

Foreign Entry into Underwriting Services: Evidence from Japan's "Big Bang" Deregulation

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ABSTRACT

We examine the impact of foreign underwriting activity using issue-level data in the Japanese "Samurai" and euro-yen markets over the period from 1992 to 2001. We find that the firms in these markets who chose Japanese underwriters over their foreign counterparts tended to be Japanese, riskier, smaller, seasoned, and collateralized. We then examine the determinants of underwriting fees. While our data confirms that Japanese underwriters charged higher fees and spreads on average, we find that after conditioning for issuer characteristics, the residual charges of Japanese underwriters were actually lower than those of their foreign competitors. However, using the endogenous switching regression technique to account for the endogeneity of issuer choice, we find that firms tended to choose the proper nationality of underwriter, in the sense that switching from a Japanese underwriter to a foreign one, or vice versa, would be predicted on average to result in an increase in underwriting fees. Finally, we examine the impact of the 1996 liberalization of foreign access to the "Samurai" bond market. We conduct a matching exercise, using yen-denominated issues in the euro-yen market as a control sample. We find that deregulation led to a statistically and economically significant decrease in underwriting fees in the Samurai bond market.

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1. Introduction

In 1996, Japanese Prime Minister Hashimoto announced a “big bang” set of reforms aimed at preventing further deterioration of Japanese financial markets and retaining Tokyo’s place as a leading world financial center. While the pace of reform certainly accelerated subsequent to this announcement, the deregulations are better perceived as the culmination of a long process of reforms that began long before the 1990s, but accelerated during that turbulent period [Hoshi and Kashyap (2001)]. One important component of the “big bang” reforms concerned opening Japanese securities markets to foreign participants. Various restrictions that had limited the activities of foreign issuers and underwriters were repealed during the 1990s, with restrictions on foreign participation in underwriting in the Samurai market being removed in mid-1995.

The lifting of restrictions on foreign competition in Japanese securities markets was controversial. Japanese securities markets had already been liberalized in 1993, with the entry of Japanese commercial banks into underwriting services [Yasuda (2007)]. Underwriting activity was an important source of profitability for Japanese commercial banks experiencing pressure from bad loans associated with the collapse of the asset bubble at the start of the decade.

Japanese investment banks were also under pressure, partly due to the entry by commercial banks into underwriting activity earlier in the decade, but also because of the poor overall performance of the Japanese economy. These pressures culminated in the failures of Yamaichi and Dai-Ichi securities in October of 1997. The poor conditions faced by Japanese investment banks, combined with the relatively rapid success of foreign underwriters in achieving substantial market share in Japanese securities markets,

have led some to question whether Japanese securities markets will suffer from the so-called “Wimbledon effect,” a term sometimes applied to the London securities market, where robust domestic financial activity is primarily underwritten by foreign investment banks [e.g. Pohl (2002)].

This paper examines the impact of foreign entry into Japanese underwriting activity subsequent to the “big bang” liberalizations of the 1990s, using data on yen-denominated bonds in the domestic Japanese, Samurai, and euro-yen markets.¹ We first examine the implications of issuer choice for underwriting fees in these three markets from 1996-2001, the portion of our data set over which foreign underwriters had access to these markets. We use an instrumental-variables procedure, acknowledging the fact that the choice of domestic versus foreign underwriter is likely to reflect firm characteristics. We then examine the implications of using a foreign underwriter after conditioning for the factors leading to the issuing firm’s underwriter choice. Surprisingly, despite the fact that fees charged by Japanese underwriters are larger on average, we find that in most cases underwriting fees were increasing in the choice of a foreign underwriter at statistically and economically significant levels after conditioning for issuer characteristics.

We then allow the firms that chose foreign or Japanese underwriters to differ more markedly, using the endogenous switching regressions, as employed by Fang (2005) and Song (2007). Using this methodology, we find that the question of whether foreign or Japanese underwriters are “cheaper” is a poorly-posed one. Instead, we find that firms that chose to issue under Japanese underwriters would be predicted to face

¹ The domestic and euro-yen markets include issues by both Japanese and foreign firms. The Samurai market is a yen-denominated securities market located in Japan that specializes in issues by foreign firms.

higher fees on average by switching to foreign underwriters, but the same could also be said for firms issuing under foreign underwriters. In other words, it appears that Japanese underwriters in these markets specialize in servicing specific issues in which they enjoy a comparative advantage.

To further investigate the impact of foreign entry into these markets, we turn in the final part of the paper to the liberalization of the Samurai securities market in 1995 that allowed foreign firms to participate in underwriting activities in this market.² In contrast, foreign underwriters have been underwriting yen-denominated debt in the euro-yen market since the beginning of the decade. As such, the opening up of the Samurai market gives us a natural experiment to investigate the impact of allowing access to foreign underwriters. Of course, the Japanese experience of the latter half of the 1990s was anything but tranquil, and other events that could affect the terms of securities issues were also taking place. To account for this, we conduct a matching test of the impact of opening up the Samurai market, using the terms faced by foreign issuers in the euro-yen market as a control. As the Samurai market is limited to foreign issuers as well, our experiment matches foreign issuers in yen-denominated debt in the Samurai market to similar foreign issuers in yen-denominated debt in the euro-yen market to gauge the implications of the policy change. Our results suggest that opening up the Samurai market to foreign underwriters resulted in a statistically and economically significant reduction in underwriting fees. These results are shown to be robust to a variety of matching techniques, including variants of Mahalanobis and propensity scoring matching.

² See, for example, Packer (1997).

The remainder of this paper is divided into seven sections. Section 2 reviews the literature concerning underwriter choice and the determination of underwriter fees. Section 3 discusses our data set. Section 4 examines the determinants of choosing a domestic or foreign underwriter using various regression techniques. Section 5 examines the implications of underwriter choices on fees. Section 6 conducts our difference-in-differences test concerning the liberalization of the Samurai bond market. Section 7 concludes.

2. Previous Literature

2.1 Underwriter Choice and its Implications

There is a large literature on underwriter reputation and outcomes in equity initial public offerings (IPOs). Carter and Manaster (1990) introduce a model of services provided by underwriters with heterogeneous “prestige” levels, measured empirically by revealed hierarchy in “tombstone announcements” of IPOs. Their theory predicts that low risk firms choose more prestigious underwriters to reveal their relative safety and avoid underpricing. Holders of equity in these firms then experience a lower and less variable rate of return between the IPO sale and the first secondary market sale. These predictions are then confirmed empirically.

James (1992) argues that “setup costs” affect the pricing of equity underwriting services. He introduces a model where underwriters invest in costly information-gathering activity that assists in subsequent underwriting activity. This implies that underwriters will charge lower spreads to firms that make subsequent issues. However, the information gathered in this manner depreciates over time, so the probability of

switching underwriters increases over time. These predictions are confirmed in empirical tests of equity IPOs in the United States.

Fernando et al. (2005) model underwriter choice as a two-sided matching activity. Their model predicts that more competent underwriters underwrite more issues, but that the market share of less able underwriters will increase as the overall size of the market increases.

For bond underwriting in the U.S., Fang (2005) stresses the reputation implications that an intermediary faces when launching a security, as damage to the reputation of the underwriter is likely to follow a default on the security. She argues that underwriting firms will specialize among their clientele according to their reputation levels. In particular, higher reputation underwriters are predicted to specialize in underwriting higher-quality firms and charge higher fees than underwriters with inferior reputations. She confirms this prediction for U.S. bond data. In particular, she finds that reputable underwriters obtain lower bond yields for and charge higher fees to their bond issuing clients, but the issuer receives higher net proceeds. She concludes that underwriter reputation generates important economic rents and thus continued incentives for underwriters to remain reputable.

