more effectively (Holburn and Zelner 2010). As political connections can represent non-pecuniary private benefits (Lenway and Rehbein 1991; Morck and Yeung 2004; Hung, Wong, and Zhang 2012), CEOs of older firms are more likely to exhibit opportunistic behavior and reap private control benefits. An alternative argument is that it is less likely older firms have a founder as CEO (Baker and Gompers 2003; Gompers, Ishii, and Metrick 2010). As private control benefits are stronger in firms whose founders are still active, older firms are less likely to offer private control benefits. These competing arguments suggest that firm age has an undetermined effect on CEOs' private control benefits.

Firm share of the local pie. Some recent high-profile scandals of corporate fraud have occurred at the firms that were major employers in their geographic region. CEOs of Adelphia and HealthSouth, for example, played local benefactor with company funds. Gompers, Ishii, and Metrick (2010) suggest a higher level of private benefits of control is expected when firms are a major employer in their region. Thus, CEOs tend to extract more private control benefits when their firm has a larger share of the local pie (i.e., a higher ratio of their firm's sales to the sales of all firms in the same region).

Free cash flow. The private benefits of control are likely to be associated with free cash flow because it can be diverted toward empire building and excessive compensation (see, e.g., Jensen 1986; Stulz 1990; Stein 1997; Gompers, Ishii, and Metrick 2010; Dharmapala, Foley, and Forbes 2011). Recognizing this relation, however, investors may demand control discounts that are positively related to free cash flow, hence raising the private costs of control (Gompers, Ishii, and Metrick 2010). Thus, the net effect of free cash flow on private control benefits is undetermined a priori.

Asset tangibility. Eckbo and Thorburn (2003) and Dyck and Zingales (2004a) argue that managers find it more costly to expropriate tangible than intangible assets. It is more difficult for managers to redirect corporate assets into their personal account if assets are tied down and easily observable, as is the case with tangible assets. Thus, the private benefits of control held by CEOs are negatively associated with asset tangibility.

Firm diversification. Denis, Denis, and Sarin (1997) argue that managers in diversified firms derive their private benefits of control exceeding their private costs of control. Managers benefit from firm diversification because they have greater power and prestige and higher compensation in the management of larger firms (Jensen 1986; Jensen and Murphy 1990; Stulz 1990); because they have less risk of undiversified personal portfolios (Amihud and Lev 1981); or because they seem to become indispensable to the firm (Shleifer and Vishny 1989). Thus, CEOs in diversified firms are more likely to expropriate private control benefits than those in focused firms.

1.1.3 Industry characteristics

Media, sports, and entertainment industries. Demsetz and Lehn (1985) argue that CEOs in media, sports management, and entertainment industries can enjoy private benefits when they control the editorial privilege of a media company or can associate with sports and entertainment celebrities. DeAngelo and DeAngelo (1985), Field (1999), and Smart and Zutter (2003) all show that control of a firm in these industries provides many opportunities to capture private benefits. Media, sports, and entertainment firms are hence more likely to convey private control benefits.

Product market competition. The degree of product market competition adversely affects the opportunity for managers to appropriate private control benefits. When markets are more competitive, prices become more verifiable, and managers have greater difficulty appropriating resources through manipulated transfer prices without incurring legal or reputation costs (Dyck and Zingales 2004b). It is also more likely that, in a competitive market, the distortions resulting from the extraction of private control benefits jeopardize a firm's survival (Alchian 1950; Stigler 1958; Shleifer and Vishny 1997; Dyck and Zingales 2004b; Guadalupe and Pérez-González 2010). Therefore, CEOs in firms facing greater product market competition are less likely to extract private control benefits.

1.2 Effects of private control benefits on corporate performance and decisions

1.2.1 Firm performance

The private benefits of control are pecuniary and non-pecuniary benefits accruing individually to the CEO of a firm. That a CEO can appropriate corporate assets for reasons of self-interest creates conflicts of interest between the CEO and minority shareholders. When the private benefits of control are high enough, the CEO has an incentive to seek private benefits at the expense of minority shareholders, diminishing the value of the firm (see, e.g., Reese and Weisbach 2002; Nenova 2003; Dyck and Zingales 2004a; Pinkowitz, Stulz, and Williamson 2006). Therefore, private control benefits result in additional agency costs. If the market underestimates these additional costs, a firm's operating and stock return performance will be poorer than expected, and its future value will become lower (see, e.g., Gompers, Ishii, and Metrick 2003; Morck and Yeung 2012). We hypothesize that a firm with the CEO extracting more private control benefits experiences poorer performance and lower value.

1.2.2 Leverage

With an increase in firm leverage, managers may not be able to meet debt payments and hence are threatened by bankruptcy. The literature documents that management turnover is abnormally high around bankruptcy. For example, Gilson (1989) shows that in any given year 52% of firms experience a senior management change if they are either in default on their debt, bankrupt, or privately restructuring debt to avoid bankruptcy. Hotchkiss (1995) also finds that 70% of firms replace CEOs by the time a reorganization plan is implemented following bankruptcy. When CEO turnover occurs upon bankruptcy, CEOs can no longer derive private benefits from incumbency. To avoid these costs, CEOs will rationally favor financing policies that reduce the probability of financial distress. This suggests that CEOs will choose more conservative levels of debt for their firms when they enjoy a higher level of private control benefits.

1.2.3 Risk-taking

The private benefits of control influence managers' choices with respect to their investment risks. Unlike many other sources of income such as firm equity, human capital is difficult to diversify and not traded in markets (see, e.g., Fama 1980; Amihud and Lev 1981; Lambert 1986). As firm-specific human capital skills are a part of private control benefits (Shleifer and Vishny 1989; Benos and Weisbach 2004), managers would be inclined to advocate for less risk-taking than shareholders without those skills and benefits, so as to secure their position in the firm (Jensen and Meckling 1976; Demsetz and Lehn 1985; John, Litov, and Yeung 2008; Laeven and Levine 2009). Moreover, if managers prefer a quiet life, as a part of private control benefits (Pagano and Röell 1998), they may forgo some value-enhancing risky projects in order to avoid costly efforts (Bertrand and Mullainathan 2003). Taken together, managers who enjoy large private benefits of control tend to adopt conservative and suboptimal investment strategies. We hypothesize that the private benefits of control discourage CEOs from making risky investments, resulting in higher cash holdings and lower firm risk.

1.2.4 Antitakeover provisions

Corporate managers might add antitakeover provisions to a corporate charter even if these provisions hurt their shareholders (see, e.g., Bebchuk, Coates, and Subramanian 2002; Gompers, Ishii, and Metrick 2003). The rationale is that a control transaction does not generally compensate incumbent managers for the loss of private benefits (Bebchuk 1999). Hannes (2005, 2006) and Bates, Becher, and Lemmon (2008) suggest that as antitakeover provisions help managers preserve their private benefits of control, they may be willing to sustain a reduced share value. Managers might receive a higher share price in the absence of antitakeover provisions, but a hostile bidder may easily rob them of their precious control benefits by ousting them. Thus, when a firm supplies greater control benefits, CEOs have more incentives to adopt antitakeover provisions.

There is, however, a challenge to the agency view behind antitakeover provisions. An alternative bargaining view argues that antitakeover provisions may benefit shareholders by allowing managers to fend off opportunistic offers, resulting in higher target premiums (see, e.g., Ryngaert 1988; Stulz 1988; Comment and Schwert 1995; Schwert 2000). Kadyrzhanova and Rhodes-Kropf (2011) investigate the trade-off between agency costs and the bargaining benefits of adopting antitakeover provisions. They show that the provisions allowing managers to delay takeovers (i.e., delay provisions) produce significant bargaining benefits and have positive effects on shareholder value, while non-delay provisions suffer from significant agency costs and negative valuation effects. We therefore hypothesize that CEOs with higher levels of private benefits of control are likely to adopt non-delay provisions.

1.2.5 Employee pay

Jensen and Meckling (1976) and Thaler (1989) argue that the agency problem between managers and shareholders affects employee pay generally. Managers may pay employees more to pursue their own self-interest. Higher pay to the workforce may mean managers enjoy private benefits such as less effort in wage bargaining and better social relations with employees (Cronqvist, Heyman, Nilsson, Svaleryd, and Vlachos 2009). Pagano and Volpin's (2005) model suggests that through a generous wage contract, CEOs can generate a management-worker alliance, turn workers and unions into antitakeover mechanism, and transform firms into unattractive takeover targets. We therefore hypothesize that CEOs with higher levels of private benefits of control are likely to pay their employees more.

2. Sample and Data Description

2.1 Sample selection

Our sample consists of all firms in the ExecuComp database for which there is a match in both CRSP and Compustat. We exclude financial firms (SIC codes 6000–6999) and regulated utilities (SIC codes 4900–4999). Firms must have been traded on the NYSE, the AMEX, or Nasdaq. These filters result in a final set of 20,654 firm-year observations for 2,446 firms from 1992 through 2010. Since we use the lagged value of private control benefits as the explanatory variable, our sample period ends in 2010.

2.2 Measuring private control benefits

We create an index of private control benefits that is based on thirteen variables: CEO characteristics (ownership, tenure, gender, age, and cash pay), firm characteristics (size, age, share of the local pie, free cash flow, asset tangibility, and firm diversification), and industry characteristics (media, sports, and entertainment industries, and product market competition).[5] These variables are measured annually over 1992–2010. We define each variable separately, and then discuss how we form an overall private control benefit index.

Our first set of variables is intended to measure the characteristics of the CEO. *CEO Ownership* is defined as the percentage of a firm's common stock owned by the CEO. *CEO Tenure* is measured as the number of years the CEO has been with the firm. *CEO Gender* is a dummy variable that identifies whether the CEO is female. *CEO Age* is defined as the age of the firm's CEO. *CEO Cash Pay* is measured as the natural logarithm of the total annual amount of CEO cash compensation (salary plus bonus).

