

Choice of Financing Source in International Debt Markets¹

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Received November 18, 1999

This paper examines incremental debt financing decisions of large Asian firms over the period 1989–1998. We find that flotation costs, agency costs, and renegotiation and liquidation risk affect the choice of debt type and that firms in countries with well developed private bond markets have a higher probability of accessing international bond markets. Significant differences exist between the determinants of choice of debt type across Japanese and non-Japanese firms that cannot be explained by keiretsu associations. Moreover, there is no significant difference in the determinants of financing source for Japanese firms across independent firms, horizontal keiretsus, and vertical keiretsus. *Journal of Economic Literature* Classification Numbers: F39, G15, G21, G32. © 2001 Academic Press

I. INTRODUCTION

While studies of firms' capital structures initially focused on the optimal leverage decision, the discussion has broadened to incorporate issues relating to the structure

¹ This paper has benefited from comments by Steve Dennis, Warren Hogan, Mike Skully, Kris Webster, participants at research workshops at Monash University and the University of Technology, Sydney, and at the 2000 FMA European Meeting, the 12th Annual PACAP/FMA Meeting, and the 2001 JFI Symposium on Corporate Finance with Blurring Boundaries between Banks and Financial Markets, and an Associate Editor and two anonymous referees. The authors also gratefully acknowledge the research support provided by both the small and large grant schemes of the Australian Research Council.

of a firm's debt. The focus in these more recent studies has been on how firms choose between public and private debt sources,² and contingent on that choice, the determination of debt contract terms including maturity, secured status, and pricing of the debt.³ They explore how asymmetric information, agency costs, taxes, credit quality, reputation, and strength of the borrower/lender relationship affect these decisions.

Outside the United States there have been few studies of the choice of financing source, defined here as the choice between public and private (intermediated) debt. Consequently the primary objective of this paper is to extend the U.S. literature to consider the choice of financing source by Asian firms in international debt markets. It seeks answers to the following important questions. Are the determinants of financing source in international debt markets similar to those observed in studies of domestic debt markets? Do cross-country differences in government corruption, in legal rules affecting the enforcement of debt contracts, in the development of financial markets and institutions, and/or in corporate governance mechanisms, affect the choice? Is the behaviour of Japanese firms in selecting debt type different from that of other Asian firms? Does affiliation with a horizontal or vertical keiretsu affect the choice of financing source by Japanese firms?

Three main groups of hypotheses explaining the choice between public and private (intermediated) debt have been suggested. First, flotation costs hypotheses draw on the observation that flotation costs of public debt issues are high and have a large fixed cost component. With potential economies of scale, firms that issue in large quantities are likely to find public debt financing relatively more attractive (see Blackwell and Kidwell, 1988; and Easterwood and Kadapakkam, 1991). Second, agency cost hypotheses draw on the distinction that private debt involves the lender monitoring the firm's activities, while monitoring is not available with public issues. Only firms with high credit quality, and thus who do not need to be closely monitored, are able to use public debt financing which is then available at a lower interest rate. Firms exposed to greater incentive problems, in the form of asset substitution and underinvestment, receive more value from monitoring and will use private debt despite higher interest rates (see Diamond, 1984, 1989, 1991; and Rajan, 1992). Finally, the liquidation and renegotiation hypotheses recognise that, in the event of financial distress, private debt agreements are easier to renegotiate and provide for more flexible liquidation than public debt (see Berlin and Loeys, 1988; Chemmanur and Fulghieri, 1994; and Detragiache, 1994).

A number of recent empirical studies have found support for these hypotheses. With the exception of two Japanese studies (see Hoshi *et al.* 1992; and Anderson and Makhija 1999), the data relate to that of U.S. firms. Moreover the studies generally focus on balance sheet ratios of private debt (or public debt) to total

² See for example Houston and James (1996), Johnson (1997), and Krishnaswami *et al.* (1999).

³ See Dennis *et al.* (2000).

debt.⁴ A difficulty with using balance sheet measures of debt type is that it is often difficult to distinguish public from private debt, and bank debt from private non-bank debt.⁵ Moreover, balance sheet data often involve the averaging of financing decisions over time and this may produce misleading indications of a firm's debt choice. On the other hand, studies based on incremental financing decisions of a firm are better equipped to deal with debt choice issues as identification of debt type is readily achieved and there is no averaging of financing decisions over time.

There has recently developed an extensive literature on the effects of legal rules, and their enforcement, on economic growth and financial development. Laporta *et al.* (1997, 1998) examine the importance of national legal origin on creditor and shareholder rights and on external finance, while Levine (1999) and Levine *et al.* (2000) extend this research to consider the importance of legal systems for economic growth. An important conclusion is that countries with poor legal rules and law enforcement have narrower debt and equity markets (see Laporta *et al.*, 1997), and that a well defined and enforced legal system facilitates greater financial intermediation and therefore economic growth (see Levine *et al.*, 2000). Moreover, Rajan and Zingales (1998) argue that relationship-based systems, as in Japan with its main bank system, work well when contracts are poorly enforced but can severely mis-allocate capital.

Another strand of the literature considers the effect of alternative forms of ownership and corporate governance in Asian firms on financial behavior. Claessens *et al.* (1999) document the separation of ownership and control in East Asian corporations, while the effect of bank equity ownership within horizontal (financial) keiretsus in Japan on the financial performance, corporate control, and value of firms is examined in Weinstein and Yafeh (1998), Morck and Nakamura (1999), and Morck *et al.* (2000). These studies suggest that main bank client firms do not perform better than independent firms, that firm value and equity ownership by main banks are inversely related, and that the keiretsu facilitate the entrenchment of management. However, there has been relatively little research into the effects of keiretsu membership on the choice of debt instruments and the design of debt contracts. Cai *et al.* (1999) find that the maturity of Japanese domestic straight bond issues from 1980 to 1993 is directly related to the ratio of the firm's bank debt to total debt and that this relationship is stronger for independent firms than keiretsu-affiliated firms. However, when Anderson and Makhija (1999) examine the determinants of the ratio of bank to total debt of Japanese firms in 1990, they find it is directly related to the firm's growth opportunities but that this relationship is not influenced by keiretsu-affiliation.

Thus this study makes three important contributions to the literature on the choice of debt type. First it extends the empirical analysis beyond the United States and Japan by examining the debt choice of firms located in ten countries—

⁴ An exception is MacKie-Mason (1990) which uses incremental data to model the choice between alternative forms of debt and equity within a nested discrete choice framework.

⁵ Houston and James (1996) and Johnson (1997) acknowledge that this feature can lead to substantial measurement errors and bias results.

China, Hong Kong, Indonesia, Japan, Malaysia, Philippines, Singapore, South Korea, Taiwan, and Thailand.⁶

Second, we use data on *incremental* funding decisions of the firms as collected by IFR Securities Data in Hong Kong and marketed as *IFR OmniBase*. It provides comprehensive information relating to the contract terms on each public debt issue and/or bank loan. Incremental data allow us to narrow the choice between public issues and bank financing to contracts likely to perform similar functions.⁷ Hence we restrict the analysis to the choice between making a public issue of fixed term debt and obtaining a syndicated term loan.

Third, whereas prior studies have focused on debt choice within domestic loan and bond markets, we examine the choice within international debt markets. In countries with relatively thin or highly regulated domestic debt markets, large firms rely on international markets for their medium-to-long-term debt. As in domestic markets, the firms may choose between private debt (a syndicated term loan) or a market-traded bond (a Eurobond or foreign bond issue).

In the first of two models that we estimate, Eurobonds are considered identical to foreign bonds. However, because Eurobonds have some characteristics that suggest a limited monitoring role of investors, in the second model we assume that Eurobonds lie between the intensive monitoring of bank loans and nonmonitored public issues. We find that the choice of financing source by Asian firms is influenced by a similar set of factors as those of U.S. firms. Across the two models we find strong support for the flotation costs hypothesis and the renegotiation and liquidation hypotheses, with the preference for foreign bonds and Eurobonds directly related to both the issue and firm size and inversely to the probability of distress. On the other hand, the evidence for the agency cost/monitoring hypothesis is somewhat mixed, with support for the monitoring role of bank debt in countries other than Japan and for reputation serving as a substitute for monitoring in Japan. There is also some evidence that cross-country differences in domestic financial market development impinge on debt choice in international markets. Finally, while the estimated relationships are stable over time, we find that the behaviour of Japanese firms is significantly different from that of firms from the other Asian countries. However, the determinants of debt choice of Japanese firms affiliated with either a horizontal or vertical keiretsu is not significantly different from independent Japanese firms.

In Section II we describe the primary features of off-shore medium-to-long-term debt instruments. Then in Section III we specify a model of the determinants of the choice between public and private debt. The model is estimated using incremental data of loan/debt issues of Asian firms as described in Section IV. The results are then presented in Section V while Section VI concludes.

⁶ These countries are recognised as representing the dominant economies in the Asian region.

⁷ For example, it is unlikely that large firms would be confronted with a choice between issuing long-term bonds or a revolving line of bank credit which is typically used for short-term working capital management.

