1. INTRODUCTION

The evidence, that prices of syndicated corporate loans differ between the European and U.S. markets, with interest rate spreads, smaller in Europe by about 30 basis points on average over the past decade, after controlling for risk and other factors, is statistically significant. The differences are economically and statistically significant, with spreads in the European market about 20 percent less than comparable spreads in the U.S. Levels of differences are larger for riskier borrowers, but differences are proportional to levels of spreads across the risk spectrum. I cannot reject a hypothesis that price differences are as large today as they were a decade ago. I control for a host of factors known (or thought) to affect corporate debt decisions and pricing, but such controls have little effect on the pricing difference across markets. I interpret the evidence as implying that important determinants of loan pricing remain to be identified in the literature. It is a pricing puzzle. In contrast, lenders cross borders to a much greater extent.
About one-quarter of the volume of lending in the U.S. and European markets is provided by lenders headquartered elsewhere. Nevertheless, syndicated loan participations are still characterized by a significant home “bias.” I analyze the impact of borrower and lender domicile, but cast my analysis in terms of market location because it is consistent with market practice and because it provides the most illuminating view. The reasons why “market” matters are a subject for future research this paper only provides evidence that it does.

The natural first hypothesis that might explain the differences in loan prices that I observe is that the characteristics of loans and borrowers differ across subsamples, that is, all else is not equal.

My empirical tests control for a wide variety of factors and mechanisms suggested in the corporate debt and financial intermediation literatures, including potential cross-market differences in: non-price terms of loans; asymmetric information or moral hazard (Petersen, Mitchell, and Raghuram Rajan, 2002); legal regime (La Porta et al 1997); multi-product package pricing practices; regulation (McCauley and Seth 1992); and others. I cannot reject a hypothesis that my finding is evidence of market inefficiency in the sense of myopic behavior by market participants, but the size of the pricing difference and the sophistication of syndicated loan market participants lead me to discount this possibility. The most active lenders are large banks headquartered in a variety of nations, each with significant international operations. Many lend in both the U.S. and Europe. Moreover, borrowers are large corporations, many with international operations. It is difficult to believe that such market participants would fail to exploit obvious opportunities to gain by crossing borders. I am left with an economically material pricing puzzle that I believe must be due to a friction that is not yet well understood, at least in the context of debt markets, and thus my results can be viewed as an implicit call for research into the nature of corporate loan markets that can explain the results. I have only one speculation to offer about the friction: Whatever is responsible for the home bias I observe may be an important element of the explanation, because limits to bank arbitrage of loan pricing differences seems to be a prerequisite for persistence of substantial differences. For example, the loan market trade press hints at explanations involving limited cross-region lending and borrowing by banks combined with differences in competition within regions. Recent articles have noted that European banks are awash in deposits and that they compete fiercely in making investments in Europe, driving down loan spreads. Ashcraft and Morgan (2003) suggest that a high incidence of relatively high-spread loans in a bank’s portfolio might be evidence of excessive risk-taking. My evidence implies that controlling for differences in loan and borrower characteristics may be important to proper regulato-
ry use of loan price information. For macroeconomists, my evidence implies that even large corporate loan markets of major industrial nations may be rather segmented. Thus, domestic regulatory and monetary policies may have a significant impact on the availability of loan finance and economic activity (Bernanke and Gertler, 1995).

One strand of the literature, including Flood and Rose (2003), tests whether the law of one price holds across markets, interpreting rejections as evidence of less than fully integrated markets. Another focuses on portfolio shares and capital flows (Karolyi and Stulz (2002) offer a survey). A third strand, including Berger, Dai, Ongena and Smith (2003) and Santos and Tsatsaronis (2002), examines whether the nationality of providers of financial services affects prices or quantities of such services. Most of the literature focuses on equity, bond and money markets. Adam et al 2002 offer a review that implies that some markets are integrated while others are not.

Other papers focused on syndicated lending include Nini (2003), which examines syndicated lending in emerging markets; Esty (2002), which examine syndicated project finance loans; Dennis and Mullineaux (2000), which studies syndicated loans in the U.S.; and Bae and Goyal (2003) and Casolaro, Focarelli, and Pozzolo (2003), which examine the pricing of internationally syndicated loans, and Angbazo, Mei and Saunders (1998), which reports estimates of factor models for highly leveraged transaction loans.