The other variables are intended to capture the characteristics of the firm and its industry. *Firm Size* is measured as the natural logarithm of the book value of total assets. *Firm Age* is calculated as the difference between the founding date and a given fiscal year-end date.[6] *Local Pie* is defined as the ratio of a firm's sales to the sales of all firms

[5] Unlike Boone, Field, Karpoff, and Raheja (2007), we exclude antitakeover provisions from our PCB index. Following Hannes (2005, 2006), Chemmanur, Paeglis, and Simonyan (2011), Cuñat, Gine, and Guadalupe (2012), and Johnson, Karpoff, and Yi (2015), antitakeover provisions adopted by firms can be endogenous and are a function of private control benefits.
[6] Company founding date data are obtained from Jay Ritter's website (http://bear.warrington.ufl.edu/ritter/). If the founding date is not available, we replace it by the date of its first appearance in the CRSP files.

in the same metropolitan or micropolitan statistical area (MSA). Free cash flow, *FCF*, is calculated as the firm's operating income before depreciation minus interest expense, taxes, preferred dividends, and common dividends, divided by total assets. *Tangibility* is measured as the ratio of property, plant, and equipment to total assets. *Multisegment* is defined as an indicator variable for a diversified firm. Among industry characteristics, we examine media, sports management, and entertainment industries (*Media*) and industry competition (*HHI*). *Media* is a dummy variable that equals one if the firm operates in industries in SIC codes 2710–2711, 2720–2721, 2730–2731, 4830, 4832–4833, 4840–4841, 7810, 7812, and 7820. *HHI* is the Herfindahl-Hirschman index, defined as the sum of the squared fraction of industry sales by all firms in the two-digit SIC industry.[7]

Panel A of Table 1 reports summary statistics for the components of private control benefits. On average, CEOs in the sample own 3.6% of the shares, have 8.0 years of tenure, are 55.3 years old, and earn $1.2 million in cash compensation per year. 1.8% of CEOs are female. The average sample firm has total assets of $5.7 billion, an age of 31.1 years, a 4.9% market share in the same MSA, a free cash flow ratio of 8.0%, and an asset tangibility ratio of 28.2%. 55.4% of the sample firms have multiple segments, and 3.0% of the sample firms operate in the media, sports management, and entertainment industries. The Herfindahl-Hirschman index averages 6.5%. These summary statistics are similar to those reported by previous studies.

[Insert Table 1 here]

Panel B presents pair-wise Spearman correlations among the components of private

[7] Application of narrowly defined industry classifications such as four-digit SIC codes, Fama and French (1997) 48 industries, and Hoberg and Phillips (2010) 500 industries yields similar results.

control benefits.[8] Most of the correlations are statistically significant. CEOs in larger firms are likely to have higher cash compensation, consistent with previous findings (see, e.g., Rosen 1982; Kostiuk 1990; Murphy 1999). Older CEOs tend to have longer tenures, and longer-tenured CEOs tend to have higher share ownership, confirming findings in Denis and Sarin (1999), Becker (2006), and Lehn and Zhao (2006).

To create a one-dimensional index of private control benefits, we extract common components, using principal component analysis, from the thirteen variables that reflect various aspects of private control benefits. Using a single factor rather than the thirteen variables individually, we minimize measurement error and increase the power of the regression tests by avoiding multicollinearity (see, e.g., Baker and Wurgler 2006; Custódio, Ferreira, and Matos 2013). Another advantage of using principal component analysis is that we do not have to eliminate any components in a subjective fashion, or make subjective judgments regarding the relative importance of these components (Tetlock 2007).

As the first principal component is the weighted linear combination of the original thirteen variables that captures the greatest variance in the sample, the index of private benefits of control (PCB) is the first factor of the principal component analysis. The eigenvalue of the first principal component is 6.8, and explains 52.2% of the sample variance.[9] The PCB index is standardized to have zero mean and unit standard deviation. This procedure produces a parsimonious index:

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[8] The results are similar for Pearson correlations, so to save space we do not report them here.

[9] An eigenvalue above one indicates that the first component has more explanatory power than any one of the original proxies by itself. Our analysis shows two principal components with eigenvalues above one (the second principal component has an eigenvalue of slightly above one, 1.02). When we include both the first and second principal component as the independent variables in our regression analysis, the conclusion remains unchanged.

$$
\begin{aligned}
PCB_{it} = {} & -0.116(CEO\ Ownership)_{it} + 0.015(CEO\ Tenure)_{it} - 0.024(CEO\ Gender)_{it} \\
& + 0.159(CEO\ Age)_{it} + 0.340(CEO\ Cash\ Pay)_{it} + 0.385(Firm\ Size)_{it} \\
& + 0.221(Firm\ Age)_{it} + 0.155(Local\ Pie)_{it} + 0.100FCF_{it} \\
& - 0.088Tangibility_{it} + 0.229Multisegment_{it} + 0.094Media_{it} \\
& + 0.053HHI_{it}, \qquad (1)
\end{aligned}
$$

where PCB_{it} is the index of private control benefits for firm *i* in year *t*. The absolute value represents the extent of the component's contribution to the PCB index, and the sign indicates whether the contribution is positive or negative. *CEO Ownership*, *CEO Gender*, and *Tangibility* are negatively correlated with the index, while the other ten variables are positively correlated with the index. These results are consistent with our expectations.

3. Identification

Analysis of the effects of private control benefits on firm performance and policy decisions may suffer from a potential endogeneity problem for reasons of simultaneity, omitted variables, or measurement error. Simultaneity or reverse causality may contaminate the results if firm performance or policy decisions contemporaneously affect the level of private control benefits that the CEO can extract. We eliminate this type of influence from the analysis by examining the relation between private control benefits and subsequent firm performance and policy decisions. We also address this simultaneity bias by using a difference-in-differences method (as in Bertrand and Mullainathan 2003) and a dynamic GMM model (as in Gupta 2005; Hoechle, Schmid, Walter, and Yermack 2012; Wintoki, Linck, and Netter 2012; Ellul and Yerramilli 2013).

Unobservable variables that are common to firms may also generate a significant relation between the level of private control benefits and firm performance and policy decisions. This concern is referred to as the omitted variable bias. Specifically, the index of private control benefits may be correlated with a variable not in the analysis but that determines, in part, firm performance or policy decisions, causing the ordinary least squares estimator to be biased and inconsistent. We include firm fixed effects and year fixed effects in our analysis to control for unobservable omitted variables (Roberts and Whited 2013). The difference-in-differences method and the dynamic GMM model we use also control for this potential problem.

Finally, measurement error in estimating private control benefits may influence the impact they have on firm performance and policy decisions. Use of variables with large measurement error can result in Type II statistical errors (i.e., accepting false null hypotheses; see Toft and Shea 1983). Our use of principal component analysis to create an index of private control benefits can control for the possibility that measurement error affects our results, because principal component analysis is insensitive to the effects of measurement error (Gauch 1982; Williamson and Kerekes 2011).

4. Empirical Results

4.1 Private control benefits and firm performance

4.1.1 Stock returns

To examine the relation between private control benefits and subsequent stock returns, we sort our sample firms into quintiles according to their PCB index in year *t*, and compute portfolio returns from the beginning of July of year *t* + 1 through the end of June of year *t* + 2.[10] We investigate the returns of each of the quintile PCB-sorted portfolios, as well as the returns to long-short portfolios that buy firms in the bottom PCB quintile (G1) and short firms in the top PCB quintile (G5). Following convention, we

[10] The results are robust to sorting firms into decile portfolios.

compute abnormal returns using the Fama and French (1993) three-factor model; the Carhart (1997) four-factor model; the Carhart four-factor model plus the Pastor and Stambaugh (2003) liquidity risk factor; the Fama and French (2015) five-factor model; and the Daniel, Grinblatt, Titman, and Wermers (1997) (DGTW) characteristic adjustment method.

Table 2 presents average monthly abnormal returns of the quintile portfolios and the long-short portfolios, using both value-weighted and equal-weighted portfolio returns. A quintile-spread portfolio that buys firms in the bottom PCB group and sells firms in the top PCB group is associated with an average monthly abnormal stock return ranging from 0.66% to 1.09% (equivalent to annualized abnormal returns of 8.21% through 13.89%), depending on the model or weighting scheme. We also find a negative and significant abnormal return in the top PCB group across all models, supporting the agency theory of private control benefits.

[Insert Table 2 here]

To address concerns that the abnormal return to the PCB index might be driven by an omitted variable bias, we estimate Fama-MacBeth (1973) regressions of returns that include a set of control variables. The cross-sectional regression is:

$$r_{it} = \alpha_t + \beta_t PCB_{it} + \boldsymbol{\omega}'\boldsymbol{X}_{it} + \varepsilon_{it}, \quad (2)$$

where r_{it} is the return on firm *i*'s stock in month *t*, *PCB* is the index of private control benefits, and $\boldsymbol{X}$ is a vector of control variables (fully defined in the Appendix). Following Gompers, Ishii, and Metrick (2003), we include the full set of control variables used in their Fama-MacBeth regressions except for firm size. As the size variable has been used to estimate the PCB index, we exclude this control variable to avoid a multicollinearity problem (see, e.g., Bharath and Dittmar 2010). All explanatory variables are lagged by one year. All control variables are winsorized at the 1st and 99th percentiles because extreme observations may bias the estimation result. The dependent variable is the raw return, value-weighted industry-adjusted return, equal-weighted industry-adjusted return, or DGTW characteristic-adjusted return, where industries are defined by the Fama-French (1997) 48-industry categories.[11] We estimate equation (2) for each month and calculate the mean and time-series standard deviation of the 228 monthly estimates to obtain the Fama-MacBeth coefficients and standard errors. *t*-statistics are based on standard errors corrected for autocorrelation following Newey and West (1987).[12]

Table 3 shows the results. The number of observations varies across regressions because of data availability. In all regressions, the coefficients on *PCB* are negative and statistically significant at the 1% level. The evidence is consistent with the hypothesis that shareholder wealth suffers when CEOs extract more private control benefits. Table 3 also indicates that two control variables are consistently significant across all the regression models. Stock returns tend to drop with stock prices and increase with institutional ownership. These results are consistent with previous evidence (see, e.g., Loughran and Ritter 1996; Sias, Starks, and Titman 2006).

[Insert Table 3 here]

4.1.2 Firm value

It is well established that agency conflicts between managers and shareholders can affect firm value (see, e.g., Jensen and Meckling 1976; Claessens, Djankov, Fan, and

[11] The conclusions in this study do not change when industry classifications are based on four-digit SIC codes or Hoberg and Phillips (2010) 500-industry categories.
[12] The results are similar if we estimate the regressions using weighted least squares, where weights are equal to market capitalization at the end of month $t-1$.