II. OFF-SHORE MEDIUM-TO-LONG-TERM DEBT INSTRUMENTS⁸

Medium-to-long-term funding in off-shore markets takes three general forms: (i) bank lending, predominantly term loans and revolving loan agreements (revolvers or stand-by facilities); (ii) Euro medium-term notes (EMTNs); and (iii) international bonds which incorporate Eurobonds and foreign bonds. International bank lending is an important component of international debt markets. Indeed Smith and Walter (1997, pp. 19–20) argue that there are no good substitutes for bank loans in short term financing in M&A and LBO transactions and in longer-term project financing because of the flexibility that may be incorporated within bank lending arrangements. They conclude that “bank lending provides one of the few alternatives for close borrower-lender contact and monitoring, and therefore maintains significant advantages in contracting and information costs.” Loan facilities in off-shore markets are often syndicated with a lead manager or co-manager(s) having responsibility for arranging the transaction.⁹ The relationship between the borrower and lead manager is usually one of long standing with the manager having detailed knowledge of the borrower’s business and financing preferences. In contrast the participants in the syndicate will often have little private information relating to the borrower and hence rely on the monitoring role of the lead bank(s) (see Giddy, 1994, p. 250).¹⁰

Within international bonds there are important distinctions between foreign bonds and Eurobonds. Foreign bonds are issued within the national bond market of the currency of denomination of the issue and are subject to the regulation and supervision of public issues of that country.¹¹ On the other hand, Eurobonds are issued in bearer form and in such a way as to avoid national bond market regulation and supervision.¹² Moreover, unlike the traditional form of public issue generally applying to foreign bonds in national markets involving broad advertising in public markets, Eurobonds involve a form of private placement through syndicates of banks and issuing houses (see Dufey and Giddy, 1994, p. 24).

III. THE DETERMINANTS OF DEBT CHOICE

Initially we define the dependent variable, PUBLIC, as a discrete choice variable taking the value of unity if the deal is a public issue (Eurobonds or foreign bonds),

⁸ This section draws from several sources including Dufey and Giddy (1994), Giddy (1994), McGrath and Viney (1997), and Smith and Walter (1997).

⁹ This includes the structuring and underwriting of the facility, setting its price and other terms, and organising other participating members of the syndicate.

¹⁰ With the lead manager(s) acting as agent for the participants, agency costs are contained by lead managers seeking to protect and/or enhance their reputation capital and by their taking a share in the loan that is at least as large as that of any other syndicate member.

¹¹ Examples of foreign bonds include Yankee bonds when issued in the United States and Samurai bonds when issued in Japan.

¹² They are issued and sold in jurisdictions other than the country of the currency of denomination and are structured so that interest payments are not subject to withholding taxes.

or zero if private debt (syndicated term loans and a small number of bank guaranteed international bonds). In this version of the model Eurobonds and foreign bonds are treated identically. However, being structured so as to avoid regulatory costs, Eurobonds are likely to have lower flotation costs than foreign bond issues on national bond markets. Moreover, Eurobonds involve a form of private placement with significantly less disclosure than foreign bond issues.¹³ Carey *et al.* (1993, p. 4) argue that in the U.S. private placement market the main institutional lenders “evaluate and monitor the placements they buy in a manner that is generally similar to that of commercial banks’ loan underwriting and monitoring operations.” To the extent that the Eurobond market has similar characteristics, it may be argued that Eurobonds lie somewhere in the monitoring spectrum *between* closely monitored bank loans and nonmonitored foreign bonds. Thus we define an alternative dependent variable, ORDPUBLIC, in which the three debt types have an ordinal ranking. Foreign bonds take a value of two, Eurobonds a value of unity, and bank loans and bank guaranteed international bonds take zero values.

(a) *Flotation Cost Hypothesis*

Whereas public issues in domestic markets involve large flotation costs in the form of registration, legal, accounting, printing, and trustees fees, private debt avoids much of these costs. Given the large fixed cost component in flotation costs, it is likely that there are significant economies of scale in the issue of public debt (see Smith, 1977; and Bhagat and Frost, 1986). Two proxies for flotation costs have been used in prior studies, ISSUE SIZE and FIRM SIZE (see Blackwell and Kidwell, 1988; and Johnson, 1997). Each is expected to be positively related to the probability of a public issue.

(b) *Agency Conflicts*

In the presence of asymmetric information, contracting (agency) problems between debt and equity holders of a firm may arise from asset substitution as managers of firms with risky debt have an incentive to undertake more risky projects. Moreover, firms with risky debt financing and growth opportunities in their investment opportunity sets may underinvest in low risk, positive NPV projects (see Myers, 1977). These moral hazard problems can be limited by active monitoring and collection of information relating to the borrower’s activities (see Diamond, 1984, 1991).¹⁴ Generally the demand for monitoring, and hence bank debt, is directly related to the level of information asymmetry and to growth opportunities in the firm’s investment set.

¹³ Investors in Eurobonds include wealthy individuals who entrust the investment of their funds to retail portfolio managers (often banks) and also institutional investors.

¹⁴ Because public debt is usually diffusely held, individual bondholders have little incentive to engage in costly information gathering and monitoring of borrowers. In contrast, private or bank debt is concentrated, so that free rider problems are reduced and the lender has greater incentive to produce information and to increase control over the borrower’s activities so as to reduce the moral hazard and adverse selection problems.

However, Rajan (1992) suggests an alternative relationship between debt type and growth opportunities in which the bank's control over the continuation of a firm's investment project is a major cost of bank debt. This control allows the bank to obtain a monopoly rent from the firm in return for continuing to fund the project, but distorts the incentive of the firm to exert optimal effort and lowers project returns. Firms that have attractive investment opportunities are able to obtain funds at a lower rate from both public and private debt, thereby reducing their incentive to engage in asset substitution and underinvestment. Thus the control of the bank over investment decisions of firms with attractive investment opportunities is less valuable and these firms prefer public debt which avoids the adverse effects of bank debt. In this framework, bank debt and growth opportunities are inversely related.

Diamond (1991) argues that reputation can substitute for the role that monitoring plays in overcoming the moral hazard problem. Firms with low and medium credit ratings borrow from banks since their reputation is not sufficiently high to allow them to borrow directly from public debt markets.¹⁵ Firms with the highest credit rating access funds at relatively low interest rates but any default results in the loss of funds at this low rate. Therefore high rated firms have a strong incentive not to cheat and are able to borrow in bond markets without monitoring.

To summarise, the agency costs hypotheses suggest that the probability of a public issue is inversely related to the level of asymmetric information and directly related to the reputation of the borrower, while the sign of the relationship with growth opportunities is uncertain. As a proxy for asymmetric information we follow Krishnaswami *et al.* (1999) in using the unexpected change in future earnings, UNEXP EAR, and expect it will be inversely related to the probability of a public issue. As a proxy for reputation we use the firm's ratio of long-term debt to total debt, LTD/TD. We expect that a firm's favourable reputation is reflected in its ability to have previously raised longer-term debt, so that the long-term debt ratio will be directly related to the probability of making a public issue. Finally, in proxying investment or growth opportunities we use the market-to-book ratio, MVBV. While investment or growth opportunities are directly related to MVBV, the expected sign of the relationship with the probability of a public issue is uncertain.

(c) *Renegotiation and Liquidation Hypotheses*

The large number of parties involved in public issues makes it difficult to renegotiate bond agreements, as any new agreement must involve the consensus of all parties involved. However, private debt agreements involve a small number of lenders that often have an ongoing relationship with the borrower whereby the lender obtains detailed information regarding the prospects of the firm. Additionally, private debt agreements involve active monitoring of the firm's activities that reduces information asymmetries and improves the renegotiation process.

¹⁵ Reputation is unlikely to resolve the moral hazard problem for low rated firms, as the interest rate charged is relatively high so that borrowers have little to lose if they are caught undertaking self-interested actions.

To resolve the moral hazard and incentive problems associated with risky debt, restrictive covenants and security provisions can be written into debt contracts (Smith and Warner, 1979). In public debt contracts the covenants are usually based on accounting information which can be acquired at low cost. Berlin and Loeys (1988) note that this information is imperfect so that lenders are unable to distinguish between situations where it is optimal to liquidate the project and situations where it is more efficient to allow the project to continue. Therefore the covenants written on public debt contracts tend to be too harsh (prematurely liquidating profitable projects) or too lenient (allowing unprofitable projects to continue) and this results in an inefficient liquidation policy.

As private debt involves the active monitoring of the firm, when covenants are breached lenders have more detailed and accurate information on which to base the liquidation decision. Berlin and Loeys (1988) argue that this results in a more efficient liquidation policy by allowing the liquidation value of unprofitable projects to be salvaged. As project liquidation value falls, the benefit of efficient liquidation of unprofitable projects drops and firms are more likely to use public debt which avoids the costs of monitoring and has a lower interest rate.

Chemmanur and Fulghieri (1994) argue that banks are able to implement a more efficient liquidation policy because they devote additional resources to this task.¹⁶ For firms that have a high probability of financial distress the value of greater flexibility to renegotiate loans in the event of financial distress outweighs the higher interest rate charged and hence these firms prefer bank debt. Firms that have a small likelihood of financial distress place relatively little value on the ability to renegotiate and hence prefer public debt with its lower interest rate.

