

Giofré, Maela

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# Investor Protection and Foreign Stakeholders

Maela Giofré

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# Investor Protection and Foreign Stakeholders

## Abstract

Different investor classes are endowed with different rights, and conflicting interests among them can make protections afforded to one party detrimental to another. Indeed, we find that investor protection laws have sizeable "cross" effects on foreign portfolio investment and the direction of these effects supports the conjecture that foreign stakeholders are more sensitive to the perceived riskiness of assets than domestic investors. Specifically, we find that strong protection of creditor rights - limiting excessive risk taking - positively affects foreign shareholders, whereas strong protection of shareholder rights – potentially shifting firms toward riskier projects - negatively impacts foreign bondholders.

JEL-Code: G11, G15, G30.

Keywords: international portfolio investments, investor protection, bondholders-shareholders conflicts.

*Maela Giofré*  
*University of Torino and CeRP-CCA*  
*Center for Research on Pensions and Welfare Policies*  
*Collegio Carlo Alberto*  
*Via Real Collegio 30*  
*10024 Moncalieri (Torino)*  
*Italy*  
*giofre@cerp.unito.it*

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# 1 Introduction

This paper investigates the role of corporate governance in cross-border investment. The emphasis on foreign investment is driven by evidence that international diversification is beneficial to investors despite increased financial market integration and systemic crises (Levy and Sarnat (1970); Santis and Gerard (1997); Das and Uppal (2004)). In this respect, corporate governance, with its peculiar role of facilitating access to external finance through reduction of information asymmetry (La Porta et al. (1998); LLSV (1998) henceforth), can be critical in attracting foreign portfolio investment, which is indeed particularly sensitive to information barriers.

Standard asset pricing models using a representative agent predict that differences in investor rights and financial development should be capitalized in share prices such that investing in any given nation's stocks will be a fair investment regardless of that nation's level of investor protection (Dahlquist et al. (2003)). However, as noted by Leuz et al. (2009), the key question is whether this price discount is sufficient for foreign investors that plausibly face information problems beyond those of domestic investors. Indeed, the prevalence of disproportionate investment in domestic assets – the so-called "home bias" puzzle – can be read as evidence of the asymmetric perception of asset characteristics by home and foreign investors thus breaking the representative agent hypothesis (Gehrig (1993); Kang and Stulz (1997)).

Dahlquist and Robertsson (2001) and Kang and Stulz (1997) emphasize that large, financially solid, well-known firms are preferred by foreigners, thereby underlining the asymmetry between resident and foreigner investors. Chan et al. (2005) investigate the determinants of foreign and domestic investment, finding that familiarity and variables capturing investment barriers have a significant but asymmetric effect on domestic and foreign bias<sup>1</sup>. These findings are consistent with the conjecture that foreign investors are more vulnerable to information asymmetry than domestic investors; hence, they might be more influenced by governance rules that reduce information costs.

In this work, we are interested in the impact of investor protection laws on stock and bond portfolios held by foreign investors<sup>2</sup>. This effect cannot be observed directly from market price or total market capital-

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<sup>1</sup>The same foreign-domestic asymmetry is found in Guiso et al. (2009), where domestic investors rank their own managers higher than do foreign investors.

<sup>2</sup>We ignore any direct explanation relative to the *home bias* phenomenon and focus on the determinants of foreign positions. However, domestic positions, though not explicitly investigated here, impact our analysis indirectly: the weight of each foreign