Lang 2002; Gompers, Ishii, and Metrick 2003; Lemmon and Lins 2003; Lins 2003). As the private benefits of control can induce an agency problem, we expect them to affect firm value as well. To examine this relation, we estimate:

$$Q_{it}^{*} = \alpha_i + \alpha_t + \beta PCB_{it-1} + \boldsymbol{\omega}' \boldsymbol{X}_{it-1} + \varepsilon_{it}, \tag{3}$$

where Q_{it}^{*} is industry-adjusted Tobin's *Q* (firm *Q* minus industry-median *Q*) of firm *i* in year *t*. α_i and α_t are, respectively, firm and year fixed effects, and ***X*** is a vector of control variables. Tobin's *Q* is the market value of assets divided by the book value of assets (Compustat item #6), where the market value of assets is the book value of assets plus the market value of common stock (item #24 × item #25) minus the sum of the book value of common stock (item #60) and balance sheet deferred taxes (item #74). Industry medians are computed using all available Compustat firms, where industries are defined by the Fama and French (1997) 48-industry classification. *PCB* is the index of private control benefits. Following Gompers, Ishii, and Metrick (2003), Giroud and Mueller (2011), Edmans, Goldstein, and Jiang (2012), the vector of control variables, ***X***, includes firm financial leverage (*Leverage*), return on assets (*ROA*), research and development expenditures (*R&D*), R&D missing dummy (*R&D Missing*), sales growth (*Sales Growth*), asset turnover (*ATurnover*), selling, general, and administrative expenses (*SGA*), dividend payout (*Div*), and S&P 500 dummy (*S&P500*).[13] All control variables are defined in the Appendix and winsorized at the 1st and 99th percentiles. To estimate the association between private control benefits and firm value, we adopt a pooled panel regression with

[13] Unlike Gompers, Ishii, and Metrick (2003), our control variables do not include a Delaware dummy so that we will not have perfect collinearity between this dummy and a set of firm dummies.

both firm and year fixed effects.[14] Standard errors are estimated with clustered errors at the firm level (Petersen 2009).

Table 4 presents the results. The coefficient on *PCB* is negative and statistically significant at the 1% level, implying that higher *PCB* is associated with lower firm value. To see the economic significance of this result, an increase of one standard deviation in the level of *PCB* (equal to 5.449) is associated with a reduction in the next year's industry-adjusted Tobin's *Q* of 0.278. Given that the average industry-adjusted Tobin's *Q* for the firm-year observations is 0.416, this implies that the impact of private control benefits on firm value is economically significant.[15]

[Insert Table 4 here]

4.1.3 Operating performance

To investigate the relation between the private benefits of control and operating performance, we regress various measures of operating performance on the PCB index (*PCB*), a set of control variables, and firm and year fixed effects, where all explanatory variables are lagged by one year. Following Gompers, Ishii, and Metrick (2003) and Giroud and Mueller (2011), we measure operating performance in terms of return on assets (*ROA*), net profit margin (*NPM*), sales growth (*Sales Growth*), and return on equity (*ROE*). *ROA* is net income (Compustat item #172) divided by the book value of total assets (item #6); *NPM* is net income divided by sales (item #12); *Sales Growth* is the growth in sales over the previous five years; and *ROE* is net income divided by the book value of common stock (item #60). All dependent variables are industry-adjusted by

[14] We also use a variant of the Fama and MacBeth (1973) method by estimating annual cross-sectional regressions and assessing statistical significance each year (by cross-sectional standard errors) and across all years (with the time-series standard error of the mean coefficient). The results are similar.

[15] The conclusion does not change if we also winsorize the dependent variable at the 1st and 99th percentiles.

subtracting the industry median in a given 48 Fama-French industry and year. Following Giroud and Mueller (2011), we trim all dependent variables at the 5th and 95th percentiles of their empirical distribution.[16] Following Gompers, Ishii, and Metrick (2003), Dittmar and Mahrt-Smith (2007), and Giroud and Mueller (2011), the control variables include *Leverage*, *R&D*, *R&D Missing*, book-to-market equity (*BM*), cash (*Cash*), *SGA*, and *Div*. All control variables are defined in the Appendix and winsorized at the 1st and 99th percentiles. Standard errors are clustered at the firm level (Petersen 2009).

Table 5 shows the results of panel regressions. For all operating performance measures, the coefficients on the PCB index are negative and statistically significant at the 5% level or better. This evidence indicates that firms with higher levels of private benefits of control exhibit poorer operating performance, suggesting that agency costs increase with the level of private control benefits.

[Insert Table 5 here]

4.2 Private control benefits and debt financing

To examine how the debt financing decision depends on the private benefits of control, we use panel regressions with one-year-lagged explanatory variables and with firm and year fixed effects. Leary and Roberts (2010) and Covas and Den Haan (2011) suggest that the net change in total debt is a good measure to describe the amount of funds a firm actively raises through debt contracts. Thus, to measure the dependent variable we use: (i) $\Delta LevA$, defined as the change in the book value of total debt (ΔTD) from year $t-1$ to t divided by the sum of book value of total debt and market value of

[16] The results remain robust if we winsorize rather than eliminate extreme observations, use different cutoffs, or use median regressions.

common stock in year $t - 1$, where total debt is the sum of short-term and long-term debt (Compustat item #34 + item #9); and (ii) $\Delta LevB$, defined as ΔTD from year $t - 1$ to t divided by the book value of assets in year $t - 1$. Following Rajan and Zingales (1995), Baker and Wurgler (2002), Leary and Roberts (2010), Custódio, Ferreira, and Matos (2013), and Saretto and Tookes (2013), we include the control variables: *Tobin's Q*, *SGA*, *R&D*, *R&D Missing*, *ROA*, debt maturity (*Maturity*), industry median leverage (*Industry Leverage*), earnings volatility (*Volatility*), change in earnings per share (ΔEPS), investment tax credit (*Tax Credit*), net operating loss carry forwards (*LCF*), investment grade rating (*Investment Grade*), and whether a firm has a Standard & Poor's rating (*Rated*). All control variables are defined in the Appendix and winsorized at the 1st and 99th percentiles. Standard errors are clustered at the firm level.

Table 6 presents the regression results. In column 1 where $\Delta LevA$ is the dependent variable, the coefficient on *PCB* is negative and significant at the 1% level, implying that firms with a higher PCB index have weaker incentives to use debt financing. In terms of economic significance, an increase of one standard deviation in the level of PCB (equal to 5.530) is associated with a reduction in the next year's debt financing of 1.620%. Given that the average $\Delta LevA$ is 1.480%, this implies that the impact of private control benefits on a firm's debt financing policy is not only statistically significant, but also economically significant. Column 2 shows similar results when we use $\Delta LevB$ as the dependent variable. The overall evidence in Table 6 supports the hypothesis that CEOs tend to choose more conservative levels of debt when they enjoy higher levels of private benefits of control.

[Insert Table 6 here]

4.3 Private control benefits and risk-taking

To test whether the private benefits of control affect managerial risk-taking behavior, we estimate a series of regressions whose independent variables are lagged by one year. The dependent variables in these regressions include capital expenditures (*CAPX*), research and development expenditures (*XRD*), acquisitions (*ACQ*), change in cash (Δ*Cash*), and return volatility (*RetVol*), all variables widely used in testing risk-taking activities (see, e.g., Guay 1999; Coles, Daniel, and Naveen 2006; Bargeron, Lehn, and Zutter 2010). *CAPX* is capital expenditures (Compustat item #128) divided by the average book assets at the beginning and end of the year; *XRD* is research and development expenditures (item #46) divided by the average assets; *ACQ* is acquisitions (item #129) divided by the average assets; Δ*Cash* is the change in cash and short-term investments (item #1) divided by the average assets; and *RetVol* is the standard deviation of daily stock returns for the year. *CAPX*, *XRD*, and *ACQ* are industry-adjusted by subtracting the industry median in a given 48 Fama-French industry and year. Using a firm and year fixed effects model, we regress each dependent variable on the PCB index (*PCB*) and a set of control variables. Following Bargeron, Lehn, and Zutter (2010) and Babenko, Lemmon, and Tserlukevich (2011), the control variables are GDP growth rate (*GDP Growth*), *ROA*, *Tobin's Q*, *Leverage*, *Sales Growth*, and operating cash flow (*OCF*).[17] All control variables are defined in the Appendix and winsorized at the 1st and 99th percentiles. Standard errors are clustered at the firm level.

Table 7 reports the results of five regressions, one specification for each of the five dependent variables. We find negative and statistically significant associations between

[17] Unlike Bargeron, Lehn, and Zutter (2010), our control variables do not include return on the S&P 500 to avoid perfect collinearity between this variable and a set of year dummies.

PCB and *CAPX*, *XRD*, and *ACQ*. The results indicate that CEOs who enjoy higher levels of private control benefits tend to make more conservative investment decisions. This conservative behavior results in higher cash holding and lower firm risk. The coefficient on Δ*Cash* is significantly positive, and the coefficient on *RetVol* is significantly negative. Overall, the evidence in Table 7 supports the hypothesis that managers' private control benefits significantly affect their choices with respect to investment risks.[18]

[Insert Table 7 here]

4.4 Private control benefits and antitakeover provisions

We examine the effect of private control benefits on managerial incentives to adopt antitakeover provisions. The main dependent variable is a measure of managerial entrenchment developed by Gompers, Ishii, and Metrick (2003): the G-index, which is the sum of 24 unique antitakeover provisions and obtained from the RiskMetrics database (formerly the Investors Responsibility Research Center (IRRC) database). Firms with a higher G-index are viewed as providing weaker shareholder rights, given that it is more difficult and costly for shareholders to remove managers. Following Gompers, Ishii, and Metrick (2003) and Kadyrzhanova and Rhodes-Kropf (2011), we also divide these 24 antitakeover provisions into subgroups characterized by delay and non-delay. The delay subgroup is subject to four provisions designed to slow down a hostile bidder (classified board, blank check, special meeting, and written consent provisions). The remaining 20 provisions describe the non-delay subgroup. All the dependent variables are measured at the end of fiscal year $t + 1$.

