

The Costs, Wealth Effects, and Determinants of International Capital Raising: Evidence from Public Yankee Bonds¹

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This paper examines the costs, wealth effects, and determinants of international capital raising for a sample of 260 public debt issues made by non-U.S. firms in the Yankee bond market. We find that investors demand economically significant premiums on bonds issued by firms that are located in countries that do not protect investors' rights and do not have a prior history of ongoing disclosure. The results provide support for the literature that suggests better legal protections and more detailed information disclosure increases the price investors will pay for financial assets. *Journal of Economic Literature* Classification Numbers: F3, G1. © 2002 Elsevier Science (USA)

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1. INTRODUCTION

Over the past decade, there has been remarkable growth in public debt offerings in the United States by foreign firms. These issues, known as *Yankee bonds*, provide a major source of external capital for non-U.S. firms and play an important role in the development of international capital markets. In 1998 alone, overseas firms raised over \$51 billion in public bonds in the United States, a greater than tenfold increase from 1988. Equity issues by foreign firms in the United States, while the focus of much attention, have not raised nearly this amount of capital. Therefore, in this paper, we provide an empirical exploration of this important yet relatively unexamined market.

The Yankee bond market provides a rich setting to investigate a number of issues. One issue is the pricing of Yankee bonds. Recent research argues that legal protections and information disclosure should affect the price investors are willing to pay for securities. Firms issuing Yankee bonds come from a wide range of countries with large differences in legal and information environments. Therefore, the Yankee bond market allows us to measure the impact of legal protections and information disclosure on asset prices. Another issue that the Yankee bond market can provide insights into is the stock price impact of offshore capital raising. While the shareholder wealth effects of U.S. domestic security offerings are well studied, far less is known about the impact of raising capital outside a firm's local market. Finally, since foreign firms have other markets available to issue their bonds in, the Yankee market also provides a natural setting to investigate why foreign firms choose a particular market to raise debt capital and how relative interest costs drive the decision.

The first question we address is how Yankee bonds are priced. Investors are, in general, less likely to be familiar with foreign issuers and more uncertain regarding the protection of their rights. We recognize this in our analysis of Yankee bond pricing in order to measure the effects of country- and firm-specific factors that have been argued to affect how investors price risk. We are motivated by the numerous studies that link capital market development with country-specific legal institutions (La Porta *et al.*, 1997, 1998, 2000). This literature suggests that the level of capital market development is positively related to the extent that investor's rights are protected. Protection is defined not only by the rights written into laws and regulations but also by their enforcement. In this view, securities laws, judicial systems, and disclosure requirements that better protect creditor rights should increase the price investors are willing to pay for securities. By focusing on individual bond issues, we abstract away from the potential problems of market-level studies raised by Rajan and Zingales (1998). They argue that cross-country differences in industrial composition can cause a spurious relationship between external finance and investor protections. Using individual bonds also allows us to control for risk when measuring the effects of legal protections, a point emphasized by Lombardo and Pagano (2000). In addition to legal protections, information availability may affect the pricing of Yankee bonds. Differences in accounting

standards, disclosure requirements, cultures, and languages may serve to increase the information asymmetry between U.S. investors and foreign borrowers. If investors require a premium for this uncertainty, firms may benefit from actions that certify they will act in the interest of U.S. investors (Coffee, 1999; La Porta, 2000; Stulz, 1999). Our analysis of Yankee bond pricing allows us to provide new evidence on the impact of information disclosure and legal protections on asset prices. Our findings also have important policy implications when viewed as a measure of the costs that countries with poor investor protections impose on their firms.

The next question we investigate is whether issuing Yankee bonds increases shareholder wealth. In addition to measuring the benefits to shareholders from the issuance of Yankee bonds, our findings add to recent research that examines the wealth effects of issuing securities outside a firm's domestic market. For debt securities, Eckbo (1986) finds that on average straight debt offerings by U.S. firms have nonpositive price effects. However, Kim and Stulz (1988) find a positive market reaction to Eurobond offerings issued by U.S. firms. For equity securities, Kang *et al.* (1995) report positive and significant abnormal returns to offshore warrant bond issues of Japanese firms. This result contrasts the significant negative stock price reaction for U.S. equity-linked issues. In a study of U.S. firms raising equity capital abroad, Chaplinsky and Ramchand (2000a) find the stock price reaction is less negative for these offshore issues than for comparable domestic issues. Therefore, our analysis adds to the literature by examining the stock price reaction to offshore debt offerings made by non-U.S. firms.

The last question we investigate is why foreign firms choose a particular market to raise capital and how relative interest costs drive the decision. We explicitly model the joint determination of interest costs and market choice (Yankee versus Euro) using a switching regression model with endogenous switching. In this way, we construct a unified framework in which the determinants of interest costs and the choice of market are jointly estimated.

Using a sample of 260 Yankee bonds from 16 countries, we find that investors require economically significant premiums for bonds issued by firms located in countries with poor investor protections. For example, moving from a country such as Mexico that has relatively weak creditor protections and legal systems to a country such as the United Kingdom that has relatively strong laws and enforcement decreases the annual yield spread of public corporate bonds by 58 basis points, *ceteris paribus*. Our results also show that investors demand premiums on the bonds of first-time issuers. We find that public borrowing costs are lowered by 41 basis points when a firm has listed or issued public securities in the United States prior to the debt offering. This reduction in public borrowing costs exists for both prior public debt issues (Yankee bonds) and prior stock cross-listings (American Depositary Receipts (ADRs) or direct listings), and is largest in non-investment-grade securities. Overall, our results provide support for the literature that suggests better legal protections and more detailed information disclosure increase the price investors will pay for financial assets, *ceteris paribus*.

We also find positive and significant abnormal returns around the announcement of a Yankee bond issue, providing evidence that shareholders benefit from raising public debt in the United States. While the positive wealth effects stand in contrast to the nonpositive reaction found for U.S. firms issuing public debt in the United States, our event study results on Yankee bond issues add to recent work that finds offshore equity issues are found to have larger stock price reactions than domestic equity offerings by U.S. firms. We also find that the stock price reaction is largest for first-time issuers, consistent with the hypotheses that issuing or listing in the United States signals quality (Stulz, 1999; Cantale, 1998; Fuerst, 1998), widens the firm's investor base (Merton, 1987), or both.

Finally, we find that one of the main factors that influences where a firm sells bonds is the relative interest costs between markets. Firms tend to issue in the Yankee market when the relative interest cost in the Yankee market is low, indicating that potential differences in borrowing costs influence where firms choose to sell bonds. This finding is consistent with the results of Kim and Stulz (1988) who find that potential borrowing costs are an important factor driving firms to issue bonds outside their home market. In a test of this clientele hypothesis, they show that shareholder wealth is increased for Eurodollar bond offerings by U.S. firms when the domestic and Euro interest cost spread is largest.²

The remainder of the paper is organized as follows. Section 2 gives an overview of the Yankee bond market, while Section 3 describes the data set used in the paper. Section 4 examines the effects of country-specific legal institutions and firm-specific factors on public debt costs, and Section 5 investigates the stock price reaction to a Yankee bond offering. Section 6 examines how relative interest costs influence the decision to issue Yankee bonds, and a summary is given in Section 7.

2. THE YANKEE BOND MARKET

Yankee bonds were first issued in the early 1900s as a means for overseas borrowers to raise capital in the United States. The Yankee bond market is comprised of foreign domiciled issuers who register with the SEC and borrow dollars for delivery in the United States using a U.S. syndicate to underwrite the issue. One defining feature of the Yankee market is the level of registration and disclosure requirements. Foreign domiciled issuers of Yankee bonds must adhere to similar regulations as U.S. firms, namely the U.S. Securities Act of 1933 and the Exchange Act of 1934. Therefore, Yankee bonds must be registered bonds, with the owner's name recorded by the issuer. In addition, the issuer must provide a prospectus disclosing detailed financial information that often is more extensive than required in its home country. The regulations can result in increased costs, add time needed

² For evidence on the yield differential between the U.S. domestic and Eurodollar market, see Finnerty *et al.* (1980), Finnerty and Nunn (1985), Finnerty (1985), Kidwell *et al.* (1985), Mahajan and Fraser (1986), and Kidwell *et al.* (1987).

to bring the issue to market, and disclose information that the issuer would like to keep confidential.

While the Yankee bonds afford U.S. investors some protections that they would not receive if they bought bonds issued by foreign firms in their local market, it is important to note that they do not grant investors the same rights as when they invest in the bonds of U.S. corporations. Both La Porta *et al.* (2000) and Kim and Stulz (1988) note that there are limitations of this opt-in (cross-listing) mechanism, particularly in the case of creditor rights. For example, the enforceability of the bond indentures first requires the determination of what laws apply and what court is to be used. In addition, assets located in a particular country generally remain under the jurisdiction of that country's laws. Therefore, when a claim has been settled, collection may depend on the amount of assets the foreign firm has in the United States. These limitations render the firm's home market legal environment relevant to U.S. investors.