ization, since these indicators capture only the aggregate equilibrium behavior. Previous work originating from LLSV (1998) underlines how investor protection affects financial market development, that is, the supply of equity, leaving the demand side mostly unexplored. This latter perspective is relevant insofar as we account for heterogeneity across investors. For instance, Giannetti and Koskinen (2010) show that investor protection impacts financial market development by influencing the demand for equity, because different classes of investor can differ in the benefits accruing to them and therefore in their willingness to pay for stocks. Specifically, controlling shareholders can gain access to both private and security benefits and thus be willing to pay more for a stock than investors who can enjoy only security benefits. These authors' theoretical model provides several testable implications with respect to home bias and stock market participation rates. However, they assume that domestic and foreign outside investors face the same cost of participation in both domestic and foreign markets. This hypothesis is quite strong and admittedly at odds with the prolific empirical literature emphasizing the role of asymmetric information as a potential explanation for the home bias puzzle. Our perspective can be viewed as complementary to Giannetti and Koskinen (2010): while they split the universe of investors into inside and outside investors we focus on outside investors only, in order to test whether corporate governance evenly affects all portfolio investors or whether it is particularly relevant to foreign investors. A perspective much closer to ours is taken by Leuz et al. (2009). They investigate the impact of firm-level corporate governance on foreign holdings and find that foreigners invest less in firms with poor outsider protection and opaque earnings.

We depart from previous works in that we investigate the effect of investor protection laws on foreign portfolio investment – debt and equity portfolios – accounting for the interaction of various governance mechanisms on stakeholders endowed with different rights and interests.

In fact, any analysis of the effects of investor protection laws should carefully account for the conflicting interests of the various stakeholder groups. Within the corporation, the distinct interests of managers, stockholders and creditors coexist and are often in conflict with one another. It may be the case that legislation particularly favorable to one type of stakeholder turns out to be detrimental to others. Shareholder-manager conflict has received much attention in the literature, but important sources of conflict can also arise between shareholders and bondholders. The corporate governance literature has analyzed the complex mechanisms of conflicts of interest between shareholders and creditors, suggesting that the potential conflict between

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stock index in the overall portfolio also depends on the domestic share. See Giannetti and Koskinen (2010) for a discussion of the implications of minority investor rights on home equity bias.

equity and debt claimants lies primarily in wealth expropriation and risk shifting (Jensen and Meckling (1976)). These conflicts can give rise to interesting effects on portfolio decisions making on the part of foreign investors. Specifically, strong shareholder rights protection are likely to benefit foreign shareholders ("direct" effect) but may also deter foreign bondholders ("cross" effect) as shareholders are more prone to risk-taking activities than is optimal for creditors (Myers (1977); Jensen and Meckling (1976)). Creditors might indeed be more in line with managers, who may be more concerned with their own job security and so choose to undertake less risky projects. On the other hand, strong creditor rights are likely to attract foreign bondholders ("direct" effect) but may deter stock investments ("cross" effect) if firms are induced to engage in risk-reducing processes such as acquisitions that are likely to be value-destroying (Acharya et al. (2008)). Ultimately, the question of the impact of investor protection provisions on foreign stakeholders, the focus of the present paper, is an empirical one and depends on foreigners' perception of the balance among various interests. Our results highlight that laws protecting the interests of different types of investors asymmetrically affect foreign stakeholders and, more specifically, that foreign portfolio investors more highly value corporate governance practices that are risk-reducing than do domestic investors. Foreign shareholders appear to appreciate strong creditor rights that potentially mitigate the riskiness of projects, while bondholders are negatively affected by strong shareholder rights that could induce the firm to engage in risky asset investments.

Finally, our findings also contribute to the literature that investigates the failure of convergence in investor protection legislation. Djankov et al. (2008) find no convergence in creditor rights scores. La Porta et al. (2000) reject the hypothesis of legal convergence of rules and enforcement mechanisms toward some successful standard of effective investor protection. These authors claim that this is due to the dominance of interest group politics: extensive legal, regulatory and judicial reform are needed but governments are reluctant, as the first order effect is a tax on insiders. Mansi et al. (2009), focusing on the heterogeneity across US states' legislation, critically discuss the evidence of no polarization toward a system of stronger or weaker investment protection. Different states compete also on legal dimensions in terms of their effectiveness in attracting investment but competition does not necessarily induce a "race to the bottom" or a "race to the top". Firms, in fact, sort themselves either away from binding payout restrictions that reduce financial flexibility and value, or toward greater restrictions that reduce debt financing costs. Not all jurisdictions then need or should converge to the single best or worst alternative. Rather, the existence of a variety of jurisdictions and different economic environments allows firms to maximize value by choosing a set of laws

