Determinants of bond holdings
by foreign investors

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1. Introduction

A key theme in restructuring economies in the developing world is opening local capital markets to foreign portfolio investments. This can be accomplished by permitting foreign investors to enter the local capital markets directly or by allowing local assets to trade in overseas markets. In theory, this permits firms in developing economies to draw from the global pool of capital to undertake useful investments that generate profits and employment. Furthermore, the scrutiny of foreign investors, foreign analysts and foreign stock listing standards can help resolve agency problems, effectively transmitting higher quality reporting and governance standards to firms in developing countries (Obstfeld (1998), Stulz (1999)).

There is now much theory and empirical evidence to support the notion that foreign equity capital flows are beneficial. One way foreign equity capital flows benefit local capital markets is by causing a fall in the cost of equity capital because of increased risk sharing between domestic and foreign agents.[2] This increased risk sharing reduces systematic risk, which in turn reduces the cost of equity capital.[3] There is also increasing evidence that openness to foreign portfolio investment enhances the governance of local corporations. Doidge (2003), for example, reports evidence that cross-listing in the United States affords greater protection to minority shareholders. More generally, the evidence in Kaminsky and Schmukler (2002) suggests that equity market liberalisation tends to spur the process of institutional reform, not the other way around.

In this paper, we examine what attracts foreign investors to the local bond markets. While we have much evidence on the dynamics of foreign equity investment, there is little evidence on foreign bond investment.[4] The issue is important in that liquidity is essential in order to build up mature bond markets and foreign investors are crucial in building liquidity. Foreign investors hold at least 20% of government bonds in markets as diverse as Canada, Sweden and the United States.[5] For emerging markets that largely lack domestic institutional investors such as mutual funds, pension organisations, insurance companies, etc, foreign investors are likely to be even more important. They will not only provide demand but also bring more varied investment objectives and thus provide liquidity.

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[1]   We thank the discussant and conference participants for their comments.

[2]   There is also greater liquidity following increased capital inflows. Amihud and Mendelson (1986) and Amihud et al (1997) discuss the effect of liquidity on equity risk premiums.

[3]   The effect of increased risk sharing on equity premiums is discussed in Stapleton and Subrahmanyan (1977), Errunza and Losq (1985), Eun and Janakiramanan (1986), Alexander et al (1987), and Stulz (1999a,b). Empirical evidence consistent with the risk sharing view of stock market liberalisation is provided in Henry (2000) and Chari and Henry (2002).

[4]   See Bekaert and Harvey (2003) and the references therein.

[5]   See Exhibit 2 in Beckert and Pitsilis (2000).

In this paper, we specifically ask whether differences in property rights protection matter for foreign bond holdings, after controlling for cross-country differences in macroeconomic variables including GNP per capita, lending rates and/or inflation rates and exchange rates.

Countries differ considerably in terms of the efficiency with which they respect property rights and enforce contract laws. For example, Sweden provides strong protection for private property rights, but Argentina only weak protection. Recent research indicates that the extent to which property rights are secure among countries shows several important differences in financial systems. More secure property rights are associated with higher values of stock markets (La Porta et al (1997)); a higher number of listed firms (La Porta et al (1997)); higher valuation of listed firms relative to their assets (Claessens et al (2002), La Porta et al (2002)); greater use of external finance (La Porta et al (1997, 1998, 2000)); and greater investments from external funds (Rajan and Zingales (1998), Demirgüç-Kunt and Maksimovic (1998)).

If property rights are weakly protected in emerging markets, which is indeed the case, foreign investors will charge higher risk premiums to compensate for the additional risk of contract repudiation, shorten the duration of bond maturity, or will shy away from these markets completely. Therefore, in countries with poor property rights protection, foreign investors are likely to make smaller investments.

To examine these predictions, we use data on bond portfolio holdings in 45 countries (out of 165 countries in our total sample) for which the rule of law and property rights protection quality can be identified. We estimate cross-country regressions in which the dependent variables are local currency bonds held by foreign investors. The key variable of interest on the right-hand side is an index of property rights protection. We associate countries with high levels of corruption, higher risk of expropriation and greater uncertainty about contract enforcement as countries with poor property rights protection. The regressions control for other possible macroeconomic variables that may also affect the foreign bond holdings.

Our results show that in countries with better property rights protection, foreign investors buy and hold more local bonds. Our results suggest that more secure property rights are important in developing liquid and mature bond markets. To the extent that foreign investors play a vital role in providing liquidity, our evidence shows that improving property rights protection is a matter of prime importance.

The rest of the paper is organised as follows. Section 2 presents our data and variables. Section 3 gives the summary statistics. Section 4 discusses the main empirical results, and Section 5 concludes.

2. Data and variables

2.1 Basic bond holdings data

We obtain our basic data from the International Monetary Fund website. The most recent data show that at end-2001 or end-2002, 67 countries made portfolio investments in foreign equity and debt securities and 236 countries received the investments.[6] Since our objective

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[6] The data are from the Coordinated Portfolio Investment Survey (CPIS) and includes 67 investing countries (and bonds held by international organisations and as reserve assets) and 236 countries receiving investment (other countries classified as "confidential" and "unallocated" and international organisations). For the purposes of the survey, long-term debt securities include bonds, debentures and notes with an original maturity of more than one year. Short-term debt securities cover treasury bills, commercial paper and bankers' acceptances with an original maturity of one year or less.

is to investigate the determinants of bond holdings by foreign investors, we only examine the long-term and short-term debt securities data. From the IMF sample of 236 countries, we exclude 71 countries that had investments of less than US$ 1 million in either 2001 or 2002. This restriction results in a sample of 67 investor countries investing in 165 recipient countries (in a matrix form), both in long- and short-term debt securities. For the regression analysis, we use data on bond portfolio holdings of 45 countries for which property rights protection quality can be identified, out of 165 countries.

There is one point worth mentioning about our dataset. Our data source mixes bonds of different currencies, especially local currency and US dollar. This might have the effect of making our property rights variable less relevant in that the governing law of the bonds per se will often be London or New York law rather than local country law. However, in a recent paper, Siegel (2005) tests the functional convergence hypothesis, which states that foreign firms can leapfrog their countries' weak legal institutions by listing equities in New York and voluntarily abiding by US securities law, and he shows that the US Securities and Exchange Commission has rarely been effective in enforcing the law against any US-listed foreign firm. In other words, the governing law of the country where the securities are issued or listed may not be effective. Ideally, for our analysis we should use the local currency-denominated bonds issued in a local country, but the data are not readily available.

2.2   Measuring property rights protection

To measure the extent to which a country respects private property rights, we focus on three indexes from La Porta et al (1998). These three indexes measure corruption, the risk of expropriation of private property and the risk that contracts may be repudiated.

La Porta et al (1998) describe these three indexes as follows: The "corruption index" is an assessment of corruption in government by the International Country Risk Guide (ICRG). Low scores indicate that "high government officials are likely to demand special payments" and "illegal payments are generally expected throughout lower levels of government" in the form of "bribes connected with import and export licenses, exchange controls, tax assessment, policy protection, or loans". The "risk of expropriation index" is the ICRG's assessment of the risk of "outright confiscation" or "forced nationalization". The "index for the repudiation of contracts" is the ICRG's assessment of the "risk of modification in a contract taking the form of repudiation, postponement or scaling down" due to "budget cutbacks, indigenization pressure, a change in government or a change in government economic and social priorities".

The range for each index is between zero and 10 with low values indicating less respect for private property. All three ICRG indexes are averages from 1982 to 1995. Following Morck et al (2000), we combine these three indexes into an additive index of property rights protection. The index measures the extent to which a country's legal systems and institutions enforce all contracts, including government contracts.

We include the natural logarithm of GNP per capita and the level of lending rates in the country. We include the latter in order to control for the differences in inflation rates and sovereign risks that might also explain cross-country differences. Countries with high inflation rates are subject to greater political risks, as there is a greater likelihood that their governments will introduce wage and price controls or tamper with indexes. Higher inflation rates can raise contracting costs for firms and their bank lenders. According to Demirgüç-Kunt and Maksimovic (1999), high and/or variable rates of inflation make it costly for investors and firms to contract. The cross-country macroeconomic data are from a database compiled by the World Bank (and available on its website).