Yankee bonds have several potential advantages for overseas firms seeking to raise new capital. Outside the United States, domestic public bond markets have not been a major source of external firm financing (Fabozzi, 2001; Giddy, 1994). Many countries have discouraged private-sector bonds in favor of bank loans or equity financing. For example, before 1980 Japanese firms were prohibited from raising debt in domestic public markets. Until very recently, Japanese firms still faced many constraints on public bond issuance. These included a time-consuming queuing system, fixed underwriting fees, fixed pricing systems, and strict limits on what types of firms may issue. Even in countries without significant government restrictions on debt issues, the demand for anything other than short- to medium-term investment-grade debt has been low.³ Therefore, the Yankee bond market provides non-U.S. firms an avenue for raising public debt that is often unavailable in their own domestic market. By adhering to the regulations of the U.S. market, foreign issuers can benefit from access to the largest and most liquid of the world's bond markets. Life insurance companies and pension funds are major investors in U.S. corporate bonds and have historically purchased long-term debt instruments to match their long-term liabilities. Therefore, the Yankee market provides an opportunity for foreign borrowers to arrange long-term financing, which is uncommon in most non-U.S. domestic and offshore bond markets (Karolyi and Johnston, 1998).

While Yankee bonds were first issued in the early 1900s, the market has experienced dramatic growth over the past decade. Figure 1 shows the history of capital raised in the United States by foreign firms, including public debt (Yankee bonds), public equity (ADRs or direct offerings), and privately placed debt (foreign 144a bonds).⁴ One striking feature is the dramatic increase in the amount of capital raised by all forms of securities. For example, Yankee bonds increased from

³ See Jacquie MacNish, Canadian firms crack U.S. junk bond market, *The Globe and Mail Report on Business*, July 11, 1994, pp. B1, B3.

⁴ 144a refers to SEC Rule 144a that governs secondary trading in privately placed securities.

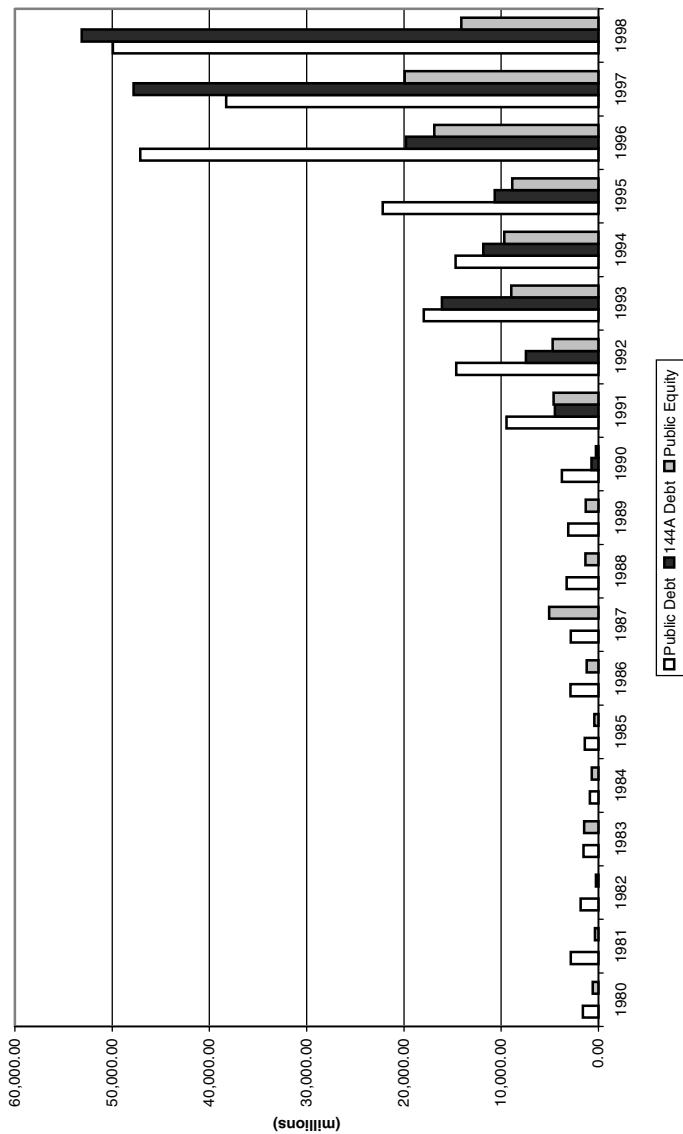


FIG. 1. Capital raised in the United States by foreign firms, 1980–1998. This chart presents total public debt, 144A debt, and public equity issued in the U.S. market by non-U.S. firms. The data are for non-U.S. financials, industrials, and utilities in the U.S. market. The data exclude U.S. and supranational issuers as well as issuers with U.S. parents. Data source is the *New Issues* database of Securities Data Company.

\$3.2 billion in 1988 to almost \$50 billion in 1998. We also see that the volume of equity offerings does not reach the volume levels of debt, either public or private.

Figure 2 compares the public debt raised by non-U.S. firms in the United States and the Eurobond markets. The Eurobond market is the largest market for non-U.S. firms to raise public corporate debt. Eurobonds are bonds that are issued and traded outside the jurisdiction of any single country. Eurobonds are issued in different currency denominations, but bonds issued in U.S. dollars (Eurodollar bonds) have been historically the largest single component of the market. While the first Eurodollar bond was issued in 1963, Fig. 2 shows that their use as a major international capital-raising tool has been a recent phenomenon. By 1998, the volume of public corporate debt issued by foreign firms in the Yankee market was approximately one-sixth of that raised in the Eurobond market (\$49.9 billion versus \$296.3 billion). If we consider only dollar-denominated Eurobonds, the Yankee market was approximately one-half the size of the Eurodollar market in 1998 (\$49.9 billion versus \$94.8 billion).

Table I provides additional information on the composition of the Yankee market. Financial corporations have been the most predominant Yankee issuers, followed by industrial corporations and utilities. Canadian firms have historically issued a majority of the bonds in the Yankee market, but have recently been overtaken in terms of volume by European firms. Issues by Asian and Latin American firms also have increased substantially in volume during the 1990s. Table I also shows that while the Yankee market has been dominated by investment-grade securities, there also exists substantial volume in high-yield bond issues (24% over the 1992–1995 period).

3. THE DATA

Our sample consists of 260 fixed-rate corporate Yankee bonds issued by firms domiciled outside the United States from 1987 to 1998. We use Securities Data Corporation, Inc. (SDC) as our primary source to select our sample and obtain issue characteristics. The characteristics necessary to compute the issue yield (offer price, coupon payments, and maturity) must be identifiable from SDC to be included in the sample. We compute the yields of the bonds given the bond details from SDC and cross-check our computed yields with those given by SDC. We exclude issues by financials, sovereigns, and supranationals as well as issues with conversion features or variable-rate coupons. We use the credit rating of Moody's whenever it is available and use the Standard and Poor's (S&P) rating in the few cases where only an S&P rating was available. All the corporate Yankee bonds are denominated in U.S. dollars.

We obtain other details about our bond issues, such as date of issuance, the size of the issue, presence of call or sinking funds provisions, and seniority from SDC. SDC data also allow us to determine if a particular issue was the firm's first Yankee debt issue in the United States. After talking with SDC officials, we found that the

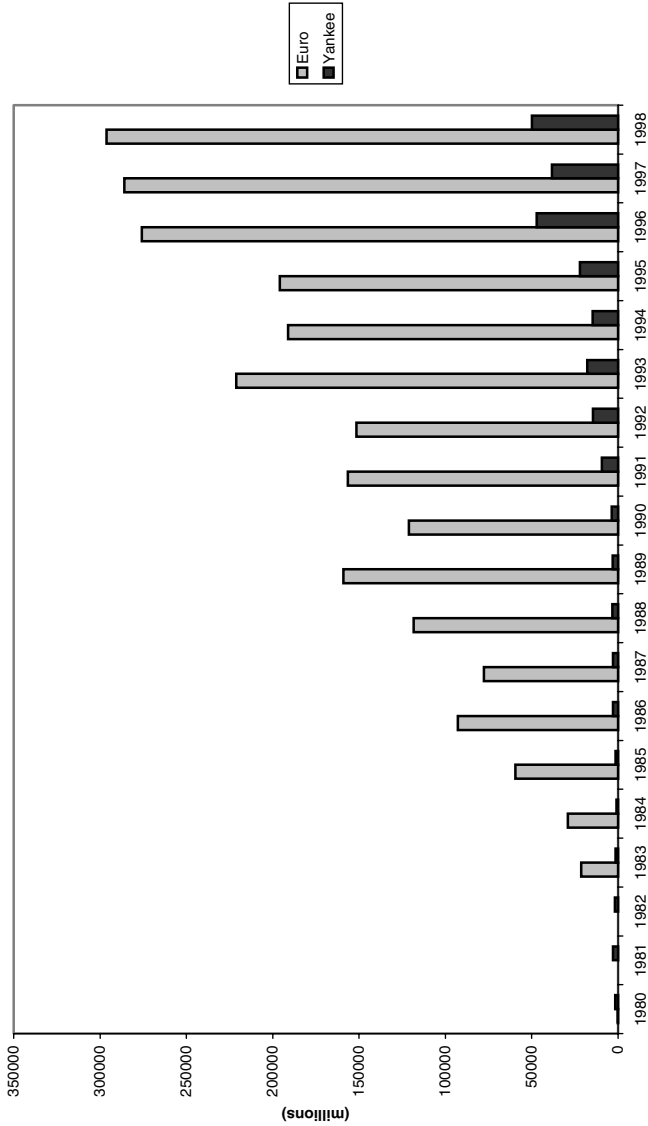


FIG. 2. Comparison of capital raised by foreign firms in the Yankee and Euro markets, 1980–1998. This chart presents total public debt issued in the United States and Euro markets by non-U.S. firms. The data are for non-U.S. financials, industrials, and utilities. The data exclude U.S. and supranational issuers as well as issuers with U.S. parents. Data source is the *New Issues* database of Securities Data Company.