In all regression models we control for both year and industry fixed effects. Because

[18] The conclusion remains unchanged if we also winsorize all the dependent variables in Table 7 at the 1st and 99th percentiles.

of insufficient within-variation of the G-index, we us industry rather than firm fixed effects (Gompers, Ishii, and Metrick 2003; Giroud and Mueller 2011). *PCB* is the index of private control benefits in year *t*. Following Stráska and Waller (2010), the control variables in year *t* include *Leverage*, *Squared Leverage*, *Delaware*, *ROA*, ROA_{-1} (*ROA* in year $t-1$), ROA_{-2} (*ROA* in year $t-2$), *R&D*, and *R&D Missing*. All the control variables are defined in the Appendix and winsorized at the 1st and 99th percentiles. As the data on the G-index are available only up to 2006, our regression analysis ends in 2006.[19] Standard errors are clustered at the firm level.

Column 1 of Table 8 shows a significantly positive association between the private benefits of control and the G-index. The coefficient on *PCB* is statistically significant at the 5% level. That is, CEOs have more incentives to adopt antitakeover provisions when their firms offer more private control benefits, consistent with the agency view. As the G-index also includes antitakeover provisions made by state governments, for robustness we exclude state antitakeover laws from the G-index in column 2. The coefficient on *PCB* becomes more significant at the 1% level, and our conclusion remains unchanged. Columns 3 through 5 report the results for the delay and non-delay subgroups. We find insignificant effects of *PCB* for delay provisions, but the coefficients on *PCB* are positive and statistically significant at the 1% level when non-delay provisions are used as the dependent variable. These results are similar when non-delay provisions do not include state antitakeover laws. The overall evidence in columns 3 through 5 indicates that CEOs with more private benefits of control tend to adopt non-delay provisions, consistent with our hypothesis.

[19] The available data from the previous year are used for years when there is no G-index. We obtain similar results if the available data from the next year are used or if we restrict our sample to years when the G-index is available.

[Insert Table 8 here]

4.5 Private control benefits and employee pay

To test whether CEOs with higher private benefits of control tend to pay their employees more, we estimate two panel regressions with one-year-lagged explanatory variables and with firm and year fixed effects. The dependent variable is the average annual compensation for non-executive employees (non-executive pay) or for non-CEO executives (non-CEO executive pay). Data are obtained from Compustat and ExecuComp. Non-executive pay is measured as the natural logarithm of one plus the ratio of total labor expenses (Compustat item #42) less total executive compensation (ExecuComp item TDC1) divided by the number of employees (Compustat item #29). Non-CEO executive pay is the natural logarithm of one plus the average total compensation per non-CEO executive. Following Cronqvist, Heyman, Nilsson, Svaleryd, and Vlachos (2009) and Chemmanur, Cheng, and Zhang (2013), the control variables include *Tobin's Q*, *Leverage*, average sale per employee (*ASales*), and number of employees (*Employees*). All the control variables are defined in the Appendix and winsorized at the 1st and 99th percentiles. Standard errors are clustered at the firm level.

Table 9 presents the regression results.[20] We find a positive and statistically significant relation between the PCB index and non-executive pay. The relation between the PCB index and non-CEO executive pay is also significantly positive. An increase of one standard deviation in PCB is associated with an increase of $44,210 in non-executive pay and an increase of $1.49 million in non-CEO executive pay. The results support the hypothesis that CEOs with higher levels of private benefits of control are likely to pay

[20] There are fewer observations for the non-executive pay regression because data on total labor expenses are available for less than 10% of firms in Compustat.

their employees more.

[Insert Table 9 here]

5. Further Robustness Tests

We use several tests to investigate the robustness of our findings. To address the endogeneity concern that could bias our results, we use two additional identification strategies: (i) the difference-in-differences (DiD) method using a quasi-natural experiment of the U.S. Ninth Circuit Court decision on July 2, 1999; and (2) the dynamic GMM model. To avoid potential look-ahead bias, we check to see if our findings hold in the out-of-sample period. Finally, to compare the validity of measures of private control benefits, we examine regression analysis for two PCB measures proposed in the literature.

5.1 Difference-in-differences analysis

The 1999 ruling of the U.S. Court of Appeals for the Ninth Circuit generates a plausibly exogenous variation in managers' private control benefits. In the ruling "Re: Silicon Graphics Inc. Securities Litigation (SGI)," the Ninth Circuit Court required plaintiffs to offer proof that defendants acted with deliberate recklessness. The effect is to make it much more difficult for investors to file class action litigations against firms headquartered in the Ninth Circuit states. A reduction in litigation risk would provide more incentives for managers to extract private benefits because their expected benefits in pursuing private benefits would outweigh their expected costs (e.g., Donelson and Yust 2014).

We identify firms headquartered in the Ninth Circuit as treatment firms and other firms as control firms. We compare for treatment firms and control firms the change in firm performance and policies over a seven-year period centered on the Ninth Circuit Court ruling year (denoted as year 0).[21] We follow the Bertrand and Mullainathan (2003) method and estimate the regression:

$$y_{it} = \gamma Treatment_i \times After_t + \omega' \boldsymbol{X_{it}} + \alpha_t + \beta_i + \varepsilon_{it}, \quad (4)$$

where y_{it} is the respective dependent variable of interest in Tables 4 through 9, and i and t index firm and year, respectively. *Treatment* equals one if a firm is headquartered in the Ninth Circuit, and zero otherwise. *After* is an indicator for observations after the Ninth Circuit Court ruling in 1999. $\boldsymbol{X}$ is the respective set of control variables as specified in Tables 4 through 9. α and β are year and firm fixed effects, respectively. We do not include the two non-interacted *Treatment* and *After* dummy variables because we have included both year and firm fixed effects in the regression. Standard errors used to compute *t*-statistics are clustered by state.

Panel A of Table 10 reports the average change in the PCB index surrounding the Ninth Circuit Court ruling. We find that the PCB indexes of the treatment and the control firms both increase significantly after the Ninth Circuit Court ruling, and the increase in the PCB index is significantly greater for the treatment group than for the control group. The evidence is consistent with our conjecture that litigation risk is negatively related to managers' extraction of private control benefits. Panel B reports the results of DiD regressions for firm performance and policies. We show only the coefficients on *Treatment* × *After* for brevity. We find that the treatment firms are valued less, experience poorer operating performance, use less debt financing, undertake fewer risk-taking

[21] The choice of a seven-year window considers a trade-off between relevance and accuracy. Choosing too wide a window could incorporate too much noise irrelevant to the event and thus reduce the power of the tests (e.g., He and Tian 2013; Fang, Tian, and Tice 2014). Our results are robust to using the entire sample period.

activities, adopt more antitakeover provisions (especially non-delay provisions), and pay more to employees than the control firms following the Ninth Circuit Court ruling. These results are consistent with the findings in Tables 4 through 9.

[Insert Table 10 here]

5.2 Dynamic panel GMM method

Following Gupta (2005), Hoechle, Schmid, Walter, and Yermack (2012), Wintoki, Linck, and Netter (2012), and Ellul and Yerramilli (2013), we use a dynamic panel GMM estimator to control for dynamic endogeneity, unobservable heterogeneity, and simultaneity problems. We include the lagged dependent variable (with one and two lags) as an explanatory variable, and first-difference all variables to control for unobserved heterogeneity and to eliminate potential omitted variable bias. We estimate the GMM model using lagged values of the explanatory variables as instruments for the current explanatory variables. That is, we use historical values of the PCB index and the control variables with three or more lags as instruments.[22] Using lagged values of variables as instruments for the present values of these variables controls for potential simultaneity and reverse causality. In addition, the use of instrumental variables approaches in our setting is problematical because there are no suitable instruments for the PCB index. Therefore, we follow Hoechle, Schmid, Walter, and Yermack (2012) and treat only the year dummy variables as exogenous and the PCB index and other control variables as endogenous. We apply two tests for the validity of our instruments: the Hansen test of overidentification with the null hypothesis that the instruments are valid (Arellano and Bond 1991), and the difference-in-Hansen test with the null hypothesis that the subset of

[22] We find similar results if we estimate the dynamic panel GMM model including the past dependent variable up to three lags and the PCB index and the control variables with four or more lags.

instruments that we use in the levels equations is exogenous (Bond, Hoeffler, and Temple 2001).

Table 11 presents the results using the same regression specifications as Tables 4 through 9. To save space, we report only the coefficients on the PCB index. Panel A shows that private control benefits are associated with lower firm value. Panel B shows a negative and robust relation between the PCB index and several operating performance measures. Panels C, D, and F show that CEOs enjoying more private control benefits use less debt financing, undertake fewer risk-taking activities, and pay their employees more. Panel E shows that CEOs in firms with more private control benefits adopt more antitakeover provisions, especially more non-delay provisions.[23] The results of both the Hansen test and the difference-in-Hansen test provide support for the validity of our instruments. Overall, the results in Table 11 indicate that our findings are robust to controlling for dynamic endogeneity.

[Insert Table 11 here]

5.3 Out-of-sample tests

So far we have used the full sample period to estimate the private benefits of control, which means we might have introduced a look-ahead bias. To address this issue, we first use principal component analysis for the sample over 1992–2000 and obtain the PCB index. We then use the pooled panel regression and the dynamic panel GMM method and test whether our results hold for the 2001–2010 sample.[24] The results (available upon

[23] To mitigate the serial correlation concern, we restrict the sample to years when the G-index available, a method similar to that in Wintoki, Linck, and Netter (2012). Our conclusions remain unchanged if we use data available from the previous or the next year and replicate our analysis on data sampled every year.

[24] We also estimate parameters of the PCB index using rolling ten-year estimation windows so that we can estimate regressions after 2001. That is, we use principal component analysis for the sample over

request) are similar. For the DiD analysis, we construct the PCB index using principal component analysis for the 1992–1995 sample and then perform DiD regressions for firm performance and policies over the 1996–2002 period centered on the Ninth Circuit Court ruling year. Our conclusions do not change. Thus, our findings are robust to out-of-sample testing, alleviating concern about look-ahead bias.