3. Descriptive statistics of the basic bond holdings data

3.1 Geographical breakdown

Tables 3.1 and 3.2 show geographical breakdowns of long-term and short-term paper investments at end-2002.[7] The 67 investing countries in the sample are grouped into six regions: East Asia, Europe, North America, Latin America, Africa/Middle East/Southeast Asia and Tax Havens.[8] The 165 recipient countries are grouped into the six regions above plus Other Nations.

The total amount of long-term bond investment is more than seven times larger than that of short-term paper investment ($6.6 trillion vs $0.88 trillion). Europe is the region that makes the largest investment in both long- and short-term paper (48.7% and 43.4%), followed by Tax Havens (28.6% and 21.6%), East Asia (8.0% and 12.7%) and North America (7.8% and 18.1%). Europe is also the largest recipient of bond investment (57.2% and 58.2%), followed by North America (23.0% and 27.8%), East Asia (5.4% and 6.1%) and Tax Havens (9.6% and 5.7%).

Focusing on East Asia, we find that as an investor, it makes only a small proportion of total bond investment in its own regional bonds (14.3% and 27.8%). On the other hand, East Asia receives a much larger or the largest proportion of bond investment from the region (21.6% and 58.0%). In particular, more than half of East Asian short-term paper investment comes from the region. This might suggest that due to the weak property rights enforced in East Asia, foreign investors are likely to shorten the duration of bond maturity to minimise the risk of contract repudiation. This might also suggest that there is a regional bias in bond holdings by foreign investors, similar to the much-documented home bias found in stock investment.[9]

3.2 East Asian country breakdown

Tables 3.3 and 3.4 show East Asian country breakdowns of long-term and short-term paper investments. There are three dominant countries that invest in East Asian bonds: Hong Kong SAR, Japan and Singapore. Together they make up more than 90% of the total investment East Asia makes in its own region. However, the profile of countries receiving bond investment is quite different. Australia, Japan, Korea, Singapore, Malaysia and New Zealand receive the majority of the investment. However, it is interesting to note that Australia, which attracts the largest investment (42.7% and 53.6%) from East Asia, makes an insignificant or zero amount of bond investment in other East Asian countries.[10]

3.3 Top 10 country breakdown

Tables 3.5 and 3.6 show the top 10 countries' bond investments in seven different regions. Japan, the United Kingdom, the United States, France and Luxembourg appear to be the most important buyers. As the group of largest investors, the top 10 countries invest mostly

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[7] For summary statistics, we only report results for end-2002, because those for end-2001 are similar. We use the terms long-term and short-term bonds or paper for long-term and short-term debt securities.

[8] We use the list of tax havens compiled by EscapeArtist Inc which can be obtained from the website EscapeArtist.com.

[9] For more on the regional bias issue, please also refer to McCauley and Park (2006).

[10] This pattern appeared for New Zealand for end-2001 which is not reported here. Considering Australia and New Zealand are both common law countries, one might maintain that the rule of law argument is at work here, but it is premature to do so without further analysis.

in Europe and North America, and East Asia receives about 4% of their total bond investment. Japan's investment in East Asian bonds also appears to be minimal, taking only 3-7% of its total investment.

3.4   Rule of law breakdown of bond investment

Tables 3.7 and 3.8 show rule of law breakdowns. We follow Stulz and Williamson (2003) who classify 51 countries into four classes of rule of law: common law, civil/French, civil/German and civil/Scandinavian.[11] The results show that the largest proportion of bond investment goes to common law countries (38% and 63%) where investor protection is deemed strongest. The second largest proportion goes to civil/French law countries (33% and 19%) that are generally regarded to provide weaker investor protection.

One might speculate that in the common law countries, investors would invest relatively more in long-term bonds than in short-term paper because investor protection tends to be strong in these countries, whereas they would invest relatively more in short-term paper in civil/French countries where investor protection tends to be weaker. However, no such evidence is found from the descriptive statistics. It appears that more investment is made in common law countries in both long-term and short-term paper. In the next section, we conduct a formal analysis on how investor rights protection affects foreign bond holdings.

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[11]   See Table 1 of Stulz and Williamson (2003).

Table 3.1

**Geographical breakdown of long-term
bond investment, end-2002**

In millions of US dollars

From \ In	East Asia (10)[1]	Europe (28)	North America (2)	Latin America (7)	Africa, Middle East and Asia (3)	Tax Havens (17)	Subtotal
East Asia (14)	76,376 [21.56%][2] {14.43%}[3]	109,154 [30.82%] {3.39%}	16,997 [4.80%] {3.28%}	12,816 [3.62%] {2.86%}	399 [0.12%] {9.18%}	138,430 [39.09%] {7.33%}	354,172 [100%] {5.36%}
Europe (42)	266,466 [7.04%] {50.35%}	1,839,011 [48.60%] {57.16%}	391,025 [10.33%] {75.44%}	327,960 [8.67%] {73.08%}	934 [0.02%] {21.51%}	958,945 [25.34%] {50.75%}	3,784,341 [100%] {57.28%}
North America (2)	141,327 [9.30%] {26.70%}	789,129 [51.93%] {24.53%}	83,098 [5.47%] {16.03%}	92,070 [6.06%] {20.52%}	2,061 [0.14%] {47.44%}	411,900 [27.11%] {21.80%}	1,519,585 [100%] {23.00%}
Latin America (21)	7,172 [6.93%] {1.35%}	40,733 [39.38%] {1.27%}	4,246 [4.10%] {0.82%}	3,150 [3.05%] {0.70%}	256 [0.25%] {5.88%}	47,881 [46.29%] {2.53%}	103,438 [100%] {1.57%}
Africa, Middle East and Southeast Asia (42)	1,085 [4.47%] {0.21%}	12,266 [50.48%] {0.38%}	1,051 [4.33%] {0.20%}	1,666 [6.85%] {0.37%}	5 [0.02%] {0.11%}	8,226 [33.85%] {0.44%}	24,299 [100%] {0.37%}
Tax Havens (44)	31,201 [4.92%] {5.89%}	384,443 [60.57%] {11.95%}	21,728 [3.42%] {4.19%}	9,553 [1.51%] {2.13%}	689 [0.11%] {15.87%}	187,129 [29.48%] {9.90%}	634,743 [100%] {9.61%}
Other Nations (73)	5,616 [3.01%] {1.06%}	42,357 [22.70%] {0.03%}	148 [0.08%] {0.03%}	1,526 [0.82%] {0.34%}	– [0.00%] {0.00%}	136,945 [73.39%] {7.25%}	186,592 [100%] {2.82%}
Subtotal	529,243 [8.01%] {100%}	3,217,093 [48.69%] {100%}	518,293 [7.84%] {100%}	448,741 [6.79%] {100%}	4,344 [0.07%] {100%}	1,889,456 [28.60%] {100%}	6,607,170 [100%] {100%}

[1] In ( ) next to the region's name is the number of countries. [2] In [ ] is the percentage when the IN country subtotal (far right) is 100%. [3] In { } is the percentage when the FROM country subtotal (bottom) is 100%.