2. DATA AND INSTITUTIONAL BACKGROUND

Though loans have been syndicated at least since the Medici era, the market became organized and prominent beginning in the 1960s, serving large multinational corporations, sovereigns, and quasi-governmental entities. Syndicated loans are typically floating-rate debt in which the interest rate paid on outstanding balances is specified as a market-determined base rate plus a spread specified in the loan contract. The rate the borrowers pays is reset periodically to reflect the market value of the base rate at the time. The base rate is frequently LIBOR, but EURIBOR, TIBOR and other base rates are also used. All lenders are party to the same debt contract. During syndication, one or more lead lenders seek other lenders to be party to the contract, relieving the borrower of the need to find lenders and to negotiate a separate contract with each lender. Loans are characterized according to the location of the market in which they are issued as well as by the location of the borrower and the lenders. For example, the early modern syndicated loan market was centred in London and served borrowers from around the world, perhaps in part because London hosted the most important
market for the Eurodollar bank deposits that paid LIBOR. Volumes grew especially rapidly in the United States during the late 1980s and early 1990s, but since 1992 volume has grown somewhat more rapidly in the European and Asian markets than in the U.S. market (Figure 1).

Figure 1. Issuance volume in the major syndicated loan markets

Loans issued in currencies other than dollars are converted to U.S. dollar amounts in Loanware using exchange rates on or near the loan contract date. Such amounts are then converted to 1996 constant dollars using the GDP deflator. Face amounts of loan commitments are used, that is, undrawn commitments are included in totals.

Ratings are my primary measure of borrower credit quality. Loanware includes ratings, but I also match borrowers by name with Moody’s Default Risk Service database, which includes a history of Moody’s corporate rating actions, in order to measure the evolution of borrower credit quality after loans are made (Covitz and Harrison (2003) examine rating migrations). Where both a Moody’s and an S&P rating are available, I use the riskier of the two ratings (results are robust to using just Moody’s or just S&P ratings). My primary measure of loan price is an all-in interest rate spread that includes the contract spread over LIBOR on the loan’s outstanding balance plus any annual fees and any upfront fee prorated over the life of the loan. Fee information is often missing in Loanware, so I include in factor models a dummy variable for the presence of fee information that helps control for such noise in my pricing measure. To limit the influence of outliers, I winsorize spreads at the 1st and 95th percentiles for each
grade. For example, I set values larger than the 95th percentile to the value at the 95th percentile. Results are robust to use of other percentiles as cut-offs and to use of raw spreads.

3. LOAN FLOWS

Some facts about loan flows are useful background for an examination of pricing differences. If most borrowers and lenders operate only in their home markets then the forces tending to promote price convergence may be weak, although one would still expect similar risks to be priced similarly in long-run equilibrium. Panel A of Table 1 displays the percentage of syndicated loan volume in the European, U.S. and Asian syndicated loan markets that is due to activity by borrowers in different domiciles. Panel B shows how borrowers in each domicile allocate their issuance across the three markets. The table reveals that borrowers usually stay home, and that Europe is usually the market of choice for borrowers located outside the three markets. That is, U.S. firms almost always issue in the U.S. market, European firms in the European market, and Asian firms in the Asian market, as shown by fractions in excess of 90 percent in Panel B. However, firms with no natural local syndicated loan market, most prominently firms from Latin American and from the “Other” category, tend to use the European market, not the U.S. market, even though the U.S. market is larger by volume.

Table 1. Relationship of market region and borrower domicile

Data are for all multi-lender loans reported in Loanware as made in the three markets during 1992-2002. Panel A examines the composition of each market in terms of borrower domicile, whereas Panel B examines the market choices of borrowers from each domicile, one at a time.