5.4 Regression results using other PCB measures

We compare the validity of measures of private control benefits by examining regression results for the Eckbo and Thorburn (2003) and Boone, Field, Karpoff, and Raheja (2007) (BFKR) measures.[25] These two measures are based on observable characteristics that could affect private control benefits. The Eckbo and Thorburn (2003) PCB measure is:

$$PCB_{it} = (CEO\ Ownership)_{it} + (CEO\ Tenure)_{it} - Secured_{it} - (Firm\ Size^{*})_{it}. \qquad (5)$$

CEO Ownership, *CEO Tenure*, and *Firm Size* are as defined before; *Secured* is the fraction of total debt that is secured; and *Firm Size** is measured by ($Firm\ Size - \mu_s)/\sigma_s$, where μ_s and σ_s are the mean and standard deviation of *Firm Size*. The PCB measure proposed by Boone, Field, Karpoff, and Raheja (2007) is based on the first principal component extracted from three variables:

$$PCB_{it} = 0.670FCF_{it} + 0.689HHI_{it} + 0.154G\text{-}index_{it}, \qquad (6)$$

1992–2001 and obtain the PCB index. We then perform regressions using 2002 data on the dependent variables. We repeat this step for every year. Significance tests are based on the time-series means and standard errors of coefficient estimates. We obtain the same conclusions.

[25] The authors in these two studies form a PCB index. Other authors such as Field and Karpoff (2002) and Wintoki (2007) use several variables to measure managers' personal benefits of control and do not form a PCB index. Gompers, Ishii, and Metrick (2010) argue that a dual-class structure preserves more of the private benefits of control, and examine the determinants of dual-class status.

where *FCF*, *HHI*, and *G-index* are as defined before.[26]

Table 12 presents the results using the same regression specifications as Tables 3 through 9 for the Eckbo and Thorburn (2003) and Boone, Field, Karpoff, and Raheja (2007) measures.[27] Again, for brevity we report only the PCB coefficients. Contrary to our results, most results estimated using these two measures are not consistent with theoretical predictions. Since these measures are likely to suffer from the potential biases as indicated above, it is not surprising that our PCB index provides a better measure of managers' personal control benefits.

[Insert Table 12 here]

6. Conclusions

Managers' private benefits of control have received much attention in both theoretical and empirical research in modern corporate finance theory. We use principal component analysis to construct a new measure of private control benefits based on CEO, firm, and industry characteristics, where the determinants of these benefits are derived from theory and from the empirical evidence in previous studies. Our private control benefit (PCB) index mitigates the potential biases that arise from omitted variables, measurement error, multicollinearity, selection, and ignoring the relative explanatory power of PCB components.

We use our PCB index to examine how the private benefits of control affect firm performance and value. We show that firms with CEOs who enjoy higher levels of

[26] The second principal component has an eigenvalue of slightly above one (1.0001). The conclusion remains unchanged if we also include the second principal component as the independent variable in our regression analysis.

[27] As the G-index is already included in the PCB measure of Boone, Field, Karpoff, and Raheja (2007), we do not examine the relation between private control benefits and antitakeover provisions when we use this measure.

private control benefits experience poorer operating and stock return performance and reduced firm value. The evidence suggests that the private benefits of control exacerbate the agency problem, and hence adversely influence corporate performance and value. We further document that these private benefits have significant effects on various corporate policies. Consistent with our hypotheses, CEOs who enjoy more private control benefits are less likely to use debt financing and make risky investments, leading to higher cash holdings and lower firm risk. They also tend to adopt more antitakeover provisions (especially non-delay provisions) and pay more for both non-executive employees and non-CEO executives. These results hold using a difference-in-differences method that takes advantage of a quasi-natural experiment based on a U.S. Ninth Circuit Court ruling. They also hold after accounting for dynamic endogeneity and for look-ahead bias. The evidence overall indicates that the private benefits of control play an important role in firm value and corporate decision making.

Appendix: Variable Definitions (Compustat Data Item Numbers in Parentheses)

Variable	Description
ASales	Net sales (#12) divided by number of employees (#29) in the previous fiscal year.
ATurnover	Net sales divided by book value of assets in the previous fiscal year.
BM	Natural logarithm of the ratio of book value of common equity (#60) in the previous fiscal year to market value of common equity (#24 × #25) at the end of the previous calendar year.
Cash	Cash and cash equivalents (#1) scaled by cash-adjusted total assets (total assets (#6) minus cash and cash equivalents (#1)) in the previous fiscal year.
Delaware	An indicator equal to one if the firm is incorporated in Delaware, and zero otherwise.
ΔEPS	Change in earnings per share from year $t - 1$ to year t, divided by the share price as the end of year t.
Div	Ratio of dividends (#21) in the previous fiscal year to market value of common equity at the end of the previous calendar year.
Employees	Natural logarithm of number of employees (#29).
GDP Growth	Percent change in U.S. GDP in the previous fiscal year.
Industry Leverage	Median leverage among firms in the same two-digit SIC group in the previous fiscal year.
InstOwn	Shares held by institutions divided by total shares outstanding in the most recent quarter as of the end of month $t - 1$.
Investment Grade	An indicator equal to one if the firm has an investment-grade rating (BBB or higher).
LCF	Net operating loss carryforwards divided by book value of assets.
Leverage	Sum of long-term debt plus debt due in one year (#9 + #34) divided by book value of assets (#6) in the previous fiscal year.
Maturity	Ratio of long-term debt (#9) minus debt maturing in two and three years (#91 + #92) to book value of total debt. Total debt is defined as debt in current liabilities (#34) plus long-term debt.
Nasdaq	An indicator equal to one if the firm is traded on the Nasdaq at the beginning of month t, and zero otherwise.
NasdaqDVOL	Natural logarithm of the dollar volume of trading in month $t - 2$ for stocks traded on the Nasdaq, which is approximated as stock price at the end of month $t - 2$ multiplied by share volume in month $t - 2$. For NYSE and AMEX stocks, *NasdaqDVOL* equals zero.
NYAMDVOL	Natural logarithm of the dollar volume of trading in month $t - 2$ for stocks traded on the NYSE or AMEX, which is approximated as stock price at the end of month $t - 2$ multiplied by share volume in month $t - 2$. For Nasdaq stocks, *NYAMDVOL* equals zero.

Appendix-*Continued*.

Variable	Description
OCF	Sum of net income before extraordinary items (#18), depreciation and amortization (#14), and R&D expense (#46), divided by book value of assets (#6) in the previous fiscal year.
Price	Natural logarithm of stock price at the end of month $t-2$.
R&D	R&D expenditures (#46) scaled by book value of assets in the previous fiscal year.
R&D Missing	An indicator equal to one if *R&D* is not available, and zero otherwise.
Rated	An indicator equal to one if the firm has an S&P rating, and zero otherwise.
Ret(–3, –2)	Compounded gross returns for months $t-3$ and $t-2$.
Ret(–6, –4)	Compounded gross returns for months $t-6$ through $t-4$.
Ret(–12, –7)	Compounded gross returns for months $t-12$ through $t-7$.
ROA	Net income (#172) divided by book value of assets in the previous fiscal year.
S&P500	An indicator equal to one if the firm is in the S&P 500 as of the end of month $t-1$, and zero otherwise.
Sales Growth	Growth in sales (#12) over the previous five fiscal years.
SGA	Selling, general, and administrative expenses (#189) divided by book value of assets in the previous fiscal year.
Tax Credit	Investment tax credit divided by book value of assets.
Tobin's Q	Market value of assets divided by book value of assets in the previous fiscal year, where the market value of assets is the book value of assets plus the market value of common stock minus the sum of the book value of common stock and balance sheet deferred taxes (#74).
Volatility	Standard deviation of annual changes in earnings over years t through $t-5$, divided by book value of assets at the end of year t.

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Table 1
Descriptive statistics

This table presents means, medians, standard deviations, and Spearman correlations for the components of private control benefits (PCB). *CEO Ownership* is the percent of the firm's common stock owned by the Chief Executive Officer (CEO). *CEO Tenure* is the number of years the CEO has been with the firm. *CEO Gender* is a dummy variable that equals one if the CEO is female. *CEO Age* is the age of the firm's CEO. *CEO Cash Pay* is the natural logarithm of the total amount of CEO's cash compensation (salary plus bonus). *Firm Size* is the natural logarithm of the book value of total assets. *Firm Age* is the difference between the firm's founding date and a given fiscal year-end date. If the founding date is not available, we replace it by the first CRSP appearance date. *Local Pie* is the ratio of a firm's sales to the sales of all firms in the same metropolitan or micropolitan statistical area (MSA). *FCF*, free cash flow, is the firm's operating income before depreciation minus interest expense, taxes, preferred dividends, and common dividends, divided by total assets. *Tangibility* is the ratio of property, plant, and equipment to total assets. *Multisegment* is an indicator for a multi-segment firm. *Media* is a dummy variable that equals one if the firm operates in the media, sports management, and entertainment industries (SIC Codes 2710–2711, 2720–2721, 2730–2731, 4830, 4832–4833, 4840–4841, 7810, 7812, and 7820). *HHI* is the Herfindahl-Hirschman index, defined as the sum of the squared fraction of industry sales by all firms in the two-digit SIC industry. ***, **, and * represent 1%, 5%, and 10% significance level, respectively.

Panel A: Summary statistics

	Mean	Median	Standard Deviation
CEO Ownership	0.036	0.013	0.066
CEO Tenure	7.973	5.556	7.714
CEO Gender	0.018	0.000	0.134
CEO Age	55.267	55.000	7.734
CEO Cash Compensation ($million)	1.228	0.857	1.757
Total Assets ($million)	5,735.481	1,126.485	23,115.762
Firm Age	31.086	26.000	22.529
Local Pie	0.049	0.005	0.137
FCF	0.080	0.088	0.124
Tangibility	0.282	0.221	0.217
Multisegment	0.554	1.000	0.497
Media	0.030	0.000	0.170
HHI	0.065	0.044	0.060

Table 1-*Continued*.

