The choice between public and private debt: A survey

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Abstract We survey the major theoretical and empirical findings of the research on the firm’s choice between public and private debt, and on the subsequent decision between bank and non-bank private debt. First, we review information-based theories, where banks are information producers, keep the firm’s private information confidential, or monitor the firm’s actions after the loan. We then review models where banks’ advantage over public lenders is in their superior ability to liquidate the firm or renegotiate loan contract terms in the event of financial distress. Finally, we review the evidence on firms’ use of different types of private debt.

In the frictionless financial markets conjectured by Modigliani and Miller (1958), capital structure is irrelevant and all of a firm’s positive net present value projects are financed. The insight that market frictions make capital structure decisions relevant has spawned a large body of theoretical and empirical research, most of which focuses on the choice between equity and debt financing. Within the class of debt securities, however, firms typically make another choice, namely public versus private debt. Furthermore, a firm that chooses private debt has the choice to borrow from a bank or a non-bank intermediary such as an insurance company. The focus of this paper is on the firm’s choice between public and private debt and on the subsequent choice between bank and non-bank private debt. While there are a number of papers that address various aspects of the public versus private debt decisions, to the best of our knowledge there is no paper that synthesises the predictions and findings of the research in this area. Our objective is to present the major theoretical and empirical findings of the research on a firm’s decision to choose between public and private debt, as well as among the types of private debt.

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We present findings on debt characteristics only in terms of the firm’s choice between public and private debt. There is also research that investigates debt characteristics in terms of maturity (Barnea, Haugen, & Senbet, 1980; Kale & Noe, 1990; Barclay & Smith, 1995a; Hoven-Stohs & Mauer, 1996; Guedes & Opler, 1996), priority structure (Barclay & Smith, 1995b; Park, 2000), and inclusion of restrictive covenants (Berlin & Mester, 1992; Berger & Udell, 1990, 1995; Carey et al., 1998; John, Lynch, & Puri, 2003; Booth & Booth, 2006).
The extant literature on a firm’s decision to choose between public and private debt can be classified into two broadly defined sets. The first set includes papers that utilise information-based arguments to explain a firm’s public/private debt decision. Information-based theories include those where banks are information producers (e.g., Nakamura, 1993), those where banks are preferred by firms with proprietary information, and those where banks are better monitors of firm performance and management actions. The second set of papers ascribes the advantage of bank loans over public debt to a bank’s superior ability to liquidate the firm or renegotiate loan contract terms in the event of financial distress (e.g., Rajan, 1992). More recently, researchers have delved further into a firm’s decision to use private debt by examining the choice between bank versus non-bank private lending institutions (e.g., Rauh & Sufi, 2010). We present the findings from the papers that distinguish between bank and non-bank lenders after the discussion of the choice between public and private debt.

Our paper is organised as follows. In the first section we describe information-based models and discuss the empirical support in the literature for their predictions. In the second section we review the theoretical and empirical papers that are based on the superior ability of banks to deal with firms in financial distress. The third section compares the findings regarding the choice between bank and non-bank private debt, and the fourth section presents some concluding remarks.

Information-based explanations of the public vs. private debt decision

In the first set of information-based papers that we discuss below, producing information is costly and bank debt is preferred over public debt when banks can produce information at a lower cost. The second strand consists of papers analysing a different type of informational advantage of banks over public debt—the ability of banks to keep proprietary information confidential. In these models the desire for confidentiality is the main reason why firms choose bank over public debt. The third group of information-based models deals with moral hazard. The underlying theme in these moral hazard models is that banks have better ability than the general public to monitor firm/manager activities after the loan is made. Information plays a key role in all these three sets of models but in a subtly different way. In the set of models where banks have cost advantages in information production, they produce information before providing the financing. In the moral-hazard models, banks are monitoring agents who are better able to produce information after providing the financing.

Costly information-production models

Producing the information required to issue public securities is expensive as prospective borrowers are required to submit certified financial statements and apply for SEC (Securities and Exchange Commission) registration (Blackwell & Kidwell, 1988). Disclosing information to banks, on the other hand, is less costly, since banks have access to the firm’s transaction accounts and can gather much of the required non-public information at low cost (Nakamura, 1993). Because the cost of producing the information required for public debt financing is high, small firms tend to rely more on bank loans (Fama, 1985).

