
Firm growth and type of debt: the paradox of discretion

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According to agency theory, debt is a useful governance mechanism for curbing the tendency of managers to over-invest in firm growth. First, we extend this view by using the theory of rules versus discretion to explain why the ability of debt to constrain excessive growth is contingent upon lenders relinquishing discretion and committing to rigid rules. Next, we draw on the financial intermediation literature to distinguish between two types of debt. We explain that transactional debt (i.e. public securities such as bonds and commercial paper) conforms to a rules regime, and thus can serve as effective governance mechanisms for limiting the agency costs of over-investment in growth. In contrast, relational debt (i.e. private loans from financial intermediaries) is best characterized as a discretionary regime, and therefore is less effective in curtailing these agency costs. Paradoxically, it is the very intention of lenders to act optimally in the future that may result in this governance breakdown. Our empirical analysis of a large sample of Japanese firms confirms that the type of debt influences both firm growth and the performance consequences of that growth.

1. Introduction

Growth of the firm, through investments that make more productive use of the firm's resources, can play a critical role in enhancing firm value (Penrose, 1959; Mahoney and Pandian, 1992) and increasing the odds of long-term survival (Bellone *et al.*, 2008). However, excessive growth, pursued in the absence of profitable opportunities, can harm firm performance (Berger and Ofek, 1995). As managers may prefer to reinvest cash flows in the firm rather than paying them out to investors, governance mechanisms that check excessive growth are necessary (Jensen, 1986). The capital supplied to the firm, in the form of debt and equity, are not just financial instruments but are governance structures for safeguarding that capital (Williamson, 1988). Although there is considerable research on how equity financing and ownership structure impact strategic investments (Hill and Snell, 1988; Bushee, 1998; Hoskisson *et al.*, 2002; Lee and O'Neill, 2003) there is a paucity of work on the role of debt financing. As debt accounts for over 90% percent of all new

external financing (Mayer, 1988), greater attention to the role of debt in the governance of firm growth is indeed warranted.

Debt contracts commit managers to adhering to various liquidity covenants, paying out cash flows in the form of periodic interest payments, and to repaying the debt at the end of the contract. Default gives lenders the right to attempt to recoup their capital by seizing the assets of the firm (Jensen, 1986; Williamson, 1988). Debt is a potential double-edged sword for firms in its conflicting implications for growth and for strategic investments. According to Jensen (1986), debt curtails the tendency for managers to over-invest in firm growth because the periodic interest payments reduce managerial discretion over internally generated cash flows and the threat of bankruptcy provides managers strong incentives to avoid wasteful investments and keep performance strong (Gibbs, 1993; Hoskisson *et al.*, 1994; Reuer and Miller, 1997; Galan and Sanchez, 2006). These high-powered incentives may, however, undermine managerial proclivity for investing in firm-specific assets (such as R&D) because the rigidity of debt contracts makes managers averse to investing in risky projects that have highly uncertain payoffs and cannot be liquidated during downturns to stave off creditors (Hitt *et al.*, 1990; Balakrishnan and Fox, 1993; Simerly and Li, 2000; O'Brien, 2003).

Both the potential benefits and the drawbacks of debt derive from the assumption that debt is a rigid, rules-based governance regime. However, the financial intermediation literature has shown that debt is heterogeneous, and that some forms of debt are characterized by a high degree of lender discretion (Boot, 2000). While public securities such as bonds and commercial paper are supplied by arms' length lenders who do indeed respond with rules and resort to liquidation to recoup their losses when firms encounter financial distress (David *et al.*, 2008), private loans from financial intermediaries such as banks are often part of a long-term relationship that can provide transacting parties the opportunity to develop trust and to learn how to better share information and solve problems (Boot, 2000; Boot and Marinc, 2008). Hence, these "relational lenders" are far more likely than arm's length "transactional lenders" to exercise their discretion and be forbearing when firms experience financial distress.

The traditional view of debt, which most aptly describes transactional debt, is that debt may be beneficial in constraining excessive growth, but can be detrimental to firms that invest heavily in firm-specific assets. Recently, David *et al.* (2008) argued that the governance provided by relational debt is very different from that provided by transactional debt, and hence relational debt can be beneficial to firms that invest heavily in R&D. However, this leaves open the question of how relational debt fares in terms of constraining excessive growth. On the one hand, it may be that relational debt is an optimal hybrid that simultaneously constrains excessive growth while also allowing for valuable discretionary investments in firm-specific assets such as R&D. In contrast, we argue that because the governance provided by relational debt is essentially the polar opposite of that provided by transactional debt, relational

debt is much less effective than transactional debt in curtailing excessive growth. Drawing on the rules versus discretion framework (Kydland and Prescott, 1977), we develop a theory that explains the paradox of why retention by lenders of the discretion to act optimally in the future can result in suboptimal outcomes relative to a mechanistic commitment to rules. Specifically, our theory explains why the retention of discretion within the context of relational debt erodes one of the most reputed governance properties of debt: its ability to discipline firm growth.

Our empirical analysis of a large sample of Japanese firms demonstrates that relational debt is associated with more total firm growth than transactional debt. Furthermore, we find evidence that the marginal growth allowed by relational debt generally represents over-investment in growth, as it reduces the total returns to growth and tends to occur for firms that lack profitable growth opportunities. These results confirm that the heterogeneity of debt is an important source of firm heterogeneity that critically influences not only firm growth but also the performance consequences of firm growth. By providing a more complete conceptual appreciation for the complex mechanisms through which debt constrains firm growth and impacts firm performance, our theory helps to explain why two firms with identical levels of debt may have very different growth rates and accrue very different returns to growth.

2. Theory and hypotheses

2.1 *Investment and over-investment in firm growth*

In theory, managers should invest additional capital in the firm only when valuable investment opportunities are identified (Brainard and Tobin, 1968). Unfortunately, managers may sometimes have incentives to depart from economically optimal investment policies. In his classic historical analysis of US corporations, Chandler (1977: 10) asserted in his seventh general proposition that career managers had a proclivity for growth over profit, preferring to “reinvest [cash flows] in the enterprise rather than pay them out as dividends.” Jensen (1986) echoed this claim, asserting that managers may have a predilection for growth, possibly even at the expense of shareholder value, because they benefit from the increased prestige and pay that go with greater firm size. According to Jensen, over-investment in growth is especially problematic when firms have free cash flow, which is “cash flow in excess of that required to fund all projects that have positive net present values” (p. 323). Jensen was much more concerned than Chandler about the erosion of shareholder value induced by over-investment in growth, and argued that governance mechanisms need to be implemented in order “to motivate managers to disgorge the cash rather than investing it at or below the cost of capital” (p. 323).

Jensen (1986) contends that debt can be a powerful governance mechanism for limiting over-investment in growth, particularly for firms lacking fruitful investment opportunities. Debt contracts obligate the firm to make periodic interest and principal payments, thereby reducing the amount of cash available for discretionary investments in growth. Excess growth is further checked because debt provides managers high-powered incentives to efficiently manage the firm and avoid wasteful investments, as failure to make payments or to conform to the liquidity covenants of the debt contract could trigger bankruptcy, resulting in possible job loss for top managers (Gilson, 1989) as well as diminished reputation and prestige (Sutton and Callahan, 1987). Empirical research supports Jensen's agency theory of free cash by showing that liquidity constraints impair a firm's ability to invest internally (Stanca and Gallegati, 1999; Brush *et al.*, 2000; Fagiolo and Luzzi, 2006), and hence debt can limit excessive firm growth (Lang *et al.*, 1996; Ahn *et al.*, 2006), including in contexts such as leveraged buyouts (Seth and Easterwood, 1993), leveraged recapitalization (Denis and Denis, 1993), hostile takeovers (Gibbs, 1993; Safieddine and Titman, 1999), and restructuring (Hoskisson *et al.*, 1994; Johnson, 1996).

2.2 Rules versus discretion

The conceptual argument underlying Jensen's agency theory of free cash is that debt constrains excessive growth by limiting discretion over free cash. Jensen (1986: 324) argued that debt is more effective than other voluntary ways of limiting cash (such as paying higher dividends) because "such promises are weak because dividends can be reduced in the future." Debt, on the other hand, credibly limits cash because it provides lenders the "right to take the firm into bankruptcy court if they do not maintain their promise to make the interest and principal payments." Hence, Jensen implies, but does not fully explain, the somewhat counterintuitive argument that using lenders that are committed to rules in order to limit cash may be more effective than relying on the discretion of the board of directors. Of course, it may be preferable to commit to the rigid rules of lenders rather than to rely on the discretion of the board of directors if the board cannot be trusted to diligently protect shareholders. However, the economic theory of rules versus discretion explains why commitment to rules may provide more effective governance of free cash flows than discretionary regimes, even in the extreme situation where the monitoring agents (be they lenders or the board of directors) can be fully trusted to act optimally and rationally in the future.

