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

Jose A. Lopez

and

Mark M. Spiegel*

Federal Reserve Bank of San Francisco

ABSTRACT

We examine the impact of foreign entry into Japanese underwriting subsequent to the "big bang" liberalizations of the 1990s, using data on yen-denominated securities in the domestic Japanese, Samurai, and euro-yen markets. We first examine the determinants of underwriter choice. Issuers choosing Japanese over foreign underwriters tend to be riskier, seasoned, Japanese, collateralized, and have smaller issues. After conditioning for issuer characteristics and instrumenting for the foreign underwriter decision, we find that foreign underwriters actually charged higher fees than their domestic Japanese counterparts.

We then turn to the implications of allowing entry by foreign underwriters, by examining underwriter fees on foreign issues charged before and after the 1996 liberalization of foreign access to the Japanese "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. Our overall results therefore suggest that even though foreign underwriters tend to earn higher fees, liberalization that allows their participation in underwriting services can lead to reductions in intermediation costs.

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 Various restrictions that had limited the activities of foreign issuers and underwriters were repealed during the 1990s, with restrictions on foreign participation in underwriting in the Samurai market being removed in mid-1995.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 desirability of opening up the Japanese securities markets to foreign competition 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 investments 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,

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have led some to question whether Japanese securities markets will suffer from the so-called "Wimbledon effect," where robust financial issuing 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 a two-step 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. We find that using a foreign underwriter does not result in a reduction in fees. On the contrary, 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.

In addition, we examine the impact that foreign underwriters had on bond yields as well as fees in the international, yen-denominated bond markets using the endogenous switching regressions employed by Fang (2005). There we find that the entry of foreign underwriters seems to have contributed to a reduction in fees, although primarily by Japanese underwriters, as well as generally reduced borrowing costs in terms of lower yields to maturity.

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[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.

The higher fees charged by foreign underwriters may be compensation for superior service. To investigate this possibility, we turn in the second 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 effect the terms of securities issues were also taking place. To account for this, we conduct a difference-in-differences test of the impact of opening up the Samurai market, using the terms faced by foreign issuers in the yen-denominated Eurobond 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 demonstrate that despite our finding in the earlier portion of the paper that foreign underwriters tend on average to charge higher fees, opening up the Samurai market to foreign underwriters resulted in a reduction in a statistically and economically significant reduction in underwriting fees. This results are shown to be robust to a variety of matching techniques, including Mahalanobis and propensity scoring matching.

The remainder of this paper is divided into seven sections. Section 2 reviews the literature concerning underwriter choice and the determination of underwriter fees.

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[2] See, for example, Packer (1997).

Section 3 discusses our data set. Section 4 examines the determinants of choosing a domestic or foreign underwriter. Section 5 examines the determinants and implications of the choice between domestic and foreign underwriters. 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 liberalized 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. The foreign underwriters' share of the domestic corporate bond market actually decreased slightly from 12.25% to 8%. However, the shares for the Samurai market increased just under 2% to almost 33% of total issuance, and the shares for the euro-yen market rose from 13% to almost 60%.

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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.

There have also been studies concerning the impact of foreign competition on the banking sector. Claessens and Glaessner (1998) find that the costs of financial services in eight developing Asian economies are decreasing in those countries' financial openness. Another 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.

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

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

3,520 in the domestic Japanese bond market from 1996 through 2001.[4] 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

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 percentage of unseasoned issues are 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

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[4] Domestic Japanese bond market data was not available in this dataset prior to 1996.

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 or 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 lead manage the issue.[5] 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.

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. The first technique is standard regression analysis on the discrete variable that is the percentage of an issue's underwriters that are foreign. The second technique is the first stage of the regression model with endogenous switching used by Fang (2005).

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[5] Because data on shares of fees in 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.

4.1 Regression analysis

With respect to the first estimation technique based on the share of Japanese underwriter participation, our dependent variable 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. Our results are reported in Table 4. 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 measure of firm creditworthiness is *INVGRADE,* which is an indicator variable for 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

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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, c 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, *LYRSMAT,* 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

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, then, it appears 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 approach

taken by Fang (2005). Specifically, we treat the decision between foreign and Japanese

underwriters 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 for four model and sample specifications. We examine Euroyen bond issues from 1992 through 2001, and a pooled sample of Euroyen and samurai bonds over the same period. The two specifications we use are based on explaining the determinants of an issue's total fees and yield-to-maturity in the second stage estimation.