Further, Nakamura (1993) argues that the informational advantage of bank debt is less pronounced for big firms because their numerous accounts are usually spread over a greater number of banks and each bank only has access to partial information. Thus, for big firms the cost advantage in borrowing from a bank is considerably lower. Both Fama (1985) and Nakamura (1993) predict that small firms use more bank debt. Hadlock and James (2002) investigate another aspect of bank information production besides the cost of producing information. These authors focus on the bank’s ability to correctly price the firm’s claims and thus reduce the adverse selection costs the firm incurs when undervalued. In this framework, the prediction is that undervalued firms rely more on bank debt.

Empirical evidence on the choice between public and bank debt, by and large, supports the predictions of models of that are based on information production costs. Consistent with the arguments in Fama (1985) and Nakamura (1993) that it is less costly in big firms to produce the information required to issue public debt, several papers find a positive relation between firm size and level of public debt in the firm’s balance sheet (Houston & James, 1996; Johnson, 1997; Krishnaswami, Spindt, & Subramaniam, 1999; Cantillo & Wright, 2000; Denis & Mihov, 2003). Hadlock and James (2002) also find support for their hypothesis that banks can price a firm’s claims with better accuracy than public lenders: using return volatility and stock price run-ups to measure undervaluation, they find that undervalued firms prefer bank debt.

Krishnaswami et al. (1999) find evidence consistent with the intuition that banks’ lower information production costs are more valuable when information asymmetry is severe. These authors measure the information asymmetry between the firm and the lenders by the residual volatility in the firm’s stock returns (computed as the standard deviation of the residuals of the market model regression) and find a positive relation between the level of information asymmetry and the ratio of privately placed long-term debt to total long-term debt. On the other hand, Denis and Mihov (2003) measure information asymmetry by the ratio of research and development (R&D) expenses to sales and find no relation between the variable and the likelihood that firm takes out a bank loan.
Proprietary information models

Strategic information, for example, information on a firm’s marketing and advertising strategies or R&D activities, is valuable to the firm’s rivals, and the value of such proprietary information diminishes if revealed. In order to obtain public debt financing at better terms, however, the revelation of such information may be necessary for the issuing firm to prove its creditworthiness. Proprietary information models posit that firms with proprietary information that is likely valuable to rivals will prefer banks to public lenders because banks have the ability to keep sensitive information confidential (Campbell, 1979).

The intuition above implies that constraints in capital markets as well as in the firm’s product markets affect the firm’s choice of financing source. Bhattacharya and Ritter (1983) develop a model where one firm needs external financing and has valuable private information relating to its R&D activities. If the firm divulges the technological information, it can obtain better financing terms in the market but it will then lose the R&D informational advantage over its competitors. In the ensuing equilibrium, the firm with superior private information discloses part of that information as a signal, so that financing for R&D can be obtained at better terms. Bhattacharya and Chiesa (1995) develop the above argument further, and compare bilateral bank-firm agreements with multifirm-multibank agreements. These authors show that it is optimal for the bank to reveal private information to the firm’s competitor who is borrowing from the same bank when the probability of producing a patentable invention (conditional on the interim stage input of R&D knowledge) is low. The intuition is that the bank shares R&D knowledge with the rival firm in order to increase the probability that both firms are solvent at maturity. This endogenously determined ‘information leakage’, however, also creates a free-rider problem that negatively affects the firm’s incentives to invest in R&D in the first place. The tradeoff between these two effects determines the choice between a bilateral and a multilateral financing agreement.

Yosha (1995) explicitly considers the inference third parties can make from the firm’s financing choice. In his model the informational disadvantage of public debt stems from the stronger requirements to provide lenders with detailed information in order to prove creditworthiness. Firms that have sensitive information that cannot be divulged to the competition prefer a bilateral financing agreement because it requires less disclosure of verifiable information. Although competitors can observe the firm’s financing choice, the cost differential between bilateral and multilateral financing prevents them from inferring with certainty that the firm is hiding positive information. Thus, in equilibrium, firms with sensitive information choose bank debt. We note here that the Yosha (1995) study does not focus on lender-borrower conflicts but on the signalling role of the firm’s financing choice and its effects on product markets.