It has long been recognized that it may be valuable to constrain an agent's actions with rigid rules when you cannot trust that agent to take the rational or optimal action in the future. This may be the case even in the absence of principle-agent considerations, as when Odysseus ordered himself bound to the mast of his ship in order to ensure that he did not irrationally succumb to the allure of the sirens. Modern game theory has extended our understanding of the value of commitment by demonstrating that, quite paradoxically, even a rational player may sometimes

gain by intentionally reducing his or her choice set or by decreasing his or her returns to some outcomes (Fudenberg and Tirole, 1991). Although the strategic benefits of committing to a course of action had long been recognized in static game theory models (Schelling, 1960), dynamic models of decision-making (such as optimal control theory) held that there should be no reason to deny the flexibility of discretion to a smart and benevolent decision maker who can be trusted to act optimally in the future (Barro, 1986). Indeed, in most situations, handcuffing smart individuals by rigid rules would likely be counterproductive. However, in their seminal article that helped garner them a Nobel Prize in 2004, Kydland and Prescott (1977) demonstrate that in a dynamic economic system, a globally suboptimal outcome may sometimes result from employing an optimal control regime in which a decision maker exercises discretion and chooses the optimal course of action at each juncture in time. Counterintuitively, it is the very fact that the decision maker can be trusted to act rationally and optimally in the future that can allow suboptimal results to emerge under discretionary regimes.

Kydland and Prescott explain that a discretionary regime would always yield better economic outcomes if the current situation arose solely due to current and past policy decisions. However, the current situation may also have been influenced by the actions of various agents. As these agents may select their actions based upon expectations of future policy changes, they may choose inappropriate actions that undermine the best intentions of policy makers. In effect, the actions of the agents can create a time inconsistency in that the optimal *ex post* policy is inconsistent with the *ex ante* objectives. In contrast to discretion, commitment to rules avoids the time inconsistency problem because policies are set and consistently applied at each point of time in the future. Agents can anticipate this consistency, and hence take actions that will help them avoid unpleasant consequences that are dictated by a commitment to rules. Thus, paradoxically, a discretionary regime that selects the best action at every point of time given the current situation can yield suboptimal economic outcomes relative to a rules regime that commits to a prescribed course of action regardless of how the situation changes over time.

Although the theory of rules versus discretion has been applied most commonly to monetary policy and the benefits of having an independent central bank, it has also been employed to study such diverse phenomena as capital taxes, patent policy, and disaster relief (Stokey, 2002). As an illustrative example (from Kydland and Prescott, 1977), consider a policymaker who, in the best interests of society in general, wants to discourage people from building homes on flood plains. The official can discourage settling in the floodplain by announcing that anyone building in such areas will receive no government support whatsoever. However, rational individuals may build in the floodplain anyway, realizing that once enough houses are built the optimal and rational *ex post* action for the policymaker will be to build dams, levees, and other costly flood control systems. If the policymaker could credibly commit *ex ante* to absolutely no flood control systems (i.e. surrender discretion and commit

to rules) and unequivocally communicate such commitment to the populace, then rational citizens would refrain from building in the floodplain. However, as long as the policymaker retains discretion and is not handcuffed by rules, the populace will realize that a wise policymaker attempting to optimize the societal objective function *ex post* will be compelled to invest in costly flood control systems after the homes are built.

Game theoretic approaches to the value of commitment have received considerable attention in the strategy literature on competitive dynamics (e.g. Ghemawat, 1991). The corporate governance literature, however, has been guided largely by positivist agency theory that eschews mathematical game theoretical approaches (Jensen, 1983), and therefore tends not to explicitly consider commitment issues. We contend that the rules versus discretion framework can be fruitfully applied to explain the governance of the agency costs of free cash. Managerial investment decisions could be governed by the board's discretion to allocate cash as necessary. Alternatively, by obtaining debt, boards credibly commit to rules that limit cash by providing lenders the right to liquidate the firm if they fail to make contractual payments. Intuitively, it might appear that discretionary governance should yield better economic outcomes than rigid rule-based governance. Boards should, in theory, be able both to rein in the use of cash when growth opportunities are not available by increasing dividend payments or repurchasing shares (Black, 1976), and to foster optimal investment when growth opportunities are abundant by cutting dividends or approving new securities issues. However, it is important to recognize that outcomes are affected by agents' actions and their expectations about future policy changes. If managers anticipate strict exercise of rules by debt (i.e. bankruptcy in the event of default), then managers will be highly motivated to conserve cash and avoid excessive investments in firm growth. In contrast, the exercise of discretion by boards of directors subjects managers to much weaker discipline because managers can anticipate that performance shortfalls are more likely to be met with forbearance by helping managers work through the financial difficulties.

Even though it may rarely be optimal *ex post* to force a firm into bankruptcy, committing to doing so *ex ante* can actually induce a more globally optimal *ex post* outcome. While rules give managers strong incentives to avoid excessive investments in growth, the anticipation by managers of *ex post* discretion attenuates the *ex ante* incentives. Hence, while we do not claim that rules-based regimes are in general superior to discretionary regimes, we do propose that rules-based regimes will be much more effective than discretionary regimes for curbing over-investment in firm growth. Recasting the relationship between governance mechanisms and over-investment in terms of the governance regimes as opposed to the financial security (i.e. debt or equity) opens up the possibility of exploring how governance regimes may vary within one class of security. Specifically, we contend that the existing agency theory literature has painted an oversimplified picture of debt. While transactional debt does indeed entail the arm's length relationship and

commitment to rules assumed by many scholars (e.g. Jensen, 1986; Williamson, 1988), relational debt entails a relatively close relationship between the lender and the firm. We contend that a close relationship between the lender and the firm facilitates the retention of discretion by lenders, and hence undermines the tendency of debt to discipline growth. Below, we expand on this argument after first describing the salient characteristics of the institutional context of our study (i.e. Japan).

2.3 *Free cash flow, over-investment, and governance in Japan*

While most of the research on over-investment and free cash flow has focused on US corporations, several researchers have noted the applicability of this topic to the Japanese context (Jensen, 1989; Kester, 1991). However, there are relatively few empirical investigations using Japanese firms (Kang and Shivdasani, 1997; Yafeh and Yosha, 2003). The institutional context of Japan might be a particularly fruitful one for studying over-investment. Japanese firms tend to have much stronger commitments to both internal and external stakeholders, commitments that are bolstered by reciprocal shareholding amongst business partners and an implicit commitment to providing “lifetime employment” (Abegglen and Stalk, 1985). The pursuit of growth helps firms to meet these obligations to their stakeholders, and hence Japanese managers tend to have a greater bias toward growth than US firms (Abegglen and Stalk, 1985; Kester, 1991). This growth bias is also an intrinsic feature of inter-firm rivalry in Japan (Abegglen and Stalk, 1985; Porter *et al.*, 2000), where rival firms compete fiercely to match each others’ moves, often growing in order to offer the full product lines of their competitors (Porter *et al.*, 2000). Furthermore, this growth bias is not restricted to companies in growth industries. Rather than cut back when demand falls, Japanese firms in declining industries often step up their investment in growth (Abegglen and Stalk, 1985; Kester, 1991). Finally, relative to the United States, the growth of Japanese firms depends more heavily on available cash than it does on growth opportunities (Thomas and Waring, 1999).

Of course, a predilection for growth does not, by itself, indicate that Japanese firms are subject to over-investment in growth. Growth is beneficial as long as firms have profitable growth opportunities. During the decades following World War II, most Japanese firms grew by exploiting the considerable growth opportunities that were available and attained remarkable success in numerous product markets (Abegglen and Stalk, 1985). In 1991, however, Japan experienced an economic downturn that has continued for over a decade. As the economy stagnated, growth opportunities dwindled. The Japanese economy, which had grown over 6% a year on average during the 1985–1991 period, grew only 1% a year on average between 1992 and 2000 (Economic and Social Research Institute, 2002). Jensen (1989: 73) was prescient in noting that “[m]any of Japan’s public companies are flooded with free cash far in excess of their opportunities to invest in profitable internal growth.”

Given the dearth of growth opportunities, this time period should serve as a particularly poignant context for studying over-investment.

2.4 Types of debt: transactional versus relational

While prior research on the disciplining properties of debt implicitly assumes that debt is homogeneous, the financial intermediation literature has long distinguished between two distinct forms of debt: private loans from financial intermediaries and public securities in the form of bonds [we draw extensively on a review by Boot (2000)]. With public securities such as bonds and commercial paper, the firm and lenders are typically linked only by a relatively simple arm's length transaction. The securities are often diffusely held, and the only performance metric of interest to the lenders is the direct financial returns available from holding the debt they purchased. The time horizon of the lenders is bounded by the maturity date of the securities issue, and in practice may be even much shorter as these securities can be readily traded in active secondary markets. When Jensen (1986) and Williamson (1988) described the governance properties of debt, they were describing arm's length transactional debt. While transactional debt is the most common source of external financing for major US corporations, some corporations also have significant amounts of private loans from financial intermediaries (Stearns and Mizruchi, 1993). These institutions may come to wield considerable influence over the firm, as the private lender may control access to funds when money is tight (Davis and Mizruchi, 1999) and representatives from the financial intermediary frequently hold seats on the firm's board of directors (Stearns and Mizruchi, 1993). Moreover, a focus on transactional debt lacks generalizability because both small and large firms in most of the rest of the developed world, and even small firms within the United States, tend to rely predominantly on private loans from financial intermediaries for external financing (Mayer, 1990). As we explain below, the governance properties of private loans may diverge considerably from those of transactional debt.