Table 3.2

**Geographic breakdown of short-term
paper investment, end-2002**

In millions of US dollars

In \ From	East Asia (10)[1]	Europe (28)	North America (2)	Latin America (7)	Africa, Middle East and Asia (3)	Tax Havens (17)	Subtotal
East Asia (14)	31,024 [57.98%][2] {27.78%}[3]	10,285 [19.22%] {2.46%}	3,336 [6.23%] {2.09%}	– [0.00%] {0.00%}	18 [0.03%] {2.29%}	8,849 [16.54%] {4.65%}	53512 [100.00%] {6.07%}
Europe (42)	36,477 [7.11%] {32.66%}	243,419 [47.46%] {58.25%}	131,240 [25.59%] {82.19%}	279 [0.05%] {15.20%}	169 [0.03%] {21.50%}	101,359 [19.76%] {53.28%}	512,943 [100.00%] {58.15%}
North America (2)	21,595 [8.80%] {19.33%}	133,897 [54.54%] {32.04%}	19,475 [7.93%] {12.20%}	1,101 [0.45%] {60.00%}	244 [0.10%] {31.04%}	69,186 [28.18%] {36.37%}	245,498 [100.00%] {27.83%}
Latin America (21)	6 [0.15%] {0.01%}	959 [24.19%] {0.23%}	357 [9.01%] {0.22%}	19 [0.48%] {1.04%}	2 [0.05%] {0.25%}	2,621 [66.12%] {1.38%}	3,964 [100.00%] {0.45%}
Africa, Middle East and Southeast Asia (42)	126 [11.05%] {0.11%}	833 [73.07%] {0.20%}	– [0.00%] {0.00%}	18 [1.58%] {0.98%}	34 [2.98%] {4.33%}	129 [11.32%] {0.07%}	1,140 [100.00%] {0.13%}
Tax Havens (44)	18,267 [36.41%] {16.35%}	18,027 [35.93%] {4.31%}	5,272 [10.51%] {3.30%}	398 [0.79%] {21.69%}	319 [0.64%] {40.59%}	7,884 [15.72%] {4.14%}	50,167 [100.00%] {5.69%}
Other Nations (73)	4,200 [28.13%] {3.76%}	10,488 [70.25%] {2.51%}	5 [0.03%] {0.00%}	20 [0.13%] {1.09%}	– [0.00%] {0.00%}	216 [1.45%] {0.11%}	14,929 [100.00%] {1.69%}
Subtotal	111,695 [12.66%] {100.00%}	417,908 [43.37%] {100.00%}	159,685 [18.10%] {100.00%}	1,835 [0.21%] {100.00%}	786 [0.09%] {100.00%}	190,244 [21.57%] {100.00%}	882,153 [100.00%] {100.00%}

[1] In ( ) next to the region's name is the number of countries. [2] In [ ] is the percentage when the IN country subtotal (far right) is 100%. [3] In { } is the percentage when the FROM country subtotal (bottom) is 100%.

Table 3.3

**East Asian country breakdown of
long-term debt securities, year-end 2002**[1]

In millions of US dollars

From In	Australia	Hong Kong SAR	Indonesia	Japan	Korea	Malaysia	New Zealand	Philippines	Singapore	Thailand	Subtotal
Australia	−	11,333	1	17,092	20	26	358	10	3,761	−	32,601
	[0.00%][2]	[34.76%]	[0.00%]	[52.43%]	[0.06%]	[0.08%]	[1.10%]	[0.03%]	[11.54%]	[0.00%]	[100.00%]
	{0.00%}[3]	{41.72%}	{1.14%}	{57.01%}	{1.66%}	{15.78%}	{50.42%}	{7.52%}	{22.53%}	{0.00%}	{42.67%}
China	−	1,232	−	578	38	−	−	2	416	−	2,266
	[0.00%]	[54.37%]	[0.00%]	[25.50%]	[1.69%]	[0.00%]	[0.00%]	[0.09%]	[18.37%]	[0.00%]	[100.00%]
	{0.00%}	{4.54%}	{0.00%}	{1.93%}	{3.18%}	{0.00%}	{0.00%}	{1.51%}	{2.49%}	{0.00%}	{2.97%}
Hong Kong SAR	−	−	57	1,137	455	40	−	58	1,653	20	3,421
	[0.00%]	[0.00%]	[1.67%]	[33.23%]	[13.30%]	[1.17%]	[0.00%]	[1.70%]	[48.33%]	[0.58%]	[100.00%]
	{0.00%}	{0.00%}	{64.80%}	{3.79%}	{37.86%}	{24.45%}	{0.00%}	{43.82%}	{9.91%}	{100.00%}	{4.48%}
Indonesia	−	−	−	49	78	1	−	4	869	−	1,000
	[0.00%]	[0.00%]	[0.00%]	[4.86%]	[7.77%]	[0.09%]	[0.00%]	[0.40%]	[86.90%]	[0.00%]	[100.00%]
	{0.00%}	{0.00%}	{0.00%}	{0.16%}	{6.46%}	{0.55%}	{0.00%}	{3.01%}	{5.21%}	{0.00%}	{1.31%}
Japan	−	5,351	−	−	29	−	282	5	3,828	−	9,495
	[0.00%]	[56.36%]	[0.00%]	[0.00%]	[0.31%]	[0.00%]	[2.97%]	[0.05%]	[40.31%]	[0.00%]	[100.00%]
	{0.00%}	{19.70%}	{0.00%}	{0.00%}	{2.41%}	{0.00%}	{39.75%}	{3.74%}	{22.93%}	{0.00%}	{12.43%}
Korea	−	4,202	−	5,348	−	51	69	15	2,586	−	12,271
	[0.00%]	[34.24%]	[0.00%]	[43.58%]	[0.00%]	[0.42%]	[0.56%]	[0.12%]	[21.07%]	[0.00%]	[100.00%]
	{0.00%}	{15.47%}	{0.00%}	{17.84%}	{0.00%}	{31.38%}	{9.77%}	{11.12%}	{15.49%}	{0.00%}	{16.06%}
Malaysia	−	2,085	3	1,823	332	−	−	9	1,830	−	6,083
	[0.00%]	[34.28%]	[0.05%]	[29.98%]	[5.46%]	[0.00%]	[0.00%]	[0.15%]	[30.08%]	[0.00%]	[100.00%]
	{0.00%}	{7.68%}	{3.41%}	{6.08%}	{27.65%}	{0.00%}	{0.00%}	{6.85%}	{10.96%}	{0.00%}	{7.96%}

Table 3.3 (cont)

**East Asian country breakdown of
long-term debt securities, year-end 2002**

In millions of US dollars

From In	Australia	Hong Kong SAR	Indonesia	Japan	Korea	Malaysia	New Zealand	Philippines	Singapore	Thailand	Subtotal
New Zealand	251	–	–	1,258	–	–	–	–	279	–	1,788
	[14.03%]	[0.00%]	[0.00%]	[70.36%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[15.63%]	[0.00%]	[100.00%]
	{99.93%}	{0.00%}	{0.00%}	{4.20%}	{0.00%}	{0.02%}	{0.00%}	{0.00%}	{1.67%}	{0.00%}	{2.34%}
Philippines	–	–	5	1,389	81	4	–	–	595	–	2,074
	[0.00%]	[0.00%]	[0.22%]	[66.96%]	[3.92%]	[0.22%]	[0.00%]	[0.00%]	[28.68%]	[0.00%]	[100.00%]
	{0.00%}	{0.00%}	{5.12%}	{4.63%}	[6.76%]	{2.73%}	{0.00%}	{0.00%}	{3.56%}	{0.00%}	{2.71%}
Singapore	–	1,842	23	680	144	41	–	23	–	–	2,753
	[0.00%]	[66.91%]	[0.82%]	[24.69%]	[5.23%]	[1.49%]	[0.00%]	[0.84%]	[0.00%]	[0.00%]	[100.00%]
	{0.00%}	{6.78%}	{25.69%}	{2.27%}	{11.98%}	{25.05%}	{0.00%}	{17.43%}	{0.00%}	{0.00%}	{3.60%}
Taiwan, China	–	674	–	46	–	–	–	7	333	–	1,060
	[0.00%]	[63.58%]	[0.00%]	[4.32%]	[0.00%]	[0.00%]	[0.00%]	[0.66%]	[31.40%]	[0.00%]	[100.00%]
	{0.00%}	{2.48%}	{0.00%}	{0.15%}	{0.00%}	{0.00%}	{0.00%}	{5.27%}	{1.99%}	{0.00%}	{1.39%}
Thailand	–	447	–	550	24	1	–	–	542	–	1,564
	[0.00%]	[28.58%]	[0.00%]	[35.20%]	[1.53%]	[0.04%]	[0.00%]	[0.00%]	[34.64%]	[0.00%]	[100.00%]
	{0.00%}	{1.65%}	{0.00%}	{1.84%}	{2.00%}	{0.34%}	{0.00%}	{0.00%}	{3.25%}	{0.00%}	{2.05%}
Subtotal	252	27,167	89	29,951	1,203	165	710	134	16,693	21	76,376
	[0.33%]	[35.55%]	[0.12%]	[39.24%]	[1.57%]	[0.22%]	[0.93%]	[0.17%]	[21.85%]	[0.03%]	[100.00%]
	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}

[1] Data for Vietnam and Cambodia are not reported here. [2] In [ ] is the percentage when the IN country subtotal (far right) is 100%. [3] In { } is the percentage when the FROM country subtotal (bottom) is 100%.