Panel A. Percentage of syndicated loan volume for each market due to borrowers in each domicile

<table>
<thead>
<tr>
<th>Borrower domicile</th>
<th>U.S. market</th>
<th>European market</th>
<th>Asian &amp; SW Pacific market</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>97,7</td>
<td>3,2</td>
<td>2,6</td>
</tr>
<tr>
<td>Europe</td>
<td>0,5</td>
<td>81,8</td>
<td>1,0</td>
</tr>
<tr>
<td>Latin America</td>
<td>0,2</td>
<td>6,3</td>
<td>0,3</td>
</tr>
<tr>
<td>Canada</td>
<td>1,0</td>
<td>0,6</td>
<td>0,0</td>
</tr>
<tr>
<td>Asia &amp; SW Pacific</td>
<td>0,1</td>
<td>1,9</td>
<td>94,4</td>
</tr>
<tr>
<td>Other</td>
<td>0,5</td>
<td>6,2</td>
<td>1,7</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>
### Panel B. Percentage of syndicated loan volume issued by borrowers in each domicile appearing in each market

<table>
<thead>
<tr>
<th>Borrower domicile</th>
<th>U.S. market</th>
<th>European market</th>
<th>Asian &amp; SW Pacific market</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>98,5</td>
<td>1,2</td>
<td>0,3</td>
</tr>
<tr>
<td>Europe</td>
<td>1,7</td>
<td>98,0</td>
<td>0,3</td>
</tr>
<tr>
<td>Latin America</td>
<td>6,0</td>
<td>93,0</td>
<td>1,0</td>
</tr>
<tr>
<td>Canada</td>
<td>80,5</td>
<td>19,4</td>
<td>0,1</td>
</tr>
<tr>
<td>Asia &amp; SW Pacific</td>
<td>0,9</td>
<td>6,9</td>
<td>92,2</td>
</tr>
<tr>
<td>Other</td>
<td>15,1</td>
<td>79,0</td>
<td>5,9</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Even Canadian firms issue 19 percent of their loans in the European market, which is surprising given the tight integration of U.S. and Canadian financial markets. Latin American borrowers’ preference for the European market does not appear to be due to a preference for Spanish or Portuguese banks. Such banks’ share of Latin American borrower loans is less than 10 percent and similar to their share of European borrower loans. It is possible that non-US and non-Asian borrowers use the European market for historical reasons (as noted, London was the centre of the market years ago), but it is also possible that firms that must issue far from home choose the cheaper market.

In contrast to borrowers, lenders are more likely to cross borders, at least as a group. The left panel of Table 2 shows that 20 to 30 percent of lending in each market is by out-of-region lenders. By-volume and by-number results are similar except for the U.S., where a difference arises because non-U.S. lenders are more likely to participate in large loans than in small loans. As shown in the middle panel, lead lenders are somewhat less likely to be domiciled outside the market, especially in the U.S., where only 12 percent of lead lenders are foreign.
Table 2. Out-of-market lender share of loans in each market

Data are for all multi-lender loans reported in Loanware as made in the three markets during 1992-2002 that include information about participating lenders’ shares of the amount of the loan. Results are similar if loans for which shares are missing are included by assuming each lender takes an equal share.

Although lenders cross borders more than borrowers, the fractions in Table 2 are small enough to hint that lenders may be subject to home bias (as noted previously, “bias” may not be the best term for the loan market, but I follow the literature’s terminology). The degree to which loan portfolios mimic the world loan portfolio cannot be measured accurately with Loanware data because many bank assets are not syndicated loans (and some syndicated loans do not appear in Loanware). However, virtually all banks have substantial volumes of loans that are almost by necessity domestic because such loans are originated to small firms through domestic branches. Thus, lenders that seek to invest in the world loan portfolio should overweight foreign borrowers in the syndicated-loan portion of their portfolios.

Table 3 presents lenders’ portfolio allocations of syndicated loans to borrowers in different regions. For example, the first column shows that U.S.-domiciled lenders channel 91 percent of their syndicated lending volume to U.S. borrowers, 6 percent to European and 3 percent to Other-region borrowers. The right panel gives the share of loan volume to borrowers in each region in the global syndicated loan portfolio as represented by Loanware. This is an estimate of the portfolio shares that would appear in other columns of Table 3 if lenders seek to hold the world syndicated loan portfolio. Like other assets, it appears that syndicated loan portfolios display substantial home bias. Lenders in each region are overweight borrowers in their home region by about 30 to 40 percentage points. That is, the degree of home bias is similar for lenders in different regions.
Table 3. Home bias: Portfolio allocations of lenders in each region.