For the specification based on fees and presented in Table 5A, the empirical results for Euroyen bonds suggest that foreign underwriters were preferred for larger issues and by less risky (i.e., investment grade) firms. These results are in lines with the standard regression analysis in the previous section, however the empirical results for the combination of the Euroyen and samurai markets suggest only larger issues were steered toward foreign underwriters. With regard to Japanese underwriters, in addition to being favored for smaller and riskier bond issues, issues with longer maturities were more likely to be underwritten by Japanese firms. In addition, a desire by the bond issuer to use an underwriter with greater prior market share and experience (i.e., underwriter reputation) led them to prefer Japanese underwriters.

For the specification based on bond yields and presented in Table 5B, the selection equation results are similar. That is, larger issues and investment-grade issuers are more likely to use foreign underwriters for their international, yen-denominated bonds. In contrast, smaller issues and riskier issues, as well as issues by Japanese firms, longer maturity issues and collateralized issues, are more likely to choose a Japanese underwriter. These results are common across the Euroyen and the combined samples.

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Overall, the results in this section suggest that foreign underwriters were preferred by certain issuers in the international, yen-denominated bond markets, suggesting that their presence may have served to expand the set of issuers into these markets.

5. Determinants of underwriter fees and bond yields

This section examines the determinants of underwriter fees and bond yields in the yen-denominated markets in our sample using two estimation techniques. The first technique is an instrumental variables estimation analysis of underwriting fees. The second technique is the second-stage analysis of the regression model with endogenous switching, as used by Fang (2005).

5.1 Instrumental variable regression analysis

With respect to the first technique, we use instrumental variables for our estimation, because the nationality of issuer is endogenous, as we discussed in the previous section. 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 introduce underwriter reputation in two forms: *UNDREP* measures

underwriter reputation in the market in which the issue is being made. *UNDREP* takes

value one if the underwriter used in the transaction is in the top ten in the market of issue

in the total value of underwriting activity and zero otherwise. *OVERUNDREP* measures

the overall underwriter reputation in all of the three markets in our sample.

OVERUNDREP takes value one if the underwriter used in the transaction is in the top ten

in the three markets in our sample combined and zero otherwise. Model 1 runs our

specification with only *UNDREP*, while Model 2 includes 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 spread paid on debt. As such, underwriters that can

place a certain amount of debt at lower spreads can charge higher fees than those cannot.

To some extent, this effect should be already captured through our underwriter reputation

variables, but we do have spread data for a portion of the individual bond issues in our

sample. We therefore add the variable, *SPREAD,* to our specification in Models 3 and 4

as a check of the robustness of our results. The addition of these variables reduces our

sample size from 3,540 to 496 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, indicating that underwriter fees are

decreasing in the share of Japanese underwriters after instrumenting for other

endogeneity and conditioning for other issuer characteristics. This result is surprising

because it is commonly thought that foreign underwriters compete 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 negatively and significantly, as expected, suggested that lower fees are charged to higher quality issuers. We also find that fees are decreasing in *LTOTVAL,* suggesting some economies of scale in the provision of underwriting services. *LYRSMAT* enters positively and significantly throughout, as expected, indicating that a positive premium is paid partly through underwriter fees for longer issues. *COLLATERAL* consistently enters with a negative coefficient estimate, but is insignificant for our larger sample. However, it is statistically significant as well for the smaller sample with *SPREAD* included

Concerning underwriter reputation, both *UNDREP* and *OVERUNDREP* enter positively at statistically significant levels, again 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. Note that these variables become insignificant when we introduce the *SPREAD* variable, a direct measure of the terms that the underwriter delivered to the issuer. Our measure of issuer reputation, *UNSEASONED,* is insignificant throughout.

The *SPREAD* 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 spread reductions. Still it may be the case that the spread 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 *DOMESTIC* and *SAMURAI* variables are both positive and significant, validating the contention that fees are higher in the Samurai and domestic markets than in the euro-yen market.

Overall, our results seem reasonable and intuitive. Underwriter fees are higher for longer-term, riskier, and uncollateralized issues. Fees are also higher for issues with more reputable underwriters and in the domestic and Samurai market relative to the euro-yen market. The surprising result we obtained was that after instrumenting for endogeneity and conditioning for other issue characteristics, fees were lower for Japanese underwriters than for foreign underwriters.