TABLE I
Yankee Bond Issues, 1980–1998

Year	Firm location								Investment grade (%)	Industry			Total issuance (\$ mill.)	Total issuance by U.S. firms (\$ mill.)		
	Canada	Europe	Asia	Latin America		Australia/New Zealand		Africa/Mid East		Other	Industrial	Utility			Financial	
1980–1983	6,949	1,110	270	—	134	59	—	—	96	2,584	4,279	1,658	8,522	136,644		
1984–1987	2,907	1,806	2,842	—	682	150	—	—	91	1,487	1,641	5,259	8,386	335,336		
1988–1991	11,725	3,908	3,201	—	1,034	20	—	—	96	2,337	5,836	7,431	19,888	353,196		
1992–1995	27,043	27,097	8,624	4,083	4,217	140	1,019	76	76	32,291	11,661	28,271	72,223	752,352		
1996–1998	24,763	81,869	11,607	6,655	7,363	525	1,531	91	91	28,667	12,923	92,721	134,311	836,555		
Total	73,387	115,789	26,545	10,738	13,430	894	2,550	87	87	67,366	36,340	135,339	243,329	2,414,083		

Source. *Securities Data Corporation*.

Note. Yankee bonds are defined as public bonds issued by non-U.S. firms in the U.S. market. Securities include straight and convertible debt. Firm location “Other” refers to firms from the Cayman Islands or Bermuda.

last digit of the SDC firm identifier for a particular firm may change over time. Hence, to check whether an issuer had a previous Yankee debt issue, we use a truncated SDC identifier for matching purposes. The SDC database does not give us all the information necessary to determine which companies had previously listed equity in the United States. For this purpose, we augment the information that SDC compiles on equity offerings in the United States with information on foreign firm cross-listings (non-capital raising) supplied from the Center for Research in Security Prices tapes and from information provided by the Bank of New York.

Table II provides summary characteristics of the sample by years, location of issuer, broad industries, and sample statistics. The sample consists of 260 Yankee

TABLE II
Frequency Distribution of Yankee Bonds Made by Non-U.S. Firms, 1987–1998

	Number	Percentage
A. Offering year		
1987–1989	10	3.8
1990–1992	43	16.6
1993–1995	88	33.8
1996–1998	119	45.8
Total	260	100.0
B. Firm location		
Asia	24	9.2
Canada	151	58.1
Europe	53	20.4
Latin America	32	12.3
Total	260	100.0
C. Industry distribution		
Communications	32	12.3
Manufacturing	97	37.2
Mining, construction, and agriculture	64	24.5
Utilities	41	15.7
Transport, trade, and services	27	10.3
Total	260	100.0
D. Summary statistics		
Issue size (\$ millions)	214.80	
Years to maturity	14.51	
% of issues that are investment grade	74.62	
% of issues with Call provisions	32.31	
% of issues with Sinking Fund	1.92	
% of issues of Subordinated debt	3.8	
% of issues with a prior U.S. equity cross-listing	59.2	
% of issues with a previous U.S. public debt offer	48.1	
% of issues with a prior U.S. offering	74.6	

Note. Yankee bonds are defined as public bonds issued by non-U.S. firms in the U.S. market. All issues are fixed-rate corporate bonds denominated in U.S. dollars.

bond issues from 16 countries. The increasing frequency of Yankee issues is evident from Panel A: 10 issues are found in the first three years of the sample compared to 119 in the past three years. Panel B shows that Canadian firms (151) were the most frequent issuers over our sample period, followed by Europe (53), Latin America (32), and Asia (24). Panel C shows that issuers are from different industries and there is no evidence of concentration in any particular industry. Manufacturing (97), Communications (32), Utilities (41), Mining, Construction, and Agriculture (64), and Transport, Trade, and Services (27) is the broad industry breakdown of the sample. Panel D gives some sample statistics. The mean years to maturity of the sample is 14.5 years and mean issue size is \$214.8 million. Investment grade issues comprise about 75% of our sample. About 59% of issues had a prior U.S. equity cross-listing and 48% had a previous public debt offer. About 75% of the sample had either a prior equity cross-listing or a previous public debt offer.

4. YANKEE BOND PRICING

In this section, we focus on Yankee bond pricing to measure the effects of investor protections and information disclosure on bond prices. We follow previous studies that suggest the yield on new issues of public debt can be determined by default risk, the maturity of the issue, issue size, the presence of call or sinking fund provisions, and general economic conditions at the time of the sale (see, e.g., Ederington, 1975; Kidwell *et al.*, 1985; and Blackwell and Kidwell, 1988). We examine the determinants of bond pricing using multivariate models that employ the at-issue yield spread as the dependent variable.⁵ The yield spread is calculated as the difference between the at-issue yield for the Yankee debt offer and the yield of a Treasury bond with similar maturity. When an exact match is not available, we interpolate between the two closest maturity matches. To calculate the bond's yield, we use the net proceeds of the offering (net of underwriting and other issue costs). The independent variables include country- and firm-specific test variables as well as control variables. The model is estimated using the following ordinary least squares regression (standard errors are corrected for heteroskedasticity using White's (1980) procedure):

$$\begin{aligned}
 YLDSPD_i = & \beta_0 + \beta_1 TestVariable(s) + \beta_2 I_{(Aa1, Aa3)} + \beta_3 I_{(A1, A3)} \\
 & + \beta_4 I_{(Baa1, Baa3)} + \beta_5 I_{(Ba1, Ba3)} + \beta_6 I_{(B1, Caa)} + \beta_7 (MAT) \\
 & + \beta_8 (AMT) + \beta_9 PREM + \beta_{10} CALL + \beta_{11} SUB \\
 & + \beta_{12} SINK + \beta_{13} FX + \beta_{14} UTL.
 \end{aligned} \tag{1}$$

The control variables are defined as follows: *YLDSPD*, the yield spread, is calculated as the difference between the at-issue yield for the Yankee debt offer and the yield of a Treasury bond with similar maturity. $I_{(Aaa)}$ is an indicator variable

⁵ Similar results are obtained when the total yield is used as the dependent variable.

denoting the Moody's rating of the issue, equal to 1 if rated Aaa. It is suppressed in the intercept term. $I_{(Aa1,Aa3)}$, $I_{(A1,A3)}$, $I_{(Baa1,Baa3)}$, $I_{(Ba1,Ba3)}$, $I_{(B1,Caa)}$ are indicator variables denoting the Moody's rating of the issue. For example, $I_{(Aa1,Aa3)}$ is equal to 1 if rated Aa1, Aa2, or Aa3; 0 otherwise. $I_{(A1,A3)}$ is equal to 1 if rated A1, A2, or A3; 0 otherwise, and so on. MAT is the natural logarithm of the issue's maturity in years. AMT is the natural logarithm of the dollar size of the net proceeds of the bond issue in millions of dollars. PREM is the difference between the Moody's Aaa seasoned corporate bond yield index and the composite Treasury yield on the offer date. CALL is indicator variable denoting the presence of a call provision: CALL equals 1 if the issue is callable; 0 otherwise. SUB is the indicator variable denoting the presence of subordinated status. SUBORDINATED equals 1 if the issue is subordinated; 0 otherwise. SINK is the indicator variable denoting the presence of a sinking fund feature. SINKINGFUND equals 1 if the issue contains a sinking fund provision; 0 otherwise. FX, the 30-day historical volatility of the United States to home country currency exchange rate. UTL is the indicator variable denoting the firm is in the utility industry; UTIL equals 1 if issue is from a utility company; 0 otherwise.