Data are for all multi-lender loans reported in Loanware as made in the three markets during 1992-2002 that include information about participating lenders’ shares of the amount of the loan. Results are similar if loans with missing shares are included by assuming each lender takes an equal share, except that under such assumptions, lenders from the other region have shares of 40, 14 and 46 percent in loans to U.S., European and other borrowers, respectively.

<table>
<thead>
<tr>
<th>Borrower region</th>
<th>US</th>
<th>Europe</th>
<th>Other</th>
<th>Global weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>US</td>
<td>91</td>
<td>39</td>
<td>31</td>
<td>64</td>
</tr>
<tr>
<td>Europe</td>
<td>6</td>
<td>51</td>
<td>12</td>
<td>22</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
<td>10</td>
<td>57</td>
<td>14</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

The final row of Table 3 gives the shares of lenders from each region in the global market. U.S. lenders’ share, at about 50 percent, is smaller than U.S. borrowers’ share, which is about 67 percent (the latter not shown in table), whereas European and Other-region lenders’ shares are somewhat larger than those of borrowers from the same region.

4. PRICING

As noted, I focus on the U.S. and European markets in analyzing pricing and I restrict attention to borrowers from industrialized nations. In part, I do so because I expect integration to be most complete for these markets and borrowers. Moreover, I usually omit Asian loan markets because usable loan samples are relatively small and because the 1997 Asia crisis complicates interpretation of results. I omit borrowers from emerging-market nations because a greater role for country-risk effects on borrower credit quality complicates analysis and interpretation. I examine all-in interest rate spreads at origination because all our sample loans are floating-rate instruments, so borrowing costs differ across firms only to the extent that spreads and fees differ. The main challenge is controlling for differences in borrower characteristics and in the non-price terms of loans, particularly credit risk, since that is the primary risk borne by lenders. Ratings are my primary measure of credit quality. Table 4 displays the distribution of loan volume in each market by agency grade for loans to borrowers for
which I have a rating at the time the loan contract was signed. As noted, I use the riskier of Moody’s and S&P’s rating if both are available (results are qualitatively similar if I use one or the other). Loans to below-investment-grade borrowers are substantially less common in the European market, whereas AAA and AA-rated borrowers are more common. That I require a rating for the borrower at issuance greatly reduces the size of the sample usable for pricing analysis. Many borrowers are not rated, especially in the European market, and Loanware does not always report ratings for rated borrowers, although my match to Moody’s DRS database mitigates the latter problem.

Table 4. Distribution of borrowers by rating

Data are for all multi-lender loans reported in Loanware as made in the three markets during 1992-2002 and that have a rating reported in Loanware, or a rating I was able to locate by matching to Moody’s DRS database. However, all loans are in the denominator of the measures in the Memo line. Ratings are the riskier of Moody’s and S&P ratings when both are available and are as of the loan contract date. Values are percentages of total loan volume.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Market</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U.S.</td>
</tr>
<tr>
<td>Investment grade (percent)</td>
<td></td>
</tr>
<tr>
<td>AAA and AA</td>
<td>9</td>
</tr>
<tr>
<td>A</td>
<td>35</td>
</tr>
<tr>
<td>BBB</td>
<td>28</td>
</tr>
<tr>
<td>Speculative grade (percent)</td>
<td>27</td>
</tr>
<tr>
<td>BB</td>
<td>14</td>
</tr>
<tr>
<td>B</td>
<td>12</td>
</tr>
<tr>
<td>Less than B</td>
<td>1</td>
</tr>
<tr>
<td>Memo: Percent of total volume</td>
<td>66</td>
</tr>
</tbody>
</table>

Table 5 shows that simple mean spreads differ in European and U.S. markets. The first two columns of the left panel display mean spreads by grade for the U.S. and European markets for the whole period 1992-2002 for loans to borrowers in industrialized nations. Pricing is similar on average for the AA and A grades, but spreads are 27, 54 and 66 basis points smaller on average in the European market for the BBB, BB, and B grades, respectively. Differences are somewhat less dra-
matic when borrowers from emerging-market nations are included in the sample, as shown in Panel B of the table.