Panel B: Spearman correlations

	CEO Ownership	*CEO Tenure*	*CEO Gender*	*CEO Age*	*CEO Cash Pay*	*Firm Size*	*Firm Age*	*Local Pie*	*FCF*	*Tangibility*	*Multisegment*	*Media*	*HHI*
CEO Ownership	—												
CEO Tenure	0.394***	—											
CEO Gender	0.007	-0.032***	—										
CEO Age	0.126***	0.434***	-0.049***	—									
CEO Cash Pay	-0.125***	0.035***	-0.016**	0.164***	—								
Firm Size	-0.229***	-0.068***	-0.027***	0.133***	0.599***	—							
Firm Age	-0.090***	-0.023	0.022***	0.127***	0.183***	0.292***	—						
Local Pie	-0.033***	-0.020***	0.005***	0.055***	0.119***	0.240***	0.115***	—					
FCF	0.012***	0.070***	-0.002	0.026	0.108***	0.132***	0.034***	0.026***	—				
Tangibility	-0.028***	0.014	-0.040***	0.090***	0.021***	0.147***	0.064***	0.105***	0.134***	—			
Multisegment	-0.077***	0.005***	-0.013*	0.152***	0.215***	0.294***	0.174***	0.063***	0.013***	-0.050	—		
Media	0.040**	0.017***	0.019***	0.068***	0.137***	0.132***	-0.027***	-0.029	-0.021***	-0.081***	0.092***	—	
HHI	0.025***	0.012***	-0.004**	0.044***	0.039***	0.048	0.092***	0.049***	0.048***	0.093***	-0.007**	-0.053***	—

Table 2

Abnormal returns associated with private control benefits

This table reports average monthly abnormal returns (alphas) sorted by the index of private control benefits (PCB) (see equation (1)). We sort our sample firms into quintiles according to their PCB index in year *t*, and compute portfolio returns from the beginning of July of year *t* + 1 through the end of June of year *t* + 2. Monthly portfolio returns are either value-weighted or equal-weighted. Panels A, B, C, D, and E report abnormal returns (in percent) estimated from the Fama and French (1993) three-factor model, the Carhart (1997) four-factor model, the Carhart four-factor model plus the Pastor and Stambaugh (2003) liquidity risk factor, the Fama and French (2015) five-factor model, and the Daniel, Grinblatt, Titman, and Wermers (1997) (DGTW) benchmark return adjustment procedure. We also report average monthly abnormal returns on a hedge portfolio that buys firms in the bottom PCB group (G1) and shorts firms in the top PCB group (G5).

PCB Index	Value-Weighted		Equal-Weighted	
Panel A: Fama-French three-factor model				
	Alpha	*t*-statistic	Alpha	*t*-statistic
G1	0.324	2.06	0.351	2.14
G2	0.197	1.37	0.222	1.47
G3	0.017	0.13	0.038	0.27
G4	-0.029	-0.22	-0.020	-0.15
G5	-0.340	-2.57	-0.374	-2.67
G1 – G5	0.663	3.72	0.724	3.95
Panel B: Carhart four-factor model				
	Alpha	*t*-statistic	Alpha	*t*-statistic
G1	0.505	3.76	0.550	4.02
G2	0.368	3.03	0.412	3.26
G3	0.176	1.58	0.206	1.80
G4	0.117	1.07	0.138	1.24
G5	-0.196	-1.69	-0.213	-1.76
G1 – G5	0.701	4.09	0.763	4.32
Panel C: Carhart four-factor model plus Pastor and Stambaugh liquidity risk factor				
	Alpha	*t*-statistic	Alpha	*t*-statistic
G1	0.521	3.82	0.563	4.06
G2	0.304	2.54	0.347	2.79
G3	0.122	1.11	0.151	1.34
G4	0.071	0.65	0.097	0.87
G5	-0.266	-2.34	-0.284	-2.40
G1 – G5	0.787	4.52	0.847	4.73
Panel D: Fama-French five-factor model				
	Alpha	*t*-statistic	Alpha	*t*-statistic
G1	0.471	2.85	0.498	2.90
G2	0.142	0.93	0.163	1.01
G3	-0.104	-0.75	-0.088	-0.61
G4	-0.220	-1.75	-0.208	-1.60
G5	-0.566	-4.31	-0.592	-4.24
G1 – G5	1.037	6.24	1.090	6.35
Panel E: DGTW characteristic adjustment method				
	Abnormal Return	*t*-statistic	Abnormal Return	*t*-statistic
G1	0.410	2.74	0.438	2.82
G2	0.285	2.55	0.316	2.64
G3	0.074	0.78	0.092	0.92
G4	0.034	0.34	0.053	0.49
G5	-0.300	-2.75	-0.323	-2.73
G1 – G5	0.710	3.80	0.761	3.96

Table 3
Fama-MacBeth regressions of returns

This table presents Fama-MacBeth (1973) cross-sectional regressions of monthly stock returns on the index of private control benefits (*PCB*) and a set of control variables. *PCB* is defined in equation (1), and the control variables are defined in the Appendix. All explanatory variables are lagged by one year, and all control variables are winsorized at the 1st and 99th percentiles. The dependent variable (in percent) is the raw return, value-weighted industry-adjusted return, equal-weighted industry-adjusted return, or Daniel, Grinblatt, Titman, and Wermers (1997) characteristic-adjusted return. *t*-statistics in parentheses are based on standard errors corrected for autocorrelation following Newey and West (1987). The number of observations varies across regressions because of data availability. ***, **, and * represent 1%, 5%, and 10% significance level, respectively.

		Industry-Adjusted		
Variable	Raw Return	Value-Weighted Return	Equal-Weighted Return	Characteristic-Adjusted Return
PCB	-0.027***	-0.028***	-0.028***	-0.030***
	(-3.59)	(-4.30)	(-4.20)	(-4.18)
Nasdaq	-0.302	-0.150	-0.007	-0.155
	(-0.75)	(-0.35)	(-0.02)	(-0.44)
S&P500	0.175	0.116	0.112	0.253**
	(1.57)	(1.23)	(1.07)	(2.36)
BM	0.027	0.021	0.030	-0.121*
	(0.26)	(0.23)	(0.39)	(-1.91)
Price	-0.341**	-0.283*	-0.283*	-0.323***
	(-2.08)	(-1.76)	(-1.96)	(-2.68)
InstOwn	0.440***	0.396***	0.329**	0.358**
	(2.92)	(2.94)	(2.30)	(2.59)
NYAMDVOL	-0.024	-0.019	-0.029	-0.003
	(-1.13)	(-0.99)	(-1.47)	(-0.15)
NasdaqDVOL	0.013	0.006	-0.022	0.029
	(0.25)	(0.10)	(-0.45)	(0.64)
Div	-6.223*	-3.272	-2.366	-6.077**
	(-1.89)	(-1.27)	(-0.88)	(-2.02)
Ret(–3, –2)	0.176	0.121	-0.277	0.115
	(0.33)	(0.27)	(-0.63)	(0.24)
Ret(–6, –4)	0.277	0.074	-0.282	-0.050
	(0.56)	(0.18)	(-0.71)	(-0.11)
Ret(–12, –7)	0.565**	0.483**	0.250	0.394*
	(1.99)	(2.07)	(1.03)	(1.72)
Sales Growth	0.031	0.039	0.030	0.030
	(1.10)	(1.28)	(1.12)	(1.03)
Intercept	1.317	0.581	1.530	0.650
	(0.88)	(0.49)	(1.48)	(0.58)
Number of months	228	228	228	228
Number of observations	228,129	219,682	219,682	223,941
Pseudo R^2	0.075	0.053	0.050	0.045

Table 4
Regression of Tobin's *Q*

This table presents a panel regression of industry-adjusted Tobin's *Q* on the index of private control benefits (*PCB*), a set of control variables, and firm and year fixed effects. *PCB* is defined in equation (1), and the control variables are defined in the Appendix. All explanatory variables are lagged by one year, and all control variables are winsorized at the 1st and 99th percentiles. Tobin's *Q* is the market value of assets divided by the book value of assets, where the market value of assets is the book value of assets plus the market value of common stock minus the sum of the book value of common stock and balance sheet deferred taxes. Industry-adjusted Tobin's *Q* is computed by subtracting the industry median in a given 48 Fama and French industry and year. Standard errors are estimated with clustered errors at the firm level (Petersen 2009). *t*-statistics are in parentheses. ***, **, and * represent 1%, 5%, and 10% significance level, respectively.

Variable	Tobin's *Q*
PCB	-0.051***
	(-4.04)
Leverage	-0.375***
	(-2.99)
ROA	1.080***
	(3.95)
R&D	3.461***
	(6.01)
R&D Missing	0.019
	(0.33)
Sales Growth	-0.001
	(-0.23)
ATurnover	0.151**
	(2.46)
SGA	0.525*
	(1.91)
Div	-0.025***
	(-4.58)
S&P500	-0.364***
	(-5.91)
Intercept	0.857***
	(3.15)
Firm fixed effects	Yes
Year fixed effects	Yes
Number of observations	19,786
Adjusted R^2	0.584

Table 5
Regressions of operating performance

This table presents panel regressions of various industry-adjusted measures of operating performance on the index of private control benefits (*PCB*), a set of control variables, and firm and year fixed effects. *PCB* is defined in equation (1), and the control variables are defined in the Appendix. All explanatory variables are lagged by one year, and all control variables are winsorized at the 1st and 99th percentiles. Return on assets (*ROA*) is net income divided by the book value of assets; net profit margin (*NPM*) is net income divided by sales; sales growth (*Sales Growth*) is the growth in sales over the previous 5 years; and return on equity (*ROE*) is net income divided by the book value of common stock. All dependent variables (in percent) are industry-adjusted by subtracting the industry median in a given 48 Fama and French industry and year, and are trimmed at the 5th and 95th percentiles of their empirical distributions. Standard errors are estimated with clustered errors at the firm level (Petersen 2009). *t*-statistics are in parentheses. The number of observations varies across regressions because of data availability. ***, **, and * represent 1%, 5%, and 10% significance level, respectively.