Another question addressed in the literature is the effect of banking relationships on underwriter choice. Historically, Kroszner and Rajan (1994) find that banking relationships did not lead to poor decisions in securities investment in the United States prior to the imposition of the Glass-Steagall Act in 1933. Looking at more recent U.S. data following commercial bank entry into bond underwriting in 1989, Yasuda (2005) finds that bank relationships have a positive impact on underwriter choice, which is not

entirely attributable to the discounts that firms receive when choosing banks with which they have previous experience when making their underwriter choice. Yasuda (2007) finds similar results for the related deregulation of the Japanese bond market in 1993 that permitted commercial banks to underwrite domestic bonds.

2.2 Liberalization of Japanese bond markets

The Japanese Ministry of Finance began liberalizing its bond markets during the 1980s. For example, as noted by Nishi and Vergus (2007), foreign firms were first permitted to underwrite euro-yen bonds in 1984. The most far-reaching deregulatory step was the 1992 Financial Institution Reform Act that effectively dismantled the separations between the sectors of the financial industry; i.e., commercial banks, investment banks and insurance firms. For more detailed descriptions, see Hoshi and Kashyap (1999), de Jong et al. (2005), and Yasuda (2007).

The Act also liberalized access by foreign firms to all three yen-denominated bond markets, although there was not an immediate increase in foreign underwriting activity. In fact, the first Samurai bond underwritten by a foreign firm was issued in 1995. As noted in Packer and Reynolds (1997) and Packer (2000), foreign underwriting in the Samurai market was initiated mainly by a 1995 trade agreement between the Japan and the United States that restrictions on the ability of corporations to issue or sell securities in domestic and foreign markets; see U.S. Treasury Department (1995).

As shown in Table 1, the foreign share of the yen-denominated bond market has increased markedly over the period from 1996 to 2001. While the foreign underwriters' share of the domestic corporate bond decreased slightly -- from 12.25% to 8% -- the

shares for the Samurai market increased just under 2% to almost 33% of total issuance, and the shares for the euro-yen market surged from 13% to almost 60%.

There is evidence that previous liberalizations in Japanese securities have reduced the borrowing costs in these markets. McKenzie and Takaoka (2003) find that the 1993 relaxation of the “three bureaus agreement,” which had favored the use of Japanese underwriters by firms in the euro-yen bond market, was associated with a reduction in spreads paid in this market.³ McKenzie and Takaoka (2006) find that the 1993 relaxation of restrictions on underwriting activity by Japanese banks reduced spreads in both the euro-yen and domestic Japanese bond markets.⁴

3. Data

Our sample consists of 11,979 individual yen-denominated bond issues: 7,854 in the euro-yen market and 605 in the Samurai bond market from 1992 through 2001, and 3,520 in the domestic Japanese bond market from 1996 through 2001.⁵ Data is obtained from the Capital Data Bondware and Loanware data set from Dealogic.

Summary statistics for individual issues in each of these markets is shown in Table 2. It can be seen the average total value of the issues in the Samurai market are largest, with the domestic market second and the euro-yen market having the smallest

³ This restriction was relaxed in 1993 and completely abolished in 1998.

⁴ There have also been related studies concerning the impact of foreign competition on the banking sector. Claessens and Glaessner (1998) find that costs of financial services in eight developing Asian economies are decreasing in those countries’ financial openness. A related issue is the impact of foreign banks on the variability of the local supply of credit. Peek and Rosengren (1997, 2000) document credit supply shocks to Japanese banks operating in the United States as a result of shocks to the parent bank. Goldberg (2006) finds that U.S. bank to loans to Europe are pro-cyclical, in the sense that they are increasing in European GDP and decreasing in European interest rates, although the first result is not statistically significant.

⁵ Domestic Japanese bond market data was not available in this dataset prior to 1996, and the coverage after 1996 is not complete as well. As such, most of the analysis below is conducted for the euro-yen and Samurai markets.

issues. The percent of issues rated as “investment grade”, either by a U.S. or a Japanese rating agency, is highest in the domestic market, at 98.0 percent, with the share of issues rated investment grade in the Samurai market the lowest of the three at 81.8 percent. This is consistent with Packer and Reynolds (1997), who found that Japanese rating agencies were not systematically overrating the Samurai market relative to the domestic market. Years-to-maturity is highest in the euro-yen market, averaging 6.6 years, compared with 4.1 years for the Samurai market. The share of unseasoned issues is lowest for the euro-yen market, with only 4.1 percent of unseasoned issuers.

Our measure of underwriter reputation is a binary variable, equal to one if the underwriter is among the top 10 in that market in that year in terms of total value of issues underwritten. Using that measure, the average share of top underwriters measures the share of issues in the market underwritten by firms in the market’s top 10, which is effectively a measure of the degree of concentration in underwriting activity in the market. It can be seen that underwriting activity in the Samurai market is most concentrated on average, with a 0.90 share, while the euro-yen market is the least concentrated with a 0.74 share.

Similarly, our measure of overall underwriter reputation is a binary variable equal to one if the underwriter if the individual issue is among the top 10 underwriters across all three bond markets in our sample. Our summary measure in Table 2, which measures the average share of issues receiving a 1 then is a measure of the market share in that market of underwriters with the highest share of yen-denominated issues in *any* of our 3 markets. It can be seen that the highest share is in the Samurai market, at 0.94 percent,

but the euro-yen market, which again appears to have the greatest degree of dispersion in underwriters is not much lower at 0.90 percent.

There is a large discrepancy in the share of collateralized issues across the three markets, with over 25 percent of issues being collateralized in the domestic market, but only 4.6 percent of issues collateralized in the euro-yen market, while none of the issues in the Samurai market were collateralized.

We next turn to underwriting fees and spreads. Fees are measured as the amount paid to the underwriter divided by the total value of the issue. It can be seen that fees charged in the Samurai market are roughly 2.5 times their size in either the domestic or the euro-yen market. The spread paid on issues represents the contractual interest rate relative to the yield on treasuries of comparable maturity. Spreads are also higher on average in the Samurai bond market, roughly 63 basis points higher than those in the domestic market and 73 basis points higher than those in the euro-yen market. This result is consistent with the findings reported by Packer and Reynolds (1997).

Finally, we turn to the use of domestic versus foreign underwriters. We use the share of Japanese underwriters in the issue as a measure of the degree of domestic participation. This variable ranges between 0 and 1, with an interior value resulting when both foreign and domestic underwriters are lead managers of the issue.⁶ It can be seen that the average share of Japanese is largest in the domestic market, at 0.88, with the Samurai and euro-yen markets having a little larger share of foreign participation, at 0.78 and 0.72 respectively.

⁶ Because data on shares of fees is unavailable, underwriters are assumed to have the same share of influence over the issue; i.e., the share of Japanese underwriters is set at 0.5 when there are 2 underwriters and one is Japanese.

More information on the differences between issues underwritten by foreign and domestic underwriters is contained in Table 3. We divide the sample into the majority of issues, which only have Japanese underwriters, and those which have either partial foreign underwriter presence or are completely underwritten by foreign firms. It can be seen that issues with foreign underwriters tend to be larger and have shorter maturities. Unseasoned issuers are more likely to use foreign underwriters, while since Japanese underwriters are predominant among the leaders in these markets, issues with Japanese underwriters are more likely to be issues with top underwriters, both in the market of issue and overall. Finally, as has been documented elsewhere, issues underwritten by Japanese underwriters have substantially higher fees and spreads.