5.2 Endogenous switching regressions

Turning now to the second estimation procedure, we again follow closely the approach taken by Fang (2005). Specifically, 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. Note that while the explanatory variables are the same across the two equations, the coefficients are permitted to be different. The unobserved (or missing) variables related to underwriter choice are accounted for in this regression by introducing the appropriate Mills-ratio terms generated from the first stage of the

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estimation, as discussed in section 4.2. 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 7A. These results reinforce those presented above: Fees appear to be negatively correlated with issue size in the euroyen market and in the combined euroyen and samurai markets, but only for the Japanese underwriters, who account for between 70 to 80 percent of the underwriting activity over our full sample period. In contrast, foreign firms are shown to have a positive relationship between fees and issue size, which suggests, in light of the selection equation result, that foreign underwriters are more likely to underwrite large bond issues.

Using similar reasoning, the fees charged by Japanese underwriters for longer-term securities and for the issuance of samurai bonds, which they were found to be more likely to underwrite, are also higher at statistically significant levels. We also find that underwriter reputation leads to fee increases for the Japanese underwriters. However, this is not the case for foreign underwriters; i.e., these coefficients are not statistically significant in the foreign underwriters' regression equation. Another interesting difference highlighted by these results is that Japanese underwriters were willing to charge lower fees for investment grade issuers in the Euroyen market, even though they were less likely to be chosen for these issues. Overall though, these results suggest that higher fees represented compensation for preferred underwriter characteristics, which is in line with Fang's (2005) results indicating higher fees for reputable banks in the U.S. corporate bond market.

We next examine whether the higher fees represented compensation for the superior ability of chosen underwriters to issue at reduced fees, as in Fang, by conducting

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the endogenous switching regressions using the sample bonds' yields-to-maturity. These results are presented in Table 7B. We find that longer-term securities pay statistically significantly higher yields using both foreign and Japanese underwriters, as expected. We also find that investment-grade borrowers have lower risk spreads and bond yields, regardless of underwriter type.

We also find a preference for foreign underwriters among larger issues in our pooled sample, as foreign underwriters achieve statistically significant lower yields. However, the attributes that appear to motivate those who choose Japanese underwriters, namely their deeper experience and reputation, does not lead to lower bond yields; in fact, issues with more experienced Japanese underwriters pay higher yields in both markets. Overall, our results suggest that issuers pay premia to underwriters with preferred characteristics that lead to lower yields.

In conclusion, while the results presented in this section suggest that foreign underwriters in yen-denominated bond markets actually charge higher fees than Japanese underwriters, they are silent on two issues: First, they do not imply that Japanese underwriters are "cheaper" in a true sense of the word. It may be the case that foreign underwriters are delivering a superior product to that offered by Japanese underwriters, which more than compensates for the discrepancy in fees. Second, they certainly do not imply that foreign competition in underwriting reduces the overall cost of issuing in yen-denominated bond markets. We move towards addressing the latter question in the following section.

6. "Big Bang Deregulation in the Samurai Market

As discussed in the previous section, 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 discussed by Hoshi and Kashyap (2001), the Japanese big bang reforms were not completely a discrete liberalization, but were an acceleration of the liberalization process that took place throughout the decade. 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.[6]   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.

Still, as shown in Figure 1, 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]   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

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[6] For more detailed descriptions, see Hoshi and Kashyap (1999), de Jong et al. (2005), and Yasuda (2007).

[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.

States that reduced restrictions on the ability of corporations to issue or sell securities in domestic and foreign markets.[8]

As shown in Figure 1, 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 8. It can be seen that participation by foreign underwriters increased in both markets. 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 0.32% 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

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[8] See U.S. Treasury Department (1995)

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 in 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%. In the end, it is difficult to assess which market experienced the more dramatic fall in issuing costs, as the euro-yen market experienced both the greater decline in fees and in interest rate spreads.

Still, the summary statistics demonstrate that 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%. 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.[9] 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, $md\left(X_i, X_j\right)$, satisfies

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

where S is the sample covariance of X.

Our characteristic vector includes the conditioning variable 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 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

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[9] 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.