Table 3.4

**East Asian country breakdown of
short-term debt securities, year-end 2002**[1]

In millions of US dollars

From / In	Australia	Hong Kong SAR	Indonesia	Japan	Korea	Malaysia	New Zealand	Philippines	Singapore	Thailand	Subtotal
Australia	–	9,795	–	1,657	–	–	–	–	5,130	50	16,632
	[0.00%][2]	[58.89%]	[0.00%]	[9.96%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[30.84%]	[0.30%]	[100%]
	{0.00%}[3]	{64.39%}	{0.00%}	{47.65%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{42.11%}	{69.44%}	{53.61%}
China	–	1,569	–	–	–	–	–	–	53	–	1,622
	[0.00%]	[94.40%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[3.17%]	[0.00%]	[100%]
	{0.00%}	{10.31%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{0.43%}	{0.00%}	{5.23%}
Hong Kong SAR	–	–	–	12	4	–	–	50	111	2	179
	[0.00%]	[0.00%]	[0.00%]	[6.52%]	[2.40%]	[0.00%]	[0.00%]	[27.93%]	[62.018%]	[1.12%]	[100%]
	{0.00%}	{0.00%}	{0.00%}	{0.34%}	{18.70%}	{0.00%}	{0.00%}	{100.00%}	{0.91%}	{2.78%}	{0.58%}
Indonesia	–	–	–	2	–	–	–	–	89	–	90
	[0.00%]	[0.00%]	[0.00%]	[1.85%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[98.63%]	[0.00%]	[100%]
	{0.00%}	{0.00%}	{0.00%}	{0.05%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{0.73%}	{0.00%}	{0.29%}
Japan	–	1,396	–	–	–	–	1	–	2,789	–	4,186
	{0.00%}	[33.35%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[0.02%]	[0.00%]	[66.63%]	[0.00%]	[100%]
	{0.00%}	{9.18%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{100.00%}	{0.00%}	{22.90%}	{0.00%}	{13.49%}
Korea	–	1,761	–	125	–	9	–	–	523	10	2,428
	[0.00%]	[72.53%]	[0.00%]	[5.15%]	[0.00%]	[0.35%]	[0.00%]	[0.00%]	[21.56%]	[0.41%]	[100%]
	{0.00%}	{11.58%}	{0.00%}	{3.60%}	{0.00%}	{94.68%}	{0.00%}	{0.00%}	{4.30%}	{13.89%}	{7.83%}
Malaysia	–	43	–	–	19	–	–	–	126	–	187
	[0.00%]	[22.99%]	[0.00%]	[0.00%]	[9.89%]	[0.00%]	[0.00%]	[0.00%]	[67.20%]	[0.00%]	[100%]
	{0.00%}	{0.28%}	{0.00%}	{0.00%}	{80.43%}	{0.00%}	{0.00%}	{0.00%}	{1.03%}	{0.00%}	{0.60%}

Table 3.4 (cont)

**East Asian country breakdown of
short-term debt securities, year-end 2002**

In millions of US dollars

From / In	Australia	Hong Kong SAR	Indonesia	Japan	Korea	Malaysia	New Zealand	Philippines	Singapore	Thailand	Subtotal
New Zealand	–	–	–	171	–	–	–	–	2,754	10	2,935
	[0.00%]	[0.00%]	[0.00%]	[5.83%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[93.82%]	[0.34%]	[100%]
	{0.00%}	{0.00%}	{0.00%}	{4.92%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{22.60%}	{13.89%}	{9.46%}
Philippines	–	–	–	–	–	–	–	–	104	–	104
	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[100%]
	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{0.86%}	{0.00%}	{0.34%}
Singapore	–	303	–	1,510	–	–	–	–	–	–	1,814
	[0.00%]	[16.70%]	[0.02%]	[83.26%]	[0.00%]	[0.03%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[100%]
	{0.00%}	{1.99%}	{0.00%}	{43.44%}	{0.00%}	{5.54%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{5.85%}
Taiwan, China	–	131	–	–	–	–	–	–	224	–	355
	[0.00%]	[36.90%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[62.97%]	[0.00%]	[100%]
	{0.00%}	{0.86%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{1.84%}	{0.00%}	{1.14%}
Thailand	–	213	–	–	–	–	–	–	279	–	492
	[0.00%]	[43.29%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[0.00%]	[56.81%]	[0.00%]	[100%]
	{0.00%}	{1.40%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{0.00%}	{2.29%}	{0.00%}	{1.59%}
Subtotal	–	15,211	–	3,477	23	9	1	50	12,182	72	31,024
	[0.00%]	[49.03%]	[0.00%]	[11.21%]	[0.07%]	[0.03%]	[0.00%]	[0.16%]	[39.27%]	[0.23%]	[100%]
	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}

[1] Data for Vietnam and Cambodia are not reported here. [2] In [ ] is the percentage when the IN country subtotal (far right) is 100%. [3] In { } is the percentage when the FROM country subtotal (bottom) is 100%.

Table 3.5

Top 10 country breakdown of long-term
debt securities investment, year-end 2002

In millions of US dollars

From \ In	United States	United Kingdom	Germany	Luxembourg	Italy	Netherlands	Japan	France	Canada	Cayman Islands	Subtotal
East Asia (14)[1]	60,227 [30.89%][2] {12.84%}[3]	50,087 [25.69%] {6.42%}	13,750 [7.05%] {2.52%}	16,113 [8.26%] {3.12%}	3,821 [1.96%] {1.25%}	3,769 [1.93%] {1.10%}	29,951 [15.36%] {2.79%}	15,733 [8.07%] {2.63%}	627 [0.32%] {4.10%}	899 [0.46%] {2.13%}	194,977 [100.00%] {4.16%}
Europe (42)	230,012 [8.46%] {49.04%}	345,738 [12.72%] {44.31%}	426,727 [15.70%] {78.15%}	390,163 [14.36%] {75.64%}	190,146 [7.00%] {62.32%}	265,737 [9.78%] {77.87%}	413,010 [15.20%] {38.47%}	450,439 [16.57%] {75.37%}	2,605 [0.10%] {17.01%}	3,190 [0.12%] {7.55%}	2,717,766 [100.00%] {57.99%}
North America (2)	106,024 [9.92%] {22.60%}	206,101 [19.28%] {26.41%}	57,071 [5.34%] {10.45%}	82,675 [7.73%] {16.03%}	43,198 [4.04%] {14.16%}	60,612 [5.67%] {17.76%}	395,281 [36.98%] {36.82%}	78,321 [7.33%] {13.11%}	7,988 [0.75%] {52.15%}	31,770 [2.97%] {75.19%}	1,069,044 [100.00%] {22.81%}
Latin America (21)	33,863 [37.78%] {7.22%}	10,794 [12.04%] {1.38%}	7,676 [8.56%] {1.41%}	4,236 [4.73%] {0.82%}	11,489 [12.82%] {3.77%}	2,453 [2.74%] {0.72%}	8,472 [9.45%] {0.79%}	3,264 [3.64%] {0.55%}	1,989 [2.22%] {12.99%}	5,404 [6.03%] {12.79%}	89,640 [100.00%] {1.91%}
Africa, Middle East and Southeast Asia (42)	4,273 [22.17%] {0.91%}	2,643 [13.72%] {0.34%}	4,890 [25.38%] {0.90%}	1,044 [5.42%] {0.20%}	1,515 [7.86%] {0.50%}	238 [1.24%] {0.07%}	3,737 [19.39%] {0.35%}	723 [3.75%] {0.12%}	29 [0.15%] {0.19%}	178 [0.93%] {0.42%}	19,270 [100.00%] {0.41%}
Tax Havens (44)	33,746 [7.11%] {7.19%}	60,705 [12.80%] {7.78%}	35,948 [7.58%] {6.58%}	21,436 [4.52%] {4.16%}	52,185 [11.00%] {17.10%}	8,467 [1.78%] {2.48%}	210,916 [44.46%] {19.65%}	48,923 [10.31%] {8.19%}	1,869 [0.39%] {12.20%}	185 [0.04%] {0.44%}	474,411 [100.00%] {10.12%}

Table 3.5 (cont)

**Top 10 country breakdown of long-term
debt securities investment, year-end 2002**

In millions of US dollars

From / In	United States	United Kingdom	Germany	Luxembourg	Italy	Netherlands	Japan	France	Canada	Cayman Islands	Subtotal
Other Nations (73)	910	104,219	3	148	2,750	3	12,152	221	209	629	121,244
	[0.75%]	[85.96%]	[0.00%]	[0.12%]	[2.27%]	[0.00%]	[10.02%]	[0.18%]	[0.17%]	[0.52%]	[100.00%]
	{0.19%}	{13.36%}	{0.00%}	{0.03%}	{0.90%}	{0.00%}	{1.13%}	{0.04%}	{1.36%}	{1.49%}	{2.59%}
Subtotal	469,055	780,287	546,065	515,815	305,105	341,279	1,073,551	597,623	15,316	42,255	4,686,351
	[10.01%]	[16.65%]	[11.65%]	[11.01%]	[6.51%]	[7.28%]	[22.91%]	[12.75%]	[0.33%]	[0.90%]	[100.00%]
	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}

[1] In ( ) next to the region's name is the number of countries.   [2] In [ ] is the percentage when the IN country subtotal (far right) is 100%.   [3] In { } is the percentage when the FROM country subtotal (bottom) is 100%.