Following Johnson (1997) we use the firm's fixed to total asset ratio, FA RATIO, to proxy project liquidation value and expect it to be inversely related to the probability of a public issue. Moreover, the firm's LEVERAGE and Altman's Z-SCORE are used as proxies for financial distress. As a high Z-SCORE represents a low probability of financial distress we expect Z-SCORE to be directly related, while LEVERAGE is inversely related, to the probability of a public issue.

(d) Legal and Institutional Hypotheses

La Porta *et al.* (1998) show the origin of a country's legal system is related to the level of legal protection and enforcement provided to external creditors and shareholders, with common law countries providing the greatest protection of shareholder and creditor rights, and French civil law countries providing the least protection.¹⁷ However, Modigliani and Peroti (2000) argue that actual enforcement, rather than historical origin of legal rules, is important in financial decision making.

¹⁶ These expenditures are driven by a desire to acquire a reputation for flexibility in renegotiations so that the bank may attract more business.

¹⁷ Furthermore, La Porta *et al.* (1997) show that common law countries have both larger and broader external debt and equity markets than civil law countries, while French civil law countries have the least developed external capital markets.

Using a market based measure of shareholder protection, they find evidence that poor enforcement of legal rules leads to a greater reliance on bank lending and less reliance on traded securities.¹⁸

To account for differences in the level of legal protection and enforcement across countries we include a time-varying measure of legal and political risk, POL STABILITY, the Institutional Investors Country Credit Risk Rating. It provides a score out of 100 for each country, based on perceptions of the international banking community, with higher scores indicating greater creditworthiness and political stability. Firms domiciled in countries with greater political stability are likely to have greater access to international bond markets implying a positive relationship between POL STABILITY and the probability of a public issue.

The International Country Risk Guide's (ICRG) measure of political risk contains 12 components. As an alternative to the political stability measure, we focus on three of those components, the rule of law or LAW & ORDER tradition, the risk of REPUDIATION of contracts by government, and government integrity (GOVT INTEG). The LAW & ORDER variable "reflects the degree to which the citizens of a country are willing to accept the established institutions to make and implement laws and adjudicate disputes," while the REPUDIATION variable reflects the risk that a government will modify or repudiate a contract with a foreign business (a high score indicating a low probability of repudiation). Finally, GOVT INTEG is inversely related to government corruption or the likelihood that government officials will expect or demand bribes, with high scores associated with high levels of government integrity and low levels of corruption. Following Levine *et al.* (2000) we combine LAW & ORDER and REPUDIATION into a single measure, ENFORCE (see the Appendix for details).¹⁹ As low corruption and high quality law enforcement provide greater protection to external creditors and facilitate access to public debt markets, we expect GOVT INTEG and ENFORCE to be positively related to the probability of a public issue.²⁰

The development of domestic financial markets may also affect the choice between public and private debt in international debt markets. Firms domiciled in countries with highly developed bond markets, and therefore with experience in making public issues, may also have a preference for issuing international bonds.²¹

¹⁸ The study is limited by the small cross sectional sample of seven observations and the use of an equity price measure of legal enforcement, rather than a debt based measure of legal enforcement. The equity price measure of legal enforcement is however consistent with measures of the efficiency of the judicial system, law and order, and government corruption, but sometimes inconsistent with the shareholder rights index provided in La Porta *et al.* (1998). The authors argue that this supports their view that legal enforcement is more important than legal rights.

¹⁹ Levine (1999), Levine *et al.* (2000), and Modigliani and Peroti (2000) use similar measures of government corruption and law enforcement.

²⁰ Given that the debtor firms are drawn from only ten countries, legal system dummy variables are not used as the results may be driven by one or two countries. Moreover, our legal proxies are time-varying and also focus on law enforcement rather than legal origin.

²¹ Reasons for issuing international bonds may include the ability to access additional funding sources, raising foreign currency denominated debt, and/or avoiding domestic bond market regulations.

TABLE I
Summary of Estimated Model

Hypotheses	Proxies	Expected sign for probability of a public issue
Flotation costs hypothesis	ln (ISSUE SIZE)	+ve
	ln (FIRM SIZE)	+ve
Agency conflicts		
• Asymmetric information	UNEXP EAR	—ve
• Reputation	LTD RATIO	+ve
• Growth opportunities	MVBV	?
Renegotiation and liquidation hypotheses		
• Liquidation value	FA RATIO	—ve
• Probability of distress	Z-SCORE	+ve
	LEVERAGE	—ve
Legal and institutional hypotheses		
• Legal/political risk	POL STABILITY	+ve
	GOVT. INTEG	+ve
	ENFORCE	+ve
• Financial market development	PRLTD/GDP	?
Controls	COUNTRY DUMMIES	?

On the other hand, international debt markets may also represent a substitute for poorly developed domestic debt markets. This implies that firms *without* access to well developed domestic bond markets because of poor liquidity are more likely to issue international public debt. To proxy the level of domestic financial market development, we use the ratio of private long term primary domestic debt issues to gross domestic product (PRLTD/GDP).²² Given the two offsetting effects, the relationship between PRLTD/GDP and the probability of a public issue is uncertain.

(e) Controls

The model also includes a set of COUNTRY of domicile indicator variables to account for systematic cross-country differences in the choice of debt type. The principal hypotheses, proxies, and expected signs of the relationships are summarised in Table I while the variables are defined in the Data Appendix.

²² This variable was originally constructed by Aylward and Glen (1998) and is also used by Beck *et al.* (1999). Data are only available to 1995 and are missing for Singapore. To avoid losing observations we assume post 1995 data are unchanged and substitute Hong Kong data for Singapore. The latter assumption is reasonable as the level of debt issues outstanding is very similar for the two countries, indicating similar levels of primary debt issuance (see Beck *et al.*, 1999).

IV. DATA

This study combines debt contract data from IFR Securites Omnibase with annual report data from Global Vantage and Compact Disclosure and institutional data from the World Bank and the International Country Risk Guide. IFR contains information on capital issues by Asian companies including the timing of the issue, instrument type, issue size, currency of denomination, pricing, guarantees, maturity, and various other contract features.

Confirmed Eurobonds, foreign bonds, and syndicated term loans of public companies (but excluding finance industry issuers) during the 1989–1998 period were extracted from IFR for ten countries: China, Hong Kong, Indonesia, Japan, Malaysia, The Philippines, Singapore, South Korea, Taiwan, and Thailand. In deals where the borrower is a subsidiary or has a third party guarantor, the ultimate credit risk, and in some cases country risk, may lie with the subsidiary, the parent, or the guarantor. The method of assigning deals to the ultimate party responsible for making repayment has implications for matching the deals with annual report data, and when the subsidiary or guarantor is located off-shore, in assigning the deal to the appropriate country. For each deal, IFR reports the borrower, borrower's parent, guarantor of the deal, and country of risk where the latter is "the country of legal incorporation of the entity that would ultimately be answerable to investors in the event of a default. In loans it is the borrower's country, except when guaranteed in which case it is the guarantor's country. In bonds it is the ultimate parent country, with the same provisos for guarantors."

Rather than adopt the IFR procedure, and at the expense of reducing the sample size, we adopt a more conservative approach which omits observations where there is any doubt about the identity of the debtor. Thus public issues were assigned to a country based on the nationality of the borrower's parent company. However, unlike the IFR country of risk variable, *public issues* where a *nonparent* or *nonbank* guarantee is provided are excluded from the sample. In cases where a bank acted as the guarantor on an international bond (thereby assuming the credit risk) we treat the bank guaranteed bond as being equivalent to a bank loan or private debt.²³ With the sample of *term loans* we followed a stricter procedure. Observations were only included where the borrower was also the parent or parent's finance company subsidiary, and both the borrower and parent were located in the *same* country. Moreover, where information on guarantors is provided, only loans guaranteed by the parent or by a bank were included in the sample.

Approximately one-third of the debt issues were matched to company data at the annual report date prior to the deal. When a deal contained multiple tranches of the same debt type, the tranches were combined to form a single observation leaving a sample of 3273 observations across 365 firms, an average of 9 issues per firm. However, with two firms making one-sixth of the issues, the results may be unduly influenced by several (large) firms that access the markets in smaller but

²³ The bank guaranteed international bonds are all issued by Japanese companies.

very frequent deals. Hence, for each firm we aggregate issues of each debt type over the company's annual reporting period, thereby reducing the final sample to 934 observations for 365 companies or an average of 2.6 per company.²⁴

A preliminary examination of this data revealed that the observations for both China and Thailand were exclusively syndicated loans. While there were many Eurobond issues by Chinese firms in the IFR data, most were government instrumentalities and therefore could not be matched to the Global Vantage or Compact Disclosure annual report data. For Thailand, however, the IFR data revealed that there were no Eurobond/foreign bond issues after early 1989, but many before that date. Rather than allow our results to be affected by these extreme outcomes, we initially exclude the 6 Chinese and 57 Thai syndicated loan observations, leaving a sample of 871 observations from 8 countries.