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, COLLLATERAL, 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.

Our setup is a little non-standard, because 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 9. 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.[10]

7. Conclusion

This paper examines the impact of foreign participation in underwriting services on Japanese bond markets. 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 are favored by firms that are riskier, seasoned and Japanese, and those that making issues that are smaller, and collateralized issues. Issuers that are larger, safer and non-Japanese tend to be more likely to choose foreign underwriters in yen-denominated markets. Indeed, while domestic underwriters were found to charge higher fees on average, after conditioning for issue characteristics and instrumenting for the foreign underwriter decision, we found that foreign underwriters actually charged higher fees than their domestic Japanese counterparts.

We then examined the impact of foreign underwriter competition on conditions in the Japanese bond market, using the case of the 1996 liberalization of foreign participation in the Japanese Samurai bond market. We conducted a Mahalonobis and propensity scoring matching exercise, using foreign yen-denominated issues in the euro-

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[10] We also conducted a number of robustness tests. First, we ran both Mahalonobis 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.

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

Overall, our results therefore indicate that despite the fact that foreign underwriters appear to be more expensive in terms of fees, they appear to provide competition for their domestic Japanese counterparts in a manner that increases market competition. As such, our results favor the contention that liberalization in underwriting services tends to reduce the cost of financial services.

References

Carter, Richard, and Steven Manaster, (1990), "Initial Public Offerings and Underwriter Reputation, *Journal of Finance,* 45(4), 1045-1067.

Claessens, S. and Glaessner, T., 1998. "Internationalization of Financial Services in Asia," Policy Research Working Paper #1911, World Bank.

Fang, Lily Hua, (2005), "Investment Bank Reputation and the Price and Quality of Underwriting Services," *Journal of Finance,* 60(6), 2729-2761.

Fernando, Chitru S., Vladimir A. Gatchev, and Paul A. Spindt, (2005), "Wanna Dance? How Firms and Underwriters Choose Each Other, *Journal of Finance,* 60(5), 2437-2468.

Goldberg, L, 2006. "The International Exposure of U.S. Banks: Europe and Latin America Compared," in Edwards, S., ed. *Capital Controls and Capital Flows in Emerging Economies: Policies, Practices and Consequences.* NBER and University of Chicago Press, forthcoming.

Hoshi, Takeo and Anil K. Kashyap, (2001), *Corporate Financing and Governance in Japan,* MIT Press, Cambridge, Massachusetts.

James, Christopher, (1992), "Relationship-Specific Assets and the Pricing of Underwriter Services, *Journal of Finance,* 47(5), 1865-1885.

Kroszner, Randall S. and Raghuram G. Rajan, (1994), "Is the Glass-Steagall Act Justified? A Study of the U.S. Experience with Universal Banking Before 1933," *American Economic Review,* 84(4), 810-832.

McKenzie, C.R. and Sumiko Takaoka, (2003), "The Impact of Japanese Deregulation on the Euro-Yen Bond Market," in D.A. Post, ed., *MODSIM 2003 International Congress on Modeling and Simulation Proceedings,* vol. 3: Socio-Economic Systems, Modeling and Simulation Society of Australia and New Zealand, Townsville, 1463-1468.

McKenzie, C.R. and Sumiko Takaoka, (2006), "The Impact of Bank entry in the Japanese Corporate Bond Market," *Journal of Banking and Finance,* 30, 59-83.

Nishi, Fumiaki and Alexander Vergas, (2007), "Asian Bond Issues in Tokyo: History, Structure and Prospects," BIS Papers, no. 30, 143-167.

Packer, Frank and Elizabeth Reynolds, (1997), "The Samurai bond Market," *Current Issues in Economics and Finance,* 3(8), June, 1-6.

Peek, J. and Rosengren, E.S., 1997. "The International Transmission of Financial Shocks: The Case of Japan," *American Economic Review,* 87, 495-505.

Peek, J. and Rosengren, E.S., 2000. "Collateral Damage: Effects of the Japanese Bank Crisis on Real Activity in the United States," *American Economic Review,* 90, 30-45.

Pohl, Nicole, (2002), "Foreign Penetration of Japan's Investment Banking Market: Will Japan Experience the Wimbledon Effect?," APARC Research Paper, Stanford University.