While private loans from financial intermediaries may sometimes constitute arm's length transactions, the firm and lender are more typically linked by a complex and multifaceted relationship. Hence, we designate private loans from financial intermediaries (primarily banks) as relational debt. Relational lenders provide loans in private transactions that are typically part of a long-term relationship wherein the lenders generally rollover the loans and also provide additional business services such as brokerage, letters of credit, check clearance, and cash management services. As a consequence, relational lenders adopt an extended time frame for evaluating the firm and employ multiple performance criteria that account for the numerous business relationships that exist between the two (Boot, 2000).

Relational debt has fundamentally different governance properties than transactional debt primarily because relational lenders, unlike transactional lenders, have

both the motive and the means to renegotiate when clients default. In terms of motive, transactional lenders are concerned only with the direct returns available from the transaction at hand. As anything that impairs firm performance reduces creditworthiness and devalues existing bonds, transactional length lenders will fervently enforce the terms and covenants of their debt contracts in order to protect their investments. Furthermore, transactional lenders credibly commit to following the rules of the debt contract and attempting to force defaulting firms into bankruptcy because that is generally the only recourse open to the lenders to try to recoup their investments (Williamson, 1988). In contrast to transactional debt, the indefinite time horizon adopted by relational lenders and the multiple business ties between the client and the lender may provide the bank with strong motives to renegotiate when clients default. Not only would liquidation preclude future loans with the client but it would also entail the loss of the additional business services that the bank may sell to the client, which are often more lucrative than the loans themselves (Davis and Mizruchi, 1999). Furthermore, relational lenders often have business relationships with the suppliers and customers of the firms they loan money to, which would also suffer if they pushed struggling firms into liquidation (Aoki and Patrick, 1994). Lastly, relational lenders may also wish to cultivate a reputation for being forbearing and helping firms through trouble spots in order to attract new clients (Chemmanur and Fulghieri, 1994).

Not only do relational lenders have incentives to be more forbearing but they also have the means to be forbearing, unlike transactional lenders. Transactional debt is generally widely dispersed among a large number of bond holders, whereas relational debt is concentrated in the hands of one or just few lenders (Aoki and Patrick, 1994). Thus, as a practical matter, it is simply much easier to restructure relational loans than arm's length transactional bonds (Detragiache, 1994). Furthermore, by nature of the long-term relationship and multiple business contacts, relational lenders acquire considerable firm-specific information about the firm. That information, which transactional lenders lack, gives relational lenders the knowledge needed for renegotiation (Cremer, 1995). Relational lenders also have incentives to gather this firm-specific information because they hold a large proportion of the firm's debt (whereas transactional debt is diffusely held) and they can amortize the costs of collecting that information over an indefinite time horizon and multiple business relationships (Boot, 2000).

As David *et al.* (2008) point out, relational debt can have advantageous governance properties, relative to transactional debt, for R&D-intensive firms. From a transaction cost perspective, the arm's length relationship and strict adherence to the debt contract typical of public bonds can aptly be characterized as market governance. Although market governance produces high-powered incentives, it fails to adequately safeguard the continuity of investment, a critical consideration for firm specific and highly uncertain investments like R&D. In contrast, the governance exercised by relational lenders is more akin to hierarchical governance.

The bank's long-term relationship with the client and its ability to exercise forbearance when firms default help to safeguard the continuity of investment in R&D, thereby providing managers the incentives necessary to make and effectively manage such investments. While David *et al.* (2008) demonstrated that relational debt can have significant benefits for firms that invest heavily in R&D, their results also revealed that transactional debt is superior to relational debt for firms that do not invest heavily in such assets. Accordingly, we contend that one of the significant costs of relational debt is that it will be too permissive of growth when profitable opportunities are scarce.

2.5 Debt and firm growth

As Williamson (1988) noted, market governance (such as that exercised by transactional debt) represents a commitment to the rules of the contract, while hierarchical governance (such as that exercised by relational debt) is characterized by the retention of discretion. *Ex ante*, banks would prefer that client firms do not get into financial trouble. However, if the firm does subsequently encounter financial difficulties, it will probably not be optimal to liquidate the firm, *ex post*, because bankruptcy erodes much of the value of a firm and lenders often recover only a fraction of their investment (Bris *et al.*, 2006). The theory of rules versus discretion explicates why affording lenders greater discretion to "act optimally" in the future accentuates the possibility of a time inconsistency between *ex ante* objectives and *ex post* policy. Transactional debt conforms to the description of debt offered by Jensen (1986). Bound only by market ties, lenders credibly commit to liquidating the firm in the event of default, as that is the only mechanism they have at their disposal to attempt to recoup their investment (Williamson, 1988). Thus, transactional debt represents a rules regime, governed rigidly by the terms pre-specified in the debt contract. As such, we would expect that transactional debt should curtail over-investment in growth by providing tight budget constraints and high-powered incentives to avoid wasteful investments.

Bank lending can be characterized as either transactional or relational. When firms have arm's length ties with banks, managers can expect little help from the bank in the event of default. While exercising discretion by being forbearing may be technically possible for a bank with arm's length ties to a client, the lack of a close relationship makes it practically infeasible. With arms' length ties, bank debt is likely more dispersed amongst multiple banks (Uzzi, 1999). As banks thus have "discretion" over only a fraction of the client's debt, scrambling to recover what they can before the other banks is a more likely scenario than a coordinated rescue effort. Furthermore, any bank that initiated a rescue effort would risk bearing all the costs of that effort (in time and money) but reap only a fraction of the benefits. Finally, while banks do not wish to develop a reputation for being overly harsh with clients (Chemmanur and Fulghieri, 1994), neither do they wish to foster an adverse

selection problem by developing a reputation for being soft on defaulters, and thus the arm's length clients will serve as examples.

From a governance perspective, transactional bank debt behaves much like public bond debt. However, the emergence of a closer relationship between the bank and its client makes the exercise of discretion in response to financial distress feasible, and hence dramatically alters its governance properties. With closer ties, most of the firm's debt will likely be held by that one bank (Uzzi, 1999), giving the bank both the means and the motive to renegotiate loans. Furthermore, the extended business ties provide lenders access to richer information about the firm's operations and financial position (Aoki and Patrick, 1994; Boot, 2000). In Japan, relational lenders also gain access to more information by obtaining seats on the firm's board (Aoki and Patrick, 1994). Hence, relational lenders have additional information that can be used to craft a customized financial solution. By the theory of rules versus discretion, the situation is ripe for a time inconsistency problem. *Ex ante*, the bank would prefer the firm not squander resources by over-investing in growth. While the bank can threaten bankruptcy in response to default, smart clients will realize that *ex post*, the most rational course of action for the bank will be to help the firm tide over its troubles. If at least some managers exploit the expected *ex post* rationality of banks by being willfully imprudent with their investments in growth, then we would expect relational debt to lead to more over-investment in growth than transactional debt. However, even if managers do not intentionally act opportunistically, the expectation of *ex post* discretion undermines *ex ante* discipline and incentives for all managers, even those who refrain from deliberate opportunism.

2.6 Transactional and relational debt in Japan

While general theories of rules versus discretion and financial intermediation lead us to predict that relational lenders will generally be relatively lenient taskmasters of firm growth, the situation will likely be particularly acute in Japan. Traditionally, regulations in Japan constrained the access to various securities and bank loans were the primary means of debt financing. However, 1979 marked the beginning of a long period of gradual deregulation that culminated around 1992 when most firms could also freely obtain transactional debt in the form of bonds (Hoshi and Kashyap, 2001). Aoki and Patrick (1994: xxi) describe debt governance in Japan as a "main bank system" that operates as an "especially intensive manifestation of relationship banking" and has been a distinguishing feature of Japanese corporate governance. Firms typically obtain loans from several banks but designate a single bank as the main bank. The firm's main bank acts as the *de facto* head of a loan consortium, monitoring the firm on behalf of all other banks. This arrangement is reciprocal in that one firm's main bank will likely be a subordinate lender to other firms where a different bank takes the lead. However, the main bank is typically the largest lender, holding a majority of the firm's short-term loans. The main bank also obtains the

bulk of lucrative business relationships with the firm such as payment settlement accounts, advisory services (e.g. acquisitions and divestitures), and brokerage and trust operations. The main bank commonly dispatches directors to serve on the client firm's board, and some bank executives may become full-time officers of the firm.

Curiously, Japan's "especially intensive manifestation of relationship banking" may closely resemble the embedded banking relationships that Uzzi (1999) observed amongst small firms in the United States. In these relationships, managers of the client firms forged close personal ties with their bankers within the context of what was expected to be a long-term relationship. These ties often extended to social activities such as golf and expand to include the family members and other business partners of those involved (Uzzi, 1999). Similarly, in Japan, a firm's transactions with its stakeholders tend to be "embedded in complex, multilayered webs" (Lincoln and Gerlach, 2004: 11), and social norms convey a strong expectation that managers will socialize with other members embedded in these webs (Gerlach, 1992; Aoki and Patrick, 1994). Japanese firms also tend to have close long-term relationships with a core set of stable suppliers and customers, and many firms are organized into business groups termed *keiretsu* (Gerlach, 1992). While the bonds of dependence and enforceable trust that grow out of a tightly embedded relationship should attenuate the tendency for managers to act opportunistically against their lenders, there exists a concomitant dark side to embedded relationships that may serve to only exacerbate the tendency for banks to be lenient on excessive firm growth.