Table 5. Mean spreads by grade and market (basis points)

The sample is restricted to loans to borrowers for which a rating is available on the date the loan contract is signed. Ratings are the riskier of Moody's and S&P's rating if both are available. Spreads are all-in measures that include the contract spread on outstanding balances plus annual fee plus any upfront fee prorated over the original term to maturity of the loan. Fixed-rate loans, loans with no spread information, notes, and loans with purposes ESOP, debtor-in-possession, and private placements are excluded.

<table>
<thead>
<tr>
<th>Rating</th>
<th>Panel A. Borrowers from industrialized nations only</th>
<th>Panel B. Borrowers from all nations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U.S. market</td>
<td>European market</td>
</tr>
<tr>
<td>AA</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td>A</td>
<td>44</td>
<td>40</td>
</tr>
<tr>
<td>BBB</td>
<td>92</td>
<td>65</td>
</tr>
<tr>
<td>BB</td>
<td>182</td>
<td>128</td>
</tr>
<tr>
<td>B</td>
<td>255</td>
<td>189</td>
</tr>
</tbody>
</table>

4.1 DIFFERENCE IN EUROPEAN AND U.S. MARKET SPREADS

Figure 2 sheds more light on how average pricing differences across the two markets vary by grade and over time. It displays estimates of year-by-year differences in spreads across the two markets in the form of coefficient values on interactions of a European-market dummy with year-of-issuance dummies from regressions estimated separately for each grade (un-interacted European market dummies are also included, so those shown in Figure 2 are marginal effects). A and BBB grades are in the top panel and BB and B in the bottom. Only 4 of the 44 coefficients are positive. Although the top panel appears to display no trend, a bit of a trend toward relatively lower European market spreads is evident for the junk grades.
**Figure 2.** Estimates of mean difference in European and U.S. market spreads by year and grade.

Estimates are the coefficients on dummy variables that interact a European-market dummy with year dummies, from separate regressions for loans to borrowers in each grade.

Overall, even though some hypotheses of equality of spread differences over time are rejected, I am not persuaded that trends exist in loan spread differences across the two markets. The apparent trend toward convergence of pricing for loans to A-rated borrowers is driven by the unusual year-2000 observation that is evident in Figure 2. I cannot reject a hypothesis of equality between the early and late periods for BBB and BB. And the pricing sample includes only 39 European-market loans to B-rated borrowers during 1999-2002. I am reluctant to conclude that there has been a trend *away* from pricing convergence based on such a relatively small subsample.
5. **ASYMMETRIC INFORMATION EFFECTS**

Diamond (1984) and James (1987), among many others, argue that banks mitigate problems of asymmetric information. Degryse and Ongena (2003) and Petersen and Rajan (2002) focus on the effect of distance on information costs and lending, and Hadlock and James (2002) note that some firms may choose to issue in higher-cost markets in which their quality is not clearly revealed. Taken together, the body of such work suggests that the identity of lenders may matter, that is, the same borrower might pay different spreads to one set of lenders than to another because of differences in lenders’ information about the borrower’s credit quality.

The existence of such differences may represent a constrained efficient outcome if some borrowers wish to avoid revealing their type. Loan size and rating migration variables may control for asymmetric-information effects to some extent, but not completely. If lenders’ ability to mitigate information problems is correlated with differences in lender and borrower nationality, and if lender nationality patterns differ across markets, then observed differences in pricing might be due to information effects. I add indicators for the presence of any lender with nationality different from that of the borrower and for any lead lender with nationality different from that of the borrower, both separately and together. In another set of regressions, I add variables measuring the fraction of lenders with nationality different from that of the borrower and the fraction of lead lenders with different nationality, again both separately and together; and in other regressions whether there are any, and the fraction of, lenders and lead lenders from outside the borrower’s home region, again separately and together. I would expect economically statistically significantly positive coefficients on (at least some) of these variables if differences in lender and borrower nationality make it more difficult for lenders to understand borrower credit quality. Results for these variables are not shown in tables because in no case does their addition have a material effect on the coefficients of the European market dummies. Moreover, coefficients on the additional variables are economically small and never statistically significant for investment-grade loans. In seven of the dozen regressions involving only junk loans, at least one of these variables is statistically significant at the ten percent level, but magnitudes are small (usually around an implied 5 basis point maximum effect) and signs differ. Most of the significant cases involve lead-lender variables, that is, the presence of any lead lender (or a higher fraction of lead lenders) with nationality different from the borrower is associated with higher spreads. However, a higher fraction of lenders in any role
with nationality different from the borrower is associated with slightly smaller spreads.