most appropriate to their own situation. Our findings contribute to this debate by providing an indirect rationalization of the evidence of no convergence toward the strongest investor protection setting: investor protection can be beneficial to one type of investor and detrimental to another. Accordingly, the level of investor protection in each country is endogenously determined by many conflicting forces, among which are the political choice to promote inward investment and to favour some classes of investor over others.

The remainder of this paper is organized as follows. After describing the conceptual framework and its main implications in Section 2, we present our empirical analysis in Section 3, describing the econometric setting, the data and the results. Section 4 summarizes the main findings and addresses the potential policy implications of our analysis.

## 2 A conceptual framework

Our theoretical framework relies on equilibrium portfolio allocations in which investors are supposed to face different costs from investing in various financial markets. According to Gehrig (1993), foreign investments appear on average more risky to domestic investors – leading to an information-based justification to home bias – and portfolios differ among investors depending on the perceived variance-covariance matrix. We adopt this approach, shifting the focus to foreign investment exclusively, considering a different investor-specific perceived variability of return for each foreign index in the investment opportunity set. Details on the derivation of the model are provided in Appendix A. In the model, the "unbiased" portfolio holding of an asset depends, as in standard portfolio choice theory, on asset characteristics (risk and return). When considering *equilibrium* asset holdings without investment barriers, all investors ought to hold the same portfolio (value-weighted portfolio) in which each asset is weighted according to its stock market capitalization ( $MS$ ). Importantly, the same portfolio is universally optimal in equilibrium even in the presence of investment barriers, provided that these barriers identically affect all investors. Conversely, heterogeneity in bilateral-specific investment barriers generates a wedge between the investor-specific portfolio and the value-weighted portfolio. This wedge depends, in particular, on how far the bilateral investment barrier of country  $l$  investing in country  $j$  is from the average barrier of all countries investing in the same asset  $j$ . Denoting by  $D_{lj}$  the relative (to world average) investment barrier of country  $l$  investing in asset  $j$ , the optimal portfolio weight in asset  $j$  ( $w_{lj}$ ) by country  $l$  is

$$w_{lj} = \frac{1}{D_{lj}} MS_j \quad (1)$$

where  $MS_j$  is the market share of asset  $j$  in the world market capitalization and  $\frac{1}{D_{lj}}$  represents the *relative* (with respect to world average) "advantage" of country  $l$  investing in asset  $j$ . In other words, this variable captures the inverse of the investor's relative (to world average) investment barriers (direct barriers, such as transaction costs, or indirect ones, such as information barriers) in holding asset  $j$ : an investor residing in country  $l$  will demand a share of asset  $j$  greater than its market share in proportion to  $\frac{1}{D_{lj}}$  (inverse of the relative investment cost)<sup>3</sup>.

By taking the logs of the above expression we obtain

$$\log\left(\frac{w_{lj}}{MS_j}\right) = \log\left(\frac{1}{D_{lj}}\right) \quad (2)$$

The ratio  $\frac{w_{lj}}{MS_j}$  can be interpreted as the bilateral *bias* in asset  $j$  by a representative investor in country  $l$ . If the actual position  $w_{lj}$  is larger than  $j$ 's market share, then there is a positive bias, while a ratio lower than 1 reveals a negative bias. The above relation implies that the bias in asset  $j$  by investors residing in country  $l$  depends on the reciprocal of the bilateral-specific investment barrier relative to the world average investment barrier. In other words, the larger the bilateral-specific investment barrier relative to the world average, the lower the actual position in a given asset<sup>4</sup>. In our analysis, the risky assets can be either stocks or bonds, as the risk-free asset is determined in the model as the residual portfolio share.