4. Determinants of the Use of Foreign Underwriters

In this section, we examine the determinants of whether a yen-denominated bond issuer uses a Japanese or a foreign underwriter. We report the results from two related estimation techniques: First, we conduct standard regression analysis on the percentage of foreign underwriters. Second, we conduct the first stage of a two-stage regression model of underwriter choice, which again examines the decision of whether an issue is serviced by a domestic or a foreign underwriter.

4.1 Regression analysis

Our dependent variable is the share of Japanese underwriter participation ranges between zero and one, with zero reflecting no participation by Japanese underwriters, and one reflecting only Japanese underwriter participation. When both foreign and Japanese

underwriters share an issue, they are assumed to carry equal weight; for example, the share of foreign participation is assumed to be 0.5 when there are two underwriters, one who is Japanese and one who is not. We estimate the full sample, which includes all of the three markets mentioned above, along with market dummies, and then each of the three markets separately for a total of four models.

Our results are reported in Table 4. Our measure of firm creditworthiness is *INVGRADE*, an indicator variable that takes value 1 when the issuing firm is rated as investment grade. It can be seen that the variable is negative and statistically significant at a 1% confidence level for full sample and euro-yen market, and at a 5% confidence level for the Samurai market. The coefficient estimates also indicate economic significance. For example, the point estimate for the full sample indicates that the share of Japanese underwriters is expected to be 9% lower for investment grade issues. However, the coefficient is much smaller and statistically insignificant for the domestic Japanese bond market.

We obtain mixed results for the total value of issues, *LTOTVAL*. We obtain a negative and statistically significant coefficient estimate for our pooled and euro-yen samples, but a positive and significant coefficient for the Samurai market. These results suggest that larger issues tend to favor the use of foreign underwriters in the euro-yen market, but favor Japanese underwriters in the Samurai market. Our coefficient estimate for the domestic market is again insignificant.

As would be expected, we obtain a positive and statistically significant coefficient estimate for *JAPANISSUER*, which equals 1 if the issuing firm is Japanese and 0

otherwise, for the full and euro-yen samples. However, the results for the domestic market are again insignificant. There are no Japanese issuers in the Samurai market.

We would expect that unseasoned issuers would be more likely to choose foreign underwriters, as they would be less locked into existing relationships with Japanese firms. The results for our *UNSEASONED* variable suggest that this is the case. The variable enters negative and statistically significant at a 1% confidence level for the full sample and the euro-yen sub-sample. The point estimate for the full sample suggests that on average unseasoned issues have a 5% lower Japanese underwriter share than seasoned issues. The results for the Samurai and domestic markets are insignificant.

We also get mixed results for the length of issues. The shares of Japanese underwriter participation in the full and euro-yen samples are increasing in the log of years to maturity, *LYRSMAT*, in the full and euro-yen samples. The coefficient estimates also indicate economic significance. A one-standard deviation increase in the log of years to maturity in the full sample, which would correspond to a 0.84 increase, is expected to increase the share of Japanese participation by 10 percent. The results for the Samurai market are insignificant, while those for the domestic market enter with a statistically significant negative sign.

Our dummies for both the Samurai and domestic markets both enter with positive and statistically significant coefficients. On average, the point estimates suggest that the share of Japanese participation in underwriting is 20% higher in the domestic market and 26% higher in the Samurai market, confirming that foreign underwriters are more active in the euro-yen markets than in the other two markets.

Finally, we find that collateralized bonds tend to use Japanese underwriters more extensively in our pooled full sample, but the coefficient estimates for individual markets are insignificant, or missing in the case of the Samurai market in which no issue is collateralized.

Overall, the OLS results suggest that Japanese underwriters are favored by firms that are riskier, seasoned and Japanese, and those that whose issues are smaller and collateralized. Issuers that are larger, safer and non-Japanese tend to be more likely to choose foreign underwriters in yen-denominated markets. The one market which deviated substantially from our full sample results was the domestic market, where few issue characteristics were found to have any significant effect on the choice of underwriter nationality, except for the term of the issue. However, even here, the results in the domestic market indicated that longer-term issues chose a lower share of Japanese underwriters, the opposite of the result we obtained for the euro-yen market.

4.2 Selection equation within an endogenous switching regression framework

Turning now to the second estimation procedure, we closely follow the econometric approach taken by Fang (2005) and Song (2007). Specifically, we treat the underwriter nationality decision as a binary outcome I_i , whose continuous form I_i^* is a function of a set of explanatory variables. The first equation in this estimation is $I_i^* = z_i' \gamma + \varepsilon_i$, where the latent underwriter decision is a function of a set of explanatory variables z_i . We set the discrete realizations to $I_i = 1$ for any foreign underwriter participation if $I_i^* > 0$ and $I_i = 0$ for all Japanese underwriter participation if $I_i^* \leq 0$.

Our empirical results are presented in Table 5. These results again suggest that foreign underwriters are more likely to be chosen by non-Japanese, larger, safer, and non-collateralized issuing firms, basically confirming the first stage results found in the OLS regressions above.

5. Determinants of underwriter fees

In this section, we examine the determinants of underwriter fees. We again report results for two estimation techniques: First, we conduct an instrumental variables estimation analysis of underwriting fees. Second, we report the second-stage analysis of our endogenous switching regression specifications.

5.1 Instrumental variable regression analysis

In this section, we instrument for the nationality of underwriter to address the likely endogeneity of the choice of underwriter nationality. As our instrument, we use the nationality of the issuer. As we found in the previous section, Japanese issuers are far more likely to use Japanese underwriters than foreign issuers. We exclude the nationality of issuer from the final specification, implying that after accounting for differences in firm characteristics, the only impact of being a Japanese firm on underwriter fees is through its impact on the choice of underwriter.

In addition to the conditioning variables we used in the previous section, our specification allows the fees charged by underwriters to be a function of underwriter reputation. We use the measures of underwriter reputation introduced in our summary statistics: *UNDREP* takes value one if the underwriter used in the transaction is in the top

ten in underwriting activity in the market of issue in the total value of underwriting activity, and zero otherwise. *OVERUNDREP* takes value one if the underwriter used in the transaction is in the top ten in underwriting activity in the three markets in our sample combined and zero otherwise. Models 1 and 3 run our specification with only *UNDREP* included, while Models 2 and 4 include both *UNDREP* and *OVERUNDREP*.

The cost of issuing debt is of course not only a function of underwriting fees, but also a function of the interest rate paid on debt service. We therefore add the variable, *YIELD*, to our specification in Models 3 and 4 as a check of the robustness of our results. However, we also continue to report our results without this variable, as its inclusion reduces our sample size from 3,540 to 2,462 observations.

Our results are shown in Table 6. Our primary variable of interest is *JSHARE*, the share of Japanese participation in underwriting services. It can be seen that this variable enters negatively at statistically significant levels in all of our specifications, indicating that underwriter fees are decreasing in the share of Japanese underwriters after instrumenting for the nationality of the underwriter and conditioning for other issue characteristics. This result is surprising because it is commonly thought that foreign underwriters competed with entrenched Japanese firms on price. Indeed, our summary statistics showed that Japanese underwriters were on average more expensive than their foreign competitors. These results suggest that the additional fees levied by Japanese underwriters are explained by the characteristics of issues that they service.