Proprietary information models have some interesting empirical implications. First, innovative firms—firms more likely to have positive information worth hiding from the competition—should choose bank over public debt in order to conceal the private information. Johnson (1997) measures the firm’s positive information with its market-to-book ratio, and finds that the ratio is not a significant determinant of the firm’s debt structure. Krishnaswami et al. (1999) measure favourable private information with the unexpected future earnings of the firm, which are computed as the difference between actual earnings per share and forecasted earnings per share in year \( t + 1 \) scaled by earnings per share in year \( t \). They show that firms with higher unexpected earnings rely more on private debt than other firms, but only if they have serious information asymmetry problems. Thus, they show that positive private information is a determinant of the firm’s financing choices, but only when information asymmetries between firm and lenders are severe.

Proprietary information models also predict that the announcement of a bilateral financing agreement should trigger a positive stock response because it is a signal that the firm has positive information. Lummer and McConnell (1989), Szewczyk and Varma (1991), Preece and Mullineaux (1994), and Billett, Flannery, and Garfinkel (1995) find evidence of a positive stock response to the announcement of private placement of debt. Mikkelsen and Partch (1986) and James (1987), however, find evidence of a positive stock response to the announcement of bank loans, but zero or negative response to the announcement of a non-bank private loan. Finally, Best and Zhang (1993) find no significant abnormal return following the announcement of a new bank loan.

Moral-hazard models

The intuition underlying moral hazard models of financial intermediation is that shareholders of levered firms sometimes need to be monitored because they have incentives to engage in actions that are damaging to debtholders. Jensen and Meckling (1976), for example, show that shareholders of a levered firm have the incentive to invest in risky projects because their downside risk is bounded by limited liability, while the potential benefit from the project is unlimited. Galai and Masulis (1976) also demonstrate such asset substitution incentives by modelling the equity of a levered firm as a call option on the firm’s assets, and showing that shareholders have the incentive to increase the volatility of the firm’s asset to increase the value of the firm’s equity. Because debtholders have priority claims on a firm’s cash flows, Myers (1977) highlights the possible ‘underinvestment’ problem where shareholders of a firm with risky debt forgo positive net present value (NPV) projects when the cash flows of the project go primarily towards repaying the face value of debt. It follows that rational lenders anticipate shareholders’ incentives for asset substitution and underinvestment and either monitor the firm or demand a higher yield.6

Moral hazard models of the public/private debt choice build around the notion that it is more efficient for one financial intermediary to monitor a firm than it is for multiple individual investors, because each investor has the

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6 Nini, Smith, and Sufi (2009) and Roberts and Sufi (2009a) investigate the extent of the impact of incentive conflicts between lenders and borrowers on investment and financial policies respectively.
incentive to free-ride on someone else's monitoring effort. In Diamond (1984) the free-riding problem can be resolved if one bank pools resources from many depositors and lends to many firms. In the model, a bank monitors managerial actions at a lower cost compared to multiple public lenders because it avoids duplication of effort and free-riding. Diamond (1984) shows that the delegation of the monitoring task to a bank is feasible when the bank lends to multiple firms with projects whose returns are independent because this diversification increases the probability that the bank has enough proceeds to pay back its depositors.

Building on his earlier model, Diamond (1991) investigates how the interplay between bank monitoring and borrower reputation affects the choice between public and bank debt. A new borrower borrows from a bank to develop a 'good' reputation that, with time, allows lenders to predict its future actions. Borrowers with a good reputation can use public financing because the cost of losing reputation prevents them from engaging in self-interested actions. The Diamond (1991) model has some interesting empirical implications. First, it implies that new borrowers, for example, start-ups or young firms, initially submit to bank monitoring to acquire a reputation capital and then switch to public debt. Another implication of the model is that firms with a middle-range credit rating prefer bank debt, while firms with very high or very low credit rating prefer public debt. The intuition for this second prediction is that firms with a high credit rating (i.e., good-reputation firms) face lower capital costs in the market and thus higher loss of future profits in case of default. On the other hand, firms with very low credit rating have a higher cost of capital and, therefore, have less to lose by defaulting or by being caught engaging in self-interested actions when monitored. Thus, monitoring does not provide sufficient deterrents (for bad-reputation firms) to avoid self-interested actions.