Table II provides summary statistics relating to the characteristics of securities and issuers for the full sample, and for Japan and non-Japan, respectively. In terms of debt type, 61% of the sample are Eurobonds, 32% are syndicated term loans (including bank guaranteed bonds), and 7% are foreign bonds. By country, Japanese firms comprise 68% of the full sample, with 87% of the Eurobonds and 63% of the foreign bonds, but only 33% of syndicated loans and bank guaranteed public issues.²⁵

For the full sample, the aggregated issue size is somewhat skewed with a mean of USD267.1m and median of USD117.2m.²⁶ Whereas Japanese foreign bonds and Eurobonds are issued in larger amounts than syndicated loans, Eurobonds and syndicated loans for the remaining countries are of similar size. The mean term to maturity of the issues is 5.3 years, with foreign bonds having a longer maturity of 7.6 years while Eurobonds and syndicated loans average 5.3 and 4.7 years, respectively. With one exception, the debt is predominantly denominated in a foreign currency. The exception is Japanese Eurobond issues where 77% are denominated in the domestic currency. Turning to borrower features, real firm size, proxied by total assets, is also strongly skewed with a sample mean of USD18880m and median of USD7793m. In all debt categories, Japanese firms are much larger than non-Japanese firms. An interesting feature of foreign bond issuers, both Japanese and non-Japanese, is that they have higher long-term debt and fixed asset ratios than firms using syndicated loans or Eurobonds. Finally, we note that the institutional measures of political risk and financial development reflect Japan's greater political stability, government integrity, law enforcement, and development of domestic bond markets vis-a-vis the remaining countries.

A correlation matrix of dependent and independent variables is provided in Table III. Consistent with the predictions in Table I, there are significant positive correlations between the dependent variables and proxies for flotation costs (issue

²⁴ Esho *et al.* (1999) report results with and without this aggregation.

²⁵ Discussions with personnel at IFR confirmed that Japanese firms are not frequent users in the syndicated loan market.

²⁶ For comparability, issue and firm size data are converted to constant 1995 USD.

TABLE II
 Characteristics of Securities and Borrowers: Mean Values with Medians in Parentheses

Characteristic	All countries (<i>N</i> = 871)			Japan (<i>N</i> = 595)			Non-Japan (<i>N</i> = 276)		
	SL ^a	EB ^b	FB ^c	SL ^a	EB ^b	FB ^c	SL ^a	EB ^b	FB ^c
Observations	275	531	65	92	462	41	183	69	24
Real issue size (US\$m)	147.0 (61.2)	319.2 (174.4)	349.8 (208.5)	62.2 (32.4)	341.0 (193.6)	315.4 (135.8)	189.7 (80.6)	173.5 (104.4)	408.5 (324.2)
Maturity (years)	4.72 (5.00)	5.29 (5.00)	7.59 (7.00)	4.97 (5.00)	5.37 (5.00)	5.95 (5.00)	4.59 (4.07)	4.76 (5.00)	10.5 (10.0)
PPN in foreign currency (%)	86.6 (100.0)	32.3 (0.0)	100.0 (100.0)	92.4 (100.0)	22.9 (0.0)	100.0 (100.0)	83.6 (100.0)	95.9 (100.0)	100.0 (100.0)
Real total assets (US\$m)	4488 (974)	24764 (14703)	31700 (15134)	7957 (1763)	27927 (17091)	45487 (27237)	2744 (911)	3589 (1493)	8146 (5333)
LTD RATIO (%)	50.0 (50.5)	56.9 (55.6)	68.0 (73.8)	47.0 (46.7)	57.1 (55.6)	68.7 (73.8)	53.0 (52.8)	56.0 (57.7)	66.7 (73.2)
MVBV	1.41 (1.23)	1.30 (1.22)	1.48 (1.35)	1.36 (1.22)	1.32 (1.23)	1.50 (1.33)	1.44 (1.25)	1.22 (1.07)	1.45 (1.35)
LEVERAGE	.62 (.64)	.74 (.76)	.63 (.63)	.73 (.78)	.76 (.78)	.68 (.72)	.56 (.58)	.61 (.65)	.54 (.58)
Z-SCORE	1.37 (1.21)	1.38 (1.30)	1.30 (1.13)	1.36 (1.31)	1.39 (1.31)	1.32 (1.48)	1.38 (1.07)	1.38 (1.17)	1.27 (.95)
FA RATIO (%)	39.8 (37.0)	33.7 (28.1)	48.8 (41.6)	31.3 (29.3)	33.0 (27.4)	45.5 (30.7)	44.1 (43.0)	38.7 (37.6)	54.3 (56.1)
POL STABILITY	73.4 (69.8)	88.3 (91.4)	80.5 (91.4)	92.1 (91.4)	92.3 (91.8)	93.1 (92.4)	64.0 (67.0)	61.9 (68.0)	59.0 (65.6)
GOVT INTEG	4.3 (4.7)	4.8 (5.0)	4.6 (5.0)	4.9 (5.0)	5.0 (5.0)	5.0 (5.0)	4.0 (4.0)	4.0 (4.0)	3.9 (4.0)
ENFORCE	18.1 (18.3)	19.2 (20.0)	18.4 (18.3)	19.6 (20.0)	19.5 (20.0)	19.1 (19.2)	17.4 (17.3)	17.5 (17.5)	17.1 (17.1)
PRLTD/GDP (%)	6.0 (5.4)	10.5 (10.4)	9.0 (10.4)	11.2 (10.4)	11.4 (11.9)	12.0 (12.4)	3.4 (2.0)	4.4 (2.0)	3.8 (1.7)

^a Syndicated Loans and Bank Guaranteed Public Issues.

^b Eurobonds.

^c Foreign Bonds.

TABLE III
Correlation Matrix ($N = 871$)

size and firm size), borrower reputation (the long-term debt ratio), and legal/political risk (political stability, government integrity, and law enforcement), and negative correlation with the proxy for liquidation value (fixed asset ratio). There is also a negative correlation with the proxy for growth opportunities (market-to-book value) consistent with the monitoring hypothesis and a positive correlation with domestic private bond market development. However, the correlation with leverage is incorrectly signed.

V. REGRESSION RESULTS

(a) *Fixed Coefficient Model*

As noted previously, we estimate two models of debt choice. In the first model, Eurobonds and foreign bonds are assumed to have similar characteristics and hence are combined into a single debt category, international bonds. The firm's choice between borrowing in the syndicated term loan market or issuing an international bond is then modeled using the bivariate discrete choice logit and probit estimators.²⁷ In the second model, it is assumed that Eurobonds have monitoring characteristics lying between the extremes of highly monitored bank debt and non-monitored foreign bonds, resulting in an ordered ranking of debt choice which is modeled using the ordered logit (or ordered probit) estimator.²⁸

Logit regression results with the discrete choice dependent variable PUBLIC are reported in the first three columns of Table IV whereas the final three columns report the ordered logit results with the dependent variable ORDPUBLIC. To ensure that the results are not biased by extreme values of independent variables, they are truncated at four standard deviations from their means.²⁹ Initially the models were estimated using GOVT INTEG and ENFORCE, rather than POL STABILITY. The country indicator control variables are relative to Hong Kong which has been excluded to avoid singularity. The logit REG 1 and ordered logit REG 4 do not include the proxies for the legal and institutional hypotheses whereas they are included in REGs 2 and 5, respectively. Generally the inclusion of these institutional proxies has little impact on the results for the flotation cost, agency conflict, and renegotiation and liquidation risk proxies. Rather, they reduce the significance of the country indicator variables for Japan and South Korea. This result is not surprising as Japan and South Korea have relatively developed domestic medium- and long-term debt markets. Thus the significant positive coefficient of the PRLTD/GDP variable in both the logit and ordered logit regressions is consistent with the hypothesis that firms in countries with relatively strong domestic

²⁷ As the results are very similar, for space reasons only the logit results are reported.

²⁸ In contrast with the multinomial logit or probit models, the ordered logit and probit models account for the ordinal nature of the dependent variable.

²⁹ The regressions were also run with truncation at seven standard deviations with little influence on the results.