It seems less likely that lenders of different nationality would differ in their ability to mitigate information problems for all borrowers. Overall, the data offer little support that differences in lender ability to mitigate information problems are at the heart of the cross-market pricing differences I observe. It is important to note that results do not imply that asymmetric information is unimportant. The statistical and economic significance of loan size and rating-migration variables could be interpreted as evidence that asymmetric information is generally important in the syndicated loan market. However, evidence does imply that lenders’ ability to manage information problems is not stronger for borrowers located in their own domicile or region, implying that nationality differences per se, or distance per se, are not particularly important to syndicated loan pricing.

5.1 EX POST MONITORING

Berlin and Mester (1991) and Smith and Warner (1979) suggest that loan covenants and loan renegotiation play an important role in alleviating moral hazard, especially asset substitution. Carey, Prowse, Rea and Udell (1992) and Carey, Sharpe and Post (1998) extend the idea, arguing that differences in lenders’ tendency to hold up borrowers during renegotiations, and lenders’ reputation for doing so, are an important determinant of the structure of financial markets. A lender with a reputation for agreeing to reasonable contract revisions is preferred by borrowers, other things equal, and can charge higher spreads at origination,

but such a lender must protect its reputation by avoiding borrowers that will require harsh discipline because such discipline will harm the lender’s reputation. It is possible that lenders of different nationality may have renegotiation policies and reputations that differ across nations because of differences in home-market law, regulation, and financial system structure. A lender that chooses renegotiation policies that are optimal for its domestic market may essentially offer a different loan product in the eyes of global syndicated loan market borrowers than a lender from another nation, and thus spreads may differ with lender nationality.

5.2 RATING AGENCIES APPLY DIFFERENT STANDARDS TO DIFFERENT BORROWERS

Many non-US borrowers complain of a U.S. bias on the part of Moody’s and S&P. If such rating agencies grade non-US borrowers as riskier than actually-equivalent-risk U.S. borrowers, I would expect to see lower average spreads in the European market, which is dominated by European borrowers, than in the
U.S. market. In this case, European borrowers assigned a given agency grade would be safer than U.S. borrowers in the same grade and would borrow at lower spread, presuming the market perceives and prices risk correctly. This explanation is difficult to test directly because it amounts to a hypothesis of omitted variable bias results and lack a proxy for rating agency bias. Moreover, sample of European loans is too small to provide meaningful measures of ex post default rates by grade, which in a large sample and in the long run should reveal any bias.

However, several pieces of circumstantial evidence weigh against this hypothesis:

- U.S. firms should pay the same spreads in the European market and in the U.S. market, but results presented previously imply otherwise.
- If ratings are biased by borrower nationality, it seems likely the bias would be smaller for the industrialized European nations that form the bulk of our pricing sample, and especially for the U.K., which has a market-oriented financial system similar to the U.S.

Thus, I would expect differences in European- and U.S.-market simple mean spreads in Table 5 to be larger when emerging-market borrowers are included in the sample, as in Panel B of Table 5, but in fact they are smaller.

5.3 REGULATION

McCauley and Seth (1992) argue that, through the early 1990s, Japanese banks had a lower cost of capital than other banks because they were permitted to operate with smaller capital ratios. However, the Basel Accord harmonized capital regulation beginning in 1992. If other regulations (or national differences in de facto implementation of the Accord) are responsible for the price differences I observe, implications for lender-nationality effects on spreads are similar to those for the monitoring explanation discussed previously. That is, regulation should cause lenders from a given nation to behave differently everywhere, so lender nationality should be significantly correlated with price differences.