Variable	*ROA*	*NPM*	*Sales Growth*	*ROE*
PCB	-0.390***	-0.272***	-4.902***	-0.289**
	(-6.56)	(-4.42)	(-9.39)	(-2.31)
Leverage	-4.960***	-3.213***	2.933	-26.359***
	(-6.08)	(-3.38)	(0.40)	(-11.78)
R&D	7.882	-8.977	-35.294	2.697
	(1.58)	(-1.55)	(-0.76)	(0.25)
R&D Missing	0.643	1.069*	-9.305**	-0.340
	(1.29)	(1.89)	(-2.09)	(-0.29)
BM	-1.001***	-0.867***	-4.974***	-1.858**
	(-2.83)	(-2.95)	(-2.88)	(-2.43)
Cash	1.859*	3.362***	41.110***	0.581
	(1.73)	(3.27)	(5.10)	(0.30)
SGA	4.160***	-6.972***	-62.198***	20.421***
	(3.23)	(-5.52)	(-5.74)	(6.80)
Div	-0.010*	-0.006*	-0.013	-0.021**
	(-1.75)	(-1.94)	(-0.39)	(-2.09)
Intercept	12.748***	13.541***	129.918***	3.323
	(10.47)	(10.60)	(12.29)	(1.26)
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Number of observations	14,084	14,084	14,100	14,082
Adjusted R^2	0.655	0.782	0.530	0.618

Table 6
Regressions of debt financing

This table presents panel regressions of debt financing on the index of private control benefits (*PCB*), a set of control variables, and firm and year fixed effects. *PCB* is defined in equation (1), and the control variables are defined in the Appendix. All explanatory variables are lagged by one year, and all control variables are winsorized at the 1st and 99th percentiles. The dependent variable (in percent) is measured by: (i) $\Delta LevA$, defined as the change in the book value of total debt (ΔTD) from year $t-1$ to t divided by the sum of book value of total debt and market value of common stock in year $t-1$, where total debt is the sum of long-term and short-term debt; or (ii) $\Delta LevB$, defined as ΔTD from year $t-1$ to t divided by the book value of assets in year $t-1$. Standard errors are estimated with clustered errors at the firm level (Petersen 2009). *t*-statistics are in parentheses. ***, **, and * represent 1%, 5%, and 10% significance level, respectively.

Variable	$\Delta LevA$	$\Delta LevB$
PCB	-0.293***	-0.445***
	(-2.89)	(-3.34)
Tobin's Q	0.186*	1.642***
	(1.69)	(6.54)
SGA	6.391***	10.299***
	(4.00)	(4.14)
R&D	11.905***	19.986***
	(4.61)	(3.73)
R&D Missing	1.009	1.277
	(1.54)	(1.53)
ROA	9.109***	10.648***
	(4.89)	(3.51)
Maturity	0.116	-0.673
	(0.29)	(-1.20)
Industry Leverage	-12.975***	-13.378***
	(-6.49)	(-2.80)
Volatility	-4.371***	-7.566***
	(-2.90)	(-3.56)
ΔEPS	2.459***	1.947***
	(4.57)	(3.88)
Tax Credit	13.199**	12.662*
	(2.27)	(1.67)
LCF	-0.949	-1.329
	(-0.93)	(-0.99)
Investment Grade	3.109***	3.415***
	(5.62)	(4.98)
Rated	-4.461***	-6.574***
	(-7.52)	(-7.73)
Intercept	8.479***	-0.445***
	(3.80)	(-3.34)
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Number of observations	15,794	15,794
Adjusted R^2	0.208	0.220

Table 7
Regressions of risk-taking

This table presents panel regressions of corporate risk-taking on the index of private control benefits (*PCB*), a set of control variables, and firm and year fixed effects. *PCB* is defined in equation (1), and the control variables are defined in the Appendix. All explanatory variables are lagged by one year, and all control variables are winsorized at the 1st and 99th percentiles. The dependent variables (in percent) include capital expenditures (*CAPX*), research and development expenditures (*XRD*), acquisitions (*ACQ*), change in cash (Δ*Cash*), and return volatility (*RetVol*). *CAPX* is capital expenditures divided by the average book assets at the beginning and end of the year; *XRD* is research and development expenditures divided by the average assets; *ACQ* is acquisitions divided by the average assets; Δ*Cash* is the change in cash and short-term investments divided by the average assets; and *RetVol* is the standard deviation of daily stock returns for the year. *CAPX*, *XRD*, and *ACQ* are industry-adjusted by subtracting the industry median in a given 48 Fama-French industry and year. Standard errors are estimated with clustered errors at the firm level (Petersen 2009). *t*-statistics are in parentheses. The number of observations varies across regressions because of data availability. ***, **, and * represent 1%, 5%, and 10% significance level, respectively.

Variable	*CAPX*	*XRD*	*ACQ*	*ΔCash*	*RetVol*
PCB	-0.073**	-0.081**	-0.224***	0.117*	-0.062***
	(-2.21)	(-2.43)	(-3.90)	(1.81)	(-5.65)
GDP Growth	0.284***	0.005	-0.327***	0.124	-0.056***
	(3.05)	(0.07)	(-3.67)	(0.77)	(-3.16)
ROA	1.110	-4.954***	2.948***	-1.242	-0.452**
	(1.37)	(-5.41)	(3.60)	(-0.67)	(-1.96)
Tobin's Q	0.354***	-0.040	0.052	-0.458***	0.178***
	(7.83)	(-0.82)	(0.86)	(-3.60)	(12.85)
Leverage	-2.636***	-0.608*	-7.112***	2.987***	0.455***
	(-6.58)	(-1.68)	(-10.62)	(3.72)	(3.57)
Sales Growth	0.002***	-0.001	-0.002***	0.001	-0.001
	(4.77)	(-0.37)	(-2.64)	(1.05)	(-0.94)
OCF	2.087***	3.832***	2.852***	-1.069	-2.681***
	(3.98)	(5.81)	(4.12)	(-0.66)	(-12.34)
Intercept	1.469**	1.390*	6.822***	-1.694	3.558***
	(1.97)	(1.87)	(6.13)	(-1.28)	(16.27)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	19,680	19,801	18,627	19,946	20,622
Adjusted R^2	0.567	0.784	0.269	0.123	0.685

Table 8
Regressions of antitakeover provisions

This table presents panel regressions of antitakeover provisions on the index of private control benefits (*PCB*), a set of control variables, and year and industry fixed effects. *PCB* is defined in equation (1). The control variables (defined in the Appendix) are winsorized at the 1st and 99th percentiles. The dependent variables in these regressions include the G-index, delay provisions, and non-delay provisions, which are all measured at the end of the next fiscal year. The G-index developed by Gompers, Ishii, and Metrick (2003) is the sum of 24 unique antitakeover provisions. The 24 antitakeover provisions are divided into the delay and the non-delay subgroups. The delay subgroup contains four provisions designed to slow down a hostile bidder (classified board, blank check, special meeting, and written consent provisions), and the remaining 20 provisions are classified as the non-delay subgroup. As the data on the G-index are available only up to 2006, our regression analysis ends in 2006. Standard errors are estimated with clustered errors at the firm level (Petersen 2009). *t*-statistics are in parentheses. ***, **, and * represent 1%, 5%, and 10% significance level, respectively.

Variable	G-index	G-index (Excluding State Laws)	Delay Provisions	Non-Delay Provisions	Non-Delay Provisions (Excluding State Laws)
PCB	0.029**	0.053***	0.001	0.064***	0.053***
	(2.19)	(3.97)	(0.13)	(5.76)	(5.23)
Leverage	6.212***	7.013***	1.384***	5.956***	5.629***
	(7.70)	(8.60)	(3.86)	(8.66)	(9.09)
Squared Leverage	-8.259***	-9.751***	-1.935***	-8.057***	-7.816***
	(-6.88)	(-7.92)	(-3.53)	(-7.37)	(-8.12)
Delaware	-0.489***	0.607***	0.611***	-1.670***	-0.004
	(-3.52)	(4.35)	(10.41)	(-12.89)	(-0.03)
ROA	0.372	0.736*	-0.028	0.735*	0.765**
	(0.79)	(1.66)	(-0.13)	(1.89)	(2.33)
ROA_{-1}	-0.013	0.009	-0.087	0.076	0.096
	(-0.13)	(0.09)	(-1.41)	(0.97)	(1.34)
ROA_{-2}	-0.420**	-0.539***	-0.175**	-0.448***	-0.364***
	(-2.29)	(-3.10)	(-2.11)	(-3.00)	(-3.02)
R&D	-2.517**	-0.770	-0.653	-0.957	-0.117
	(-2.29)	(-0.76)	(-1.23)	(-1.22)	(-0.16)
R&D Missing	-0.156	-0.156	-0.048	-0.218	-0.108
	(-0.91)	(-0.89)	(-0.63)	(-1.49)	(-0.82)
Intercept	9.348***	4.502***	3.033***	3.896***	1.469**
	(9.83)	(5.58)	(10.28)	(5.89)	(2.29)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	10,927	10,927	10,927	10,927	10,927
Adjusted R^2	0.108	0.124	0.115	0.257	0.153

Table 9
Regressions of employee pay

This table reports panel regressions of employee pay on the index of private control benefits (*PCB*), a set of control variables, and firm and year fixed effects. *PCB* is defined in equation (1), and the control variables are defined in the Appendix. All explanatory variables are lagged by one year, and all control variables are winsorized at the 1st and 99th percentiles. The dependent variable (in thousands) is the average annual compensation for non-executive employees (non-executive pay) or for non-CEO executives (non-CEO executive pay). Non-executive pay is measured as the natural logarithm of one plus the ratio of total labor expenses less total executive compensation divided by the number of employees. Non-CEO executive pay is the natural logarithm of one plus the average total compensation per non-CEO executive. Standard errors are estimated with clustered errors at the firm level (Petersen 2009). *t*-statistics are in parentheses. The number of observations varies across regressions because of data availability. ***, **, and * represent 1%, 5%, and 10% significance level, respectively.