Embedded relationships foster the development of trust, which helps to engender norms of reciprocity (Uzzi, 1999). Within the context of a banking relationship, this reciprocity may translate into a tacit understanding that the bank will support its client through financial distress, and the firm will in turn push as much lucrative ancillary business to the bank as possible (Seal, 1999). While this arrangement may sometimes serve as an economically justifiable tradeoff (such as for R&D-intensive firms), it necessarily erodes the ability of shareholders to rely on relational lenders to be diligent monitors. In Japan, erosion of this monitoring function may be further exacerbated by the fact that client firms are often significant shareholders in the banks (Dinç, 2006). Moreover, close personal ties can compromise objectivity (Locke, 1999) and lead to parochialism (Adler and Kwon, 2002), whereby decisions and resource allocations are based on personal relationships rather than just claims or economic efficiency (Khatri *et al.*, 2006). Indeed, if widespread, such inefficient capital allocation methods can undermine the competitiveness of an entire nation (Morck *et al.*, 2005).

2.7 Hypotheses

Our theory has argued that relational debt should allow for more growth than transactional debt at the unprofitable end of the spectrum. While our theoretical

focus on over-investment in growth is consistent with the agency theoretic view of capital structure, it is important to acknowledge that relational debt may very well be more permissive of profitable growth as well as unprofitable growth. In theory, transactional debt does not preclude significant growth if managers legitimately identify profitable growth opportunities, as they can subject their growth plans to the scrutiny of the capital markets in order to obtain the appropriate funding (Mizruchi and Stearns, 1994). In practice, due to information asymmetries, there may be some situations where cash strapped firms forego profitable growth opportunities rather than raise the required funds in external capital markets (Myers and Majluf, 1984). Hence, the tight budget constraints of transactional debt might cause managers to forego some profitable growth. In contrast, relational lenders should be quite supportive of profitable growth opportunities, as they offer only benefits to lenders. Thus, relational debt can help alleviate the information asymmetries that can lead to under-investment in profitable growth opportunities. While relational debt does impose more constraints and incentives on managers than they would face if the firm were debt free, those constraints and incentives would be considerably stronger if the debt were transactional. Therefore, while we expect that both forms of debt will be associated with diminished firm growth, we predict that relational debt will allow for more growth (both profitable and unprofitable) than transactional debt.

H1: Transactional debt is more negatively associated with firm growth than is relational debt.

Hypothesis 1 does not make a distinction between potentially profitable and potentially unprofitable growth, merely suggesting that transactional debt has a more negative association with firm growth, in general. Yet, growth can be beneficial or detrimental for profits depending on the firm's potential growth opportunities. To more explicitly explore whether transactional debt is more effective in constraining inappropriate growth (i.e. growth at the less profitable end of the spectrum), we consider the moderating effect of the firm's growth opportunities. Firms have profitable growth opportunities when the potential market value generated from investment exceeds the investment outlay. Growth is likely to be beneficial when firms possess profitable growth opportunities but has deleterious consequences when firms lack such opportunities. As R&D-intensive firms often have ample growth opportunities (Kamien and Schwartz, 1982), relational debt can be beneficial for such firms (David *et al.*, 2008). However, we contend that the primary downside of relational debt is that it will fail to curtail over-investment in growth, which is primarily a problem when firms lack significant profitable growth opportunities. The rules-based governance of transactional debt translates into tight budget constraints and high-powered incentives to avoid wasteful investments, and hence it should deprive managers of both the means and the motive to over-invest in firm

growth when they lack profitable growth opportunities. Relational lenders, in contrast, should be relatively tolerant of modest over-investment in firm growth, and hence will be less effective in curtailing growth when profitable growth opportunities are scarce.

H2: Transactional debt is more negatively associated with firm growth than is relational debt for firms lacking growth opportunities.

It is important to recognize that even when firms over-invest in growth, observed growth over the course of a year may still very well be positively associated with performance. Economic value is created as the firm adopts more and more positive NPV projects. However, if managers continue to invest after all positive NPV projects have been exhausted, the economic value created during that period will begin to be eroded. In order to induce a negative relationship between growth and performance over the course of the year, managers would have to *severely* over-invest in growth. Although some firms may employ inappropriate governance mechanisms due to organizational inertia, adjustment costs (Nickerson and Silverman, 2003), bounded rationality (Masten, 1993), and governance inseparabilities (Argyres and Liebeskind, 1999), we would expect relatively few firms to engage in such gross over-investment. Most corporations are likely to be reasonably well governed (Davis and Mizruchi, 1999), and even when strong governance mechanisms limiting over-investment are lacking, competition (Jensen, 1989) and the market for corporate control (Manne, 1965) induce limits on how far managers will deviate from optimal behavior. Hence, even if managers have a predilection for growth, it is unlikely that managers will want to engage in disastrous growth that would severely impair firm performance, risk bankruptcy, jeopardize the manager's present position, and erode his or her reputation in the managerial labor market. Accordingly, while we expect that over-investment in firm growth reduces the positive returns to growth, we would expect that the relationship between growth and performance would still generally be positive.

H3: Growth is positively associated with performance

The rules-based governance of transactional debt imposes tight budget constraints and high-powered incentives on managers because it responds to debt contract violations with severe adverse consequences. Budget-constrained managers will apply their limited cash to the best investment opportunities and may raise additional funds if attractive opportunities still exist, but will lack both the means and the motive to continue investing once all profitable growth opportunities have been exhausted. Merely giving lenders discretion erodes the tendency for debt to discipline growth because it will rarely be optimal for a bank to push a client into bankruptcy. Furthermore, lenders may actually derive net benefits from modest over-investments in growth by their clients. Hence, small covenant violations

or late interest payment would likely be met with forbearance by the bank, and thus managers face relatively weak incentives to avoid excessive investments in growth. If transactional debt curtails unprofitable growth to a greater extent than relational debt, then it will strengthen the positive association between growth and performance to a greater extent than relational debt.

H4: Transactional debt produces a more positive relationship between firm growth and performance than does relational debt.

3. Methods

3.1 Study context

While firms in almost all developed nations have some access to both relational and transactional debt, it is important to note that the relative prevalence of the two types varies considerably across countries. For example, although private debt is still common for small firms in the United States, large public corporations rely largely on public bond debt. Conversely, private debt from banks is the dominant source of external financing for major corporations in Germany and France (Allen and Gale, 2000). Japan, however, provides a particularly useful context for our study because it has both a longstanding tradition of private bank debt and, following deregulation throughout the 1980s and 1990s, a readily accessible public bond debt market (Anderson and Makhija, 1999). Furthermore, unlike many countries, accounting standards in Japan make it possible to distinguish between loans and bond debt based on annual company reports. While we test our hypotheses on a sample of Japanese firms, we believe that our results have implications for all national contexts where firms either have access to both types of debt or could have access to both types of debt pending financial deregulation.

3.2 Data and variables

In order to test our theory, we require a sample of firms with detailed financial information that distinguishes between relational and transactional debt. Although financial reporting by US firms does not typically distinguish between the two types of debt, Anderson and Makhija (1999) show that reasonable proxies for these constructs can be derived from the Pacific-Basin Capital Markets (PACAP) database for Japanese firms. Hence, we used the PACAP database for Japan to construct our sample frame and test our hypotheses. As many firms could not access public bond debt until the early 1990s, we restricted our sample to the years 1992–2002, which encompassed 2182 firms and 18,373 observations. We lagged all independent variables one year so that firm growth and performance over a given year is modeled as a function of the capital structure as of the start of that year. Thus, the

independent variables span the time frame 1992–2001, while the dependent variables correspond to 1993–2002. This lagging, in conjunction with occasional missing data items, reduced the final sample to 2103 firms and 16,230 observations. However, the models where the market measure of performance *alpha* is the dependent variable contain fewer observations because that variable (which was merged in from another dataset) was not available for 2002. All variables were obtained from the PACAP database, with the exception of *alpha*, R&D investment, and advertising expense, which were obtained from the Nikkei NEEDS database.

3.2.1 Dependent variables

The appropriate measure of firm growth depends upon the theoretical rationale for a study (Weinzimmer *et al.*, 1998). Our theory is concerned with the extent to which managers are reinvesting capital into the firm, in the form of capital expenditures, acquisitions, or other investments that produce firm growth. Two of the most common measures of firm size are assets and sales. Sales growth, however, may derive from many causes (e.g. demise of a competitor, improved strategy, a strong economy, etc.) and does not necessarily indicate that managers have reinvested cash flow into the firm's operations. Similarly, the total book value of assets encompasses current assets (e.g. inventories, accounts receivable, and cash on hand), growth in which may not necessarily be indicative of reinvestment in the firm. Thus, we assess firm *growth* with the year over year increase in net fixed assets. This variable was computed as $\ln(\text{net fixed assets}_t / \text{net fixed assets}_{t-1})$. Results were similar, however, if we measured growth with either annual capital expenditures or growth in sales.