6. PORTFOLIO DIVERSIFICATION EFFECTS

The contribution of a loan to a bank’s portfolio credit risk posture may also affect the loan’s interest rate spread in a manner that differs systematically with nationality. The conventional benchmark case in which all investors in an asset class hold the world portfolio for that class is not realistic for banks because part
of their portfolios are associated with domestic small business and consumer
loans originated through branch networks. Thus, banks tend to have large core
exposures to home country credit risk, but the degree of such core exposure dif-
fers across nations according to the share of core loans in bank portfolios.
Because a bank’s reservation price for making a loan should depend on the
extent to which the loan diversifies or concentrates its portfolio credit risk, and a
borrower’s nationality may affect concentration differently for different banks,
spreads may differ systematically for different pairings of lender-borrower
nationality. This hypothesis is difficult to test directly because banks portfolios of
credit risk positions are unobservable, but two pieces of circumstantial evidence
suggest otherwise. First, if the syndicated loan market is a primary vehicle for
diversifying the unavoidable credit risk from branch-originated loans, one would
expect banks to prefer foreign to domestic borrowers in the syndicated loan mar-
ket, but in fact lenders display home bias. La Porta, Lopez-de-Silanes, Shleifer,
and Vishny (1997) and others suggest that a country’s legal tradition influences
the nature and efficiency of its financial system. Legal tradition rather than
nationality per se might drive some of the nationality-related explanations pre-
sented previously. Santos and Tsatsaronis (2003) find substantial changes in
underwriting costs borne by issuers in European bond and stock markets as the
euro came into use. They argue that reduced legal and regulatory barriers
increasingly favour underwriters operating at large scale, which in turn has led to
greater competition between established underwriters and new entrants as each
attempts to be among the survivors. Although U.S.-based commercial and
investment banks have increased their activities in the European market over the
past decade, increased competition associated with European integration does
not explain the fairly stable difference in investment-grade loan spreads that I
observe since 1992.

7. CONCLUDING REMARKS

I offer evidence that syndicated corporate loan spreads are significantly
smaller in Europe than in the U.S., suggesting that a market-location factor is
correlated with economically important components of the intermediation
process. Systematic differences across the two markets in loan and borrower
characteristics do not appear to account for the pricing difference. Importantly,
nationality per se, such as borrower or lender nationality within Europe, is not
highly correlated with spreads when controls for risk are included. The relatively
small number of U.S. firms that issue in the European market pay European-
market spreads, not U.S.-market spreads. These and other facts cast doubt on
many potential explanations drawn from the literature on financial intermediation, including explanations focusing on differences in asymmetric information and moral hazard, creditor rights, multi-product pricing discounts, rating dynamics, and regulation. While many of proxy variables are correlated with loan spreads, differences in spreads in the two markets remain. I also find little evidence of a trend toward convergence of spreads. I describe the pricing difference as a puzzle because its size and persistence is suggestive of an equilibrium phenomenon (a pure failure of arbitrage on this scale by the large, sophisticated participants in the syndicated loan market is difficult to accept).

Several avenues of future research might solve the puzzle and enhance understanding of corporate finance and financial intermediation. One avenue might focus on why borrowers do not cross borders. I find that borrowers domiciled in a region that hosts a major syndicated loan market usually issue there. However, borrowers domiciled elsewhere generally choose to issue in Europe, where spreads are lower. This suggests that issuing out of home market is costly, potentially explaining why so few U.S. firms issue in Europe, which is an important element of the puzzle. I show that lender portfolios display significant home bias. Research that reveals how home bias interferes with arbitrage by lenders, and why home bias persists in equilibrium, might also help solve the puzzle. Evidence may also indicate that economically important aspects of financial intermediation and corporate finance remain to be discovered. That is, loans made in the European and U.S. markets actually differ materially along some dimension relevant to price. One possibility is that important mechanisms have not yet been modeled. Another is that mechanisms already in the literature work differently in Europe and the U.S. If the latter is the case, research that reveals how and why the workings of such mechanisms depend on region (but not on nationality per se) would be valuable. Another possibility is that there is no true puzzle but that variables I use are poor proxies for the factors that drive pricing. I use conventional intuition and proxies associated with theories of lending. If they are inadequate in this exercise, this raises concerns about their adequacy in other contexts. Thus, more research on empirical measures would be valuable. Similarly, although circumstantial evidence argues against inconsistencies in credit ratings causing the results I obtain, research on ratings that reveals such inconsistencies could solve the puzzle and be useful to market participants and researchers.
REFERENCES