The control variables account for differences in credit rating, maturity of issue, size of the issue, market risk premium, whether the issue has a call provision, whether the issue is subordinated, and whether the issue has a sinking fund feature. Because these variables have been used in previous studies, we provide only a limited discussion. We expect to find that the yield spread is negatively related to the bond's rating. We included the maturity of the issue to control for any term structure effects in the default premium. The size of the issue may be important if larger offerings have more public information than smaller issues and therefore have less uncertainty. Also, large offerings may enhance future liquidity and hence may have lower yields. The variable PREM is defined as the yield spread between the Moody's Aaa seasoned corporate bond yield index and the composite Treasury yield index and is included to control for general economic conditions at the time of the sale.⁶ From the bondholder's perspective, bonds that are callable have prepayment risk. Therefore, we expect that callable bonds will have higher yield spreads. Similarly, subordinated bonds are riskier than senior debt, so the yield spread of subordinated debt should be higher than that of senior debt. The sign of the impact of a sinking fund is ambiguous: the presence of sinking funds can reduce the default risk of an issue by requiring orderly payment of the principal over the life of the bond; however, sinking funds are likely to be attached to riskier bonds (see Myers, 1977; Smith and Warner, 1979). Since exchange rate movements may affect investors' beliefs about the firms' ability to cover interest payments, the historical volatility of the United States to foreign exchange rate may be positively related to the yield spread (Marr *et al.*, 1989). If utility firms are perceived as lower risk, then investors may require lower spreads on these firms. In addition, other control variables were investigated. We examined additional

⁶ We also used the BBB index and found similar results.

ratings classifications, one using a simple dummy variable for investment grade debt, another assigning increasing numerical values to each rating class, and finally using individual dummies for each rating class. Regressions were performed using the historical mean return of the United States to home country currency exchange rate and the historical volatility of U.S. Treasury rates. In all specifications, the results for the test variables discussed next remain robust.

While specifications similar to ours have been used extensively in the literature, it is important to note that our model has several potentially undesirable features. One is the use of final maturity as a measure of the bond's payment schedule. Given various coupon payments and maturities, duration may better capture the relevant differences in payment schedules. Another is that the pricing equation allows for fixed increases in the yield spread if a bond is callable, subordinated, or has a sinking fund provision. In theory, none of these features have fixed effects on bond yields. Finally, the choice of issuing a Yankee bond may be endogenous in equilibrium. Ignoring this choice could result in a misestimated model due to selection bias. To address the first issue, we use the bond's duration instead of the years to maturity and find our conclusions are unchanged. Next, we remove all bonds that are callable, subordinated, or have a sinking fund provision. Again, our results are robust to this specification. Finally, we address the issue of self-selection by correcting for potential selection bias. We employ Heckman's (1979) correction procedure to control for self-selection bias induced by the firm's decision to issue in the United States. Here, the decision to issue in the U.S. market versus the Euro market is modeled based on purely exogenous factors such as firm and market characteristics. In results not reported here, we find our test variables remain correctly signed and significant. Given the finding that our results are robust with respect to the above-mentioned limitations, we now turn to the model's estimation.

4.1. Investor Protection Test Variables

In general, when creditor rights are protected, investors are willing to pay more for securities (La Porta *et al.*, 2000). Protection includes not only the rights written into laws and regulations, but the effectiveness of their enforcement. U.S. investors buying foreign public debt are likely to face a high degree of uncertainty regarding their legal protection. Therefore, we expect that investors would demand premiums on bonds issued by firms located in countries that do not protect investors' rights. One way we test this hypothesis is to examine firms domiciled in emerging markets. If the firm is domiciled in an emerging rather than a developed market, we expect investors would face a higher degree of uncertainty and price bonds accordingly. Formally:

H1. Ceteris paribus, borrowing costs are higher for firms domiciled in emerging markets.

This proxy is, however, a catch-all for the various problems investors may face regarding bondholder–shareholder conflicts. Therefore, we also examine variables

from La Porta *et al.* (1998) that rank countries' protection of investors' rights. These proxies are motivated by the studies that link capital market development and country-specific legal institutions (see, e.g., La Porta *et al.*, 1997, 2000). The first, creditor rights (CR), is an index aggregating different creditor rights a particular country provides. The index ranges from 0 to 4, with 4 representing the highest protection. One point is added if there is no automatic stay on assets, secured creditors get paid first, there are restrictions on reorganizations, and if management does not stay in reorganizations. At the bottom of the scale are countries such as Mexico, Peru, and France. At the top of the scale are countries such as Hong Kong, United Kingdom, and Singapore. The second, rule of law (ROL), is an index of the law and order tradition of the country. It is scaled from 0 to 10, with higher scores for counties with more tradition for law and order. Countries with the best rule of law include Canada, United States, and the Netherlands, while countries with the poorest include India, Indonesia, and the Philippines. These indices allow an examination into both aspects of creditor protections and rights written into laws (CR) as well as the effectiveness of their enforcement (ROL). We do not include a measure for local accounting standards given firms issuing Yankee bonds must adhere to U.S. reporting standards. Formally:

H2. *Ceteris paribus*, borrowing costs are higher for firms domiciled in countries that have relatively poor creditor rights and weak rule of law.

The remaining La Porta *et al.* (1998) variables, such as the risk of government expropriation and corruption, would seem less applicable in our analysis. However, as a robustness check, we replace our rule of law variable with the Berkowitz *et al.* (1999) legality index. Their legality index is formed from a principal components analysis of the covariance matrix of the five La Porta *et al.* legality variables: Efficiency of the Judiciary, Rule of Law, Corruption, Risk of Expropriation, and Risk of Contract Repudiation. Our results are robust with respect to this specification, and therefore we report specifications using the original rule of law variable.

4.2. Firm-Specific Test Variables

If there is considerable uncertainty regarding the protection of bondholder rights, investors may require premiums for this uncertainty. In this environment, firms may benefit from actions that assure creditors in the United States.

Coffee (1999), La Porta *et al.* (2000), and Stulz (1999) suggest one way foreign firms can certify they will act in the interest of U.S. investors is by cross-listing equity in the United States. La Porta *et al.* (2000) define this opt-in mechanism of listing shares in the United States as an example of the functional convergence of legal systems that improve investor protection.⁷ While Yankee bonds must adhere

⁷ It is important to note that only foreign stock listings on the NYSE, AMEX, or Nasdaq are associated with the high reporting and disclosure requirements. Non-U.S. firms listing over-the-counter or through the 144a market are exempt from the registration requirements of the Securities Act of 1933.

to U.S. reporting requirements, a prior equity cross-listing would imply a history of *ongoing* disclosure prior to the bond issue. In a study of U.S. high-yield bonds, Fenn (2000) provides evidence that this ongoing disclosure is more important than the disclosure associated with the initial securities registration. In addition, cross-listing equity increases analyst coverage and visibility of the firm, which may also increase information availability (Baker *et al.*, 1999). Therefore, the equity cross-listing mechanism can provide Yankee bond investors with valuable firm-specific information.

A second way foreign firms can certify they will act in the interest of U.S. investors is suggested by Diamond (1989). He argues that when there is a high degree of uncertainty in resolving bondholder–shareholder conflicts, firms can benefit from developing a good reputation for repaying creditors. Therefore, foreign firms can assure U.S. investors by issuing debt in the United States. In this view, borrowers deliver on their contracts not because they are forced to, but because doing so builds a good reputation that facilitates future access to capital markets at favorable terms. Another benefit to issuing debt is that once a firm has issued debt in the U.S. market, it is likely to provide credit analysts with relevant information on an ongoing basis (Fenn, 2000).

Therefore, if a good reputation and better information availability are important, investors will, *ceteris paribus*, pay more for the Yankee bonds of firms that had previously issued debt in the U.S. market or cross-listed equity on U.S. markets prior to the Yankee bond offering.⁸ We test this by examining if investors require premiums for first-time issuers. The test variable, prior us offering (PRUS), is a dummy variable that indicates the presence of a previous U.S. public debt or equity listing. Formally,

H3. Ceteris paribus, borrowing costs are lower for firms that have previously issued debt in the U.S. market or cross-listed equity in the United States prior to the Yankee bond offering

⁸ The importance of these two mechanisms to non-U.S. firms is also evident in the financial press. One example from *Euromoney* (June 1993) titled “Why it’s important to get your Yankee issue right” discusses the implications of establishing a firm’s reputation of past borrowing in the United States:

US investors are unfamiliar with many foreign names, and so they have little sense for what rate new borrowers should pay. This offers an opportunity to issuers but also a danger: do the first deal right, and you will establish *credibility and a reasonably low spread for future issues* (emphasis added). Do the first deal wrong, and there may not be a second.

The October 21, 1991 Investment Dealer’s Digest provides an example of the benefits of a prior stock presence in the U.S. prior to the Yankee bond issue:

On the heels of a highly successful stock offering four months ago, Societe Nationale Elf Aquitaine last week tapped the Yankee bond market with another hot deal. The \$300 million 10-year debt issue was the French firm’s first in the U.S. . . . The enhanced visibility afforded by the stock sale made the debt offering much easier, according to CFO Philippe Hustache. “It’s good to be in the US dollar market,” he added.