We use Jensen's *alpha* to assess firm performance. This variable, which uses the Capital Asset Pricing Model to measure the excess return on the firm's stock, was derived from Nikkei NEEDS data. We believe that this measure is appropriate because it incorporates not just current performance but also expectations of future cash flows that might derive from any firm growth. However, as a robustness check, we also employ return on assets (*ROA*) as a measure of performance. *ROA* is measured as operating income divided by total assets.

3.2.2 Independent variables

Relational debt generally comes in the form of loans from banks with which the client has close ties, while transactional debt can come in the form of either public bonds or loans from banks with which the client has only market ties. For Japanese firms, prior research has argued that it is reasonable to treat all banks loans as being relational, and to treat all bonds as transactional debt (Hoshi *et al.*, 1993; Anderson and Makhija, 1999; Wu *et al.*, 2001). Thus, the variable *relational* represents the sum of all bank loans divided by the market value of the firm, and the variable *transactional* is the sum of all bonds and long-term notes divided by the market value of the firm. We scale debt by the market value of the firm, as opposed to total assets, because Kester (1986) indicates that this may be more appropriate for Japanese firms.

Results are similar, however, if we scale by total assets (while the main effects of both types of debt on performance tended to be in the opposite direction, our hypotheses were still supported). Prior research has indicated that higher market-to-book ratios (or Tobin's Q) indicate that firms have more profitable growth opportunities (Lang *et al.*, 1996; Brush *et al.*, 2000; David *et al.*, 2006). Hence, we use the firm's market-to-book ratio, reverse coded by multiplying it by negative one, to assess the extent to which it *lacks opportunities* for profitable growth. The market-to-book ratio was calculated as the sum of the book value of debt and the market value of equity divided by total assets.

We also controlled for a number of other factors that might impact either firm growth or performance. The variable *fixed assets* is defined as net fixed assets divided by total assets. *Cash* is total cash and marketable securities divided by total assets, and *sales* is the natural log of total firm sales. *ROA* was also used as an independent variable in some models. However, in those models, it was lagged one year relative to the dependent variable. *Volatility* assesses the instability of the firm's earnings and is measured as the standard deviation of return on assets over the previous five years. *Advertising* and *R&D* are total expenditures on advertising and R&D, respectively, divided by total assets. We also included two controls to account for divergent patterns of equity ownership across companies. *Foreign ownership* is the total number of shares owned by foreigners divided by total shares, and *bank ownership* is the total number of shares owned by financial institutions and securities companies divided by total shares.

In addition to the firm level control variables, we also included industry level control variables. For each industry, *industry growth*, *industry ROA*, and *industry volatility* all represent the median value of the corresponding firm level variable for all firms for which that industry is their primary industry. *Industry leverage* is the ratio of total debt-to-market value for the median firm in each industry, while *industry opportunities* is the market-to-book ratio of the median firm in each industry.

3.3 Analysis

We used regression analysis to test our hypotheses. As our sample comprises panel data, we incorporate firm fixed effects to account for unobserved heterogeneity. Fixed effects were deemed superior to random effects because a Hausman test indicated that there was a significant ($P < 0.01$) systematic difference in the coefficients from random effects models versus fixed effects models. We also considered that several of our key variables could potentially be endogenously determined. If our models fail to include every variable that influences both the endogenous independent variables and the dependent variables, traditional OLS methods will suffer from omitted variables' bias. Two-stage instrumental variables (IV) regression methods can eliminate this bias but comes at a cost, as it produces much larger

standard errors. Hence, we only treat variables as endogenous if tests indicate that endogeneity creates a problem (see Chapter 15 of Wooldridge, 2003).

To test if endogeneity poses a problem, we must first find valid instruments for each of the potentially endogenous variables. These instruments should be strongly related to the endogenous variables but weakly related to dependent variable (i.e. *growth*, *alpha*, or *ROA*, depending on the model being tested). While the suitability of various instruments vary somewhat with different dependent variables, generally industry level measures for the potentially endogenous variables served as valid instruments. Furthermore, *cash* sometimes serves as a valid instrument for both *growth* and our two debt measures, while *fixed assets* sometimes serves as a valid instrument for *growth* and *transactional*. We also created instruments for the interactions between growth and type of debt by interacting the instrument for *growth* with the instruments for *relational* and *transactional*. All 2SLS models tested employ more instruments than endogenous variables to enable tests of overidentifying restrictions to verify that the instrumental variables are both appropriately excluded from the second stage regression and uncorrelated with the error term in the second-stage regression (a critical assumption of IV regressions). As Davidson–MacKinnon tests of exogeneity indicate that growth and its interactions pose an endogeneity problem when *alpha* is the dependent variable ($F=7.8$, $P<0.01$), we employ 2SLS-IV regressions with firm fixed effects for those models and standard fixed effects regressions for all others.

Finally, it should be noted that analysis of Cook's D statistics indicated that four outliers had a significant impact on the models and thus were excluded from the analysis. However, retaining these observations does not materially alter our results. Analysis of variance inflation factors revealed that multicollinearity is not a problem in any of the models reported. Also, all models included year fixed effects (not reported) in addition to the firm fixed effects. Descriptive statistics are given in Table 1, while Table 2 details how our critical variables (i.e. *alpha*, *ROA*, *growth*, *relational*, and *transactional*) have varied over the course of our sample window.

4. Results

Our empirical analysis is given in Table 3. Model 1 presents the fixed effects regression used to test whether transactional debt is more effective in restraining firm growth than relational debt. While *transactional* had the expected significant negative main effect on *growth* ($P<0.01$), *relational* had no significant effect. Furthermore, the effect for *transactional* was significantly stronger than that for *relational* ($F=7.97$, $P<0.01$), supporting H1. Also, as might be expected, firms that lacked profitable growth opportunities generally grew less than those with such opportunities ($P<0.01$). However, the positive interaction between *lacks opportunities* and *relational* ($P<0.01$) in model 2 suggests that the negative relationship between a

Table 1 Descriptive statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
Mean (SD)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	
(1) Alpha	0.03 (1.47)																		
(2) Growth	0.01 (0.14)	0.04																	
(3) Transactional	0.09 (0.11)	-0.08	0.00																
(4) Relational	0.25 (0.25)	-0.14	-0.06	-0.20															
(5) Lack Oppor.	-0.98 (0.55)	-0.36	-0.08	0.11	0.32														
(6) Fixed Assets	0.28 (0.17)	-0.04	-0.03	0.15	0.06	-0.04													
(7) Cash	0.1 (0.09)	0.06	0.04	-0.06	-0.31	-0.17	-0.28												
(8) Sales	11.2 (1.4)	0.03	0.01	0.29	-0.01	0.03	-0.08	-0.11											
(9) ROA	0.03 (0.04)	0.23	0.14	-0.07	-0.36	-0.35	0.01	0.21	0.11										
(10) Volatility	0.02 (0.01)	0.05	-0.09	-0.11	-0.03	-0.16	-0.07	0.10	-0.28	-0.26									
(11) Adverstising	0.01 (0.02)	0.06	0.02	-0.02	-0.15	-0.10	-0.02	0.11	0.07	0.14	0.02								
(12) R&D	0.01 (0.02)	0.14	-0.01	0.02	-0.20	-0.16	-0.07	0.02	0.10	0.11	0.04	0.06							
(13) Foreign Own.	0.06 (0.08)	0.18	0.02	0.03	-0.29	-0.31	-0.10	0.12	0.32	0.22	0.01	0.06	0.15						
(14) Bank Own.	0.34 (0.16)	-0.03	0.03	0.27	-0.14	-0.09	-0.05	-0.03	0.48	0.04	-0.17	0.00	0.16	0.17					
(15) Ind. Growth	-0.01 (0.02)	-0.06	0.18	0.04	-0.03	-0.07	0.10	0.00	0.10	0.15	-0.12	0.10	-0.10	0.02	0.02				
(16) Ind. Opportun.	-0.10 (0.26)	0.14	0.00	0.04	-0.22	-0.39	0.18	0.06	-0.04	0.05	0.10	0.07	0.13	0.05	0.14	0.06			
(17) Industry ROA	0.03 (0.01)	0.13	0.05	0.02	-0.17	-0.16	0.13	0.07	0.04	0.35	-0.10	0.18	0.05	0.05	-0.01	0.41	0.20		
(18) Ind. Leverage	0.33 (0.14)	-0.12	0.00	0.08	0.42	0.28	0.11	-0.16	0.14	-0.14	-0.14	-0.08	-0.21	-0.07	-0.04	-0.03	-0.42	-0.38	
(19) Ind. Volatility	0.01 (0.00)	0.08	-0.06	-0.02	-0.20	-0.13	-0.12	0.10	-0.16	-0.11	0.37	-0.04	0.14	0.06	0.03	-0.33	0.28	-0.24	-0.41