Yasuda, Ayako, (2005), "Do Bank Relationships Affect the Firm's Underwriter Choice in the Corporate-Bond Market?," Journal of Finance, 60(3).

Table 1

Annual League Tables for Yen-Denominated Corporate Bond Issuance

Panel A. Domestic Corporate Bond Issuance

Rank	1996 Underwriter	Total ($ millions)	Share (%)	2001 Underwriter	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)

<u>**Panel B. Samurai Corporate Bond Issuance**</u>

Rank	Underwriter	1996 Total ($ millions)	Share (%)	Underwriter	2001 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	416.42	2.05
10	<none>			Bear Stearns & Co Inc	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

		1996 Total ($ millions)	Share (%)		2001 Total ($ millions)	Share (%)
Rank	Underwriter			Underwriter		
1	Nomura Securities Co Ltd	9,879.54	20.03	Morgan Stanley	25,681.80	33.56
2	Mitsubishi UFJ Securities	5,836.26	11.83	Mizuho Financial Group Inc	7,616.20	9.95
3	Daiwa Securities SMBC Co Ltd	5,660.67	11.48	Merrill Lynch & Co	6,483.60	8.47
4	Nikko Cordial Securities Inc	5,446.88	11.04	Daiwa Securities SMBC Co Ltd	5,881.65	7.69
5	Mizuho Financial Group Inc	5,282.25	10.71	Nomura Securities Co Ltd	5,167.85	6.75
6	Morgan Stanley	2,976.55	6.04	UBS	4,609.75	6.02
7	Yamaichi International (Europe) Ltd	2,352.33	4.77	Mitsubishi UFJ Securities	4,403.75	5.75
8	Merrill Lynch & 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: 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
CONSTANT	1.68***	1.71***	0.24	1.06***
	(0.08)	(0.10)	(0.30)	(0.15)
INVGRADE	-0.09***	-0.12***	-0.10**	-0.01
	(0.02)	(0.03)	(0.04)	(0.04)
LTOTVAL	-0.06***	-0.07***	0.04**	-0.005
	(0.004)	(0.01)	(0.02)	(0.01)
JAPANISSUE	0.13***	0.14***	--	0.04
	(0.01)	(0.01)		(0.07)
UNSEASONED	-0.05***	-0.08**	0.04	-0.001
	(0.02)	(0.03)	(0.05)	(0.02)
LYRSMAT	0.12***	0.15***	0.04	-0.07***
	(0.01)	(0.01)	(0.03)	(0.01)
DOMESTIC	0.20***	--	--	--
	(0.01)			
SAMURAI	0.26***	--	--	--
	(0.02)			
COLLATERAL	0.10***	0.05	--	0.02
	(0.01)	(0.03)		(0.02)
1997	-0.06***	-0.06***	0.03	0.03
	(0.01)	(0.02)	(0.02)	(0.02)
1998	-0.02	-0.04*	0.01	0.08***
	(0.01)	(0.02)	(0.09)	(0.02)
1999	-0.17***	-0.23***	-0.47***	-0.04
	(0.02)	(0.02)	(0.10)	(0.02)
2000	-0.18***	-0.15***	-0.54***	-0.13***
	(0.01)	(0.02)	(0.06)	(0.03)
2001	-0.13***	-0.16***	-0.43***	-0.01
	(0.01)	(0.02)	(0.06)	(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 5A
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	Euro-yen & Samurai
CONSTANT	-2.60	-2.35
INVGRADE	+0.144 ** (0.058)	-0.051
LTOTVAL	+0.024 *** (0.005)	+0.030 *** (0.005)
JAPANISSUE	-0.000	-0.000
UNSEASONED	-0.000	-0.000
LYRSMAT	-0.199 *** (0.019)	-0.141 *** (0.018)
SAMURAI	-	-0.481 *** (0.076)
SAMURAI after 1995	-	-0.720 *** (0.134)
COLLATERAL	+0.064	+0.045
UNDREP	-0.405 *** (0.052)	-0.485 *** (0.051)
Observations	4,553	5,102