The work of Besanko and Kanatas (1993) contributes to this strand of theoretical literature by allowing firms to use banks and capital markets simultaneously, and by endogenising the bank's monitoring incentives. In their model, the entrepreneur has a stake in the firm and can improve the probability of project success by exerting additional effort. External financing, however, reduces the entrepreneur's payoff from the project since he has to share the cash flow with the lenders. As a result of the lower expected payoff from the project, the entrepreneur has less of an incentive to exert additional effort. In such a setting, banks can monitor the entrepreneur and force him to supply more effort. In the equilibrium that ensues, the entrepreneur finances the project with a mix of public and bank debt, although the level of bank monitoring is less than what would be considered optimal by outside claimants. The lower level of bank monitoring results because the entrepreneur trades off a higher level of bank debt with its greater monitoring against the personal cost (increased effort) that would result from bank monitoring.

Shareholders usually do not make investing and financing decisions, but delegate these tasks to a manager. In the frameworks of Diamond (1991) and Besanko and Kanatas (1993) described above, the assumption is that shareholders always agree with the manager's decisions. There are instances, however, when the manager's interests are not perfectly aligned with the objectives of the shareholders. In Hoshi, Kashyap, and Scharfstein (1993), for example, the manager can invest either in a good project with high financial payoffs or in a pet project with low financial payoffs but private benefits that accrue to the manager but not to the shareholders. The role of bank debt is to monitor the manager's project choice to guarantee that he invests in the good project.

Hoshi et al. (1993) model's main empirical prediction is that when the firm has a high Tobin's Q (which measures the attractiveness of the firm's investment opportunities), the manager does not need to be monitored because the expected financial payoffs from the good project are higher than the private benefits from the pet project. For an intermediate level of Tobin's Q, however, the manager finds it optimal to submit to bank monitoring and invest in the good project rather than using public debt and investing in the inefficient pet project. Finally, for low levels of Tobin's Q, the manager issues public bonds because he loses little by not investing in the efficient project. The model also predicts that firms with tangible assets that can be used as collateral issue public debt more often. The intuition here is that collateral makes debt less risky and thus less expensive, which allows the manager to keep most of the financial payoffs from the project, and this makes him less likely to choose the pet project. Finally, the model predicts that levered firms prefer bank debt because leverage makes debt riskier and more expensive. Then, since the manager receives less of the cash flows from the good project, he has the incentive to invest in the pet project to receive the private benefits. Under these circumstances bank monitoring may be the mechanism that provides the incentive to the manager to invest in the good project.

Almazan and Suarez (2003) explicitly consider the role of separation between ownership and control in the choice between public and private debt. In their model the manager controls the investment and financing decisions, while the shareholders can only affect the manager's choices by offering a contract that links compensation to firm value. The conflict of interest between managers and shareholders arises from the fact that managers alone bear the costs of bank monitoring, while the potential benefits have to be shared with the firm's owners. As in Hoshi et al. (1993), managers can extract private benefits at the expense of shareholders, and this incentive can only be controlled by monitoring and incentive compensation. The model identifies two optimal financial regimes—separating and pooling. In the separating regime, the manager of a firm with a low-profitability project issues public debt, receives a flat reward profile, and extracts private benefits, while the manager of a firm with a high-profitability project uses bank financing and submits to monitoring, receives incentive compensation, and refrains from extracting private benefits. In the pooling regime, on the other hand, the manager always chooses bank debt.

7 The manager's incentive to invest in the lower-value pet project depends on (i) the percentage of the project's financial payoffs the manager receives as compensation, and (ii) the expected value of the financial payoffs and the private benefits.
receives incentive pay, and does not extract private benefits. In the separating regime shareholders save on compensation costs if the project's profitability is high, but lose on production efficiency if the project's profitability is low, because the manager extracts private benefits (thus reducing the probability of success). Thus, shareholders prefer the separating regime when the probability of a highly profitable project is high. The Almazan and Suarez (2003) model predicts that when the information asymmetry problem (interpreted as the difference in profitability between high- and low-profitability firms) is severe, firms with positive information choose bank debt. The model also implies a positive stock price reaction to the announcement of bank loans and a positive relation between the degree of information asymmetry and the size of the bank loan announcement effect. Finally, the model predicts that pay-performance-sensitivity is higher for firms with more bank debt.