TABLE IV
Logit and Ordered Logit Regression Results ($N = 871$)

Independent variables	LOGIT ^{a,b}			ORDERED LOGIT ^{a,b}		
	REG 1	REG 2	REG 3	REG 4	REG 5	REG 6
CONSTANT	-7.41 (-7.92)***	-11.570 (-2.94)***	-7.188 (-2.05)**	-6.300 (-8.42)***	-8.877 (-3.29)***	-5.654 (-2.07)**
ln (ISSUE SIZE)	0.489 (4.93)***	0.456 (4.53)***	0.774 (8.76)***	0.224 (2.54)**	0.190 (2.12)**	0.446 (5.91)***
ln (FIRM SIZE)	0.659 (7.36)***	0.685 (7.49)***		0.576 (7.89)***	0.609 (8.30)***	
(FIRM SIZE)/GDP			6.356 (1.14)			18.876 (4.36)***
UNEXP EAR	0.394 (0.22)	0.138 (0.08)	0.631 (0.37)	-0.275 (-0.19)	-0.345 (-0.24)	0.139 (0.10)
LTD RATIO	1.153 (2.25)**	0.974 (1.87)*	1.500 (2.88)***	1.760 (3.96)***	1.655 (3.68)***	1.821 (4.16)***
MVBV	-0.197 (-0.85)	-0.347 (-1.40)	-0.472 (-1.97)**	0.179 (1.00)	0.008 (0.04)	-0.245 (-1.35)
FA RATIO	-1.607 (-2.86)***	-1.448 (-2.53)**	-1.407 (-2.51)**	-0.859 (-1.79)*	-0.730 (-1.50)	-0.799 (-1.68)*
Z-SCORE	-0.082 (-0.53)	-0.077 (-0.49)	-0.245 (-1.68)*	-0.085 (-0.61)	-0.078 (-0.55)	-0.151 (-1.13)
LEVERAGE	-2.04 (-3.35)***	-2.595 (-3.34)***	-1.147 (-1.64)	-2.805 (-4.60)***	-2.873 (-4.65)***	-1.719 (-3.00)***
GOVT INTEG		0.705 (1.06)	0.531 (0.90)		0.497 (1.12)	0.354 (0.80)
ENFORCE		0.023 (0.15)	-0.006 (-0.04)		-0.007 (-0.05)	0.000 (0.00)
PRLTD/GDP		26.012 (2.26)**	19.000 (1.82)*		24.810 (2.33)**	19.260 (1.94)*
Japan	3.399 (6.15)***	0.845 (0.64)	2.281 (1.89)*	2.863 (5.90)***	0.474 (0.39)	2.147 (1.89)*
Indonesia	2.591 (4.60)***	4.467 (3.15)***	3.225 (2.53)**	2.373 (4.94)***	3.783 (4.00)***	3.189 (3.24)***
Malaysia	0.654 (1.04)	0.486 (0.48)	0.167 (0.18)	0.618 (1.18)	0.282 (0.36)	0.090 (0.12)
Philippines	1.909 (2.75)***	3.715 (2.51)**	2.943 (2.19)**	1.818 (3.17)***	3.117 (3.14)***	2.776 (2.73)***
Singapore	0.382 (0.49)	1.108 (1.06)	0.587 (0.60)	-0.97 (-0.15)	0.446 (0.52)	-0.037 (-0.04)
South Korea	1.864 (2.97)***	-0.183 (-0.16)	0.568 (0.55)	2.273 (4.49)***	0.319 (0.32)	1.093 (1.17)
Taiwan	0.124 (0.13)	1.426 (1.14)	0.889 (0.74)	-0.344 (-0.43)	0.714 (0.77)	0.801 (0.83)
MU (1)				4.373 (24.57)***	4.427 (23.97)***	4.154 23.27***
Summary statistics						
Log likelihood	-321.80	-317.49	-351.12	-559.95	-553.19	-586.65
Correct predictions	84.04%	84.27%	81.06%	76.81%	77.04%	73.13%
Wald statistic (time)	5.02	13.65	8.89	6.14	9.25	8.10
Wald statistic (Japan)	34.91***	32.46***	27.47***	34.54***	30.54***	29.89***

^a t statistics in parentheses.

^b ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

private bond markets have a higher probability of accessing international bond markets. However, neither of the political risk proxies is statistically significant.

The results in Table IV also provide strong support for the flotation cost, agency conflict, and renegotiation and liquidation hypotheses. The probability of a public issue is directly related to issue and firm size consistent with the presence of scale economies in flotation costs of public issues, and with the long-term debt ratio consistent with reputation providing a substitute for bank monitoring in overcoming moral hazard problems. Also, the renegotiation and liquidation hypotheses are supported with the probability of a public issue inversely related to the firm's liquidation value, proxied by the fixed asset ratio, and to the firm's probability of distress, proxied by the leverage ratio. In contrast with these strong results, the proxies for asymmetric information and growth opportunities do not attain statistical significance.

In addition to the parameter estimates, the ordered logit model produces estimates of the unknown threshold parameters, MU, that separate the adjacent choice categories. The threshold, MU(0), between ORDPUBLIC = 0 (syndicated term loan) and ORDPUBLIC = 1 (Eurobond) is normalised to zero so only MU(1) is estimated for the J = 3 choice model. The highly significant positive estimate of MU(1) reported in Table IV indicates that the three categories in the response are ordered as assumed (see Liao, 1994, p. 43).

Among the summary statistics at the foot of Table IV is the proportion of correct within-sample predictions of the estimated model. The predictive ability of the logit model with 84% of observations correctly classified compares well with a naive forecast that all observations are public issues (which correctly predicts 68% of the observations). The ordered logit model is a little less successful with 77% of observations correctly classified. The poorer performance is due to its inability to classify foreign bonds correctly.³⁰

In the summary statistics we report Wald Chi-squared statistics to test the stability of the estimated parameters over time and across Japan and the remaining countries.³¹ For the test of Japanese stability, each of the behavioral parameters has a fixed and variable component,

$$\beta_k = {}_f\beta_k + {}_v\beta_k \text{ (JAPAN)},$$

where the *f* and *v* subscripts indicate fixed and variable, respectively. The ${}_f\beta_k$ coefficients relate to non-Japan while the coefficients for Japan are $({}_f\beta_k + {}_v\beta_k)$. The Wald test then tests the null that the *k* behavioral parameters ${}_v\beta_k$ are jointly zero.³² For the time stability test a time indicator variable, taking the value of unity

³⁰ While 83% of syndicated loans and Eurobonds are correctly classified, none of the foreign bonds are correctly classified.

³¹ The fact that Japanese firms are much larger than non-Japanese firms suggests that a cross-country test of parameter stability of the relationship across Japan and non-Japan would be of considerable interest.

³² While it would be of interest to examine the stability of the estimated models for other countries, the relatively small number of observations for those countries results in a relatively weak test of parameter stability.

for issues after January 1, 1995, and zero otherwise, replaces JAPAN in the variable coefficient model. In all forms of the model, the Wald (time) statistic is statistically insignificant indicating that we cannot reject the null of stable parameter estimates pre- and post-January 1995. However, the Wald (Japan) statistic strongly rejects the null that the determinants of debt choice are the same for Japanese and non-Japanese firms.

As the significance of individual variable coefficients suggested that the parameter instability across Japan and non-Japan could be related to firm size, REGs 3 and 6 replace $\ln(\text{FIRM SIZE})$ with the firm's total assets scaled by the country's gross domestic product ($\text{FIRM SIZE}/\text{GDP}$). In a study of debt maturity, Demirgüç-Kunt and Maksimovic (1999) argue that this specification is consistent with the perception of a "small firm" differing across countries in proportion to the aggregate output of the country. The scaled firm size results are broadly consistent with the earlier results, although the in-sample predictive performance of the model is reduced. Importantly, the Wald(Japan) statistic still strongly rejects the null of parameter stability across Japan and non-Japan.

(b) Variable Coefficient Model

REGs 7 and 8 in Table V summarise the parameter estimates corresponding to REGs 2 and 5 but allowing for variable coefficients across Japan and non-Japan. As the primary source of variability in the legal and institutional variables is cross-country, the estimated coefficients for these variables are constrained to be equal for Japan and non-Japan.³³ The summary statistics for REGs 7 and 8 suggest that the variable coefficient model across Japan and non-Japan marginally improves the within-sample predictive performance of the model vis-a-vis REGs 2 and 5. Moreover, the Wald (time) statistics cannot reject the null of parameter stability over time.

Where the estimated parameters for Japan and non-Japan are significantly different, this is shown by a # on the non-Japan coefficients. For the logit REG 7, the sensitivity of choice of debt type to changes in firm size, leverage, and long-term debt ratio is significantly greater for Japan than non-Japan (in each case the non-Japanese coefficient is not significantly different from zero). The ordered logit results of REG 8 are somewhat different, with the coefficients of issue size, firm size, long-term debt ratio, and growth opportunities significantly different across Japan and non-Japan. While the long-term debt ratio is only significant for Japan, we now find that issue size, growth opportunities, and Z-score are significant for only non-Japan (though the Z-score coefficient is incorrectly signed). These results suggest that the logit model is somewhat superior in explaining Japanese debt choice while the ordered logit model is superior for non-Japan.

Care must be taken in interpreting ordered logit (or probit) coefficients, for while the positive coefficient on the firm size variable implies that an increase

³³ The constrained estimates of these parameters in Table V are similar to those in Table IV. Again, cross-country differences in financial development are a significant determinant of the choice of debt type.