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

Table 5B
Determinants of underwriter nationality

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

	Euro-yen	Euro-yen & Samurai
CONSTANT	-1.32 *** (0.331)	-1.32 *** (0.323)
INVGRADE	+0.311 *** (0.078)	+0.169 ** (0.070)
LTOTVAL	+0.068 *** (0.015)	+0.074 *** (0.014)
JAPANISSUE	-0.302 *** (0.031)	-0.311 *** (0.031)
UNSEASONED	+0.066	+0.065
LYRSMAT	-0.497 *** (0.023)	-0.438 *** (0.022)
SAMURAI	-	-1.062 *** (0.221)
SAMURAI after 1995	-	+0.263
COLLATERAL	-0.191 ** (0.96)	-0.198 ** (0.096)
UNDREP	-0.633 *** (0.43)	-0.668 *** (0.043)
Observations	5,618	6,188

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)
CONSTANT	0.068***	0.075***	0.013***	0.012***
	(0.019)	(0.026)	(0.004)	(0.004)
JSHARE	-0.041***	-0.051***	-0.007*	-0.007*
	(0.011)	(0.017)	(0.004)	(0.004)
INVGRADE	-0.002*	-0.003*	-0.001*	-0.001*
	(0.001)	(0.002)	(0.001)	(0.001)
LTOTVAL	-0.003***	-0.003***	-0.000**	-0.000**
	(0.001)	(0.001)	(0.000)	(0.000)
LYRSMAT	0.004***	0.005***	0.001**	0.001**
	(0.001)	(0.002)	(0.000)	(0.000)
COLLATERAL	-0.001	-0.001	-0.002***	-0.002***
	(0.002)	(0.002)	(0.001)	(0.001)
UNDREP	0.010***	0.006**	0.000	-0.000
	(0.003)	(0.002)	(0.001)	(0.000)
OVERUNDREP	--	0.014***	--	0.002
		(0.005)		(0.002)
UNSEASONED	-0.001	-0.002	-0.000	-0.000
	(0.001)	(0.002)	(0.000)	(0.000)
SPREAD	--	--	0.002***	0.002***
			(0.000)	(0.000)
DOMESTIC	0.013***	0.015***	0.004**	0.004**
	(0.004)	(0.005)	(0.002)	(0.002)
SAMURAI	0.013***	0.014***	0.001	0.001
	(0.002)	(0.003)	(0.001)	(0.001)
1997	-0.001	-0.002	-0.001	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)
1998	-0.002	-0.003	0.000	0.000
	(0.001)	(0.002)	(0.002)	(0.001)
1999	-0.003***	-0.004**	-0.002	-0.002
	(0.001)	(0.002)	(0.002)	(0.002)
2000	-0.009***	-0.010***	-0.003*	-0.004*
	(0.002)	(0.003)	(0.002)	(0.002)
2001	-0.012***	-0.015***	-0.003*	-0.004**
	(0.003)	(0.005)	(0.002)	(0.002)
Observations	3540	3540	496	496

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 7A
Determinants of underwriting fees

Dependent variable: Underwriter fees/total value of issue
Estimation technique: Second stage of regression model with endogenous switching

	Euro-yen		Euro-yen & Samurai	
	Domestic underwriter	Foreign underwriter	Domestic underwriter	Foreign underwriter
CONSTANT	+1.382 *** (0.015)	-0.255	+1.317 *** (0.013)	-0.028
INVGRADE	-0.066 ** (0.027)	-0.078	+0.024	-0.104
LTOTVAL	-0.011 *** (0.002)	+0.0380 *** (0.009)	-0.014 *** (0.002)	+0.025 *** (0.014)
LYRSMAT	+0.091 *** (0.009)	-0.004	+0.068 *** (0.009)	-0.006
SAMURAI	-	-	+0.264 *** (0.036)	+0.129
SAMURAI after 1995	-	-	+0.410 *** (0.046)	+0.165
COLLATERAL	-0.030	-0.051	-0.021	-0.020
UNDREP	+0.186 *** (0.024)	-0.019	+0.233 *** (0.025)	-0.020
Observations	4,553		5,102	

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

Table 7B
Determinants of bond yields-to-maturity

Dependent variable: Bond yield-to-maturity
Estimation technique: Second stage of regression model with endogenous switching