4.3. Results

Model 1 of Table III shows that controlling for the underlying issue characteristics, the cost of debt is increased by 26 basis points (p -value = 0.06) if the firm is located in an emerging market. Model 2 of Table III examines the effects of the investor protection and information variables on bond yields. We expect to find that

TABLE III
Multivariate Tests of First-Time Issuer Effects

	Model 1 Full sample	Model 2 Full sample	Model 3 Full sample	Model 4 Full sample	Model 5 Full sample	Model 6 Excluding Canada
INTERCEPT	1.9849** (0.00)	2.6903** (0.00)	2.8448** (0.00)	2.4284** (0.00)	2.2136** (0.00)	-0.3793 (0.71)
EMERGING	0.2606* (0.06)					
ROL		-0.0643** (0.04)	-0.0778** (0.02)	-0.0605* (0.06)	-0.04946 (0.22)	-0.0777 (0.14)
CR*ROL		-0.0109** (0.01)	-0.0109** (0.01)	-0.01275** (0.00)	-0.01209** (0.00)	-0.0096* (0.06)
PRUS		-0.4072** (0.00)	-0.2216** (0.03)	—	—	-0.3923** (0.00)
PRUS*J		—	-0.5155* (0.07)	—	—	—
PRYA		—	—	-0.2276** (0.02)	-0.2280** (0.02)	—
PRST		—	—	-0.3513** (0.00)	-0.3541** (0.00)	—
PR144					0.1413 (0.57)	
$I_{(Aa1,Aa3)}$	0.0520 (0.76)	0.0271 (0.90)	0.0240 (0.90)	0.1443 (0.48)	0.2139 (0.37)	0.3541 (0.21)
$I_{(A1,A3)}$	0.2989** (0.00)	0.3389** (0.00)	0.3390** (0.00)	0.5697** (0.00)	0.6286** (0.00)	0.8114** (0.00)
$I_{(Baa1,Baa3)}$	0.5720** (0.00)	0.6313** (0.00)	0.6287** (0.00)	0.8033** (0.00)	0.8516** (0.00)	1.1530** (0.00)
$I_{(Ba1,Ba3)}$	2.2524** (0.00)	2.1615** (0.00)	2.5137** (0.00)	2.3062** (0.00)	2.3536** (0.00)	2.6799** (0.00)
$I_{(B1,Caa)}$	3.6663** (0.00)	3.5644** (0.00)	3.8820** (0.00)	3.7090** (0.00)	3.7433** (0.00)	4.2098** (0.00)
MAT	-0.0733 (0.33)	-0.0277 (0.69)	-0.0278 (0.69)	-0.0053 (0.94)	0.0002 (0.99)	0.0010 (0.99)
AMT	-0.2567** (0.00)	-0.2229** (0.00)	-0.2408** (0.00)	-0.2254** (0.00)	-0.2182** (0.00)	-0.1509 (0.12)
PREM	0.7826** (0.02)	0.9719** (0.00)	0.9161** (0.01)	0.9552** (0.00)	0.9480** (0.00)	0.7920 (0.13)
CALL	0.3964** (0.01)	0.3908** (0.00)	0.3573** (0.00)	0.4244** (0.00)	0.4262** (0.00)	0.3327* (0.05)
SUB	0.5350 (0.13)	0.5713 (0.12)	0.6077 (0.12)	0.5490 (0.13)	0.5515 (0.13)	-1.6870** (0.00)

TABLE III—*Continued*

	Model 1 Full sample	Model 2 Full sample	Model 3 Full sample	Model 4 Full sample	Model 5 Full sample	Model 6 Excluding Canada
SINK	0.7543** (0.00)	0.6672** (0.00)	0.5906** (0.01)	0.6221** (0.01)	0.6218** (0.01)	3.7208** (0.00)
FX	41.00** (0.04)	36.91* (0.05)	35.92* (0.06)	43.25** (0.03)	42.68** (0.03)	49.06 (0.13)
UTL	-0.0877 (0.38)	-0.0843 (0.38)	-0.0984 (0.31)	-0.0487 (0.60)	-0.0361 (0.71)	-0.1271 (0.55)
<i>N</i>	260	260	260	260	260	109
Adj <i>R</i> ²	0.813	0.827	0.832	0.834	0.833	0.850

Note. Regression estimates of yield spread on bond characteristics, market conditions and country variables. Yield spread is the offering yield-to-maturity (on the net proceeds of the offer, after total manager's fees) in excess of the yield on similar maturity treasuries. Emerging dummy is 1 for issues from emerging country firms. Aaa rated bonds are included in the intercept term CR is an index of different creditor rights and ranges from 0 to 4 with 4 indicating best creditor rights. ROL assesses law and order tradition of a country and ranges from 0 to 10 with 10 indicating best rule of law. PRUS is a dummy variable that indicates the presence of a previous U.S. public debt offer or a U.S. equity cross-listing. PRST is a dummy variable that indicates the issuer's stock was listed on a U.S. stock exchange at the time of the bond issue. PRYA is a dummy variable that indicates the presence of a previous U.S. public debt offer. Aaa rated bonds are included in the intercept term. *P*-values (in parentheses) are computed using heteroskedastic consistent variance estimates. * and ** indicate significance at the 1 and 5% levels, respectively.

bonds issued by firms located in countries that provide both strong laws protecting creditor rights and effective enforcement of these laws would be valued highest by investors. Consistent with this hypothesis, we find the coefficients on ROL and CR * ROL to be negative and significant (-0.064 , p -value = 0.01 and -0.0109 , p -value = 0.01, respectively).⁹ We submit this as evidence consistent with La Porta *et al.* (2000) who argue that investor protection laws matter most when they are accompanied by effective enforcement mechanisms. For example, moving from a country such as Mexico that has relatively weak creditor protections and legal systems (creditor rights = 0, rule of law = 5.35) to a country such as the United Kingdom that has relatively strong laws and enforcement (creditor rights = 4, rule of law = 8.57) decreases the annual yield spread of public corporate bonds by 58 basis points.¹⁰ It also is important to note that our tests are potentially biased against finding significant results, since issuing Yankee bonds requires firms to adhere to U.S. reporting standards and give investors the right to sue in U.S. courts. If this has a greater effect on firms located in countries with poor investor protections, our results actually underestimate the costs these countries impose on their firms.

⁹ We use RULE OF LAW as the base case since CREDITOR RIGHTS and the interaction term (CREDITOR RIGHTS * RULE OF LAW) is highly correlated (0.95).

¹⁰ $\{(-0.0643 * 5.35 \pm 0.0109 * 5.35 * 0) - (-0.0643 * 8.57 \pm 0.0109 * 8.57 * 4)\} = -0.581$.

Model 2 of Table III also shows that the coefficient on prior U.S. offering (PRUS) is negative and significant (-0.41 , p -value = 0.00). This indicates that after controlling for the baseline regression and country-level creditor protections, first-time issuers pay a 41 basis point premium. Therefore, investors require premiums both when their rights are not well protected and when they lack critical information regarding issuers. These results are even more striking when viewed in light of the sample composition. The sample firms are predominately developed-market firms issuing high-quality bonds. They would appear to be the least likely to suffer the "neglect" Merton (1987) discusses, yet the market still requires economically significant premiums for the first-time issuers. This would suggest that there is a significant information gap between U.S. investors and first-time foreign issuers, irrespective of the issuer's quality.

If information problems are driving the premium investors charge for first-time issuers, we would expect the premium to be largest in the most information-sensitive securities. Because noninvestment grade issues generally require more analysis and information than do investment grade, the benefit to a prior U.S. listing or issuance should be higher for noninvestment grade securities. Model 3 of Table III shows that for noninvestment grade issues (J), the coefficient on $PRUS * J$ is negative and significant (-0.51 , p -value = 0.07). Model 3 also shows that the coefficient for investment grade issues is again negative and significant, but lower in magnitude (-0.22 , p -value = 0.03). The results are consistent with the hypothesis that investors demand higher premiums for uncertainty in the most information-sensitive securities.

What explains the premium investors require for first-time issuers? To examine this issue, we divide the test variable prior U.S. offering (PRUS) into its two components, previous public-equity issue or cross-listing (PRST) and previous Yankee issue (PRYA). Model 4 of Table III shows that the coefficient on PRYA is also negative and significant (-0.23 , p -value = 0.02). Therefore, a prior public debt offering increases the price investors are willing to pay for a firm's bonds. This is consistent with Diamond's (1989) hypothesis that a prior borrowing history can serve to build a reputation that facilitates future access to capital markets at favorable terms. The finding is also consistent with Fenn (2000) who find a first-time issuer premium in the U.S. high-yield bond market. He argues that in addition to reputation effects, the premium may result from importance of *ongoing* information disclosure that is useful to credit agencies and investors. We also find support of this hypothesis in that the coefficient on PRST is negative and significant (-0.35 , p -value = 0.00). Therefore, our results suggest that ongoing information provided by an *equity* listing is also valued by investors. Overall, the effects appears to be similar for both groups, as we cannot reject the hypothesis that the coefficients are equal (p -value of difference = 0.40). This suggests that it is not just a borrowing reputation that provides investors with valuable information necessary to evaluate bond issues, but also ongoing information disclosure. As further evidence of this finding, we report in Model 5 the effect of a previous

144a debt offering (PR144).¹¹ The coefficient on PR144 is insignificant (0.14, p -value = 0.57). Since bonds privately placed in the 144a market do not have to meet stringent U.S. reporting standards, the results further demonstrate the importance of disclosure in the pricing of Yankee bonds.