Table 3.6

**Top 10 country breakdown of short-term debt
securities investment, year-end 2002**

In millions of US dollars

From / In	United States	United Kingdom	Germany	Luxembourg	Italy	Netherlands	Japan	France	Canada	Cayman Islands	Subtotal
East Asia (14)[1]	3,323 [17.81%][2] {2.14%}[3]	5,396 [28.92%] {7.04%}	49 [0.26%] {0.36%}	4,550 [24.39%] {4.97%}	346 [1.85%] {3.77%}	486 [2.61%] {5.32%}	3,477 [18.64%] {7.23%}	858 [4.60%] {1.22%}	13 [0.073%] {0.30%}	158 [0.85%] {2.01%}	18,656 [100%] {3.84%}
Europe (42)	130,171 [41.36%] {83.81%}	41,468 [13.17%] {54.07%}	9,434 [3.00%] {69.22%}	53,290 [16.93%] {58.20%}	7,740 [2.46%] {84.36%}	6,178 [1.961%] {67.68%}	11,940 [3.79%] {24.83%}	50,503 [16.04%] {71.80%}	1,069 [0.35%] {24.48%}	2,956 [0.94%] {37.68%}	314,749 [100%] {64.74%}
North America (2)	16,324 [15.31%] {10.51%}	18,690 [17.53%] {24.37%}	3,990 [3.74%] {29.28%}	28,868 [27.08%] {31.53%}	246 [0.23%] {2.68%}	1,582 [1.48%] {17.33%}	15,153 [14.21%] {31.52%}	14,886 [14.00%] {21.16%}	3,151 [2.96%] {72.15%}	3,710 [3.48%] {47.30%}	106,600 [100%] {21.93%}
Latin America (21)	357 [18.60%] {0.23%}	712 [37.10%] {0.93%}	8 [0.42%] {0.06%}	117 [6.10%] {0.13%}	46 [2.40%] {0.50%}	15 [0.78%] {0.16%}	– [0%] {0.00%}	47 [2.50%] {0.07%}	– [0%] {0.00%}	617 [32.15%] {7.87%}	1,919 [100%] {0.39%}
Africa, Middle East and Southeast Asia (42)	– [0.00%] {0.00%}	538 [82.64%] {0.70%}	7 [1.08%] {0.05%}	26 [3.99%] {0.03%}	– [0.00%] {0.00%}	72 [11.06%] {0.79%}	– [0.00%] {0.00%}	1 [0.15%] {0.00%}	– [0.00%] {0.00%}	7 [1.08%] {0.09%}	651 [100%] {0.13%}
Tax Havens (44)	5,143 [14.58%] {3.31%}	1,962 [5.56%] {2.56%}	141 [0.40%] {1.03%}	4,685 [13.28%] {5.12%}	797 [2.26%] {8.69%}	793 [2.25%] {8.69%}	17,318 [49.08%] {36.02%}	4,023 [11.40%] {5.72%}	129 [0.37%] {2.95%}	292 [0.83%] {3.72%}	35,283 [100%] {7.26%}

Table 3.6 (cont)

**Top 10 country breakdown of short-term debt
securities investment, year-end 2002**

In millions of US dollars

From / In	United States	United Kingdom	Germany	Luxembourg	Italy	Netherlands	Japan	France	Canada	Cayman Islands	Subtotal
Other Nations (73)	–	7,933	–	26	–	2	192	18	5	104	8,280
	[0.00%]	[95.81%]	[0.00%]	[0.31%]	[0.00%]	[0.02%]	[2.32%]	[0.22%]	[0.06%]	[1.26%]	[100%]
	{0.00%}	{10.34%}	{0.00%}	{0.03%}	{0.00%}	{0.02%}	{0.40%}	{0.03%}	{0.11%}	{1.33%}	{1.70%}
Subtotal	155,318	76,699	13,629	91,562	9,175	9,128	48,080	70,336	4,367	7,844	486,138
	[31.95%]	[15.78%]	[2.80%]	[18.83%]	[1.89%]	[1.88%]	[9.90%]	[14.47%]	[0.90%]	[1.61%]	[100%]
	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}	{100.00%}

[1] In ( ) next to the region's name is the number of countries. [2] In [ ] is the percentage when the IN country subtotal (far right) is 100%. [3] In { } is the percentage when the FROM country subtotal (bottom) is 100%.

Table 3.7

**Rule of law breakdown of long-term
bonds, year-end 2002**

In millions of US dollars

From / In	Common (13)[1]	Civil/French (18)	Civil/German (5)	Civil/ Scandinavian (4)	Subtotal
Common (19)	582,835 [36.29%][2] {42.66%}[3]	235,504 [14.67%] {23.01%}	722,734 [45.01%] {42.35%}	64,783 [4.03%] {36.06%}	1,605,856 [100%] {37.56%}
Civil/French (22)	439,889 [31.17%] {32.20%}	468,920 [33.23%] {45.82%}	460,009 [32.59%] {26.95%}	42,478 [3.01%] {23.65%}	1,411,296 [100%] {33.01%}
Civil/German (6)	300,796 [27.56%] {22.02%}	287,216 [26.32%] {28.07%}	449,774 [41.21%] {26.35%}	53,658 [4.92%] {29.87%}	1,091,444 [100%] {25.53%}
Civil/ Scandinavian (4)	42,627 [25.48%] {3.12%}	31,740 [18.97%] {3.10%}	74,228 [44.36%] {4.35%}	18,729 [11.19%] {10.43%}	167,323 [100%] {3.91%}
Subtotal	1,366,149 [31.95%] {100%}	1,023,379 [23.93%] {100%}	1,706,745 [39.92%] {100%}	179,647 [4.20%] {100%}	4,275,920 [100%] {100%}

[1] In ( ) next to the region's name is the number of countries. [2] In [ ] is the percentage when the IN country subtotal (far right) is 100%. [3] In { } is the percentage when the FROM country subtotal (bottom) is 100%.

Table 3.8

**Rule of law breakdown of short-term
paper, year-end 2002**

In millions of US dollars

From In	Common (13)[1]	Civil/French (18)	Civil/German (5)	Civil/ Scandinavian (4)	Subtotal
Common (19)	292,708 [75.11%][2] {68.96%}[3]	62,775 [16.11%] {47.84%}	30,318 [7.77%] {53.48%}	3,922 [1.01%] {42.74%}	389,723 [100%] {62.70%}
Civil/French (22)	63,700 [53.90%] {15.01%}	36,078 [30.53%] {27.50%}	17,351 [14.68%] {30.60%}	1,046 [0.89%] {11.40%}	118,175 [100%] {19.01%}
Civil/German (6)	53,424 [61.60%] {12.59%}	25,119 [28.96%] {19.14%}	6,619 [7.63%] {11.67%}	1,571 [1.811%] {17.12%}	86,733 [100%] {13.95%}
Civil/ Scandinavian (4)	14,615 [54.33%] {3.44%}	7,243 [26.92%] {5.52%}	2,406 [8.94%] {4.24%}	2,637 [9.80%] {28.74%}	26,901 [100%] {4.33%}
Subtotal	424,447 [68.30%] {100.00%}	131,215 [21.11%] {100.00%}	56,694 [9.12%] {100.00%}	9,176 [1.48%] {100.00%}	621,532 [100%] {100.00%}

[1] In ( ) next to the region's name is the number of countries.   [2] In [ ] is the percentage when the IN country subtotal (far right) is 100%.   [3] In { } is the percentage when the FROM country subtotal (bottom) is 100%.