Table 2 Changes over time

Year	Alpha Mean (SD)	ROA Mean (SD)	Growth Mean (SD)	Relational Mean (SD)	Transactional Mean (SD)
1993	0.507 (1.031)	0.031 (0.041)	0.022 (0.139)	0.217 (0.212)	0.096 (0.101)
1994	0.195 (0.937)	0.033 (0.039)	0.013 (0.130)	0.208 (0.208)	0.087 (0.095)
1995	0.288 (0.916)	0.034 (0.038)	0.022 (0.129)	0.219 (0.215)	0.093 (0.106)
1996	0.055 (0.890)	0.037 (0.036)	0.028 (0.126)	0.203 (0.205)	0.075 (0.092)
1997	-0.478 (1.078)	0.034 (0.038)	0.029 (0.123)	0.233 (0.227)	0.085 (0.106)
1998	-0.468 (1.385)	0.028 (0.043)	0.008 (0.121)	0.286 (0.260)	0.090 (0.119)
1999	-0.379 (1.467)	0.036 (0.044)	0.017 (0.175)	0.314 (0.271)	0.084 (0.119)
2000	-0.296 (1.951)	0.041 (0.045)	0.016 (0.161)	0.303 (0.277)	0.082 (0.123)
2001	1.066 (1.690)	0.032 (0.048)	-0.002 (0.171)	0.296 (0.273)	0.071 (0.111)
2002	0.597 (1.642)	0.036 (0.044)	-0.018 (0.136)	0.295 (0.278)	0.061 (0.103)

lack of profitable growth opportunities and firm growth is weakened in firms that use relational debt. Consistent with H2, this interaction was significantly greater than the insignificant interaction between *lacks opportunities* and *transactional*, suggesting that relational lenders are more permissive of sub-optimal growth than are transactional lenders.

Models 3 and 4 of Table 3 use 2SLS-IV regressions to examine the performance implications of firm growth. The Sargan overidentification test statistic was insignificant for both models, confirming that the instrumental variables are indeed exogenous and correctly excluded from the performance equation. Also, the Wald chi-square statistic was highly significant ($P < 0.01$) for both models 2 and 3. We do not report *R*-squared statistics because this statistic has no natural interpretation in IV regressions. Although IV methods yield better estimates of the *ceteris paribus* effect of an endogenous variable on a dependent variable, overall model goodness-of-fit may very well decline when a variable is treated as endogenous (see Wooldridge, 2003: 494–495). Accordingly, it is also inappropriate to test whether adding in an endogenous variable (or endogenous interaction) incrementally improves overall model fit. Employing a data-driven model specification that starts with all available variables and eliminates those with poor predictive power yields equivalent results, although some control variables would have been dropped.

The positive and significant main effect of *growth* on *alpha* in model 3 supports H3 and suggests that growth is generally beneficial for firms. However, as we have argued, some managers may nonetheless be over-investing in growth, as it is possible that the returns to growth could be greater if less growth occurred. Indeed, the strong significant interaction between *growth* and *transactional* ($P < 0.01$) in model

Table 3 Statistical models

Dependent variable: Method:	Growth Fixed effects regr.		Alpha 2SLS-IV		ROA Fixed effects regr.	
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm Variables						
Growth ^a	–	–	2.20**	–0.88	0.01**	0.01**
Transactional	–0.06**	–0.10**	–1.16**	–1.05**	–0.04**	–0.04**
Relational	–0.01	0.04*	–1.09**	–1.11**	0.00	0.00
Lack opportunities	–0.01**	–0.01**	–0.54**	–0.62**	–0.02**	–0.01**
Fixed assets	–0.70**	–0.70**	2.39**	2.34**	0.00	0.00
Cash	0.04	0.03	–	–	0.02**	0.02**
Sales	–0.06**	–0.06**	–0.23**	–0.15	0.01**	0.01**
ROA	0.50**	0.48**	4.84**	4.48**		
Volatility	–0.45**	–0.43**	4.36**	4.26**	–0.17**	–0.16**
Adverstising	0.97**	0.95**	–1.21	1.27	0.10	0.10
R&D	0.03	0.03	–2.75	–3.00	–0.21**	–0.21**
Foreign ownership	–0.02	–0.03	–0.19	–0.33	0.00	0.00
Bank ownership	–0.01	–0.01	–2.55**	–2.85**	–0.03**	–0.03**
Indus. variables						
Industry growth	0.84**	0.85**	–	–	0.05**	0.05**
Industry opportunities	–0.02*	–0.02*	1.56**	1.71**	0.00	0.00
Industry ROA	–0.41**	–0.41**	3.98*	2.56	0.17**	0.17**
Industry leverage	0.03	0.03	0.26	0.36	0.00	0.00
Industry volatility	0.96*	0.97*	–16.6**	–20.4**	–0.11	–0.11
Interactions						
Arm's length × lack-opp	–	0.04	–	–	–	–
Relational × lack-opp	–	0.10**	–	–	–	–
Arm's length × growth ^a	–	–	–	39.84**	–	0.03*
Relational × growth ^a	–	–	–	0.65	–	–0.02**
Observations	16,230	16,230	13,897	13,897	16,230	16,230
F-statistic	69.7**	65.38**	–	–	73.6**	69.26**
R ²	0.114	0.115	–	–	0.120	0.121
F-stat: improve. R ²	–	10.02**	–	–	–	12.91**
Wald chi-square	–	–	3403**	2856**	–	–
Sargan's test	–	–	0.15	0.09	–	–

^aVariable was instrumented in Models 3 and 4.

* $P < 0.05$

** $P < 0.01$

4 suggests that transactional debt is effective at curtailing excessive growth, and thereby improving the returns to growth. While it is possible that transactional debt improves the returns to growth by excessively constraining growth and fostering under-investment (i.e. only the very best projects can be adopted, rather than all positive NPV projects), the insignificant main effect for *growth* in model 4 provides a strong clue that such is not the case. This insignificant main effect reveals that for firms that employ no transactional debt, growth is not positively related to performance. Thus, it would appear that firms that are completely unconstrained by rules-based governance severely over-invest in growth. Likewise, the insignificant interaction between *relational* and *growth* reveals that firms that employ relational debt are no more disciplined in their investments in growth than are firms that employ zero debt of any type. Consistent with H4, there is a significant difference between the coefficients of these two interactions ($\chi^2 = 8.39$, $P < 0.01$). Finally, models 5 and 6 illustrate that H3 and H4 are also supported when ROA is used to assess firm performance.

In order to gauge the economic significance of our results, we computed the slope of the relationship between *growth* and *alpha* for various levels of both types of debt. For firms that use no debt, there is no significant relationship between *growth* and *alpha*. Likewise, for firms that employ relational debt, there is no significant relationship between growth and alpha regardless of how much debt the firm takes on. In contrast, a firm with a leverage of just 0.127 (the 25th percentile of leverage) that relies exclusively on transactional debt will experience significant positive returns to growth (slope = 4.18, $P < 0.01$). For firms at the 75th percentile of leverage, the slope of the relationship between growth and alpha is 20.04 ($P < 0.01$). This implies that a one standard deviation increase in growth (i.e. growth of 14%) would produce a very healthy abnormal return of approximately 2.9%.

5. Discussion and conclusions

Although firm growth can have numerous operational and strategic benefits (Dobrev and Carroll, 2003; Bothner, 2005), excessive growth can impair firm performance (Jensen, 1986). By investigating the role of debt heterogeneity in the governance of the agency costs of free cash, this research makes two important contributions to agency theoretic view of debt. First, we develop theory to explain why a governance regime that commits to rules is more effective in controlling overinvestment in growth than a governance regime that retains discretion. Second, drawing on financial intermediation theory, we explain why transactional debt commits to rules while relational debt entails the retention of discretion. Our empirical test supports our theory that by committing to rules, transactional debt provides more effective governance safeguards than relational debt against overinvestment in firm growth. Not only does relational debt permit significantly more growth than

transactional debt but the additional marginal growth allowed by relational debt also significantly reduces the total returns to growth and it tends to occur in firms lacking profitable growth opportunities. In fact, when firms are completely unencumbered by transactional debt, the total returns to growth are negligible.

Prior research examining the relationship between capital structure and investment implicitly assumes that debt is a relatively simple and homogenous financial instrument, and thus has emphasized the difference between debt and equity financing (Lang *et al.*, 1996; Ahn *et al.*, 2006). The difference between debt and equity in disciplining investment and compelling managers to pay out free cash has been described colorfully by Stewart (1991: 580): “Equity is soft; debt is hard. Equity is forgiving; debt is insistent. Equity is a pillow; debt is a dagger.” However, a simple characterization that “debt is hard” implies all forms of debt are equally hard, and therefore fails to do justice to the significant governance differences between the different types of debt, differences with enormous practical implications for managers and firms. Managers may, for example, wish to increase firm leverage in order to convince shareholders (and potential shareholders) that they will refrain from excessive growth. Alternatively, high leverage could be imposed on a firm by the shareholders (via the board of directors) in order to constrain managerial discretion and protect shareholder value. If debt is to be used to help curtail overinvestment, then it is important that both managers and shareholders appreciate the dramatic differences in the discipline provided by different forms of debt.