TABLE V

Variable Coefficient Logit and Ordered Logit Regression Results for Japan and Non-Japan ($N = 871$)

Independent variables	REG 7, LOGIT ^{a,b,c}		REG 8, ORDERED LOGIT ^{a,b,c}		REG 9, LOGIT ^{a,b,c}	
	Japan	Non-Japan	Japan	Non-Japan	Japan	Non-Japan
CONSTANT	−12.921 (−3.16)***	−7.575 ^{##} (−2.04)**	−9.891 (−2.80)***	−8.039 (−2.60)***	−3.237 (−0.52)	0.954 [#] (0.19)
ln (ISSUE SIZE)	0.494 (3.336)***	0.530 (3.44)***	0.014 (0.12)	0.795 ^{###} (5.46)***	0.497 (3.37)***	0.544 (3.55)***
ln (FIRM SIZE)	1.111 (7.34)***	0.180 ^{###} (1.19)	0.750 (7.78)***	0.356 ^{##} (2.38)**	1.120 (7.36)***	0.183 ^{###} (1.22)
UNEXP EAR	1.697 (0.56)	−0.725 (−0.36)	0.238 (0.07)	−1.844 (−1.07)	1.734 (0.57)	−0.415 (−0.22)
LTD RATIO	2.131 (2.37)**	0.220 [#] (0.33)	2.347 (3.09)***	0.145 ^{##} (0.23)	2.148 (2.38)**	0.239 [#] (0.37)
MVBV	0.046 (0.10)	−0.530 (−1.62)	0.404 (1.37)	−0.541 ^{###} (−1.93)*	0.125 (0.29)	−0.555 (−1.69)*
FA RATIO	−1.705 (−1.71)*	−1.127 (−1.57)	−0.678 (−0.94)	−1.113 (−1.55)	−1.752 (−1.76)*	−1.223 (−1.71)*
Z-SCORE	−0.000 (−0.00)	−0.300 (−1.57)	0.005 (0.012)	−0.393 (−2.21)**	−0.004 (−0.02)	−0.306 (−1.60)
LEVERAGE	−5.658 (−4.13)***	−1.205 ^{##} (−1.17)	−2.916 (−3.06)***	−2.205 (−2.29)**	−5.724 (−4.17)***	−1.169 ^{###} (−1.14)
GOVT INTEG ^d	0.656 (1.05)	0.656 (1.05)	0.469 (1.01)	0.469 (1.01)		
ENFORCE ^d	0.032 (0.21)	0.032 (0.21)	0.005 (0.03)	0.005 (0.03)		
POL STABILITY ^d					−0.073 (−1.00)	−0.073 (−1.00)
PRLTD/GDP ^d	22.521 (1.83)*	22.521 (1.83)*	24.407 (2.19)**	24.407 (2.19)**	29.035 (2.24)**	29.035 (2.24)**
Indonesia		3.374 (2.57)**		3.566 (3.57)***		1.041 (0.94)
Malaysia		0.201 (0.21)		−0.053 (−0.07)		−0.693 (−0.94)
Philippines		3.398 (2.48)**		3.546 (3.42)***		−0.192 (−0.08)
Singapore		0.768 (0.78)		0.511 (0.54)		1.262 (0.95)
South Korea		−0.136 (−0.11)		0.193 (0.19)		−0.524 (−0.46)
Taiwan		0.992 (0.84)		0.648 (0.702)		1.220 (0.86)
MU (1)				4.516 (23.90)***		
Summary statistics						
Log likelihood	−299.26		−539.04		−299.56	
Correct predictions	85.30%		78.87%		85.76%	
Wald statistic (time)	27.01		13.78		27.83	

^a t statistics in parentheses.
^b ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.
^c ###, ##, # indicate significance of the difference between the Japan and non-Japan coefficients at 1%, 5%, and 10% levels, respectively.
^d The coefficients for Japan and non-Japan are constrained to be equal.

TABLE VI
Marginal Effects for Ordered Logit Model, REG 8

Independent variables	Japan			Non-Japan		
	ORDPUBLIC			ORDPUBLIC		
	= 0	=1	= 2	= 0	=1	= 2
ln (ISSUE SIZE)	-0.0026	0.0022	0.0004	-0.1538	0.1308	0.0230
ln (FIRM SIZE)	-0.1452	0.1235	0.0217	-0.0688	0.0585	0.0103
UNEXP EAR	-0.0460	0.0391	0.0069	0.3568	-0.3035	-0.0533
LTD RATIO	-0.4542	0.3864	0.0679	-0.0280	0.0238	0.0042
MVBV	-0.0783	0.0666	0.0117	0.1047	-0.0890	-0.0156
FA RATIO	0.1312	-0.1116	-0.0196	0.2154	-0.1832	-0.0322
Z-SCORE	-0.0011	0.0009	0.0002	0.0761	-0.0647	-0.0114
LEVERAGE	0.5644	-0.4801	-0.0843	0.4267	-0.3629	-0.0637
GOVT INTEG ^a	-0.0908	0.0772	0.0136	-0.0908	0.0772	0.0136
ENFORCE ^a	-0.0009	0.0008	0.0001	-0.0009	0.0008	0.0001
PRLTD/GDP ^a	0.0772	0.0136	0.7057	0.0772	0.0136	0.7057

^a The coefficients for Japan and non-Japan are constrained to be equal.

in firm size unambiguously increases the probability of choosing foreign bonds (ORDPUBLIC = 2) and reduces the probability of choosing syndicated term loans (ORDPUBLIC = 0), the sign of the impact on the probability of a Eurobond issue (ORDPUBLIC = 1) is unclear without further calculations. Thus in Table VI we report the marginal effects of each of the continuous independent variables in REG 8. These are the partial derivatives of the probability of a choice outcome with respect to changes in the regressor. With probabilities summing to unity, the marginal effects sum to zero across the three choice possibilities. The results in Table VI reveal that the marginal effects of the regressors on Eurobonds (ORDPUBLIC = 1) take the same sign as those for foreign bonds (ORDPUBLIC = 2). This suggests that Eurobonds behave like foreign bonds and thus their combination within the logit model may not lead to significant bias.

Several alternative specifications of the model were estimated to evaluate the sensitivity of the results. In REG 9 in Table V we replace the GOVT INTEG and ENFORCE variables with the single measure of legal protection and enforcement, POL STABILITY. A comparison of the logit results of REGs 7 and 9 reveals that the broad measure of political risk is not statistically significant while the proportion of correct predictions increases to 85.8%. However, the results for the remaining variables exhibit little sensitivity to the choice of legal/political proxies.³⁴

It was noted above that observations for Chinese and Thai firms were all syndicated loans, resulting in the observations for these countries being removed from the sample.³⁵ To examine the sensitivity of our results to this approach, REG 10

³⁴ For space reasons the ordered logit results are not reported. The results were similar to those reported above for the logit regression.

³⁵ A referee has suggested that these countries could be operating under a different regime to that of firms in the other countries.

in Table VII re-estimates REG 7 but with the 63 Chinese and Thai observations included. A comparison of the two regressions reveals that the predictive power of the regression increases marginally to 86.6% correct predictions, while the primary effect on the estimated coefficients is to cause the government integrity variable to become statistically significant at the 95% level while the proxy for the level of domestic financial market development is no longer statistically significant. The effect on the coefficient of the GOVT INTEG variable is not surprising as China and Thailand are rated poorly in terms of this variable. When they are excluded from the sample, the GOVT INTEG variable loses much of its variability and hence becomes statistically insignificant in the smaller sample.

As the country of domicile indicator variables in REG 7 could be capturing the influence of legal and law enforcement issues and differences in financial market development, thereby reducing the significance of the GOVT INTEG, ENFORCE, and PRLTD/GDP variables, in REG 11 the country variables have been omitted. Relative to REG 7, the proportion of observations correctly predicted falls to 84.3% while, somewhat surprisingly, the coefficient of the GOVT INTEG variable now takes an incorrect negative sign and is significant at the 95% level. The coefficients of the remaining variables are little changed for Japan while the fixed asset ratio and growth opportunities variables become more significant for non-Japan.³⁶ Moreover, the regression exhibits some evidence of instability over time.

Finally, a referee has noted that the quality of legal enforcement is largely irrelevant for debt choice if the country has a limited bankruptcy law to be enforced. Hence in REG 12 we include a creditor rights variable drawn from La Porta *et al.* (1998). Countries earn a point, up to a maximum score of four, if: (i) their laws prevent an automatic stay on assets, allowing secured creditors to repossess them; (ii) secured creditors have the primary right to collateral in the event of reorganisation; (iii) firms require the consent of secured creditors before entering reorganisation; and (iv) secured creditors can remove management after reorganisation. These four measures are summed to create a single measure, CREDRITS, with the higher the score the greater the creditor rights. Consistent with the corruption and legal enforcement variables, we expect a positive relationship between the strength of creditor rights and the probability of making a public issue. Because of the presence of linear dependence between CREDRITS, the country indicator variables, and the constant term, we remove the country of domicile indicator variables from the regression.³⁷ The results of REG 12 are then comparable with those of REG 11 from which it is evident that adding CREDRITS has little effect on the remaining variables in the model.

Overall, the sensitivity results of REGs 10 to 12 suggest the need for caution in interpreting findings for the legal and institutional variables. With only ten countries in the sample, these results are sensitive to the inclusion (or exclusion) of country of domicile indicator variables and to the inclusion (or exclusion) in

³⁶ Similar results are found for the ordered logit regression.

³⁷ Thus $CREDRITS = CONSTANT + JAPAN + 3 * INDONESIA + 3 * MALAYSIA - PHILIPPINES + 3 * SINGAPORE + 2 * SOUTH KOREA + TAIWAN$.