4.   Regression results

We begin our empirical analysis by estimating cross-country regressions that examine whether differences in foreign bond investments can be accounted for by cross-country differences in property rights protection, while controlling for other macro factors that may be important.

4.1   Summary statistics of the regression sample

In Table 4.1, we present the list of 47 sample countries and some of the variables used in the regression analysis. We partition the sample into two groups by the median of the property right index. One clear message delivered by the table is that countries with stronger investor protection show larger GDP and have more local bonds held by foreign investors. The percentage of local bonds held by foreign investors scaled by GDP is 7.18% for countries with low investor protection, whereas the same figure is as much as 35.5% for countries with high property rights protection. Table 4.2 presents some summary statistics and correlations used in the analysis.

Table 4.1

Summary statistics

Country	(1) Short-term debts (in m$)	(2) Long-term debts (in m$)	(3) Gross domestic product (in m$)	(4) Percent-age of debts over GDP	(5) Origin of law	(6) Property rights Index	(7) Creditor rights Index
Countries with low property rights protection							
ARG	606	21,485	268,831	8.22	2	16.84	1
BRA	2,984	43,500	508,994	9.13	2	20.24	1
CHL	80	4,332	66,450	6.64	2	19.60	2
COL	31	5,886	82,411	7.18	2	18.97	0
ECU	14	1,233	21,024	5.93	2	16.93	4
EGY	48	491	98,476	0.55	2	16.22	4
GRC	460	61,302	117,169	52.71	2	21.01	1
IDN	79	1,597	141,255	1.19	2	15.40	4
IND	214	1,766	481,440	0.41	1	18.44	4
JOR	18	176	8,829	2.20	2	16.41	.
KEN	22	18	11,396	0.35	1	16.46	4
KOR	2,018	22,425	427,234	5.72	3	22.20	3
LKA	31	130	15,662	1.02	1	16.30	3
MEX	742	42,802	623,890	6.98	2	18.61	0
MYS	292	9,538	88,050	11.16	1	22.76	4
PAK	22	244	58,648	0.45	1	13.47	4
PER	143	1,792	54,218	3.57	2	14.92	0
PHL	332	8,804	71,382	12.80	2	12.94	0
THA	348	3,607	115,310	3.43	1	20.17	3
TUR	575	11,833	145,244	8.54	2	18.13	2
URY	129	1,629	18,561	9.47	2	18.87	2
VEN	226	8,544	126,197	6.95	2	17.89	.
ZWE	17	39	9,057	0.62	1	16.07	4
Average	*410*	*11,008*	*154,771*	*7.18*	*.*	*18*	*2*
Countries with high property rights protection							
AUS	25,448	73,916	368,726	26.95	1	26.50	1
AUT	6,512	104,400	188,546	58.83	3	27.86	3
BEL	22,536	97,354	229,610	52.22	2	27.93	2
CAN	14,872	196,559	694,475	30.44	1	28.63	1
CHE	3,297	13,828	247,091	6.93	3	29.96	1

Table 4.1 (cont)

Summary statistics

Country	(1) Short-term debts (in m$)	(2) Long-term debts (in m$)	(3) Gross domestic product (in m$)	(4) Percent-age of debts over GDP	(5) Origin of law	(6) Property rights Index	(7) Creditor rights Index
Countries with high property rights protection							
DEU	84,910	802,257	1,846,069	48.06	3	28.60	3
DNK	6,036	51,119	161,542	35.38	4	28.98	3
ESP	5,724	165,876	581,823	29.49	2	25.30	2
FIN	3,639	37,677	120,855	*34.19*	4	28.82	1
FRA	56,589	331,120	1,309,807	29.60	2	27.89	0
GBR	174,385	394,595	1,424,094	39.95	1	28.44	4
HKG	505	15,691	162,843	9.95	1	25.63	4
IRL	12,496	67,419	103,298	77.36	1	27.15	1
ISR	91	8,996	.	.	1	24.12	4
ITA	31,564	428,540	1,088,754	42.26	2	24.65	2
JPN	36,127	167,520	4,141,431	4.92	3	27.88	2
NLD	39,538	371,334	380,137	108.09	2	29.33	2
NOR	2,584	32,007	166,145	20.82	4	29.59	2
NZL	3,844	9,145	50,425	25.76	1	28.98	3
PRT	3,278	44,617	109,803	43.62	2	24.85	1
SGP	1,233	13,228	84,871	17.04	1	26.38	4
SWE	14,220	84,280	209,814	46.95	4	28.98	2
USA	418,135	1,660,138	10,065,270	20.65	1	27.61	1
ZAF	255	7,085	114,174	6.43	1	23.07	3
Average	*40,326*	*215,779*	*1,036,939*	*35.47*	.	*27*	*2*

This table presents the amount of local bonds held by foreign investors as of the end of 2001, gross domestic product in 2001, percentage of bonds over GDP, legal origin indicator, property rights index and creditor rights index for each of 47 sample countries. The property rights index is the sum of three indexes from La Porta et al (1998). Legal origin indicator "1" is English origin, "2" French, "3" German, and "4" Scandinavian. Each index ranges from zero to 10. Each index measures government corruption, the risk of expropriation by the government and the risk of the government repudiating contracts. High values of property rights indexes indicate better protection of property rights. The creditor rights index is the sum of four dummy variables, each of which measures "no automatic stay on assets", "secured creditors first", "restrictions for going into reorganization" and "current management does not stay in the reorganized firm". High values of creditor rights indicate better protection of creditor rights.

Table 4.2

Summary statistics of variables

Panel A: summary statistics

Variable	N	Mean	Std dev	Minimum	Maximum
Short-term debts/GDP	47	2.33	3.37	0.04	12.25
Long-term debts/GDP	47	18.56	20.61	0.15	97.68
Property rights index	47	22.68	5.33	12.94	29.96
Creditor rights index	45	2.00	1.00	1.00	4.00
GDP per capital	47	15,053	13,686	332	48,160
Inflation rate	46	5.90	12.52	−3.97	64.87
Growth rate of GDP	47	0.62	4.22	−14.36	10.03
Lending rate	43	14.32	14.41	2.16	64.02

Panel B: correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Short-term debts/GDP	1.00							
(2) Long-term debts/GDP	0.72 (0.00)	1.00						
(3) Property rights index	0.65 (0.00)	0.61 (0.00)	1.00					
(4) Creditor rights index	−0.09 (0.55)	−0.22 (0.15)	−0.11 (0.46)	1.00				
(5) GDP per capita	0.52 (0.00)	0.53 (0.00)	0.90 (0.00)	−0.18 (0.25)	1.00			
(6) Inflation rate	−0.24 (0.11)	−0.22 (0.14)	−0.38 (0.01)	0.07 (0.66)	−0.37 (0.01)	1.00		
(7) Growth rate of GDP	0.33 (0.02)	0.30 (0.04)	0.41 (0.00)	0.01 (0.96)	0.34 (0.02)	−0.67 (0.00)	1.00	
(8) Lending rate	−0.40 (0.01)	−0.41 (0.01)	−0.62 (0.00)	0.15 (0.34)	−0.57 (0.00)	0.79 (0.00)	−0.72 (0.00)	1.00

4.2   Baseline regressions

Table 4.3 presents results from regressions on the cross-country data. The dependent variable is the local bonds held by foreign investors scaled by the size of GDP in the sample countries.[12] We first look at the regression results reported in Column (1) of Table 4.3. The explanatory variables are the log of the lending rate level in the country and the log of per capita GNP. We also include the growth rate of GNP. The coefficient on the lending rate level is positive and that on the growth rate of GNP is also positive, but both of these coefficients are not significant at conventional levels. The coefficient on per capita GNP is positive and significant at the 1% significance level. This implies that richer countries attract more investment in local bond markets from abroad.

In Column (2) we examine whether the cross-country variation in the creditor rights index explains the variation in foreign bond investments. The coefficient on the creditor rights index is again not statistically significant. In the regression in Column (3), we drop the creditor rights index and replace it with the property rights index. The coefficient on the property rights index variable is positive and significant at the 1% level. The coefficient on the per capita GNP loses its significance, which indicates that the institutional variable is more important than the degree of economic development.