Although our results indicate that transactional debt is more effective than relational debt in curtailing excessive firm growth, this should not be construed as implying that transactional debt is universally desirable or that relational debt is relatively devoid of value. Instead, we should recognize that firms encounter various strategic contexts, some of which benefit from rules while others may benefit from discretion. David *et al.* (2008) point out that the ability of relational lenders to exercise forbearance may be beneficial for firms that need to make specific investments in intangible assets. In such firms, the nurturing of long-term investments may be a more critical strategic issue than curbing excessive firm growth, while transactional lenders’ commitment to liquidate may be counterproductive. Likewise, as acknowledged by Jensen (1986), high levels of debt would not be appropriate for firms that have an abundance of profitable growth opportunities. As realizing the value of growth options is contingent on timely discretionary future investments (Myers, 1977), the greater flexibility afforded by relational debt may be more amenable to governing a portfolio of valuable growth options than is transactional debt.

Our research contrasts with the findings of Weinstein and Yafeh (1995, 1998) who conclude that Japanese banks push client firms for growth and appropriate most of their returns. Our results bear some similarities, in that we find that relational debt (bank debt) leads to more growth, but growth that hurts profits. The emphasis in our study, however, is on a relative comparison of relational and transactional debt.

Our study also differs from Weinstein and Yafeh's in two important ways. First, they study an earlier time period where deregulation was in its early stages and most firms did not have access to transactional debt. By contrast, in our study, firms have a mix of both relational debt (bank loans) and transactional debt (bonds) similar to more recent work by Anderson and Makhija (1999). Furthermore, Weinstein and Yafeh's emphasis is on Japanese business groups or keiretsus, and they distinguish between firms that are affiliated or unaffiliated with a keiretsu group tied to a main bank. Most Japanese firms, even those that are not affiliated with a business group, borrow from multiple banks but maintain a lending relationship with a main bank, and most banks operate as a main bank for at least some companies (Aoki and Patrick, 1994).

Our results may also help shed some light on the macro-level issues that affected Japanese firms during the 1980s and 1990s. During the 1980s, often termed the "bubble era," Japanese stock and real estate markets were at an all time high. During this period, high real estate values created the illusion that easy profits could be made from real estate investments. Lacking growth opportunities in their core business, many manufacturing firms were tempted to speculate in real estate investments. In terms of Jensen's free cash flow theory, these real estate investments represent inappropriate growth through an overinvestment of free cash. Interestingly, firms that had relational debt were far more likely than those with transactional debt to make real estate investments (Dinç, 2006). Not surprisingly, such firms performed poorly once the bubble burst in 1990. Our research suggests that the leniency of relational lenders resulted in overinvestment in growth that subsequently hurt the performance of those firms.

Although the rules versus discretion framework (Kydlund and Prescott, 1977) has proven very influential in the macro-economic policy, we believe it has important implications for theory development in the area of corporate governance research. One possible application is to extend our idea to study the heterogeneity of equity. It may be possible to classify owners of equity, like lenders of debt, into those that exercise discretion and those that commit to rules. It is likely that dispersed owners (those that shuttle their shares frequently and own small stakes) commit to rules whereby they are more likely to simply tender their shares in response to a hostile takeover attempt. Conversely, large block owners that have connections to the firm (e.g. founding family members) may be more likely to respond with discretion and help managers (for better or worse) overcome the hostile takeover. Although large block family ownership likely has beneficial governance attributes, our theory would suggest that their relationships with the firm and managers may shield managers from the discipline of takeover threats (Manne, 1965).

While our broad based sample should be highly generalizable within Japan, it is worth considering the generalizability of our results to other countries. We have developed our theory based on the general characteristics of transactional and relational debt, and tested it with Japanese corporations. We believe our study

has implications for other contexts where alternate forms of debt are (or might someday be) available. Yet capital structures do vary somewhat across countries. In addition to differences across institutional contexts, there are also differences over time. For example, recent studies have tended to treat all US debt as being transactional. However, relational banking is common among small firms in the United States (Uzzi, 1999), and even helped fuel early industrial growth in the United States before the restrictions imposed by the Glass–Steagall Banking Act of 1933 weakened the close bank–firm ties that reinforce relationship banking (Carosso, 1970). Although banks in the United States may not wield the same power over major corporations that they do in other developed countries, some major US corporations do continue to borrow a substantial amount from banks, and representatives of those (and other) banks often sit on the board of directors and can significantly influence the execution of the firm’s strategy (Davis and Mizruchi, 1999). By delineating the important distinctions between transactional and relational debt, our research yields a more broadly generalizable framework for agency theoretic treatments of debt. Ultimately, replications in other countries should help verify the generalizability of our framework and results.

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References

- Abegglen, J. and G. Stalk (1985), *Kaisha: The Japanese Corporation*. Basic Books: New York.
- Adler, P. S. and S. W. Kwon (2002), ‘Social capital: prospects for a new concept,’ *Academy of Management Review*, **27**, 17–40.
- Ahn, S., D. J. Denis and D. K. Denis (2006), ‘Leverage and investment in diversified firms,’ *Journal of Financial Economics*, **79**, 317–337.
- Allen, F. and D. Gale (2000), *Comparing Financial Systems*. MIT Press: Cambridge, MA.
- Anderson, C. W. and A. K. Makhija (1999), ‘Deregulation, disintermediation, and agency costs of debt: evidence from Japan,’ *Journal of Financial Economics*, **51**, 309–339.
- Aoki, M. and H. Patrick (1994), *The Japanese Main Bank System*. Clarendon Press: Oxford.
- Balakrishnan, S. and I. Fox (1993), ‘Asset specificity, firm heterogeneity and capital structure,’ *Strategic Management Journal*, **14**, 3–16.
- Barro, R. J. (1986), ‘Recent developments in the theory of rules versus discretion,’ *Economic Journal*, **96**, 23–37.

- Bellone, F., P. Musso, L. Nesta and M. Quere (2008), 'Market selection along the firm life cycle,' *Industrial and Corporate Change*, **17**, 753–777.
- Berger, P. G. and E. Ofek (1995), 'Diversification's effect on firm value,' *Journal of Financial Economics*, **37**, 39–65.
- Black, F. (1976), 'The dividend puzzle,' *Journal of Portfolio Management*, **2**, 5–8.
- Boot, A. W. A. (2000), 'Relationship banking: What do we know?,' *Journal of Financial Intermediation*, **9**, 7–25.
- Boot, A. W. A. and M. Marinc (2008), 'The evolving landscape of banking,' *Industrial and Corporate Change*, **17**, 1173–1203.
- Bothner, M. S. (2005), 'Relative size and firm growth in the global computer industry,' *Industrial and Corporate Change*, **14**, 617–638.
- Brainard, W. C. and J. Tobin (1968), 'Pitfalls in financial model building in econometric models: their problems and usefulness,' *American Economic Review*, **58**, 99–122.
- Bris, A., I. Welch and N. Zhu (2006), 'The costs of bankruptcy: Chapter 7 liquidation versus Chapter 11 bankruptcy,' *Journal of Finance*, **61**, 1253–1303.
- Brush, T. H., P. Bromiley and M. Hendrickx (2000), 'The free cash flow hypothesis for sales growth and firm performance,' *Strategic Management Journal*, **21**, 455–472.
- Bushee, B. (1998), 'The influence of institutional investors on myopic R&D investment behavior,' *Accounting Review*, **73**, 305–333.
- Carosso, V. P. (1970), *Investment Banking in America: A History*. Harvard Business School Press: Cambridge, MA.
- Chandler, A. D. Jr. (1977), *The Visible Hand: The Managerial Revolution in American Business*. Harvard Business Press: Boston, MA.
- Chemmanur, T. J. and P. Fulghieri (1994), 'Reputation, renegotiation, and the choice between bank loans and publicly traded debt,' *Review of Financial Studies*, **7**, 475–506.
- Cremer, J. (1995), 'Arms' length relationships,' *Quarterly Journal of Economics*, **110**, 275–295.
- David, P., J. P. O'Brien and T. Yoshikawa (2008), 'The implications of debt heterogeneity for R&D investment and firm performance,' *Academy of Management Journal*, **51**, 165–181.
- David, P., T. Yoshikawa, M. Chari and A. Rasheed (2006), 'Strategic investments in Japanese corporations: Do foreign portfolio owners foster underinvestment or appropriate investment?,' *Strategic Management Journal*, **27**, 591–600.
- Davis, G. F. and M. S. Mizuchi (1999), 'The money center cannot hold: commercial banks in the US system of corporate governance,' *Administrative Science Quarterly*, **44**, 215–239.
- Denis, D. J. and D. K. Denis (1993), 'Managerial discretion, organizational structure, and corporate performance: a study of leveraged recapitalization,' *Journal of Accounting and Economics*, **16**, 209–236.
- Detragiache, E. (1994), 'Public versus private borrowing: a theory with implications for bankruptcy reform,' *Journal of Financial Intermediation*.