4.3.1. Comparison to U.S. Findings and Robustness Checks

To verify the robustness of these results, we performed several checks. Model 6 of Table III excludes the Canadian firms from the sample. We find that the coefficients on the CR * ROL and PRUS are correctly signed and significant. Therefore, the Canadian portion of the sample does not drive the results.¹² While the baseline regression suggested that industry effects are small, we reestimated the model using industry dummies based on two-digit SIC codes: Manufacturing, Transportation, Communications, Utilities, Trade, Services, and Mining, Construction, and Agriculture. In regressions not reported here, we find the test variables remain correctly signed and significant. Finally, we included year dummies to control for time effects. Again, our results remain robust to this specification. Overall, the results provide support for the literature that suggests that better legal protections and more detailed information disclosure increase the price investors will pay for financial assets.

To compare our Yankee bond finding with those reported in the United States, we pooled data from Yankee and U.S. high-yield issues over the 1987–1998 time period. In regressions not reported here, we find the coefficient of a prior debt issue is -0.52 for the Yankee sample versus -0.17 for the U.S. sample (p -value of the difference = 0.06). Hence, the premium for first-time issuers is larger for foreign firms than for U.S. firms, *ceteris paribus*. The U.S. results confirm the work of Fenn (2000) using our 1987–1998 time period. In addition, if our model is well specified, this finding suggests that investor uncertainty is potentially larger for foreign issues than for domestic bond issues.

5. THE STOCK PRICE REACTION TO A YANKEE BOND OFFERING

In this section, we measure the stock price reaction to the announcement of a Yankee bond offering. Our event study provides new evidence on the wealth effects of these international capital-raising instruments.

The sample consists of 90 fixed-rate U.S. dollar-denominated bonds issued in the United States by foreign firms over the period 1988 to 1998. The sample is compiled from data from the SDC database. An issue must have had an identifiable announcement to be included in the sample. In addition, data on the underlying stock in the home country are required starting 125 days before the announcement

¹¹ Twenty-seven firms had a prior 144a debt offering.

¹² If the CREDITOR RIGHTS AND RULE OF LAW are used linearly (as in Model 3, Table III), the coefficients are -0.1042 (p -value = 0.03) and -0.0810 (p -value = 0.17), respectively.

TABLE IV
Sample Characteristics for 90 Yankee Bond Offerings, 1988–1998

Issuer region	Year of issue		Maturity		Issue size (\$mill)		
Asia	14	1988	2	Mean	14.0	Mean	274.44
Canada	57	1989	2	Median	10	Median	200
Europe	10	1990	0				
Latin America	7	1991	6	Rating			
Other	2	1992	11	(% investment Grade)			
		1993	8	Mean	64.4		
		1994	12				
		1995	13				
		1996	16				
		1997	13				
		1998	7				

Note. Yankee bond offerings are defined as public, straight debt securities issued by non-U.S. firms in the United States. Sample statistics are obtained from Securities Data Company, Lexis-Nexis, and Datastream.

date.¹³ Return data for each stock as well as the corresponding national market index are compiled from the Datastream International database. We follow Miller (1999) and collect announcement dates from the Lexis–Nexis database. Table IV offers information about the home country of the Yankee issuer, year in which the issue was made, maturity of the issue, size of the issue, and rating of the issue. As with our yield analysis sample, a majority of this sample is comprised of firms from Canada, and the issues tend to occur in the latter part of the sample period.

5.1. Estimates of the Stock Price Reaction

To measure abnormal returns, we estimate a market model for each firm using local currency daily returns converted to U.S. dollar returns using daily exchange rates. Similar results are found using local currency returns. As a proxy for the market return, we use a market capitalization-weighted index for each country from *Datastream*.¹⁴ Abnormal returns are then averaged across firms to form the average abnormal return. Tests of significance are conducted using standardized abnormal returns (Brown and Warner, 1985).

Panel A of Table V presents average abnormal returns surrounding the announcement of a Yankee bond offering. Foreign firms announcing a public bond offering in the United States experience positive and significant abnormal returns. For day -1 to $+1$, the average abnormal return is 0.80% (p -value = 0.01). These results stand in sharp contrast to the results for public debt offerings by U.S. firms

¹³ Lack of announcement dates and return data reduced the sample from 260 to 90 firms.

¹⁴ To verify the robustness of the results, various methodologies are employed to calculate abnormal returns. The results are robust to changes such as currency denomination (e.g., local or U.S. dollars) and market index (e.g., local or Datastream World Market index).

TABLE V
Stock Price Reaction to the Announcement of 90 Yankee Bond Offerings

Sample classification (N)	$t = -25$ to -2	$t = -1$ to $+1$	$t = +2$ to $+25$
A. Full sample			
Full sample (90)	-0.70%	0.80%***	-0.48%
B. First-time issuers			
Previous issue (67)	-0.19%	0.56%**	-0.33%
First-time issue (23)	-2.17%	1.52%**	-0.92%
C. Geographical location			
Developed (73)	-0.77%	0.63%**	-0.27%
Emerging (17)	-0.39%	1.54%**	-1.39%*
Canada (57)	-0.52%	0.46%*	-0.36%
Non-Canada (33)	-1.01%	1.40%**	-0.70%

Note. Abnormal returns are market model adjusted using parameters estimated over a 125-day period, from day -150 to -26 relative to the announcement of date. A national stock market index in each country is used as a proxy for the market portfolio. The sample period is 1988 to 1998. *, **, and *** indicate significance at the 1%, 5%, and 10% levels, respectively.

in the United States. For example, Eckbo (1986) finds that on average straight debt offerings by U.S. firms have nonpositive price effects.

Our results, however, are consistent with Kim and Stulz (1988) who find a positive market reaction to Eurobond offerings issued by U.S. firms. In addition, Kang *et al.* (1995) report positive and significant abnormal returns to offshore warrant bond issues of Japanese firms. This result contrasts the significant negative stock price reaction for U.S. equity-linked issues. In a study of U.S. firms raising capital abroad, Chaplinsky and Ramchand (2000a) find the stock price reaction is less negative for these offshore issues than for comparable domestic issues. Further, Gande (1996) and Miller (1999) report positive announcement returns for public equity issues of depositary receipts (DRs). Because their samples include capital-raising initial dual listings, they are a joint test of the stock price effects of equity issuance as well as international market segmentation. Nonetheless, they find a positive stock price reaction to public equity offerings in the United States by foreign firms. Therefore, our positive stock price reaction to a Yankee bond offering appears to be consistent with recent research on securities issues outside a firm's domestic market. Overall, our results suggest that issuing Yankee bonds is associated with an increase in shareholder value.

We next examine potential explanations for the positive stock price reaction to the announcement of a Yankee bond issue. Stulz (1999), Cantale (1998), and Fuerst (1998) argue that issuing securities in a high disclosure environment is a signal of firm quality. They reason that issuing public securities in the United States is costly, in terms of higher disclosure levels as well as fixed costs. Therefore, only quality firms would find it beneficial to do so. Yankee bond issues also require SEC disclosure and entail the substantial fixed costs of a public bond issue. Hence,

Yankee bond issuance can also be viewed as a signal of quality. Merton's (1987) model of investor recognition would also predict an increase in shareholder wealth for a Yankee bond offering, since issuing in the U.S. Yankee bond market is likely to increase the visibility of a firm and thus broaden the firm's investor base.

To further examine the signaling hypothesis and investor recognition hypothesis, we distinguish between first-time issues and repeat issues. We define a first-time issuer as a firm that had not previously issued or listed public debt or equity in the United States. The signaling hypothesis predicts that the positive impact of the first issue will be larger than that of subsequent issues. The investor recognition hypothesis also predicts that the incremental effect on investor recognition will be largest for first-time issues. Finally, Kim and Stulz (1988) argue that if reputation is indeed important to investors and results in lower subsequent borrowing costs, shareholder wealth would increase the most on the announcement of the first bond offering. Hence, we expect that first-time issues would have a larger stock price reaction.