Among the conditioning variables, *INVGRADE* enters insignificantly throughout, suggesting that asset safety is not priced in underwriting fees in these markets. We do find that fees are decreasing in *LTOTVAL*, suggesting economies of scale in the provision

of underwriting services. However, this variable becomes insignificant after conditioning for average yields to maturity. *LYRSMAT* similarly enters positively, but becomes insignificant after conditioning for yields to maturity. *COLLATERAL* is insignificant throughout.

Concerning underwriter reputation, both *UNDREP* and *OVERUNDREP* enter positively at statistically significant levels, as expected, as underwriters with superior reputations can charge higher fees to their issuers due to their superior ability to place debt at desirable terms, holding all else equal. Our measure of issuer reputation, *UNSEASONED*, is insignificant throughout, but enters with a negative point estimate, suggesting that new issuers are able to issue at lower fees than their seasoned counterparts. Of course, this does not mean that they are better off, as the increased fees may represent the underwriter's share of the rents associated with a long-term underwriter relationship. Despite these fees, positive rents from this relationship may also accrue to the issuer.

The *YIELD* variable enters positively and significantly at a 1% confidence level. This is somewhat surprising, because underwriters would be expected to be able to charge higher fees when they achieve yield reductions. Still it may be the case that the yield paid is a proxy for the difficulty of the individual issue, as issues with higher risks and probabilities of default may require more diligence and pose a greater threat to the reputation of the underwriter. Finally, the *SAMURAI* variable is both positive and significant, validating the contention that fees are higher in the Samurai market than in the euro-yen market.

Overall, our results suggest that underwriter fees are higher for issues that pay higher yields to maturity, longer issues, and smaller issues. Fees are also higher for issues with more reputable underwriters and in the Samurai market relative to the euro-yen market. After instrumenting for endogeneity and conditioning for other issue characteristics, we again find that fees were lower for Japanese underwriters than for foreign underwriters.

5.2 *Endogenous switching regressions*

We next turn to the second stage of our switching regression estimation. We specify two equations for the dependent variable of interest, one for the foreign underwriters and one for the Japanese underwriters. That is, $y_{fi} = x_i' \beta_f + u_{fi}$ and $y_{ji} = x_i' \beta_j + u_{ji}$, where y_{fi} and y_{ji} are the dependent variables of interest for bond issues underwritten by foreign and Japanese underwriters, respectively. The unobserved (or missing) variables related to underwriter choice are accounted for in this regression by introducing the appropriate Mills-ratio terms generated from our first stage estimation. As before, the two dependent variables of interest are bond underwriting fees and yield-to-maturity.

The estimation results for fees are presented in Table 7. In contrast to the previous regression, fees appear to be positively correlated with issue size in the euroyen market and in the combined euroyen and samurai markets, but only measurably for issues with Japanese underwriters. Foreign firms have only a weak negative relationship between fees and issue size, which suggests, in light of the selection equation result, that the fees charged by foreign underwriters are much less sensitive to issue size.

Using similar reasoning, the fees charged by Japanese and foreign underwriters are decreasing in years to maturity, but Japanese underwriting fees are more sensitive to maturity. Both types of underwriters charge less for collateralized issues, but only Japanese underwriters are found to charge higher fees to investment-grade borrowers. Underwriter reputation leads to fee increases for foreign underwriters, but the coefficient on Japanese underwriters is insignificant. Finally, Japanese underwriters charge higher fees in the Samurai market.

With the inclusion of our conditioning variables, the constant term estimates provides a measure of average “unexplained” fees in the euro-yen and Samurai markets. As before, we find that after conditioning for issuer characteristics the Japanese underwriters charged lower fees than their foreign counterparts at statistically significant levels.

As highlighted in Fang (2005) and Song (2007), the endogenous switching regression allows us to generate counterfactual values for our dependent variable. That is, based on the model’s estimated parameters, we can infer the fees that the client of a foreign underwriter might have faced if they had used a domestic underwriter. This expected counterfactual value is generated as

$$\begin{aligned}
 E[y_{ji} | I_i = 1] &= E[y_{ji} | I_i^* > 0] \\
 &= E[y_{ji} | z_i' \gamma + \varepsilon_i > 0] \\
 &= x_i' \beta_j + \text{cov}(u_{ji}, \varepsilon_i) \left(\frac{\phi(z_i' \gamma)}{\Phi(z_i' \gamma)} \right)
 \end{aligned} \tag{1}$$

where y_{ji} is the fee faced by borrower i who had used a foreign underwriter (i.e., $I_i = 1$) from domestic underwriter j , x_i is the borrower’s vector of explanatory variables, β_j is the corresponding parameter vector estimated for Japanese underwriters, and the last term is

an adjustment based on the appropriate Mills ratio from the selection equation for foreign underwriters. The expected counterfactual value for a borrower that used a domestic underwriter is

$$\begin{aligned} E[y_{fi} | I_i = 0] &= E[y_{fi} | I_i^* \leq 0] \\ &= E[y_{fi} | z_i' \gamma + \varepsilon_i \leq 0] \\ &= x_i' \beta_f - \text{cov}(u_{fi}, \varepsilon_i) \left(\frac{\phi(z_i' \gamma)}{1 - \Phi(z_i' \gamma)} \right). \end{aligned}$$

This feature of the modeling framework allows us to examine the differences between the counterfactual and actual values of the dependent variable of interest. In notation, the price improvement term for a borrower using a Japanese underwriter is expressed as $d_{ji} = E[y_{fi} | I_i = 0] - y_{ji}$, and the term for a borrower using a foreign underwriter is $d_{fi} = E[y_{ji} | I_i = 1] - y_{fi}$. In our analysis, we examine the average values of these differences to determine whether and how these price improvement terms are statistically significant. We examine these averages over the full sample of issues broken out by the type of underwriter actually used. We extend the analysis by subdividing these groups by issuer nationality, seasoned borrowers and underwriter reputation.

Table 8 presents the results of our counterfactual analysis for the euro-yen market. We compare the fees paid with those that our model suggests would have been attainable by switching from a foreign underwriter to a Japanese one, or vice versa.

The first row shows the actual fees paid by firms in our sample that chose foreign underwriters and the hypothetical fees that our model predicts they would have paid if they issued with Japanese underwriters. Our results indicate that firms issuing under foreign underwriters paid an average of 38.1 basis points in fees (the ratio of gross fees

on a bond underwriting to total issuance amount), while they would have paid an average of 55.4 basis points had they chosen Japanese underwriters, achieving a statistically significant savings of 17.3 basis points.

We also find that firms choosing Japanese underwriters saved on fees relative to the fees that they would have faced from foreign underwriters. However, the estimated savings on fees was 12.6 basis points, again significant at a 1% confidence level.

To examine these aggregate results further, we subdivided the full sample in three ways: by issuer nationality, by seasoned borrowers, and by underwriter reputation. In all cases, borrowers appear to have made the “correct” choice, in that they would have faced higher underwriting fees by issuing under the alternative group of underwriters.

Moreover, in all cases but one, the discrepancy is statistically significant at a 1% confidence level. The lone exception is the group of seasoned issuers that issue under Japanese underwriters. We obtain a positive, but insignificant estimate of the savings in fees enjoyed by this group relative to what they would have been predicted to face had they issued with foreign underwriters of a paltry 2.4 basis points. This suggests that Japanese underwriters did not price their services aggressively in efforts to retain existing clients, which may in part explain their declining market share over the latter half of the 1990s.