	Euro-yen		Euro-yen & Samurai	
	Domestic underwriter	Foreign underwriter	Domestic underwriter	Foreign underwriter
CONSTANT	+3.507 *** (0.453)	+4.826 *** (0.798)	+3.529 *** (0.434)	+5.626 *** (0.788)
INVGRADE	-0.497 *** (0.090)	-0.257	-0.282 *** (0.080)	-0.454 ** (0.203)
LTOTVAL	-0.010	-0.038	-0.021	-0.067 ** (0.028)
LYRSMAT	+1.394 *** (0.034)	+0.987 *** (0.052)	+1.302 *** (0.033)	+0.960 *** (0.049)
SAMURAI	-	-	+1.468 *** (0.130)	+0.155
SAMURAI after 1995	-	-	+0.279 * (0.164)	+0.631
COLLATERAL	-0.248 * (0.148)	-0.123	-0.236	-0.047
UNDREP	+0.692 *** (0.070)	0.183	+0.761 *** (0.070)	-0.151 * (0.087)
Observations	5,618		6,188	

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

Table 8
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 9
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
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

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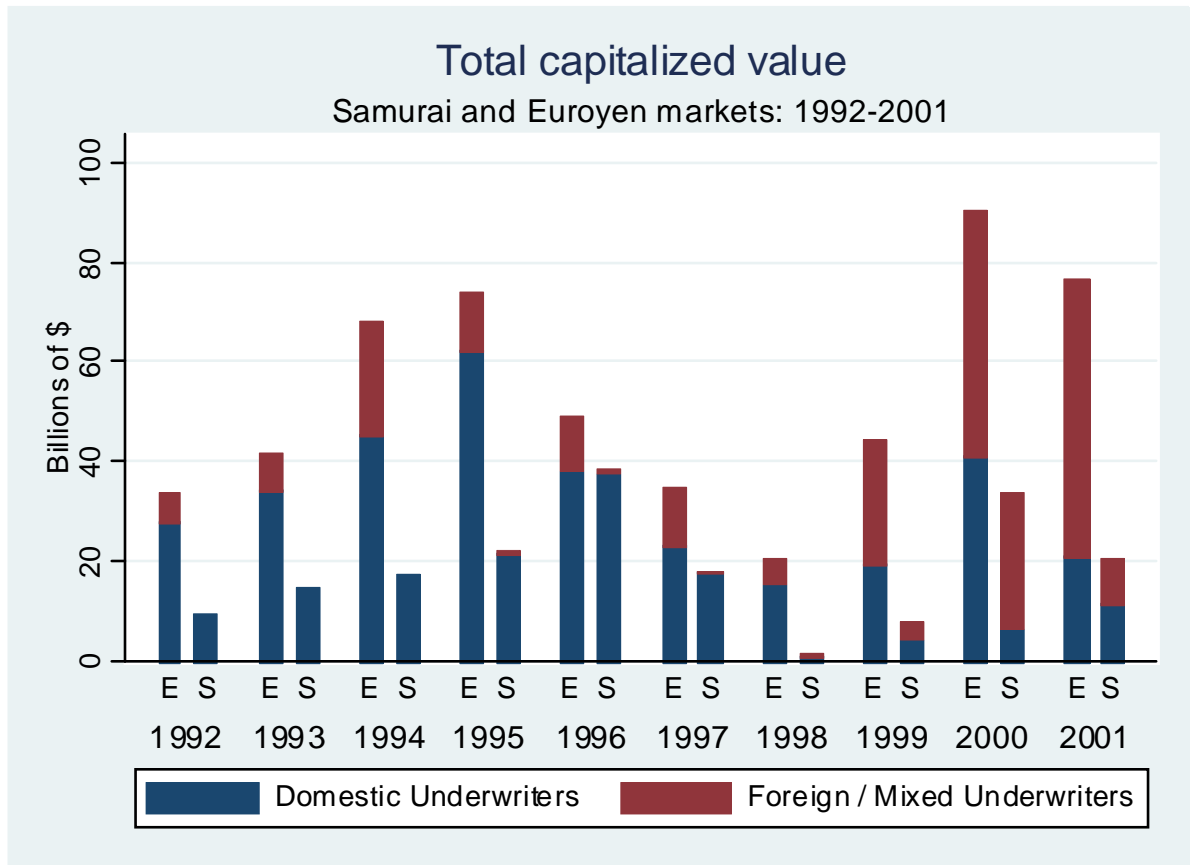
Figure 1

Total capitalized value

Samurai and Euroyen markets: 1992-2001

Figure 2

Average fees
1992-2001