Panel B of Table V reports the average abnormal returns for the sample with and without a prior U.S. offering. The abnormal returns of both PREVIOUS ISSUE and FIRST-TIME ISSUE are positive and significant (0.56%, p -value = 0.04 and 1.52%, p -value = 0.05, respectively). As predicted, we find the stock price reaction is largest for firms that have not previously issued public debt or cross-listed equity in the United States (p -value of the difference = 0.04). Table V also reports additional univariate breakdowns for robustness checks.¹⁵ Panel C shows that firms located in emerging markets have larger stock price reactions than do those from developed markets. While this result would also appear consistent with the signaling hypothesis and investor recognition hypothesis, the sample from emerging markets is small and the difference is not statistically significant. Also, Panel C reports that the stock price reaction is positive and significant for both the Canadian as well as non-Canadian portion of our sample, indicating that the results are not driven by the Canadian portion of the sample. The multijurisdictional disclosure system of 1991 allows Canadian companies to meet SEC reporting requirements with Canadian disclosure documents. Also, due to the geographical proximity and high integration of the Canadian and U.S. economies, one would expect higher investor recognition of Canadian firms relative to other foreign issuers. Hence, a smaller stock price reaction for the Canadian sample is predicted by both the signaling and investor recognition hypotheses. While the direction of the stock price reactions is consistent with these hypotheses, the difference is not significant.

6. THE DETERMINANTS OF MARKET CHOICE

In this section, we develop a framework to analyze the factors that determine whether a firm issues a Yankee bond, paying special attention to the relative interest

¹⁵ We also performed additional cross-sectional analyses of the stock price reaction. Consistent with the findings of Eckbo (1986), these cross-sectional regressions did not reveal any relation between the stock price reaction and issue characteristics such as offering size and rating.

costs in the Yankee market. Kim and Stulz (1988) propose that firms may be able to exploit temporary financing opportunities and issue bonds in the market where interest costs are lowest. Our results provide new insights into why foreign firms choose a particular market to raise debt capital and how relative interest costs drive the decision.

6.1. The Firm's Choice

In our model, a firm chooses between issuing a bond in the Yankee market or issuing a bond in the Euro market. Firms issuing Eurodollar bonds circumvent many of the U.S. securities laws. For example, Eurodollar bonds do not have to adhere to SEC regulations and therefore avoid the stringent U.S. reporting requirements. In addition, Eurodollar bonds are issued in unregistered, or bearer, form. This allows confidentiality of ownership, which might be important to investors for many reasons, not the least of which is the ability to avoid taxes. Since Eurodollar issues do not adhere to U.S. securities laws, they cannot be sold to U.S. investors. To prevent U.S. investors from buying newly issued Eurobonds, the SEC requires a "seasoning" period in which sales of Eurobonds to U.S. investors can take place only 90 days after the issue date.¹⁶

The investor base for Eurodollar bonds also distinguishes the Eurodollar market from the Yankee bond market. Where institutional investors with long-term investment horizons tend to dominate the U.S. corporate bond market, private investors have played a significant role in the demand for Eurobonds. In general, private investors have been perceived to prefer shorter-term bonds. As the Euro market becomes more institutionalized, central banks and insurance companies have become the major investors. However, these institutions also prefer short-term maturities because of liquidity needs and foreign exchange risk. As a result, most Eurobonds tend to have maturities of 3 to 10 years. Whereas Yankee bonds pay coupons semiannually, Eurodollar bonds pay interest annually.

6.2. Econometric Framework

In our model, we assume that if firms decide against issuing a Yankee bond (which would be dollar dominated and rated), they would issue a rated Eurodollar bond. While we argue that this is the most probable scenario, an obvious disadvantage of this specification is that it does not allow for all possible firm choices. For example, the choice may be between a Yankee bond or a rated EuroYen bond, between a Yankee bond or a nonrated EuroPeso bond. By comparing Yankee issues to a sample of rated Eurodollar bonds, we gain two advantages. First, abstracting from the choice of which currency to issue in should enable us to focus better on

¹⁶ To comply with the SEC requirement, Eurobond underwriters initially distribute registered shares of the offering. After a 90-day seasoning period, they offer the option to convert these shares to individual bearer bonds. While U.S. investors can purchase these bearer bonds in the secondary market after 90 days, liquidity in Eurobond secondary market is generally recognized to be low.

the choice between regulatory environments. Using bonds denominated in different currencies would necessitate controlling for the choice of currency in addition to the choice of market. For example, Kedia and Mozumdar (1999) find that the use of foreign currency denominated debt is related to various factors including the aggregate foreign exchange exposure of the firm, liquidity of the debt market, protection of creditor rights, and information asymmetries. Allayannis and Ofek (2001) also show hedging considerations motivate the use of foreign currency debt. Second, since ratings are such an important component of the bond pricing equation, analyzing rated bonds denominated in the same currency sample should allow for meaningful comparisons across markets. Bond ratings enable us to compute a Yankee/Euro cost differential that is (potentially) one of the most important factors firms consider when choosing a bond market.

The model we develop in this section is one of a class of models described by Maddala and Nelson (1975) as switching regression models with endogenous switching.¹⁷ The framework consists of two yield spread equations (one for Yankees, one for Eurodollar bonds) as well as an equation that describes the dichotomous market choice decision. One way to think of the framework is that the sample observations fall into two mutually exclusive regimes, with the decision equation serving as an endogenous selectivity criterion that determines the appropriate regime (Yankee versus Eurodollar). If firms choose a particular market because of some expected incremental benefit, then they may be nonrandomly distributed within the population. We take this selection bias into account during estimation.

The model consists of the following three equations,

$$\log YLDSPD_{Yi} = \theta_{Y0} + \theta_{Y1}X_{Yi} + \theta_{Y2}I_{Yi} + \varepsilon_{Yi} \quad (2)$$

$$\log YLDSPD_{Ei} = \theta_{E0} + \theta_{E1}X_{Ei} + \theta_{E2}I_{Ei} + \varepsilon_{Ei} \quad (3)$$

$$I_i^* = \delta_0 + \delta_1(\log YLDSPD_{Ei} - \log YLDSPD_{Yi}) \\ + \delta_2X_i + \delta_3I_i + \delta_4M_i - \varepsilon_i, \quad (4)$$

where

$$\varepsilon_Y \sim N(0, \sigma_Y^2), \quad \varepsilon_E \sim N(0, \sigma_E^2), \quad \text{and} \quad \varepsilon \sim N(0, \sigma_\varepsilon^2).$$

In this model, the net interest cost of the issue is determined by Eq. (2) if it is a Yankee bond, or by Eq. (3) if it is a Eurodollar bond. $YLDSPD_{Yi}$, $YLDSPD_{Ei}$ are the respective Yankee and Euro yield spreads for firm i , X_{Yi} and X_{Ei} are the respective bond characteristics for Yankee and Eurobonds, while I_{Yi} and I_{Ei} are the legal and

¹⁷ For a general discussion of models of this class, see Maddala (1983). For an application to unions and wages, see Lee (1978). For an application to private versus public bonds, see Kwan and Carleton (1999).

information variables. The firm uses this information as part of its decision function (Eq. 4) in deciding which market to sell bonds in. However, we only observe the interest cost of the bond the firm selects to issue. That is, we observe $YLDSPD_{Yi}$ if $I_i^* > 0$, $YLDSPD_{Ei}$ otherwise, but never both.¹⁸ This introduces a selection bias that causes the OLS estimation of Eqs. (2) and (3) to give inconsistent estimates.¹⁹ We estimate the model consistently using a full information maximum likelihood (FIML) estimator. For details of consistent estimators in the presence of selection bias, see Heckman (1976) and Lee (1978).

An advantage of our modeling approach is that we can estimate the structural form of the market location equation (Eq. 4). Using our estimates and Eqs. (2) and (3), we calculate

$$\mu_{Yi} = \log YL\hat{D}SPD_{Yi} = \hat{\theta}_{Yo} + \hat{\theta}_{Y1}X_{Yi} + \hat{\theta}_{Y2}I_{Yi} \quad (5)$$

$$\mu_{Ei} = \log YL\hat{D}SPD_{Ei} = \hat{\theta}_{Eo} + \hat{\theta}_{E1}X_{Ei} + \hat{\theta}_{E2}I_{Ei}. \quad (6)$$

This framework allows us to obtain for each bond an estimate of the issue cost *in the market the firm did not choose*. This can be used to create the interest cost differential, which is an endogenous factor in the structural form equation.²⁰

6.3. Data

Our Eurodollar sample includes 128 issues from firms located in 14 countries. It is important to note that our Eurodollar bond sample differs in many respects from our Yankee bond sample (Table II). As expected, the Eurodollar bonds tend to be of shorter maturity, have higher credit ratings, and do not support call provisions. Therefore, these differences temper the substitutability of Yankee and Eurodollar issues. The differences in bond contract characteristics across the Yankee and Eurodollar markets have important implications for our methodology because we assume that firms can choose the types of bonds they issue in each market. For example, if long-maturity speculative-grade issues are simply not available in the Euro market, it may not be appropriate to estimate a perceived interest cost for those types of bonds in the Euro market. Therefore, we exclude Yankee issues with maturities greater than 10 years, issues that are noninvestment grade, and those with call provisions.²¹ This leaves 98 Yankee issues that are comparable in issue characteristics to our Eurodollar sample.