6. “Big Bang” Deregulation in the Samurai Market

The relative fees of foreign and Japanese underwriters do not imply anything about the competitive impact of foreign competition in yen-denominated bond markets. Even if foreign underwriters charge higher fees, they may provide superior services or

serve specific segments of the market such that their presence still provides competitive pressure to domestic underwriters. To answer the question of the impact of foreign entry, we turn in this section to the “Big Bang” deregulation in the Japanese Samurai market.

As shown in Figure 1, the deregulation of the Samurai market should be a particularly good case for examining the implications of foreign underwriting. Prior to the fall of 1995, not a single foreign underwriter had participated in an issue in this market.⁷ However, the share of participation by foreign underwriters grew rapidly after the 1996 liberalization, culminating in 2000. After that year, the low interest rates associated with the quantitative easing program adopted by the Bank of Japan reduced the relative attractiveness of the Japanese bond market to foreign investment banks and their market shares declined.

This section examines the impact of the Samurai market liberalization on competitive conditions faced by foreign issuers in that market, taking 1996 as the break year for the liberalization. We use propensity scoring matching, with foreign issues in the euro-yen bond market as a control. For quality matching to take place, it must be the case that there are substantial overlaps in the types of firms issuing in the two samples and that there is sufficient data on firm characteristics that allows us to identify good matches. In our case, both of these should apply. We have an ample number of yen-denominated issues in the euro-yen market from which to choose matches, as the number of euro-yen issues far exceeds the number of issues in the Samurai market.

Summary statistics for the two markets before and after 1996 are shown in Table

9. It can be seen that participation by foreign underwriters increased in both markets.

⁷ The two issues in the fall of 1995 were both underwritten by Merrill Lynch, which underwrote one of its own issues as well as an issue by Volvo Group Finance. These 2 issues accounted for only 2.46% of Samurai issues that year.

However, since the Samurai market began the period with no foreign underwriting issues, the increase in foreign underwriter participation was far more dramatic. The share of issues with foreign participation rose from 0 to 22% in the Samurai market, while it grew from 29% to 32% in the euro-yen market, as foreign underwriters already had a significant presence in that market going into the treatment period. There was also a substantial change in the cost of issuing in both of these markets across the liberalization event. Underwriter fees remained roughly constant in the Samurai market at 1%, but increased in the euro-yen market from 0.3% to 0.4%.

However, Figure 2 reveals that underwriting fees in the Samurai market followed an interesting path over the course of our sample. Underwriter fees in the Samurai market were notably higher than those in the euro-yen market from 1996 through 1998, and then fell dramatically to almost equal the euro-yen fee levels.

Meanwhile, average interest rate spreads fell by 8 basis points in the Samurai market after the liberalization, from 1.16% to 1.08%, while they fell a dramatic 22 basis points in the euro-yen market, from 0.56% to 0.34%. On the surface, it therefore appears that the euro-yen market experienced the more dramatic fall in issuing costs, as it enjoyed both greater decline in both fees and in interest rate spreads.

There were other notable differences in the changes in these the two markets across the intervention date. One difference was that the average time to maturity decreased in the Samurai market, from 6.55 to 5.38 years, while it increased in the euro-yen from 6.37 years to 11.4 years. Another difference was that the share of collateralized issues fell in the Samurai market from an already low 0.45% level to 0, while the share of collateralized issues increased in the yen-denominated euro-yen market from 1.59% to

3.96%. This discrepancy may in part explain the greater reduction in average fees and spreads experienced in the euro-yen market. Finally, the share of investment-grade issues in the Samurai market grew substantially, from 67.7% to 81.8%, while the increase in the euro-yen market was more modest, from 96% to 99%.

We therefore proceed by matching our observations from the Samurai market with control issues from the euro-yen market using matching methods to account for changes in the characteristics of issues in the two markets.⁸ To examine the robustness of our results, we use two alternative matching mechanisms:

First we use the Mahalanobis matching method, which matches treatment observations with their counterparts in the untreated group with the closest characteristics. Given an observation in the treated group with a vector of characteristics X_i , the Mahalanobis distance from an observation in the control group with a vector of characteristics X_j , $md(X_i, X_j)$, satisfies

$$md(X_i, X_j) = \left\{ (X_i - X_j)' S^{-1} (X_i - X_j) \right\}^{\frac{1}{2}}, \quad (2)$$

where S is the sample covariance of X .

Our characteristic vector includes the conditioning variables used above, including *LTOTVAL*, *SAMURAI*, *INVGRADE*, *UNSEASONED*, *LYRSMAT*, *COLLATERAL*, *UNDREP*, *OVERUNDREP*, *SHAREOFJAPANESE*, and *JAPANISSUER*. We also include time dummies. As a robustness check, we repeat the exercise and tighten

⁸ One potential problem with our controls might arise if the Samurai and euro-yen markets differ in their credit rating standards. Packer and Reynolds (1997) find that Japanese agencies tend to give higher ratings than their US counterparts, but the magnitude of this discrepancy appears to be similar in the Samurai and domestic Japanese securities markets.

the calipers, effectively eliminating treated observation outliers that do not have corresponding matches in the untreated group with sufficiently similar characteristics.

Second, we also match using propensity scores. This method matches each treated observation with one or more untreated observations that have sufficiently close probabilities of being in the treated group. This is done in a two-step procedure, where we initially run a Probit regression to estimate each observation's propensity score and then use these estimated propensity scores to match our treated observations and estimate the impact of the treatment. The conditioning variables used in our Probit estimation are the same as those above, except *SAMURAI*, *COLLATERAL*, *JAPANISSUER*, and the time dummies needed to be dropped as they predicted success or failure perfectly. Again, as a robustness check, we match each treated observation both to its "nearest neighbor" in the untreated group, as well as a wider set of neighbors, set to the nearest 10 neighbors in our reported results below.

Note that we are comparing the impact of allowing foreign underwriter entry in the Samurai market to activity in the euro-yen market, which allowed foreign entry over the duration of our sample. Consequently, our matching exercise will yield an estimate of the impact of not allowing foreign entry in the Samurai market, rather than of allowing entry. However, this should still provide a consistent estimate of the impact of the liberalization in the Samurai market.

Our results are reported in Table 10. It can be seen that regardless of the matching method chosen, we find that there was a statistically significant average treatment on the treated (ATT) at standard confidence levels. The average effect over our four matching methods was equal to 0.00276, or roughly a third of the average raw difference in fees

observed for the Samurai market. Our test therefore indicates that after controlling for issue characteristics, the decline in fees was significantly larger for the treatment group (foreign yen-denominated issuers in the Samurai market) than for the control group (foreign yen-denominated issuers in the euro-yen market). The results therefore indicate that the 1996 liberalization that allowed foreign banks to offer underwriting services in the Samurai bond market led to reduced fees in that market.⁹

Because the policy intervention concerns the allowance of foreign underwriter participation, we cannot condition on the choice of underwriter prior to 1996. This poses a potential problem for our specification, as we verified above that the choice of underwriter nationality is endogenous to firm characteristics.

To provide some robustness analysis, however, we can examine the impact of the policy liberalization on the subset of firms that issued under domestic Japanese underwriters. We do this for the same set of conditioning variables in the lower part of Table 10. It can be seen that our results are robust to isolating this sub-sample, as the advent of foreign underwriters is shown to have resulted in a statistically significant decrease in expected fees even among the sub-sample of firms that issued under domestic underwriters.