Variable	Non-Executive Pay	Non-CEO Executive Pay
PCB	0.088***	0.114***
	(7.09)	(13.37)
Tobin's Q	-0.012	0.116***
	(-0.46)	(5.68)
Leverage	0.466***	-0.302***
	(2.83)	(-4.69)
ASales	0.001	0.001*
	(1.02)	(1.69)
Employees	0.011	0.214***
	(0.23)	(11.36)
Intercept	1.801***	4.331***
	(7.94)	(7.57)
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Number of observations	1,573	19,606
Adjusted R^2	0.857	0.736

Table 10
Difference-in-differences analysis

This table reports the difference-in-differences (DiD) analysis results of how an exogenous change in private control benefits (PCB) arising from a U.S. Ninth Circuit Court ruling affects firm performance and policies. Panel A shows the results of DiD analysis on the change in PCB around the Ninth Circuit Court ruling. *ΔPCB* is the average change in the PCB index from the three-year period before to the three-year period after the ruling. We identify firms headquartered in the Ninth Circuit as treatment firms and other firms as control firms. *t*-statistics are in parentheses. Panel B presents the results of DiD regressions for firm performance and policies using equation (4). *Treatment* equals one if a firm is headquartered in the Ninth Circuit, and zero otherwise. *After* is an indicator for the observation after the Ninth Circuit Court ruling in 1999. We report only the coefficients on *Treatment* × *After* for brevity. Standard errors used to compute *t*-statistics in parentheses are clustered by state. The number of observations varies across regressions because of data availability. ***, **, and * represent 1%, 5%, and 10% significance level, respectively.

Panel A: DiD analysis on change in private control benefits					
			Treatment Firms	Control Firms	Difference
ΔPCB			1.148***	0.738***	0.410***
			(12.34)	(11.53)	(2.92)
Panel B: DiD regressions of firm performance and policies					
B.1 Firm value					*Tobin's Q*
Treatment × *After*					-0.161**
					(-2.56)
Number of observations					6,557
Adjusted R^2					0.628
B.2 Operating performance		*ROA*	*NPM*	*SG5Y*	*ROE*
Treatment × *After*		-0.666**	-0.612**	-9.680***	-0.470**
		(-2.02)	(-2.36)	(-3.35)	(-1.99)
Number of observations		4,753	4,753	4,770	4,753
Adjusted R^2		0.745	0.816	0.671	0.708
B.3 Debt financing				*ΔLevA*	*ΔLevB*
Treatment × *After*				-0.230**	-0.469**
				(-2.17)	(-2.49)
Number of observations				5,366	5,366
Adjusted R^2				0.265	0.294
B.4 Risk-taking	*CAPX*	*XRD*	*ACQ*	*ΔCash*	*RetVol*
Treatment × *After*	-0.443**	-0.432***	-0.914**	1.179**	-0.163***
	(-2.38)	(-2.77)	(-2.18)	(2.23)	(-2.94)
Number of observations	6,481	6,560	6,080	6,615	6,812
Adjusted R^2	0.616	0.780	0.194	0.147	0.722
B.5 Antitakeover provisions	G-index	G-index (Excluding State Laws)	Delay	Non-Delay	Non-Delay (Excluding State Laws)
Treatment × *After*	0.127*	0.152**	0.051	0.126**	0.120**
	(1.94)	(2.44)	(1.06)	(2.47)	(2.50)
Number of observations	5,617	5,617	5,617	5,617	5,617
Adjusted R^2	0.933	0.938	0.915	0.952	0.935
B.6 Employee pay				Non-Executive Pay	Non-CEO Executive Pay
Treatment × *After*				0.190**	0.285***
				(2.23)	(2.68)
Number of observations				543	6,487
Adjusted R^2				0.863	0.767

Table 11
Dynamic panel GMM estimation

This table reports dynamic panel GMM regressions of a particular dependent variable on the index of private control benefits (*PCB*), lagged dependent variables (with one and two lags), and control variables. *PCB* is defined in equation (1). We use the same regression specifications as Tables 4 through 9. We report only the coefficients on *PCB* for brevity. All control variables are considered to be endogenous with the exception of the year dummy variables. AR(1) and AR(2) are tests for first-order and second-order serial correlation in the first-differenced residuals with the null hypothesis of no serial correlation. The null hypothesis of the Hansen test of overidentification is that all instruments are valid. The null hypothesis of the difference-in-Hansen test of exogeneity is that the instruments used for the equations in levels are exogenous. The number of observations varies across regressions because of data availability. ***, **, and * represent 1%, 5%, and 10% significance level, respectively.

Panel A: Firm value

Variable	*Tobin's Q*
PCB	-0.153***
	(-3.25)
Number of observations	13,663
AR(1) test (*p*-value)	0.035
AR(2) test (*p*-value)	0.303
Hansen test (*p*-value)	0.324
Difference-in-Hansen test (*p*-value)	0.188

Panel B: Operating performance

Variable	*ROA*	*NPM*	*Sales Growth*	*ROE*
PCB	-0.908***	-0.653**	-4.629***	-1.558**
	(-3.40)	(-2.40)	(-3.47)	(-2.01)
Number of observations	8,090	8,090	8,100	8,090
AR(1) test (*p*-value)	0.032	0.010	0.001	0.012
AR(2) test (*p*-value)	0.603	0.521	0.916	0.696
Hansen test (*p*-value)	0.116	0.503	0.300	0.185
Difference-in-Hansen test (*p*-value)	0.356	0.493	0.276	0.806

Panel C: Debt financing

Variable	Δ*LevA*	Δ*LevB*
PCB	-0.871**	-1.162**
	(-2.39)	(-2.06)
Number of observations	13,779	13,779
AR(1) test (*p*-value)	0.004	0.009
AR(2) test (*p*-value)	0.416	0.911
Hansen test (*p*-value)	0.509	0.303
Difference-in-Hansen test (*p*-value)	0.555	0.415

Panel D: Risk-taking

Variable	*CAPX*	*XRD*	*ACQ*	*ΔCash*	*RetVol*
PCB	-0.483***	-0.228*	-1.153***	0.587***	-0.277***
	(-4.87)	(-1.76)	(-4.83)	(2.99)	(-7.36)
Number of observations	13,552	13,657	12,319	13,777	14,312
AR(1) test (*p*-value)	0.000	0.038	0.000	0.000	0.048
AR(2) test (*p*-value)	0.142	0.801	0.999	0.463	0.211
Hansen test (*p*-value)	0.459	0.631	0.139	0.137	0.344
Difference-in-Hansen test (*p*-value)	0.943	0.781	0.707	0.241	0.149

Table 11-*Continued*.

Panel E: Antitakeover provisions

Variable	G-index	G-index (Excluding State Laws)	Delay Provisions	Non-Delay Provisions	Non-Delay Provisions (Excluding State Laws)
PCB	0.209**	0.208***	0.040	0.250***	0.124**
	(2.08)	(3.28)	(1.12)	(4.00)	(2.05)
Number of observations	2,254	2,254	2,254	2,254	2,254
AR(1) test (*p*-value)	0.750	0.482	0.619	0.823	0.676
AR(2) test (*p*-value)	0.603	0.199	0.710	0.448	0.176
Hansen test (*p*-value)	0.475	0.501	0.506	0.314	0.202
Difference-in-Hansen test (*p*-value)	0.516	0.553	0.572	0.564	0.221

Panel F: Employee pay

Variable	Non-Executive Pay	Non-CEO Executive Pay
PCB	0.051***	0.120***
	(2.91)	(7.18)
Number of observations	1,114	13,498
AR(1) test (*p*-value)	0.091	0.001
AR(2) test (*p*-value)	0.733	0.543
Hansen test (*p*-value)	0.191	0.200
Difference-in-Hansen test (*p*-value)	0.255	0.151

Table 12
Regressions using other PCB measures

This table presents regression results using the Eckbo and Thorburn (2003) and Boone, Field, Karpoff, and Raheja (2007) (BFKR) measures of private control benefits (*PCB*), which are defined in equations (5) and (6). We use the same regression specifications as Tables 3 through 9. Panel F does not report the results using the BFKR measure because the G-index is already included in this measure. We report only the coefficients on *PCB* for brevity. Standard errors are clustered at the firm level. *t*-statistics are in parentheses. ***, **, and * represent 1%, 5%, and 10% significance level, respectively.

Panel A: Fama-MacBeth regressions of returns

Variable	Raw Return	Industry-Adjusted: Value-Weighted Return	Industry-Adjusted: Equal-Weighted Return	Characteristic-Adjusted Return
PCB (Eckbo and Thorburn)	-0.013	-0.013	-0.001	-0.024
	(-0.26)	(-0.28)	(-0.02)	(-0.51)
PCB (BFKR)	-0.022	-0.073	-0.002	-0.023
	(-0.22)	(-0.79)	(-0.03)	(-0.26)

Panel B: Regression of firm value

Variable	*Tobin's Q*
PCB (Eckbo and Thorburn)	0.177***
	(9.30)
PCB (BFKR)	-0.302***
	(-2.94)

Panel C: Regressions of operating performance

Variable	*ROA*	*NPM*	*Sales Growth*	*ROE*
PCB (Eckbo and Thorburn)	0.680***	0.154	7.790***	0.779***
	(5.41)	(1.26)	(6.07)	(2.76)
PCB (BFKR)	0.029	1.048	-18.097***	-1.886
	(0.04)	(1.18)	(-2.72)	(-1.33)

Panel D: Regressions of debt financing

Variable	Δ*LevA*	Δ*LevB*
PCB (Eckbo and Thorburn)	0.457**	0.292*
	(2.29)	(1.69)
PCB (BFKR)	0.741	0.291
	(0.79)	(0.36)

Panel E: Regressions of risk-taking

Variable	*CAPX*	*XRD*	*ACQ*	*ΔCash*	*RetVol*
PCB (Eckbo and Thorburn)	0.182***	0.215***	0.479***	0.022	0.011
	(2.89)	(4.09)	(4.49)	(0.15)	(0.55)
PCB (BFKR)	0.177	-0.311	-0.209	-0.330	-0.107
	(0.45)	(-1.03)	(-0.38)	(-0.53)	(-1.32)

Panel F: Regressions of antitakeover provisions

Variable	G-index	G-index (Excluding State Laws)	Delay Provisions	Non-Delay Provisions	Non-Delay (Excluding State Laws)
PCB (Eckbo and Thorburn)	-0.284***	-0.520***	-0.134***	-0.410***	-0.386***
	(-3.98)	(-7.64)	(-4.49)	(-7.16)	(-7.80)

Panel G: Regressions of employee pay

Variable	Non-Executive Pay	Non-CEO Executive Pay
PCB (Eckbo and Thorburn)	-0.001	-0.012
	(-0.01)	(-1.23)
PCB (BFKR)	0.024	0.082
	(0.28)	(1.58)