¹⁸ Recently, simultaneous offerings in more than one market have begun to take place. Over our sample period, only 14 of these *Global* bond offerings were issued. Our findings are robust to their inclusion.

¹⁹ The problems occur because $E(\varepsilon_Y | I_i^* > 0) \neq 0$ and $E(\varepsilon_E | I_i^* \leq 0) \neq 0$.

²⁰ Lee (1979) shows these structural form probit estimates to be consistent.

²¹ A previous version of the paper included all Yankee issues. After correcting for any potential selection bias, the coefficients on the previous test variables were correctly signed and significant. These results are available from the authors upon request.

6.4. Discussion of the Variables

In estimating the interest cost equations (2) and (3), we use the same exogenous variables utilized in the previous OLS analysis. In addition to the endogenously determined Yankee–Euro yield spread ($YLDSPD_E - YLDSPD_Y$), we utilize the following additional exogenous variables in estimating the criterion function (Eq. (4)):

ACCT: Index rating of a country's accounting standards, based on the inclusion or omission of 90 items in the firm's annual report. Taken from La Porta *et al.* (1998).

YNK SPD: Difference between the Lehman composite Yankee bond index and the Lehman composite Eurobond index.

Therefore, when deciding where to issue bonds, the firm bases its decision on the characteristics of the contract (MAT, AMT) and the effect of information disclosure (PRUS, ACCT), as well as the local legal environment (CR, ROL). The inclusion of issue characteristics allows us to measure how the contract design influences the choice of market. Our information variables proxy for the costs associated with meeting the stringent U.S. reporting requirements. All else held equal, we expect that firms that already have met U.S. requirements or disclose more would find it less costly to issue Yankee bonds. In addition, the difficulty of verifying cash flows in countries with poor accounting standards may reduce the menu of financial contracts available to firms and investors (LaPorta and Lopez-de-Silanes, 1998). The legal variables are included to determine if creditor protections influence the choice of market. Finally, we include the variable YNK SPD to allow for any potential influence of yield spreads between the Yankee and Euro market on the firm's decision.²²

6.5. Structural Form Probit Estimates

Using our consistent estimates of the two bond-pricing equations, we now estimate the interest-cost differential between the Yankee and the Eurodollar market using Eqs. (5) and (6). This can be used to create the interest-cost differential, which is an endogenous factor in the structural form of Eq. (4). If, as Kim and Stulz (1988) suggest, firms actively seek financing bargains, we should find that the interest-cost differential is a significant factor determining where firms issue bonds. Table VI reports these estimates.

We find that the coefficient of the estimated interest-cost differential is positive and significant (16.2533, p -value = 0.00). This result is consistent with the hypothesis that when interest costs of Eurodollar bonds are relatively higher than Yankee bonds, firms are more likely to issue in the Yankee market. Therefore,

²² We also attempted to analyze firm-level variables that have been shown to determine the length of debt that U.S. firms issue, including firm size and growth opportunities (see, for example, Barclay and Smith (1995), Guedes and Opler (1996)). However, lack of accounting data for the majority of the sample precluded this analysis. In addition, the prevailing differences in accounting conventions across countries would make interpretation of the results problematic.

TABLE VI
Structural Form Estimates of the Yankee-Eurodollar Bond Selection Equation

	Coefficient estimate	Marginal probabilities
Constant	-2.1905 (0.41)	
$\ln Y_{\text{euro}} - \ln Y_{\text{yankee}}$	16.2533** (0.00)	1.7050
PRUS	0.9180** (0.01)	0.1005
ACCT	0.0869** (0.03)	0.0091
CR	-2.1252** (0.00)	-0.2229
ROL	-1.3598** (0.00)	-0.1426
$I_{(\text{Aa1}, \text{Aa3})}$	3.6299** (0.00)	0.2410
$I_{(\text{A1}, \text{A3})}$	3.0033** (0.00)	0.2126
$I_{(\text{Baa1}, \text{Baa3})}$	5.4928** (0.03)	0.4492
MAT	10.1222** (0.00)	1.0618
AMT	-2.6168** (0.00)	-0.2745
YNK SPD	0.1714 (0.86)	0.0180

Note. Probit estimates of bond type (1, Yankee; 0, Eurodollar) on bond characteristics, information proxies, legal variables, market conditions, and the estimated interest cost differential between issuing in the Yankee and Eurodollar market. *P*-values are in parentheses. * and ** indicate significance at the 1 and 5% levels, respectively.

our findings are consistent with Kim and Stulz (1988) who argue that the relative interest cost in each market is a significant factor determining where firms choose to sell bonds.²³

In addition, we find other factors that are significantly related to the choice of market. The coefficient on PRUS is also significantly positive (0.9180, *p*-value = 0.01). Firms are more likely to issue Yankee bonds if they have previously met U.S. reporting and disclosure requirements. For example, a firm with an ADR trading on the NYSE already conforms to SEC regulations, so the additional direct reporting costs would be negligible. Any potential loss of confidentiality after meeting SEC regulations would have been experienced previously by the firm, again making the Yankee issue relatively more attractive than to a firm that is only meeting its home country standards. We also find the coefficient on ACCT positive and significant, indicating that firms located in countries with more transparent

²³ On average, the estimated interest costs for Yankee bonds are 23% less than comparable Eurobonds.

reporting standards are more likely to issue in the U.S. market. These results provide empirical support for the recent models of Chemmanur and Fulghieri (1999) and Huddart *et al.* (1999). In these models, the choice of exchange is related to the cost of complying with the exchange's disclosure requirements.

Table VI reports that coefficients on CR and ROL are both negative and significant (-2.1253 , $p\text{-value} = 0.00$, and -1.3598 , $p\text{-value} = 0.00$, respectively). Consistent with Coffee (1999), Stulz (1999), and La Porta (2000), we find that that firms located in countries that have lower investor protections more often opt-in to the United States' more investor-friendly legal system. Firms with better investor protections are less likely to benefit from the U.S. legal enforcement and will more likely, *ceteris paribus*, issue bonds in the unregulated Eurodollar market.

Finally, we do not find that the yield spread between the index of Yankee and Eurobond issues (YNK SPD) influences the firm's choice of market. While this may appear inconsistent with the clientele hypothesis of Kim and Stulz (1988), several points are worth noting. First, it is important to recall that each firm has a particular reservation interest-cost differential, which depends on additional noninterest cost factors. In addition, our findings show that firms do indeed use the perceived interest-cost differential (obtained from the switching regression model) in the market choice decision. The coefficient on YNK SPD merely indicates that after controlling for this interest cost differential, the market yield spread has no marginal explanatory power over a firm's market choice. Second, the index of Yankee and Eurobond issues contain bonds of different maturities (the average Yankee bond is of longer maturity than the average Eurobond), so YNK SPD may reflect term structure effects rather than relative borrowing costs.²⁴

7. CONCLUSION

Our analysis of a sample of Yankee bond issues provides support for the literature that suggests better legal protections and more detailed information disclosure increases the price investors will pay for financial assets. We find that investors require economically significant premiums for bonds issued by firms located in countries with poor investor protections. For example, moving from a country such as Mexico that has relatively weak creditor protections and legal systems to a country such as the United Kingdom that has relatively strong laws and enforcement decreases the annual yield spread of public corporate bonds by 58 basis points, *ceteris paribus*. Our results also show that investors demand premiums on the bonds of first-time issuers. This is, public borrowing costs were 41 basis points lower if the foreign firm had listed or issued public securities in the United States prior to the debt offering. This reduction in public borrowing costs is found

²⁴ One possible alternative spread is formed by World Bank global bonds that trade in each market (of the same maturity). However, contemporaneous data in each market were unavailable for these bonds.

for both prior public debt issues (Yankee bonds) and prior stock cross-listings (ADRs or direct listings) and is largest in noninvestment grade securities.

We also provide new evidence on the stock price reaction to public debt offerings in the United States made by overseas firms. Our results show that the stock price reaction to an announcement of a Yankee bond offering is positive and statistically significant, providing evidence that firms benefit from raising public debt in the United States. We also find that the stock price reaction is largest for first-time issuers, consistent with the hypotheses that issuing Yankee bonds in the United States signals quality, widens the firm's investor base, or both.

Finally, our analysis provides new insights into why foreign firms choose a particular market to raise debt capital and how relative interest costs drive the decision. We model the joint determination of market choice and interest costs using a switching regression model with endogenous switching. We find that one of the main factors that influences where a firm sells bonds is the relative interest costs between markets. Firms tend to issue in the Yankee market when the relative interest cost in the Eurodollar market is high, indicating that potential differences in borrowing costs influence where firms choose to sell bonds.

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