⁹ We also conducted a number of robustness tests. First, we ran both Mahalanobis matching and one-to-one propensity scoring matching with interest rate spreads included. These specifications also indicated that there was a substantial decrease in fees. However, the small sample size resulted in large estimated standard errors, as there were only 16 treated observations meeting our support criteria. Second, we introduced the share of foreign underwriters as an additional conditioning variable and obtained similar statistically significant results as those reported in the text.

7. Conclusion

This paper examines the impact of foreign participation in underwriting services on Japanese bond markets over the period from 1992 to 2001. We first looked at the determinants of and implications of the use of foreign underwriters in the domestic, euro-yen and Samurai bond markets. There were notable differences in the characteristics of issues that chose domestic or foreign underwriters. Japanese underwriters were favored by firms that are riskier, seasoned and Japanese, and those that making issues that are smaller, and collateralized issues. Issuers that were larger, safer and non-Japanese tended to be more likely to choose foreign underwriters in yen-denominated markets. Indeed, while Japanese underwriters were found to charge higher fees on average than their foreign counterparts, we found that Japanese underwriting fees were actually below those of their foreign counterparts after conditioning for issue characteristics and instrumenting for the underwriter nationality decision.

However, our results did not necessarily imply that Japanese underwriters were “cheaper.” Our switching regression results indicated that neither firms that issued under Japanese nor foreign underwriters made an error in their underwriter nationality choice. Our counterfactual analysis predicted that both groups would have faced higher fees had they switched underwriter nationality.

Finally, we then examined the impact of entry by foreign underwriters in the Japanese bond market, using the test case of the 1996 liberalization of foreign participation in the Japanese Samurai bond market. We conducted a Mahalanobis and propensity scoring matching exercise, using foreign yen-denominated issues in the euro-

yen market as a control. Our results provided robust evidence that spreads in the euro-yen market fell after the liberalization.

Overall, our results indicate that there is partial segmentation of the issuer markets served by Japanese and foreign underwriters. On one hand, we found that neither Japanese nor foreign underwriters offer a better possible deal on average than the other group. Issuers appear to gravitate to one nationality of underwriter or another largely as a function of their characteristics. As a result, we found that no group of issuers chosen would have been predicted to reduce their fees by switching the nationality of their underwriters. This finding on average suggests some degree of segmentation. However, we also found that allowing entry by foreign underwriters in the Samurai bond market appeared to lead to a statistically significant reduction in underwriting fees, even for the sub-sample of issues solely issued with Japanese underwriters. This finding suggests that foreign and Japanese underwriters are partly in competition with each other as well, which indicates that the segmentation by issue characteristics is incomplete.

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Table 1**Annual League Tables for Yen-Denominated Corporate Bond Issuance****Panel A. Domestic Corporate Bond Issuance**

Rank	Underwriter	1996		Underwriter	2001	
		Total (\$ millions)	Share (%)		Total (\$ millions)	Share (%)
1	Mizuho Financial Group Inc	9,103.68	21.57	Mitsubishi UFJ Securities	83,516.05	43.53
2	Nomura Securities Co Ltd	8,142.90	19.29	Mizuho Financial Group Inc	39,034.07	20.34
3	Daiwa Securities SMBC Co Ltd	7,104.99	16.83	Nomura Securities Co Ltd	19,880.52	10.36
4	Yamaichi Securities Co Ltd	5,307.89	12.57	Daiwa Securities Group Inc	11,370.08	5.93
5	Citigroup	5,170.83	12.25	Daiwa Securities SMBC Ltd	10,381.17	5.41
6	Mitsubishi UFJ Securities	2,179.62	5.16	Citigroup	9,965.86	5.19
7	Daiwa Securities Group Inc	1,724.30	4.08	Shinsei Securities Co Ltd	4,161.61	2.17
8	Sumitomo Trust & Banking Ltd	1,227.68	2.91	Morgan Stanley	3,070.72	1.60
9	Iwai Securities Co	364.04	0.86	UFJ Central Leasing Co Ltd	2,629.50	1.37
10	Tokai Tokyo Securities Co Ltd	319.85	0.76	Goldman Sachs & Co	2,375.37	1.24
Total		40,645.78	96.29		186,384.95	97.14

Table 1**Annual League Tables for Yen-Denominated Corporate Bond Issuance**

(continued)

Panel B. Samurai Corporate Bond Issuance

Rank	Underwriter	1996		Underwriter	2001	
		Total (\$ millions)	Share (%)		Total (\$ millions)	Share (%)
1	Nomura Securities Co Ltd	12,761.62	33.10	Nomura Securities Co Ltd	4,350.09	21.42
2	Daiwa Securities SMBC Co Ltd	9,916.55	25.72	Merrill Lynch & Co	3,921.69	19.31
3	Nikko Cordial Securities Inc	9,008.79	23.36	Mizuho Financial Group Inc	3,781.54	18.62
4	Yamaichi Securities Co Ltd	5,438.26	14.10	Daiwa Securities Group Inc	3,307.79	16.29
5	Merrill Lynch & Co	621.30	1.61	Citigroup	1,356.34	6.68
6	Mizuho Financial Group Inc	552.50	1.43	Daiwa Securities SMBC Ltd	850.65	4.19
7	Mitsubishi UFJ Securities	232.41	0.60	Mitsubishi UFJ Securities	659.89	3.25
8	Deutsche Bank	29.04	0.08	Banc of America Securities	436.30	2.15
9	UBS	0.05	0.00	Morgan Stanley Bear Stearns & Co Inc	416.42	2.05
10	<none>				408.13	2.01
Total		38,560.51	100.00		19,488.82	95.96

Table 1

**Annual League Tables for Yen-Denominated Corporate Bond Issuance
(continued)**

Panel C. Euroyen Corporate Bond Issuance

Rank	Underwriter	1996		Underwriter	2001	
		Total (\$ millions)	Share (%)		Total (\$ millions)	Share (%)
1	Nomura Securities Co Ltd	9,879.54	20.03	Morgan Stanley Mizuho Financial Group Inc	25,681.80	33.56
2	Mitsubishi UFJ Securities Daiwa Securities	5,836.26	11.83	Merrill Lynch & Co	7,616.20	9.95
3	SMBC Co Ltd	5,660.67	11.48	Daiwa Securities SMBC Co Ltd	6,483.60	8.47
4	Nikko Cordial Securities Inc	5,446.88	11.04	Nomura Securities Co Ltd	5,881.65	7.69
5	Mizuho Financial Group Inc	5,282.25	10.71	Morgan Stanley Yamaichi International (Europe) Ltd	5,167.85	6.75
6	Morgan Stanley Yamaichi International (Europe) Ltd	2,976.55	6.04	Merrill Lynch & Co	4,609.75	6.02
7	Merrill Lynch & Co	2,352.33	4.77	Mitsubishi UFJ Securities	4,403.75	5.75
8	& Co	2,338.81	4.74	Citigroup	3,145.05	4.11
9	Citigroup	1,203.96	2.44	JP Morgan	2,588.41	3.38
10	Wako Securities Co Ltd	1,022.20	2.07	Barclays Capital	2,256.23	2.95
Total		41,999.45	85.16		67,834.29	88.65

Table 2
Summary statistics 1996-2001

	Domestic Market	Euro-yen Market	Samurai Market
Avg. log of total value of issue	18.7	16.7	19.1
% investment grade	98.0	96.6	81.8
Avg. years to maturity	5.8	6.6	4.1
% issuer first time	8.1	4.1	8.3
Avg. share of top underwriters	0.81	0.74	0.90
Avg. overall share of top underwriters	0.91	0.90	0.94
% collateralized	25.7	4.6	0
Avg. fee	0.0037	0.0035	0.0095
Avg. spread	0.45	0.35	1.08
Avg. Japanese underwriter share (%)	0.88	0.72	0.78
# of issues	3520	5809	385

Note: Monetary values are in current U.S. dollars.