- Dinç, I. S. (2006), 'Monitoring the monitors: the corporate governance in Japanese banks and their real estate lending in the 1980s,' *Journal of Business*, **79**, 3057–3081.
- Dobrev, S. D. and G. R. Carroll (2003), 'Size (and competition) among organizations: modeling scale-based selection among automobile producers in four major countries, 1885–1981', **24**, 541–558.
- Economic and Social Research Institute (2002), Retrieved from <http://www.esri.cao.go.jp/jp/sna/toukei.html>. Cabinet Office, Government of Japan.
- Fagiolo, G. and A. Luzzi (2006), 'Do liquidity constraints matter in explaining firm size and growth? Some evidence from the Italian manufacturing industry,' *Industrial and Corporate Change*, **15**, 1–39.
- Fudenberg, D. and J. Tirole (1991), *Game Theory*. MIT Press: Boston, MA.
- Galan, J. I. and M. J. Sanchez (2006), 'Influence of industry R&D intensity on corporate product diversification: interaction effect of free cash flow,' *Industrial and Corporate Change*, **15**, 531–547.
- Gerlach, M. L. (1992), *Alliance Capitalism: The Social Organization of Japanese Business*. University of California Press: Berkeley, CA.
- Ghemawat, P. (1991), *Commitment*. Free Press.
- Gibbs, P. A. (1993), 'Determinants of corporate restructuring: the relative importance of corporate governance, takeover threat, and free cash flow,' *Strategic Management Journal*, **14**, 51–68.
- Gilson, S. C. (1989), 'Management turnover and financial distress,' *Journal of Financial Economics*, **25**, 241–262.
- Hill, C. W. L. and S. A. Snell (1988), 'External control, corporate strategy, and firm performance in research-intensive industries,' *Strategic Management Journal*, **9**, 577–590.
- Hitt, M. A., R. E. Hoskisson and R. D. Ireland (1990), 'Mergers and acquisitions and managerial commitment to innovation in M-form firms,' *Strategic Management Journal*, 29–47.
- Hoshi, T. and A. Kashyap (2001), *Corporate Financing and Governance in Japan*. MIT Press: Cambridge, MA.
- Hoshi, T., A. Kashyap and D. Scharfstein (1993), *The Choice between Public and Private Debt: An Analysis of Post-Deregulation Corporate Financing in Japan*. National Bureau of Economic Research.
- Hoskisson, R. E., M. A. Hitt, R. A. Johnson and W. Grossman (2002), 'Conflicting voices: the effects of institutional ownership heterogeneity and internal governance on corporate innovation strategies,' *Academy of Management Journal*, **45**, 697–716.
- Hoskisson, R. E., R. A. Johnson and D. D. Moesel (1994), 'Corporate divestiture intensity in restructuring firms: effects of governance, strategy, and performance,' *Academy of Management Journal*, **37**, 1207–1251.
- Jensen, M. C. (1983), 'Organization theory and methodology,' *Accounting Review*, **58**, 319–339.

- Jensen, M. C. (1986), 'Agency costs of free cash flows, corporate finance, and takeovers,' *American Economic Review*, **76**, 323–329.
- Jensen, M. C. (1989), 'The eclipse of the public corporation,' *Harvard Business Review*, September–October, 61–74.
- Johnson, R. A. (1996), 'Antecedents and outcomes of corporate refocusing,' *Journal of Management*, **22**, 439–483.
- Kang, J.-K. and A. Shivdasani (1997), 'Corporate restructuring during performance declines in Japan,' *Journal of Financial Economics*, **46**, 29–65.
- Kester, W. C. (1986), 'Capital and ownership structure: a comparison of United States and Japanese manufacturing corporations,' *Financial Management*, **15**, 5–16.
- Kester, W. C. (1991), *Japanese Takeovers: The Global Contest for Corporate Control*. Harvard Business School Press: Boston, MA.
- Khatri, N., E. Tsang and T. M. Begley (2006), 'Cronyism: a cross-cultural analysis,' *Journal of International Business Studies*, **37**, 61–75.
- Kydland, F. and E. C. Prescott (1977), 'Rules rather than discretion: the inconsistency of optimal plans,' *Journal of Political Economy*, **85**, 473–491.
- Lang, L., E. Ofek and R. M. Stulz (1996), 'Leverage, investment, and firm growth,' *Journal of Financial Economics*, **40**, 3–29.
- Lee, P. M. and H. M. O'Neill (2003), 'Ownership structures and R&D investments of U.S. and Japanese firms: agency and stewardship perspectives,' *Academy of Management Journal*, **46**, 212–225.
- Lincoln, J. R. and M. L. Gerlach (2004), *Japan's Network Economy: Structure, Persistence, and Change*. Cambridge University Press.
- Locke, E. A. (1999), 'Some reservations about social capital,' *Academy of Management Review*, **24**, 8–9.
- Mahoney, J. M. and J. Pandian (1992), 'The resource-based view within the conversation of strategic management,' *Strategic Management Journal*, **13**, 363–380.
- Manne, H. (1965), 'Mergers and the market for corporate control,' *Journal of Political Economy*, **73**, 110–120.
- Mayer, C. (1988), 'New issues in corporate finance,' *European Economic Review*, **32**, 1167–1188.
- Mayer, C. (1990), 'Financial systems, corporate finance, and economic development,' in R. Glenn Hubbard (ed.), *Asymmetric Information, Corporate Finance*. University of Chicago Press: Chicago, IL.
- Mizruchi, M. S. and L. B. Stearns (1994), 'A longitudinal study of borrowing by large American corporations,' *Administrative Science Quarterly*, **39**, 118–140.
- Morck, R., D. Wolfenzon and B. Yeung (2005), 'Corporate governance, entrenchment and growth,' *Journal of Economic Literature*, **63**, 655–720.
- Myers, S. C. (1977), 'Determinants of corporate borrowing,' *Journal of Financial Economics*, **5**, 147–175.

- Myers, S. C. and N. S. Majluf (1984), 'Corporate financing and investment decisions when firms have information that investors do not,' *Journal of Financial Economics*, **13**, 187–221.
- O'Brien, J. (2003), 'The capital structure implication of pursuing a strategy of innovation,' *Strategic Management Journal*, **24**, 415–431.
- Penrose, E. T. (1959), *The Theory of the Growth of the Firm*. Blackwell: Oxford.
- Porter, M. E., H. Takeuchi and M. Sakakibara (2000), *Can Japan Compete?* Basic Books: Cambridge, MA.
- Reuer, J. J. and K. D. Miller (1997), 'Agency costs and the performance implications of international joint venture internalization,' *Strategic Management Journal*, **18**, 425–438.
- Safieddine, A. and S. Titman (1999), 'Leverage and corporate performance: evidence from unsuccessful takeovers,' *Journal of Finance*, **54**, 547–580.
- Schelling, T. (1960), *The Strategy of Conflict*. Harvard University Press: Boston, MA.
- Seal, W. B. (1999), 'Relationship banking and the management of organisational trust,' *International Journal of Bank Marketing*, **16**, 102–107.
- Seth, A. J. and J. Easterwood (1993), 'Strategic redirection in large management buyouts: the evidence from post-buyout restructuring activity,' *Strategic Management Journal*, **14**, 251–273.
- Simerly, R. L. and M. F. Li (2000), 'Environmental dynamism, capital structure and performance: a theoretical integration and empirical test,' *Strategic Management Journal*, **21**, 31–49.
- Stanca, L. and M. Gallegati (1999), 'The dynamic relation between financial positions and investment: evidence from company account data,' *Industrial and Corporate Change*, **8**, 551–572.
- Stearns, L. B. and M. S. Mizruchi (1993), 'Board composition and corporate financing—the impact of financial institution representation on borrowing,' *Academy of Management Journal*, **36**, 603–618.
- Stewart, G. B. (1991), *The Quest for Value*. HarperBusiness: New York.
- Stokey, N. (2002), 'Rules versus discretion after twenty five years,' *NBER Macro Annual*.
- Sutton, R. I. and A. L. Callahan (1987), 'The stigma of bankruptcy: spoiled organizational image and its management,' *Academy of Management Journal*, **30**, 405–436.
- Thomas, L. G. and G. Waring (1999), 'Competing capitalism: capital investment in American, German, and Japanese firms,' *Strategic Management Journal*, **20**, 729–748.
- Uzzi, B. (1999), 'Embeddedness in the making of financial capital: how social relations and networks benefit firms seeking financing,' *American Sociological Review*, **64**, 481–505.
- Weinstein, D. E. and Y. Yafeh (1995), 'Japan's corporate groups: collusive or competitive? An empirical investigation of keiretsu behaviour,' *Journal of Industrial Economics*, **43**, 359–376.
- Weinstein, D. E. and Y. Yafeh (1998), 'On the costs of a bank-centered financial system: evidence from the changing main bank relations in Japan,' *Journal of Finance*, **53**, 635–672.

- Weinzimmer, L. G., P. S. Nystrom and S. J. Freeman (1998), 'Measuring organizational growth: issues, consequences and guidelines,' *Journal of Management*, **24**, 235–262.
- Williamson, O. E. (1988), 'Corporate finance and corporate governance,' *Journal of Finance*, **43**, 567–591.
- Wooldridge, J. M. (2003), *Introductory Econometrics*. South-Western: Mason, OH.
- Wu, X., P. Sercu and J. Yao (2001), 'Reexamining the relation between corporate debt mix and growth in Japan,' *Paper presented at the EFA Annual Meeting in Barcelona*.
- Yafeh, Y. and O. Yosha (2003), 'Large shareholders and banks: Who monitors and how?,' *Economic Journal*, **114**, 128–146.