The positive relation between foreign bond investments and the strength of property rights protection supports the view that property rights protection allows more efficient contracting, and that foreign investors are willing to take part in countries where property rights protection is strong. Together with other variables, the property rights index explains about 38.5% of the variation in cross-country foreign bond investments. Notice also that the explanatory power significantly increases from the regression in Column (1) by 14.7 percentage points to 38.5%.

The fact that the creditor rights index does not explain the cross-country variation in foreign bond investments supports the argument that what matters to foreign investors is not the actual law that provides creditor rights protection, but, instead, how the law is enforced. The enforcement is a function of property rights protection. Demirgüç-Kunt and Maksimovic (1999) reach a similar conclusion. These authors argue that a direct statistical relation between the existence of creditor rights and financial contracts is not expected, because the "existence of rights may be necessary but not sufficient to make a financial contract enforceable." In a different context, Esty (2002) finds that creditor rights and property rights affect foreign bank participation in project loan syndicates.

When both the property rights index and the creditor rights index variables are included together with the log of per capita GNP and the log of lending rates (in COLUMN (4)), only the property rights index variable is statistically significant.

Our results provide additional evidence in the literature underscoring the importance of property rights protection in the development of debt markets. Miller and Puthenpurackal (2002) examine the costs, wealth effects and determinants of international capital raising for a sample of 260 public debt issues made by non-US firms in the yankee bond market. They find that investors demand economically significant premiums on bonds issued by firms that are located in countries that do not protect investors' rights and do not have a prior history of ongoing disclosure. Their results support the idea that better legal protections and more detailed information disclosure increases the price investors will pay for financial assets. Bae and Goyal (2003) examine how property rights affect private contracting in bank loan markets. They find that when property rights are weaker, banks offer less credit, charge higher spreads and lend only on a short-term basis.

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[12]   We also scale the foreign investor-held bonds by the size of the bond markets in the sample countries. The results are similar.

Table 4.3

Regression of bond holdings by foreign investors on property rights index and macroeconomic variables

Panel A. Short-term paper

	(1)	**(2)**	**(3)**	**(4)**
Constant	0.414	0.503	−9.607***	−9.541***
	(0.81)	(1.22)	(3.14)	(3.33)
Lending rate	0.022	0.023	0.015	0.019
	(0.04)	(0.05)	(0.04)	(0.04)
Growth rate of GNP	0.179	0.188	0.081	0.096
	(0.14)	(0.15)	(0.13)	(0.14)
Per capita GNP	0.114	0.114***	−0.077	−0.080
	(0.03)	(0.04)	(0.06)	(0.06)
Creditor right index		−0.048		−0.136
		(0.36)		(0.32)
Property rights index			0.573***	0.583***
			(0.17)	(0.18)
Observations	45	43	45	43
Adjusted R-squared	0.238	0.200	0.385	0.356

Panel B. Long-term bonds

	(1)	**(2)**	**(3)**	**(4)**
Constant	6.727	12.187	−39.078*	−35.015*
	(4.98)	(7.32)	(20.20)	(20.97)
Lending rate	0.137	0.154	0.104	0.137
	(0.29)	(0.31)	(0.28)	(0.29)
Growth rate of GNP	0.906	1.030	0.460	0.597
	(0.86)	(0.94)	(0.84)	(0.90)
Per capita GNP	0.728***	0.686***	−0.145	−0.227
	(0.21)	(0.22)	(0.42)	(0.44)
Creditor right index		−2.276		−2.689
		(2.15)		(2.04)
Property rights index			2.620***	2.741**
			(1.12)	(1.15)
Observations	45	43	45	43
Adjusted R-squared	0.236	0.217	0.311	0.303

The table presents results from cross-sectional regression of bond holdings by foreign investors. The sample includes 45 countries. The dependent variable is the short/long-term bonds held by foreign investors as of the end of 2001 over GDP. Independent variables include the inflation rate and log of per capita GNP, property rights index, creditor rights index. Numbers in parentheses are standard errors. ***Significant at the 1% level. **Significant at the 5% level. *Significant at the 10% level.

While not reported, we also examine whether property right protection affects the trading activity of foreign investors in local bond markets. We compute the size of bond portfolio flows between the United States and each country in our sample. US investors represent a significant fraction of the portfolio capital flows. Furthermore, comparable data are not available from other countries. The monthly flow of portfolio capital between the United States and virtually every country in the world is made available online by the US Treasury Department starting with 1988 data.[13] We use the sum of inward and outward flows of US investors scaled by the market's GDP to proxy for the amount of bond portfolio activity crossing a particular country's borders in a particular month. The results show that we observe more active foreign trading activity in countries with strong property rights.

4.3 Robustness tests

This section presents results from sensitivity tests that examine whether there are other explanations for our results. A concern with cross-country analysis is that the regression may omit an important explanatory variable that is really driving the result and that is highly correlated with property rights protection. To rule out several alternative explanations, we have experimented with other plausible institutional and macroeconomic factors and examine if including them reduces the significance of the coefficient on the property rights index. In particular, we focus on the legal origin dummies, country risk and variables that measure the size and activity of debt and equity markets. These sensitivity tests rule out a large number of alternative explanations.

Legal origin dummies: La Porta et al (1998) show that the legal origin of a country's laws explains the degree of investor protection in that country. English common-law countries offer creditors stronger legal protection against managers. German civil-law countries are protective of secured creditors. Scandinavian civil-law countries are the best in law enforcement. The legal variables are from the La Porta et al (1998) dataset. While the results are not reported, none of the legal origin dummy variables is significant.

We also examine the effect that including only the French legal origin dummy has on the coefficient of the property rights index in the baseline regression. French civil-law countries are considered weak in investor protection. However, these unreported results show that the conclusions are not sensitive to the set of legal origin dummies included in the regression. The French legal origin dummy continues to remain insignificant while the property rights index remains positive and significant at the 1% level.

GNP growth volatility: To address concerns that per capita GNP or the lending rate level does not adequately capture country risk, we include GNP growth volatility as an additional measure of country risk. GNP growth volatility is estimated as the standard deviation of the annual growth rate in GNP. As one would predict, the coefficient on the GNP growth rate volatility is negative but not significant. The inclusion of GNP growth volatility does not change our main results on the property rights index.

Size of stock market: We examine the stock market capitalisation to GDP ratio, which equals the value of listed shares divided by the GDP and the stock market total value traded to GDP. Our results on the importance of the property rights index are robust to controlling for the importance of the stock market in the economy. In addition, our results are robust to the inclusion of variables that measure the size of the bond markets and the size of the primary equity markets.

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[13] The data were downloaded from www.treas.gov/tic/country-longterm.html, and are also available in the Treasury's monthly bulletin. Across our sample of emerging market countries, only Sri Lanka lacks data from this source.

Table 4.4

Robustness tests

Panel A. Short-term paper

	(1)	(2)	(3)	(4)
Constant	−11.176***	−8.055**	−9.662***	−14.606
	(3.90)	(3.56)	(3.22)	(15.07)
Lending rate	0.024	0.034	0.009	0.029
	(0.04)	(0.05)	(0.04)	(0.05)
Growth rate of GNP	0.133	0.098	0.102	0.109
	(0.14)	(0.14)	(0.14)	(0.19)
Per capita GNP	0.018	−0.088	−0.091	−0.107
	(0.08)	(0.07)	(0.07)	(0.08)
Creditor right index	0.055	−0.132	−0.001	−0.266
	(0.37)	(0.32)	(0.32)	(0.46)
Property rights index	0.477**	0.561***	0.615***	0.687***
	(0.19)	(0.18)	(0.18)	(0.31)
English origin dummy	2.463			
	(1.77)			
French civil origin dummy	2.862			
	(1.82)			
German civil origin dummy	−0.794			
	(1.84)			
GNP growth volatility		−0.329		
		(0.29)		
Stock market cap/GDP			−0.113*	
			(0.61)	
Country credit rating				0.717
				(4.56)
Observations	43	43	43	36
Adjusted R-squared	0.390	0.361	0.396	0.285