Table 3
Domestic vs. foreign or mixed underwriters
1996-2001

	Domestic underwriters	Foreign or mixed underwriters	Difference
Log of total value	17.5 (0.02)	17.7 (0.03)	-0.3*** (0.04)
Investment grade	0.96 (0.002)	0.97 (0.004)	-0.01* (0.004)
Years to maturity	9.4 (0.09)	6.6 (0.15)	2.7*** (0.18)
Issuer first time	0.05 (0.003)	0.07 (0.005)	-0.02*** (0.006)
Collateralized	0.13 (0.004)	0.1 (0.006)	0.02*** (0.008)
Underwriter reputation	0.81 (0.005)	0.64 (0.01)	0.17*** (0.01)
Overall underwriter reputation	0.95 (0.002)	0.76 (0.009)	0.19*** (0.01)
Fee	0.004 (0.0001)	0.003 (0.0001)	0.002*** (0.0001)
Spread	0.53 (0.04)	0.39 (0.03)	0.14*** (0.05)
# of issues	7473	2241	--

Note: Characteristics of issues underwritten by domestic (Japanese) or foreign underwriters. Standard errors reported in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

Table 4
Determinants of underwriter nationality

Dependent variable: Share of Japanese underwriters

Estimation technique: OLS regression

	Full Sample	Euro-yen	Samurai	Domestic
<i>CONSTANT</i>	1.68*** (0.08)	1.71*** (0.10)	0.24 (0.30)	1.06*** (0.15)
<i>INVGRADE</i>	-0.09*** (0.02)	-0.12*** (0.03)	-0.10** (0.04)	-0.01 (0.04)
<i>LTOTVAL</i>	-0.06*** (0.004)	-0.07*** (0.01)	0.04** (0.02)	-0.005 (0.01)
<i>JAPANISSUER</i>	0.13*** (0.01)	0.14*** (0.01)	--	0.04 (0.07)
<i>UNSEASONED</i>	-0.05*** (0.02)	-0.08** (0.03)	0.04 (0.05)	-0.001 (0.02)
<i>LYRSMAT</i>	0.12*** (0.01)	0.15*** (0.01)	0.04 (0.03)	-0.07*** (0.01)
<i>DOMESTIC</i>	0.20*** (0.01)	--	--	--
<i>SAMURAI</i>	0.26*** (0.02)	--	--	--
<i>COLLATERAL</i>	0.10*** (0.01)	0.05 (0.03)	--	0.02 (0.02)
<i>1997</i>	-0.06*** (0.01)	-0.06*** (0.02)	0.03 (0.02)	0.03 (0.02)
<i>1998</i>	-0.02 (0.01)	-0.04* (0.02)	0.01 (0.09)	0.08*** (0.02)
<i>1999</i>	-0.17*** (0.02)	-0.23*** (0.02)	-0.47*** (0.10)	-0.04 (0.02)
<i>2000</i>	-0.18*** (0.01)	-0.15*** (0.02)	-0.54*** (0.06)	-0.13*** (0.03)
<i>2001</i>	-0.13*** (0.01)	-0.16*** (0.02)	-0.43*** (0.06)	-0.01 (0.03)
R-squared	0.182	0.228	0.403	0.063
Observations	9713	5809	384	3520

Note: Ordinary least squares regression of determinant of share of Japanese underwriters, with robust standard errors in parentheses. Year dummies have been estimated, but are not reported. * indicates 10% significance; ** 5% significance; and *** 1% significance.

Table 5.
Determinants of underwriter nationality

Dependent variable: Indicator variable for foreign underwriters
Estimation technique: First stage of regression model with endogenous switching and based on fees

	Euro-yen and Samurai markets after 1995
<i>CONSTANT</i>	-4.537 ^{***} (0.498)
<i>INVGRADE</i>	+0.324 ^{**} (0.147)
<i>LTOTVAL</i>	+0.280 ^{***} (0.026)
<i>JAPANISSUE</i>	-0.570 ^{***} (0.087)
<i>UNSEASONED</i>	-0.048 (0.139)
<i>LYRSMAT</i>	-0.526 ^{***} (0.044)
<i>COLLATERAL</i>	-0.362 ^{**} (0.163)
<i>YIELD</i>	-0.167 ^{***} (0.021)
<i>SAMURAI</i>	-0.734 ^{***} (0.113)
Observations	2,462

Note: Year dummies have been estimated, but are not reported. * indicates 10% significance; ** 5% significance; and *** 1% significance.

Table 6.
Determinants of Underwriting Fees

Dependent variable: Underwriter fees/total value of issue
Estimation technique: IV regression

	(1)	(2)	(3)	(4)
<i>CONSTANT</i>	+0.061*** (0.018)	+0.067*** (0.023)	+0.007 (0.005)	+0.007 (0.005)
<i>JSHARE</i>	-0.039*** (0.011)	-0.047*** (0.015)	-0.008** (0.003)	-0.008** (0.003)
<i>INVGRADE</i>	-0.002 (0.001)	-0.002 (0.002)	+0.000 (0.000)	+0.000 (0.000)
<i>LTOTVAL</i>	-0.002*** (0.001)	-0.003*** (0.001)	-0.000 (0.000)	-0.000 (0.000)
<i>LYRSMAT</i>	+0.004*** (0.001)	+0.005*** (0.002)	-0.001 (0.000)	-0.001 (0.001)
<i>COLLATERAL</i>	+0.001 (0.002)	+0.001 (0.002)	+0.000 (0.001)	+0.000 (0.001)
<i>UNDREP</i>	+0.013*** (0.003)	+0.009*** (0.003)	+0.003*** (0.001)	+0.002*** (0.001)
<i>OVERUNDREP</i>	---	+0.011** (0.004)	---	+0.002* (0.001)
<i>UNSEASONED</i>	-0.001 (0.001)	-0.002 (0.002)	-0.000 (0.000)	-0.000 (0.000)
<i>YIELD</i>	---	---	+0.001*** (0.000)	+0.001*** (0.000)
<i>SAMURAI</i>	+0.013*** (0.002)	+0.014*** (0.003)	+0.004*** (0.001)	+0.004*** (0.001)
Observations	3,069	3,069	2,462	2,462

Note: IV estimation of underwriter fees, with robust standard errors in parentheses. Year dummies have been estimated, but are not reported. * indicates 10% significance; ** 5% significance; and *** 1% significance.