TABLE VII
Variable Coefficient Logit and Ordered Logit Regression Results for Japan and Non-Japan

Independent variables	REG 10, LOGIT ^{a,b,c}		REG 11, LOGIT ^{a,b,c}		REG 12, LOGIT ^{a,b,c}	
	Japan	Non-Japan	Japan	Non-Japan	Japan	Non-Japan
CONSTANT	-14.861 (-3.78)***	-10.072 ^{##} (-3.02)***	-4.838 (-1.95)*	-0.552 ^{##} (-0.27)	-5.151 (-2.05)**	-0.393 ^{##} (-0.19)
ln (ISSUE SIZE)	0.492 (3.35)***	0.526 (3.42)***	0.536 (3.67)***	0.473 (3.33)***	0.537 (3.68)***	0.487 (3.40)***
ln (FIRM SIZE)	1.111 (7.34)***	0.202 ^{###} (1.34)	1.094 (7.29)***	0.207 ^{###} (1.49)	1.094 (7.29)***	0.181 ^{###} (1.27)
UNEXP EAR	1.660 (0.55)	-1.229 (-0.61)	1.317 (0.42)	0.918 (0.50)	1.292 (0.41)	0.803 (0.43)
LTD RATIO	2.124 (2.36)**	0.202 [#] (0.31)	2.327 (2.61)***	0.301 [#] (0.49)	2.335 (2.62)***	0.228 [#] (0.37)
MVBV	0.029 (0.07)	-0.588 (-1.83)*	0.258 (0.60)	-0.654 [#] (-2.13)**	0.276 (0.64)	-0.677 [#] (-2.17)**
FA RATIO	-1.686 (-1.69)*	-1.061 (-1.50)	-1.847 (-1.88)*	-1.171 (-1.72)*	-1.854 (-1.89)*	-1.114 (-1.63)
Z-SCORE	0.007 (0.02)	-0.297 (-1.57)	0.011 (0.04)	-0.128 (-0.75)	0.014 (0.05)	-0.151 (-0.88)
LEVERAGE	-5.636 (-4.12)***	-1.314 ^{##} (-1.29)	-5.633 (-4.12)***	-0.42 ^{###} (-0.46)	-5.632 (-4.12)***	-0.458 ^{###} (-0.51)
GOVT INTEG ^d	1.197 (2.46)**	1.197 (2.46)**	-0.668 (-2.32)**	-0.668 (-2.32)**	-0.654 (-2.25)**	-0.654 (-2.25)**
ENFORCE ^d	0.015 (0.10)	0.015 (0.10)	0.005 (0.04)	0.005 (0.04)	0.028 (0.23)	0.028 (0.23)
CREDRITS ^d					-0.116 (-0.85)	(-0.116) (-0.85)
PRLTD/GDP ^d	19.075 (1.60)	19.075 (1.60)	9.861 (1.69)*	9.861 (1.69)*	9.860 (1.68)*	9.860 (1.68)*
Indonesia		4.554 (4.56)***				
Malaysia		0.967 (1.24)				
Philippines		4.538 (4.12)***				
Singapore		1.450 (1.71)*				
South Korea		0.349 (0.31)				
Taiwan		1.736 (1.67)*				
Summary statistics						
Observations		934		871		871
Log likelihood		-300.38		-308.37		-308.01
Correct predictions		86.62%		84.27%		84.04%
Wald statistic (time)		27.34		30.31*		31.03*

^a *t* statistics in parentheses.

^b ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

^c ###, ##, # indicate significance of the difference between the Japan and non-Japan coefficients at 1%, 5%, and 10% levels, respectively.

^d The coefficients for Japan and non-Japan are constrained to be equal.

TABLE VIII

Characteristics of Japanese Debt Issues and Borrowers: Mean Values with Medians in Parentheses

Characteristic	Horizontal keiretsu (<i>N</i> = 220)			Vertical keiretsu (<i>N</i> = 178)			Independent (<i>N</i> = 197)		
	SL ^a	EB ^b	FB ^c	SL ^a	EB ^b	FB ^c	SL ^a	EB ^b	FB ^c
Observations	30	185	5	11	152	15	51	125	21
Real issue size (US\$m)	77.0 (56.6)	305.6 (170.8)	66.0 (56.6)	87.1 (52.7)	417.7 (209.8)	693.9 (325.7)	48.1 (24.5)	300.2 (200.0)	104.5 (64.5)
Maturity (years)	5.14 (5.00)	5.38 (5.01)	5.80 (5.00)	5.10 (5.00)	4.84 (4.63)	5.20 (4.75)	4.84 (5.00)	5.99 (5.26)	6.52 (5.05)
PPN in foreign currency (%)	100.0 (100.0)	9.8 (0.0)	100.0 (100.0)	81.8 (100.0)	22.7 (0.0)	100.0 (100.0)	90.2 (100.0)	42.3 (0.0)	100.0 (100.0)
Real total assets (US\$m)	10010 (2581)	23587 (11890)	17693 (3015)	28687 (15992)	41175 (31226)	90365 (92939)	2278 (643)	18242 (10918)	20049 (12274)
LTD RATIO (%)	45.5 (44.5)	51.8 (49.3)	43.9 (49.7)	49.8 (53.3)	54.4 (54.3)	69.1 (67.7)	47.2 (46.7)	68.1 (70.9)	74.3 (81.1)
MVBV	1.34 (1.24)	1.27 (1.19)	2.07 (1.99)	1.24 (1.17)	1.30 (1.23)	1.28 (1.31)	1.39 (1.23)	1.41 (1.27)	1.52 (1.38)
LEVERAGE	.78 (.82)	.81 (.85)	.77 (.78)	.77 (.76)	.71 (.74)	.61 (.61)	.70 (.76)	.73 (.75)	.72 (.77)
Z-SCORE	1.38 (1.20)	1.59 (1.43)	1.81 (1.66)	1.27 (1.25)	1.35 (1.32)	1.58 (1.62)	1.37 (1.37)	1.13 (1.11)	1.02 (.86)
FA RATIO (%)	25.0 (23.4)	22.9 (19.8)	17.2 (18.6)	35.0 (32.0)	32.8 (27.2)	38.7 (28.8)	34.2 (29.1)	48.1 (36.2)	57.1 (48.4)

^a Syndicated loans and bank guaranteed public issues.^b Eurobonds.^c Foreign bonds.

the sample of Chinese and Thai firms which relied exclusively on bank debt. In contrast, the results for the flotation costs, agency conflict, and renegotiation and liquidation hypotheses exhibited little sensitivity to these alternative treatments.

(c) Keiretsus and Debt Choice

In light of the parameter instability across Japan and non-Japan, we examined whether keiretsu affiliation affects debt choice. Japanese firms were identified as: (i) belonging to a horizontal or financial keiretsu (220 observations); (ii) belonging to a vertical or industrial keiretsu (178 observations); or (iii) being independent (197 observations).³⁸ The characteristics of the firms and debt issues of each of the three groupings are summarised in Table VIII. Whereas keiretsus are more dominant in the Eurobond market, independent firms are more heavily represented in the syndicated loan and foreign bond markets. Moreover, vertical keiretsus are larger

³⁸ The keiretsu data is obtained from Dodwell Marketing Consultants (1997).

TABLE IX
Variable Coefficient Logit Regression Result with Japanese Keiretsu
Decomposition^{a,b,c} (REG 13, $N = 871$)

Independent Variables	Non-Japan	Horizontal keiretsu	Vertical keiretsu	Independent firms
CONSTANT	-7.395 (-1.99)**	-12.184 (-2.67)***	-11.209 (-1.30)	-18.139 ^{###} (-3.60)***
In (ISSUE SIZE)	0.530 (3.44)***	0.511 (2.03)**	0.627 (2.14)**	0.430 (1.42)
In (FIRM SIZE)	0.180 (1.19)	1.160 ^{###} (4.09)***	0.809 (1.84)*	1.818 ^{###} (5.02)***
UNEXP EAR	-0.702 (-0.35)	4.055 (0.87)	3.419 (0.36)	-2.326 (-0.43)
LTD RATIO	0.220 (0.33)	1.029 (0.59)	2.981 (1.10)	2.474 (1.81)*
MVBV	-0.531 (-1.63)	-0.438 (-0.66)	1.733 (1.01)	-0.390 (-0.58)
FA RATIO	-1.128 (-1.57)	1.088 (0.52)	-3.243 (-0.88)	-2.140 (-1.49)
Z-SCORE	-0.299 (-1.56)	-0.045 (-0.12)	-1.284 (-0.98)	1.320 ^{##} (1.67)*
LEVERAGE	-1.202 (-1.17)	-6.076 [#] (-2.45)**	-5.870 (-1.44)	-7.668 ^{##} (-3.23)***
GOVT INTEG ^d	0.639 (1.02)	0.639 (1.02)	0.639 (1.02)	0.639 (1.02)
ENFORCE ^d	0.025 (0.17)	0.025 (0.17)	0.025 (0.17)	0.025 (0.17)
PRLTD/GDP ^d	24.114 (1.87)*	24.114 (1.87)*	24.114 (1.87)*	24.114 (1.87)*
Indonesia	3.349 (2.54)**			
Malaysia	0.114 (0.12)			
Philippines	3.356 (2.44)**			
Singapore	0.756 (0.76)			
South Korea	-0.273 (-0.22)			
Taiwan	0.986 (0.83)			
Summary statistics				
Log likelihood	-290.51			
Correct predictions	85.76%			
Wald (HOR = non-Japan)	13.58*			
Wald (VER = non-Japan)	5.46			
Wald (IND = non-Japan)	25.31***			
Wald (HOR = VER)	6.01			
Wald (HOR = IND)	8.97			
Wald (VER = IND)	9.56			

^a t statistics in parentheses.