Panel B. Long-term bonds

	(1)	(2)	(3)	(4)
Constant	−60.172**	−21.426	−35.309*	−159.53*
	(23.67)	(22.05)	(21.13)	(93.68)
Lending rate	0.057	0.270	0.113	0.139
	(0.27)	(0.29)	(0.29)	(0.35)
Growth rate of GNP	1.165	0.614	0.611	0.284
	(0.86)	(0.88)	(0.91)	(1.20)
Per capita GNP	−0.067	−0.300	−0.254	−0.410
	(0.50)	(0.43)	(0.44)	(0.50)

Table 4.4 (cont)

Robustness tests

Panel B. Long-term bonds (cont)

	(1)	(2)	(3)	(4)
Creditor right index	0.642	−2.518	−2.359	−1.847
	(2.23)	(2.00)	(2.11)	(2.87)
Property rights index	3.053***	2.538**	2.819**	1.151
	(1.16)	(1.13)	(1.16)	(1.96)
English origin dummy	−0.424			
	(10.65)			
French civil origin dummy	19.163*			
	(11.02)			
German civil origin dummy	−2.832			
	(11.19)			
GNP growth volatility		−3.014*		
		(1.80)		
Stock market cap/GDP			−0.275	
			(0.40)	
Country credit rating				38.769
				(28.36)
Observations	43	43	43	36
Adjusted R-squared	0.391	0.335	0.293	0.206

The table presents results from an additional cross-sectional regression of bond holdings by foreign investors to test the robustness of results reported in Table 3. The sample includes 45 countries. The dependent variable is the short/long-term bonds held by foreign investors as of the end of 2001 over GDP. This table presents several additional country level regressions of country median loan spreads to test the robustness of results reported in Table 4.3. Independent variables include the lending rate and log of per capita GNP, property rights index, creditor rights index, legal tradition dummies, GNP growth volatility, stock market capitalisation over GDP and country credit rating. Numbers in parentheses are standard errors. ***Significant at the 1% level. **Significant at the 5% level. *Significant at the 10% level.

Country credit rating: We examine if our results survive when we include the country credit rating. We use Standard and Poor's Foreign Currency Sovereign Credit Rating as a proxy for country credit rating. While not reported, we also examine country credit rating scores obtained from IMD survey data as of 2001 and find similar results. The S&P ratings data are available for 40 countries. For our sample countries, the S&P ratings range from AAA to B− with a rank of one to 16. We convert these rank values to continuous variables. Intuitively, bonds of countries with better credit ratings are likely to be preferred by foreign investors and one would expect that this variable is positively related to our dependent variable. The results show that the property rights index is significant and positive in explaining both short-term and long-term bonds held by foreign investors even after controlling for credit rating. However, for long-term bonds, neither the property rights index nor the country credit rating is significant, perhaps due to strong correlation between these two variables.

2002 data: To examine if the results are robust across time, we reexamine the data in year 2002. The results are very similar to those using the data in year 2001.

These sensitivity tests show that our results concerning the relation between property rights protection and foreign bond investments are robust.

5.   Summary and conclusions

This paper investigated how the protection of property rights affects foreign bond investments. Some countries provide stronger protection for private property rights than do other countries. The rights that lenders have are likely to be better enforced in countries with stronger protection of property rights. We asked if cross-country differences in property rights protection affect foreign bond holdings, after controlling for cross-country differences in macroeconomic variables including GNP per capita, lending rates and/or inflation rates and exchange rates.

Our findings suggest that differences in property rights protection translate into large differences in foreign bond investments. In countries that provide weak property rights protection, foreign investors make smaller investments.

These results imply that by improving property rights protection, a country or region can expect to attract foreign interest and participation in local or regional bond markets. To the extent that foreign investors play a vital role in providing liquidity, our evidence shows that improving property rights protection is a matter of prime importance.

6.   References

Alexander, Gordon, Cheol Eun and S Janakiramanan (1987): "Asset pricing and dual listing on foreign capital markets: a note", *Journal of Finance*, 42, 151-58.

Amihud, Yakov and Haim Mendelson (1986): "Asset pricing and the bid-ask spread", *Journal of Financial Economics*, 17, 223-49.

Amihud, Haim Mendelson and Beni Lauterbach (1997): "Market microstructure and securities values: evidence from the Tel Aviv Stock Exchange", *Journal of Financial Economics*, 45, 365-90.

Bae, Kee-Hong and Vidhan Goyal (2003): "Property rights protection and bank loan contracts", *Journal of Financial Economics*, submitted.

Becker, Robert and Emmanuel Pitsilis (2000): "A case for Asian bond markets", the McKinsey Quarterly 2000, Number 4.

Bekaert, Geert and Campbell Harvey (2003): "Emerging markets finance", *Journal of Empirical Finance*, 10, 3-55.

Chari, A and Peter Blair Henry (2002): "Risk sharing and asset prices: evidence from a natural experiment", *Journal of Finance*, 59, 1295-324.

Claessens, S, S Djankov, J P H Fan and L H P Lang (2002): "Disentangling the incentive and entrenchment effects of large shareholdings", *Journal of Finance*, 57, 2741-71.

Demirgüç-Kunt, A and V Maksimovic (1998): "Law, finance, and firm growth", *Journal of Finance*, 53, 2107-37.

——— (1999): "Institutions, financial markets, and firm debt maturity", *Journal of Financial Economics*, 54, 295-336.

Doidge, Craig (2003): "U.S. cross-listings and the private benefits of control: evidence from dual-class firms", *Journal of Financial Economics*, forthcoming.

Errunza, Vihang and Etienne Losq (1985): "International asset pricing under mild segmentation: theory and tests", *Journal of Finance*, 40, 105-24.

Esty, B C (2002): "When do foreign banks finance domestic investment? New evidence on the importance of legal and financial systems", Harvard Business School, working paper.

Eun, Cheol S and S Janakiramanan (1986): "A model of international asset pricing with a constraint on the foreign equity ownership", *Journal of Finance*, 41, 897-914.

Henry, Peter Blair (2000): "Stock market liberalization, economic reform, and emerging market equity rices", *Journal of Finance*, 55, 529-64.

Kaminsky, Graciela L and Sergio Schmukler (2002): "Short run pain, long run gain: the effects of financial liberalization", unpublished George Washington University and World Bank working paper, June.

La Porta, R, F Lopez-de-Silanes, A Shleifer and R W Vishny (1997): "Legal determinants of external finance", *Journal of Finance*, 52, 1131-50.

——— (1998): "Law and Finance", *Journal of Political Economy*, 106, 1113-55.

——— (2000): "Investor protection and corporate governance", *Journal of Financial Economics*, 58, 3-27.

——— (2002): "Investor protection and corporate valuation", *Journal of Finance*, 57, 1147-70.

La Porta, R, F Lopez-de-Silanes and A Shleifer (2002a): "What works in securities law?", Harvard University, Yale University and Harvard University, working paper.

La Porta, R, F Lopez-de-Silanes and A Shleifer (2002b): "Government ownership of banks", *Journal of Finance*, February.

McCauley, Robert and Y C Park (2006): "Developing the bond market(s) of East Asia: global, regional or national?", this volume.

Miller, Darius P and John J Puthenpurackal (2002): "The costs, wealth effects, and determinants of international capital raising: evidence from public Yankee bonds", *Journal of Financial Intermediation*, 11, 455-85.

Morck, R, B Yeung and W Yu (2000): "The information content of stock markets: why do emerging markets have synchronous stock price movements?", *Journal of Financial Economics*, 58, 215-60.

Obstfeld, Maurice (1998): "The global capital market: benefactor or menace?", *Journal of Economic* Perspectives, 12, 9-30.

Rajan, R and L Zingales (1998): "Financial dependence and growth", *American Economic Review*, 88, 559-86.

Siegel, J I (2005): "Can foreign firms bond themselves effectively by renting U.S. securities laws?", *Journal of Financial Economics*, 75, no 2, February, 319-59.

Stapleton, R and M Subrahmanyan (1977): "Market imperfections, capital market equilibrium and corporate finance", *Journal of Finance*, 32, 307-319.

Stulz, Rene M (1999a): "International portfolio flows and security markets", in Martin Feldstein (ed) *International capital flows*, University Chicago Press, 257-93.

——— (1999b): "Globalization, corporate finance and the cost of capital", *Journal of Applied Corporate Finance*, 12, 8-25.

Stulz, Rene and R Williamson (2003): "Culture, openness, and finance", *Journal of Financial Economics*, 70, 313-40.