Table 7.
Determinants of underwriting fees

Dependent variable: Underwriter fees/total value of issue

Estimation technique: Second stage of regression model with endogenous switching

	Euro-yen and Samurai markets after 1995	
	Domestic underwriter	Foreign underwriter
<i>CONSTANT</i>	-0.733*** (0.132)	+0.068 (0.260)
<i>INVGRADE</i>	+0.167*** (0.031)	+0.029 (0.062)
<i>LTOTVAL</i>	+0.055*** (0.007)	-0.006 (0.014)
<i>UNSEASONED</i>	-0.004 (0.031)	-0.001 (0.044)
<i>LYRSMAT</i>	-0.154*** (0.012)	-0.098*** (0.021)
<i>COLLATERAL</i>	-0.091** (0.045)	-0.100* (0.060)
<i>UNDREP</i>	+0.050 (0.038)	+0.056** (0.028)
<i>YIELD</i>	+0.092*** (0.004)	+0.215*** (0.009)
<i>SAMURAI</i>	+0.350*** (0.030)	
Observations	2,462	

Note: Year dummies have been estimated, but are not reported. * indicates 10% significance; ** 5% significance; and *** 1% significance.

Table 8.
Counterfactual analysis of fees in the Euroyen and samurai markets after 1995

Borrower type	Underwriter nationality	Fees (in basis points)		
		Actual	Counter-factual	Difference
All	Foreign	+38.089	+55.374	+17.285***
	Japanese	+50.935	+63.507	+12.572***
Japanese	Foreign	+18.992	+39.122	+20.130***
	Japanese	+29.214	+39.791	+10.576***
Foreign	Foreign	+42.014	+58.714	+16.700***
	Japanese	+62.918	+76.590	+13.672***
Seasoned	Foreign	+28.024	+49.012	+20.988***
	Japanese	+63.010	+65.467	+2.457
Unseasoned	Foreign	+38.892	+55.881	+16.990***
	Japanese	+50.375	+63.416	+13.041***
Low reputation underwriter	Foreign	+35.837	+53.561	+17.725***
	Japanese	+47.827	+61.333	+13.506***
High reputation underwriter	Foreign	+38.948	+56.065	+17.117***
	Japanese	+51.140	+63.650	+12.510***

Note: With regard to the rejection of the null hypothesis that the mean difference is zero, * indicates 10% significance; ** indicates 5% significance; and *** indicates 1% significance.

Table 9.
Summary statistics
Samurai and Euroyen-Foreign: 1992-2001

	Samurai 92-95	Samurai 96-01	Euroyen- Foreign 92-95	Euroyen- Foreign 96-01
Avg. Japanese underwriter share (%)	1.00	0.78	0.71	0.68
Avg. years to maturity	6.55	5.38	6.37	11.40
% investment grade	67.73	81.82	96.03	98.99
Avg. log of total value of issue	19.17	19.09	18.05	16.72
% issuer first time	30.91	8.31	19.61	5.17
Avg. share of top underwriters	0.81	0.90	0.78	0.72
Avg. overall share of top underwriters	0.83	0.94	0.78	0.90
% collateralized	0.45	0.00	1.59	3.96
Avg. fee	0.01	0.01	0.003	0.004
Avg. spread	1.16	1.08	0.56	0.34
# of issues	220	385	882	4063

Table 10
Impact of liberalization in Samurai market

Dependent Variable: Underwriting fees

	Unmatched	Mahalanobis Match	Mahalanobis match Reduced caliper	Propensity scoring one-to-one	Propensity scoring Nearest neighbor
Full Sample					
Treated	0.00817	0.00817	0.00842	0.00817	0.0081
Controls	0.00495	0.00540	0.00529	0.00611	0.0062
Difference	0.00322***	0.00277***	0.00313***	0.00206***	0.00190***
S.E.	0.00032	0.00070	0.00072	0.00056	0.00041
T-stat	9.92	3.96	4.32	3.66	4.63
Untreated	2645	2645	2645	2645	2645
Treated	214	214	194	214	214
Domestic UWs					
Treated	0.00820	0.00820	0.00839	0.00820	0.00820
Controls	0.00538	0.00552	0.00549	0.00538	0.00639
Difference	0.00283***	0.00268***	0.00290***	0.00283***	0.00182***
S.E.	0.00033	0.00077	0.00080	0.00033	0.00042
T-stat	8.49	3.47	3.60	4.98	4.35
Untreated	1940	1940	1940	1940	1940
Treated	212	212	184	212	212

Note: Difference-in-differences matching exercise. *** indicates statistical significance at 1% confidence.

Figure 1

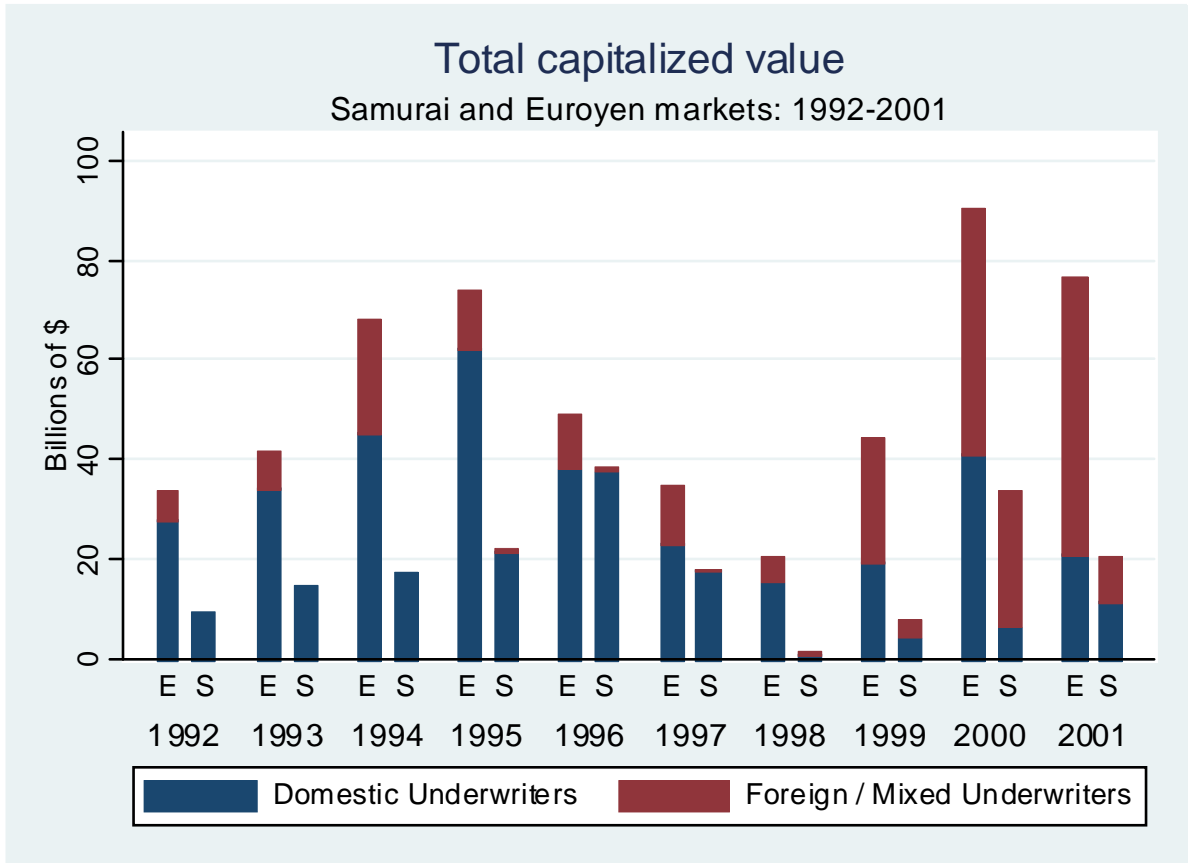


Figure 2