In the Hoshi et al. (1993) and Almazan and Suarez (2003) frameworks, the relation between incentive compensation and financing decisions is driven by the manager's incentives to extract private benefits at the expense of the shareholders, and the role of bank monitoring and incentive compensation is to protect shareholders' interests by forcing the manager to avoid pet projects. In Meneghetti (2010), equity-based compensation aligns manager and shareholder interests but also provides the manager with the incentive to engage in self-interested actions, such as asset substitution, to expropriate lenders in favour of shareholders. Banks can monitor the manager's actions and punish the manager that invests in the inefficient project, while public lenders can only rationally anticipate the manager's incentives for asset substitution activities and require a higher yield. The model predicts that managers with low incentive compensation prefer public debt because their incentive to invest in the inefficient project is very low. Managers who receive high incentive compensation, on the other hand, submit to bank monitoring and thus 'commit' to investing in the efficient project.

Empirical evidence on the validity of models of the choice between public and private debt based on moral hazard is mixed. Krishnaswami et al. (1999) find a positive relation between a firm’s market-to-book ratio and the percentage of privately placed long-term debt, which is not consistent with the prediction that the manager of a firm with good projects does not need to be monitored (Hoshi et al., 1993). In Houston and James (1996) and Johnson (1997), the relation is also not significant, and Denis and Mihov (2003) find that market-to-book is not a significant determinant of the likelihood that a firm takes out a bank loan.

A possible explanation why the relation between Tobin’s Q and level of bank debt is not supported empirically may lie in the differences between the models in the genre of Diamond (1991) and those in the genre of Hoshi et al. (1993). In the former, there is no agency conflict between shareholders and managers since managers are assumed to act in the interest of the shareholders, whereas the latter explicitly allow for the tension between the objectives of managers and shareholders. The substitutability between monitoring through bank debt and controlling managerial investment decisions through compensation-based incentives implies that the empirical relation between Tobin’s Q and the use of public/private debt will depend on the level and structure of the compensation of firm managers.

Houston and James (1996), Johnson (1997), and Denis and Mihov (2003) all find that bank borrowers have less tangible assets than public issuers, which supports the Hoshi et al. (1993) hypothesis that, since collateral makes debt less risky and cheaper, firms with tangible assets that can be used as collateral prefer public debt. Empirical evidence, however, does not support the prediction that firms with higher leverage prefer bank debt: in fact all the above papers find a negative relation between leverage and the level of bank debt or the likelihood that a firm takes out a bank loan.

The prediction in Almazan and Suarez (2003) that firms with positive private information choose bank debt when the information asymmetry problem is severe is supported by the finding that the relation between unexpected earnings and level of private debt is positive, but only for the subset of firms with severe information asymmetry problems (Krishnaswami et al., 1999). The result is also consistent with the argument that firms with positive information choose bank debt to keep the good news from competitors. The model in Almazan and Suarez also implies a positive stock price reaction to the announcement of bank loans, even more so when there is information asymmetry between firm and lenders. Consistent with this prediction, Best and Zhang (1993) find a positive stock price reaction to a bank loan announcement when the financial analysts' earnings forecast error is high. Finally, the finding that the probability of issuing public debt is negatively related to managerial ownership (Denis & Mihov, 2003) supports the prediction that firms with high managerial equity-based compensation are more likely to choose bank debt (Hoshi et al., 1993; Almazan & Suarez, 2003; Meneghetti, 2010).

As the above discussion of implies, the main intuition underlying moral hazard models is that bank debt is preferred over public debt whenever bank monitoring adds to firm value. This intuition would then also imply that firms will choose alternatives to bank/private debt when monitoring is very costly. It is likely that, when monitoring is extremely difficult, firms will resort either to more public debt or choose other monitoring mechanisms such as managerial compensation-based incentives or corporate governance.

**Liquidation/renegotiation**

There is a strand of the literature that explains the advantage of bank loans over public debt in terms of the banks’ superior ability in dealing with firms in financial distress and deciding whether to force the firm into bankruptcy or to renegotiate the loan. Financial flexibility is important even if the firm is not in financial distress: Roberts and Sufi (2009b) show that the vast majority of private debt agreements are renegotiated following new information about the firm’s credit quality, with lower interest rates and additional credit generally following increases in borrowers’ size and decreases in their leverage.