## 2.1 Estimable equation and testable implications

To estimate (2) we must provide an empirical counterpart to the variable  $D_{lj}$ , which is not directly observable.

Our final estimable regression is as follows

$$\log\left(\frac{w_{lj}^k}{MS_j^k}\right) = \alpha^k + \sum_{i=1,\dots,I} \beta^{k,i} \log(X_{lj}^i) + \sum_{n=1,\dots,N} \lambda^{k,n} Y_{lj}^n + \sum_{h=1,\dots,H} \delta^{k,h} \log(Z_j^h) + \varepsilon_{lj}^k \quad (3)$$

where the superscript  $k = B, S$  identifies bonds ( $B$ ) or stocks ( $S$ ).

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<sup>3</sup>Note that if  $D_{lj} = 1$ , i.e., if the investment barrier for country  $l$  in country  $j$  is equal to the average, then the market share of asset  $j$  is optimally held in equilibrium.

<sup>4</sup>Our theoretical framework is equivalent to the Chan et al. (2005) and Cooper and Kaplanis (1994) return-reducing approach. In fact, at equilibrium, what matters is the investment barrier relative to the average investment barrier. In our approach investment barriers enter in a multiplicative way, making our equation conveniently implementable and interpretable in log terms.



All equilibrium factors, that is factors that are common to all investors, domestic and foreign, are captured on the left-hand side by market share ( $MS$ ), which is jointly determined with the market price in equilibrium. In the presence of heterogeneity in the perception of asset variability, the asset price reveals the *average* perceived variability. Any difference between foreign and domestic portfolio investors in the perception of the same factor can create a wedge between the actual position ( $w$ ) and market share.

We consider  $i$  proxies, denoted by  $X_{lj}$  and  $n$  dummy variables  $Y_{lj}^n$  which might, *a priori*, capture bilateral investment barriers. If we consider, for instance, the distance between country  $l$  and  $j$  as an indicator of investment cost, we expect a negative sign for the associated  $\beta$  coefficient: a higher "relative proxy" (e.g., greater distance between investing country  $l$  and target country  $j$  with respect to average distance) is associated with investor  $l$  biasing her portfolio away from country  $j$  stocks<sup>5</sup>. The main variable of interest in this paper is investor protection laws, a destination-country-specific variable ( $Z_j$ ) and is included in our specification since it may represent a potential device to overcome information barriers for foreign investors. Since total market capitalization in any country must be held in equilibrium by some investors, a country cannot be underweighted by all investors. This implies that a country-specific variable can affect foreign holdings only if this variable is differently weighted by domestic and foreign investors<sup>6</sup>. Indeed, if a country-specific variable  $h$  equally affected all investors in the economy, foreign and domestic ones, its coefficient  $\delta^h$  ought to be null since the equilibrium asset price should fully incorporate any asset-specific characteristic (Dahlquist et al. (2003)).

Since we are interested in testing the direct and cross effects of investor protection laws on different types of stakeholders – shareholders and bondholders – we need to estimate (3) for stock portfolios (3a) and bond portfolios (3b) separately.

$$\log\left(\frac{w_{lj}^S}{MS_j^S}\right) = \alpha^S + \sum_{i=1,\dots,I} \beta^{S,i} \log(X_{lj}^i) + \sum_{n=1,\dots,N} \lambda^{S,n} Y_{lj}^n + \pi^S \log(sh\_r_j) + \theta^S \log(cr\_r_j) + \sum_{h=1,\dots,H-2} \delta^{S,h} \log(Z_j^h) + \varepsilon_{lj}^S \quad (3a)$$

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<sup>5</sup>Note that all variables that capture bilateral investment barriers enter our specification in relative terms, i.e., relative to the average world investment barrier.