^b ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.

^c ###, ##, # indicate a significant difference between the non-Japan and keiretsu type coefficients at 1%, 5%, and 10% levels, respectively.

^d The coefficients for non-Japan and keiretsu type are constrained to be equal.

in terms of firm and issue size in each debt type. In Eurobond and foreign bond markets horizontal keiretsus and independent firms are of similar size whereas independent firms are smaller in the syndicated loan market.

The variable coefficient model of debt choice was then modified with the JAPAN indicator variable being replaced by three indicator variables, HOR for horizontal keiretsus, VER for vertical keiretsus, and IND for independent firms. Estimated parameters of the logit model for non-Japan, horizontal keiretsus, vertical keiretsus, and independent firms are summarised as REG 13 in Table IX (the # on a coefficient indicates that it is significantly different from that of non-Japanese firms). As in the logit REG 7 of Table V, it is primarily the firm size and leverage variables that account for much of the parameter instability across non-Japanese firms and the keiretsu classifications, with the choice of debt type by Japanese firms being more sensitive to changes in firm size and leverage than for non-Japanese firms.

The summary statistics include Wald Chi-squared statistics for whether the coefficients of each keiretsu classification are jointly significantly different from those of non-Japan firms and whether they are different from those of the other keiretsu classifications. Parameter estimates of independent Japanese firms are found to be significantly different at the 99% level from those of non-Japan, while horizontal keiretsu firms are significantly different at the 90% level. Furthermore, we cannot reject the null of equality of parameters across horizontal keiretsus, vertical keiretsus, and independent firms. Thus our results reinforce the findings of Anderson and Makhija (1999) that balance sheet debt type ratios are insensitive to keiretsu associations. Moreover, the tests also suggest that the instability of debt choice parameter estimates across Japan and non-Japan is not attributable to the role of the keiretsu in Japan.

VI. CONCLUDING COMMENTS

The determinants of debt choice are of considerable interest to theoreticians and practitioners in corporate finance and banking. Our paper contributes to that literature by using incremental data to examine the debt choice decision in the context of international bond and syndicated loan markets, and by using a sample of firms drawn from countries that, with the exception of Japan, have limited access to medium-term domestic bond markets. While focusing on hypotheses relating to flotation costs, agency conflicts, and renegotiation and liquidation that are common to U.S. studies, we also draw on research into the determinants of financial development which suggests the need to control for legal and institutional factors that may contribute to cross-country differences in debt choice.

There are differences in results depending on the use of logit or ordered logit models. While the estimates of both models are stable over time, there are significant differences in the determinants of debt choice across Japanese and non-Japanese firms, with the ordered logit model producing stronger results for

non-Japan, and somewhat weaker results for Japan, than the logit model. Generally the results are consistent with prior U.S. studies of the choice of debt type with support for the flotation cost, agency cost, and renegotiation and liquidation hypotheses. There is general support across both Japan and non-Japan for the hypothesis that scale economies associated with flotation costs increase the probability of making a public issue, and for the renegotiation and liquidation hypotheses with the higher the probability of financial distress the greater the likelihood of obtaining a syndicated bank term loan in international debt markets. There is also some support for Diamond's hypothesis (1984, 1991) that agency costs associated with moral hazard problems in the borrower/lender relationship may be limited by active monitoring by a bank lender. However, while non-Japanese firms with extensive growth opportunities resolve the associated agency costs by using bank debt, such a relationship is not observed for Japanese firms. On the other hand, borrower reputation is a significant determinant of debt choice in Japan, with more reputable borrowers having a higher probability of choosing an international bond issue, but not for the other Asian countries. Jointly these results are consistent with Diamond's analysis (1991) in which reputation substitutes for the role of bank monitoring in limiting moral hazard problems. For Japanese borrowers, reputation substitutes for bank monitoring.

With only 8 countries in the sample, and Japan comprising two-thirds of the sample, care needs to be taken in interpreting the results of the cross-country controls. Moreover, the results exhibit sensitivity to the inclusion of country of domicile controls. Subject to these reservations, we find a significant positive relationship between the relative development of domestic private long-term debt markets and the probability of accessing the international bond markets. This relationship is inconsistent with the hypothesis that large borrowers access the international bond markets because of poorly developed domestic bond markets. Rather, it is suggestive of borrowers moving between domestic and international bond markets (and/or between the domestic bank loan market and the international syndicated loan market) to avoid domestic regulatory burdens and/or to obtain contract features not available in domestic markets such as foreign currency denomination loans or cheaper finance.

A unique aspect of the study is its consideration of the influence of keiretsu affiliation on debt choice. Although Cai *et al.* (1999) find that the sensitivity of the maturity of Japanese domestic straight bond issues to bank monitoring is dependent on keiretsu affiliation, our results indicate that there is no significant difference in the determinants of debt choice across independent firms, members of horizontal keiretsus, and members of vertical keiretsus. Moreover, the instability of the model across Japan and non-Japan remained, with the model for independent Japanese firms and horizontal keiretsus being significantly different from that of non-Japanese firms.

A disappointing aspect of the results was that we could not find a consistent relationship between the measures of legal and political risk and the choice of

debt type. Indeed the relationships exhibited considerable instability depending on whether China and Thailand are included in the sample and on the use of country of domicile controls. Thus, a major extension of the research reported in this study would be to extend the study beyond Asia to create a larger sample from a more diverse group of countries. Such an extension would enhance cross-country variability in the data and allow greater confidence in the results relating to the effects of corruption, legal rules, and financial development on debt choice. It would also allow alternative analyses of the observed cross-country parameter instability.

APPENDIX

TABLE X
Data Definitions

Variable	Description	Source
PUBLIC	Equal to unity if a public debt issue defined as either a Eurobond or International Bond. Equal to zero if a private debt instrument defined as a syndicated term loan or a bank guaranteed international bond.	IFR
ORDPUBLIC	Equal to two if a foreign bond, unity if a Eurobond, and zero if a syndicated term loan or a bank guaranteed international bond.	IFR
ISSUE SIZE (USD million)	The real issue amount of all tranches in the issue deflated by the U.S. CPI index with 1995 = 1.	IFR
FIRM SIZE (USD million)	Defined as the real total assets of the firm converted to U.S. dollars and deflated by the U.S. CPI index with 1995 = 1.	Global Vantage & Compact D
UNEXP EAR	Unexpected earnings, defined as $(EPS(t+1) - EPS(t))/SP$ where EPS is earnings per share and SP is the share price at period t.	Global Vantage & Compact D
LTD RATIO	The ratio of long-term debt, LTD, to total debt, TD.	Global Vantage & Compact D
MVBV	Market-to-book ratio, defined as $(TA + MKVALF - CEQ)/TA$ where TA is the book value of total assets, MKVALF is market value of the firm at fiscal year end, and CEQ is total common equity.	Global Vantage & Compact D
FA RATIO	The fixed asset ratio defined as net property, plant, and equipment divided by total assets.	Global Vantage & Compact D
Z-SCORE	Defined as $(3.3*EBIT/SALES + 1*SALES/TA + 1.4*RE/TA + 1.2*WC/TA)$, where EBIT is earnings before interest and taxes, RE is retained earnings, and WC is working capital.	Global Vantage & Compact D
LEVERAGE	Defined in book value terms as the ratio of $(TA - CEQ)/TA$.	Global Vantage & Compact D

TABLE X—*Continued*

Variable	Description	Source
POL STABILITY	Country credit risk rating out of 100. Based on perceptions of the international banking community, with higher scores indicating greater credit worthiness and therefore greater political stability.	Institutional Investors Country Credit Risk Rating
GOVT INTEG	Score ranges from 0 to 6, with lower scores indicating that government officials are likely to demand special payments.	ICRG
LAW & ORDER	Degree to which the citizens of a country accept established institutions to make and implement laws and adjudicate disputes. Ranges from 0 to 6.	ICRG
REPUDIATION	Risk that foreign business, contractors, and consultants face of a government modifying a contract, taking the form of a repudiation, postponement, or scaling down of the contract. Ranges from 0 to 10.	ICRG
ENFORCE	Defined as $REPUDIATION + (10/6) * LAW \& ORDER$. Ranges from 0 to 20, with higher scores indicating greater enforcement.	ICRG
CREDRITS	A measure of creditor rights, ranging from 0 to 4.	La Porta <i>et al.</i> (1998)
PRLTD/GDP	Private primary long term domestic debt issued to GDP.	World Bank

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