Berlin and Loeys (1998) compare two types of financial contracts: debt contracts with covenants based on public
noisy indicators, and loans with covenants monitored by a hired financial intermediary. In their model, costly monitoring detects the firm’s future solvency with higher accuracy, allowing the lender to continue to finance good projects and liquidate bad projects. The firm’s choice of the optimal financing source depends on the tradeoff between a lender that charges a high cost for supplying capital and the ability to make the right liquidation decision (the bank), and lenders that provide debt at a lower cost but who, on average, allow too many bad projects to continue and too many good projects to be liquidated.

When banks are in charge of the liquidation decision, they gain a bargaining advantage in negotiations with firms in financial distress. Sharpe (1990) first develops the idea that banks have more information on their customers than other investors and are thus able to extract rents from the borrowing firm. Rajan (1992) builds on the same intuition and develops a model where banks have the ability, when compared to arm’s-length investors, to determine if a project should be continued or liquidated. The Rajan (1992) model compares the effect of short- and long-term bank loans and long-term public debt on the manager’s incentives to exert effort.

In his model, an entrepreneur receives external financing, invests in a project, and exerts some effort. Then the entrepreneur privately observes the realisation of the state of the world, which determines if continuing the project is efficient or not: a positive state of the world guarantees that continuing the project has a positive NPV, while a negative one implies that continuing the project has a negative NPV. The effort exerted by the entrepreneur affects the probability of the good state occurring. Since the entrepreneur has a residual claim on the project cash flow, he always has the incentive to continue the project, even if the net present value is negative. With a short-term bank loan the bank can observe the realisation of the state of the world through its monitoring technology and ask for repayment, whether the project continuation has a positive expected NPV or not. If the project has a positive NPV and the entrepreneur’s source of financing is a single bank, the entrepreneur has to ‘bribe’ the bank to be able to continue the project. However, sharing the surplus with the bank negatively affects the entrepreneur’s incentive to exert effort. Alternatively, with a long-term bank loan the bank cannot demand repayment until the project is completed, even if it learns that the expected NPV is negative. In such a case, it is the bank that has to bribe the entrepreneur to persuade him to stop the project. However, because states where the project has a negative NPV are now more attractive, the entrepreneur has less of an incentive to exert effort to reduce the probability of those states. Finally, if the entrepreneur issues public debt, repayment is due when the project is completed and the profitability of the project cannot be observed until then. The main difference between bank and public debt is that banks can observe the profitability of the project and bargain with the entrepreneur for the continuation/liquidation of the project, and, ultimately, on the firm’s profits. This bargaining power, however, distorts the entrepreneur’s incentives to exert effort. On the other hand, public investors do not bargain on the firm’s profit and do not affect the entrepreneur’s optimal effort level; however, they cannot liquidate the project when it would be optimal to do so (when the NPV is negative).

In Rajan (1992), banks are assumed to have access to private information that is not available to public lenders. Chemmanur and Fulghieri (1994) relax this assumption and develop a model that describes why banks have an informational advantage over bondholders and how firms choose between public and bank debt. In their model, firms may be in financial distress because of a poor project choice, in which case they should be liquidated, or because of external circumstances, in which case they should be allowed to continue operations under a renegotiated debt agreement. Banks, as opposed to public debtholders, operate over a long-term horizon and build a reputation for making the right liquidation vs. renegotiation decision when the borrower is in financial distress.

Along similar lines, Detragiache (1994) presents a model where public and private debt are substitute, but only private debt can be renegotiated if the firm is insolvent. Thakor and Wilson (1995) also assume that banks are better than public lenders in dealing with financially distressed firms. Their focus, however, is on the effect of the bank capital requirements on the firm’s choice of financing source. Their model implies that when capital requirements are increased, the loan interest rate rises and banks are less likely to restructure a distressed loan, thus forcing firms to switch to capital markets for their financing needs. This effect is more severe for growth-oriented firms, as they usually take longer to recover from financial distress. In Cantillo and Wright (2000), banks are better reorganisers than arm’s-length investors, but have a higher cost of capital. The Cantillo and Wright (2000) model predicts that firms with high and stable cash flows and high-profitability prefer public debt because they are less likely to be in financial distress and need a good reorganiser. Firms with poorer prospects, on the other hand, take out banks loans.

While the previous models limit the firm’s financing options to debt, Bolton and Freixas (2000) propose an equilibrium model where equity issues, public debt, and bank loans coexist. Bank debt is easier to restructure, but it is also more expensive since the intermediation cost (here modelled as the cost of raising equity to meet capital requirements) is borne by the firm. Public debt is cheaper, but it involves a bankruptcy cost because the firm is always liquidated in case of default and no renegotiation is possible. Finally, with equity issues there are no bankruptcy costs, but there might be higher dilution costs since firms issuing equity are perceived as undervalued. The model predicts that the riskiest firms either do not obtain funding or issue equity; safer firms take out bank loans; the safest firms turn to the capital market for their financing needs. In Hackbarn, Hennessy, and Leland (2007), the tradeoff theory explains the mix of bank and non-bank debt in a firm’s capital structure and the priority structure of the firm’s claims. Consistent with empirical evidence that large and old firms use a mix of bank and public debt while small
and young firms rely exclusively on bank debt, the model predicts that firms with bargaining power use a mix of senior bank debt and public debt, while firms with no bargaining power use bank debt only.\(^8\)

The empirical evidence generally supports models of the choice between public and bank debt that focus on the bank’s ability to optimally liquidate the firm in financial distress or renegotiate its debt. Consistent with the argument that bank debt is more valuable when the firm is more likely to be in financial distress, Johnson (1997) finds a negative relation between the earnings growth volatility (which measures credit risk) and the level of public debt in the firm’s balance sheet, and Denis and Mihov (2003) find that firms with investment grade debt rating and higher Altman Z-Score are more likely to choose public debt.

If the firm has a good project and a bank is the only financing source, the entrepreneur has to share the surplus with the bank to be allowed to continue the project and, therefore, has less incentives to exert effort. This problem is likely to be more severe for firms with substantial growth opportunities and intangible assets. Rajan (1992) suggests that, under some conditions, multiple bank relationships can solve the hold-up problem. Houston and James (1996) empirically investigate the implication of the information hold-up problem. They use market-to-book ratio and R&D expenses to measure the firm’s growth opportunities and intangible assets and find a positive relation between the variables and the firm reliance on bank debt, but only for firms with multiple bank relationships. This evidence is consistent with the notion that the hold-up problem negatively affects firms’ reliance on bank loans. Arena and Howe (2009) find additional empirical support to the importance of financial flexibility in the choice of the firm’s financing source. They argue that the ability to renegotiate a loan and include restrictive covenants in the loan agreement protects banks from the negative effect of takeover threats on debt value. Consistent with the hypothesis, they find that firms that are more exposed to takeover threats are more likely to borrow from banks than to issue public debt.

**Bank versus non-bank private debt**

Most research on the determinants of the firm’s financing sources does not distinguish between bank and non-bank private debt. An exception is the analysis in Johnson (1997) who shows that the proportion of fixed assets in a firm’s balance sheet is negatively related to the proportion of non-bank debt, which indicates that non-bank financial institutions serve riskier firms. Denis and Mihov (2003) find no relation between fixed assets and the likelihood of borrowing from a non-bank institution, but do find that investment grade firms (i.e., safer firms) are more likely to borrow from a bank.

Carey, Post, and Sharpe (1998) investigate the specialisation in private market corporate lending and find that while bank and non-bank borrowers do not differ in terms of asymmetric information problems, they do differ in terms of observable risk; specifically, banks serve low-risk borrowers, while non-bank financial institutions serve high-risk borrowers. They offer two explanations for this result. The first explanation is that regulations and capital requirements limit banks’ risk-taking ability. The second explanation is that banks develop a reputation for being reasonable with firms in financial distress and, thus, in order to protect their reputation and not force firms into liquidation very often, they only serve medium to low-risk firms. Consistent with both explanations, Carey et al. (1998) find that borrowers at financial institutions that are subsidiaries of US bank holding companies are less risky than borrowers at financial companies that are not affiliated with banks. To distinguish between the regulatory and the reputational hypotheses Carey et al. (1998) investigate borrowers at institutions affiliated with banks that have a name similar to that of the affiliated bank, and borrowers at financial companies that are affiliated with a bank but have a very different name. Consistent with the reputational hypothesis, they find that borrowers at affiliated institutions that have a name similar to that of the affiliated bank are less risky. Arena and Howe (2009) also find that firms with better credit quality in terms of leverage and subordinated debt outstanding are more likely to borrow from banks than to issue 144A debt.

Finally, Rauh and Sufi (2010) investigate the distribution of types of debt across firms’ credit quality using a novel dataset that includes bank debt, straight bond debt, convertible bond debt, program debt (such as commercial paper), and mortgage debt. They show that most firms simultaneously use different types of debt, and that the correlation between firm profitability and leverage varies across different debt structures, suggesting that it is important to account for debt heterogeneity when investigating the determinants of a firm’s capital structure. They also find that firms with a low credit rating tend to have a multi-tiered debt structure and high variation in the priority structure.

**Concluding remarks**

There is a large body of theoretical and empirical research that investigates the firm’s debt structure and the reasons why firms use different types of debt. The topic is not trivial, as most firms exhibit some degree of heterogeneity in their debt structure (Rauh & Sufi, 2010). Further, differentiation across types of debt seems to significantly affect the firm’s capital structure decisions—Faulkender and Petersen (2006), for example, find that firms that have access to public markets have on average leverage ratios that are 50% higher than firms that do not have access to public markets and rely only on private debt. In this paper we reviewed the literature on the determinants of the firm’s choice between public and private debt. We first discussed the choice between public versus private debt, and then summarised the finding from research that analyses the difference between bank and non-bank private debt.

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8 DeMarzo and Fishman (2007) develop a dynamic model that explains the coexistence of public and bank debt. In their model, however, bank debt is characterised as a credit line from which the agent optimally draws funds if he cannot make debt payments out of the project cash flows.
Our discussion suggests that the choice between public and private debt is governed by four basic factors, which are not mutually exclusive. First is the degree to which a firm needs certification: the greater the need the greater the reliance on bank debt. Second, issuing public debt may result in the leakage of (valuable) proprietary information and, thus, firms with greater proprietary information will prefer bank debt. Third, when monitoring of managerial actions (such as investment choices) creates value, bank debt will be preferred over public debt. Finally, firms will exhibit a preference for bank debt when the flexibility to renegotiate debt contracts is valuable (for example, during financial distress).

While our understanding of corporate preferences for different sources of debt has grown considerably over the last couple of decades, there are still many issues that beg for further research. A potentially fruitful approach would be to not focus on individual financing sources but to consider simultaneously the entire panoply of debt securities that firms employ. A theoretical model with such a high level of richness would likely prove too cumbersome a task. However, empirical work along such lines is certainly a possibility—the recent work by Rauh and Sufi (2010) described above is an important step in this direction.

Literature has also recently recognised that firms satisfy their capital needs not just by issuing securities in financial markets and borrowing from banks and other intermediaries. Operational decisions such as a firm’s trade credit policy also have significant implications for a firm’s financing plan. The paper by Peterson and Rajan (1997) presents convincing evidence on how trade credit can take the place of bank credit in the case of small firms. Interestingly, they also point out that large public firms have even larger proportions of their assets (liabilities) in the form of accounts receivable (payable). This observation has generated a line of research (e.g., Gianetti, Burkart, & Ellingsen, in press) that highlights the difference between bank financing and trade credit. Banks lend money and suppliers lend goods; and it is much easier for the firm manager to divert money for ‘other’ uses than specific goods. It follows then that in firms where it is easier for managers to divert money, financing with trade credit is more likely.

Most of the research on the choice between public and private debt uses data from economies where both capital markets and the banking sector are well developed. Rajan and Zingales (1995) study the financing decisions of firms in such countries (the G-7 group of countries). The surprising finding in their paper is that leverage levels in firms do not necessarily vary on the basis of whether a G-7 country is market-oriented (e.g., the United States) or bank-oriented (e.g., Germany). The country’s orientation does, however, affect the mix of public versus bank debt in the capital structures of firms in that country—firms in bank-oriented economies will have a greater proportion of bank debt. Further research is needed to understand why it is the mix of public and bank debt and not the level of debt that is affected by the relative importance of financial markets and banks as financing sources. Findings from this research should also be of considerable interest to policymakers in countries where banks have historically been the primary source of capital for firms and stock and bond markets are relatively new and smaller in size.

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Appendix

A simple balance sheet of corporate financing decisions.

References


The choice between public and private debt