<sup>6</sup>As discussed below, when checking for the robustness of our results, we account for the fact that market share also comprises closely held shares that are not available for portfolio investment (column (5a)). Therefore, we modify the measure of the total asset supply following Dahlquist et al. (2003), and our findings still hold. Moreover, by including investing country fixed effects we also partially control for different degrees in investor protections across investing countries that Giannetti and Koskinen (2010) address as potential drivers of home bias.

$$\log\left(\frac{w_{lj}^B}{MS_j^B}\right) = \alpha^B + \sum_{i=1,\dots,I} \beta^{B,i} \log(X_{lj}^i) + \sum_{n=1,\dots,N} \lambda^{B,n} Y_{lj}^n + \pi^B \log(sh\_r_j) + \theta^B \log(cr\_r_j) + \sum_{h=1,\dots,H-2} \delta^{B,h} \log(Z_j^h) + \varepsilon_{lj}^B \quad (3b)$$

To estimate the above parameters, we adopt a feasible Generalized Least Squares specification that assumes the presence of cross-section heteroskedasticity and that includes fixed effects for investing countries, time dummies, and cross-section weight correction of the variance-covariance matrix<sup>7</sup>.

We keep the variables that capture shareholder rights ( $sh\_r$ ) and creditor rights ( $cr\_r$ ) out of the pool of destination-specific variables  $Z_j^h$  in order to separately discuss their effect on the dependent variable. We label as a "direct" effect the impact of corporate rules on "target" investors, i.e., of shareholder (creditor) rights on shareholders (bondholders); this is measured by  $\pi^S$  ( $\theta^B$ ). We expect these coefficients to be positive; that is, we expect foreign stock (bond) investment to be enhanced by stronger shareholder (creditor) rights –  $\pi^S$  ( $\theta^B$ ) > 0. We label as a "cross" effect the impact of corporate rules on "non-target" investors, i.e., creditor (shareholder) rights on shareholders (bondholders); this is measured by  $\theta^S$  ( $\pi^B$ ).

Our setting allows us to directly test two main implications.

The first generally addresses the issue of the different role played by corporate governance rules with respect to foreign versus domestic investors. If the direct effect of investor protection rights ( $sh\_r$  and  $cr\_r$ ) were the same for all portfolio investors in the market, domestic and foreign, we should find that the null hypothesis

$$1. H_0 : \pi^S = 0 \wedge \theta^B = 0$$

is not rejected, that is, we should find no effect on foreign investment since high or low protection should be priced by the market (Dahlquist et al. (2003)).

Since bilateral portfolio bias is explained by relative (to average) investment barriers, the coefficients  $\pi^S$  and  $\theta^B$  attached to the investor protection variables are different from zero only if the impact of this variable on the investors considered, i.e., foreign investors, differs from the impact on domestic investors, and therefore from the average impact that determines the equilibrium price. Conversely, a significant coefficient of country-level investor protection laws for foreign investors can be read as a signal of the asymmetric impact of corporate governance on foreign and domestic investors. In particular, evidence of positive (negative)

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<sup>7</sup>As an alternative, we have also run a Pooled OLS regression with fixed effect for investing countries, time dummies and White correction of the variance-covariance matrix. Our findings remain unaffected under this alternative specification.

coefficients of investor protection rights on foreign portfolio positions can be interpreted as better corporate governance rules in a particular country fostering (detering) inward investment.

The second testable hypothesis concerns more specifically the cross effect of investor protection on foreign investors. Specifically:

- 2a. if  $\theta^S > 0 \wedge \pi^B > 0$  (positive cross effect), then strengthening investor protection is always a desirable policy to attract foreign investments, and policies leading to stronger investor protection should be encouraged without reservation;
- 2b. if  $\theta^S < 0 \wedge \pi^B < 0$  (negative cross effect), then a systematic trade-off between direct and cross effects exists and policies aimed to strengthen investor protection are not necessarily universally optimal;
- 2c. if  $\theta^S < 0 \wedge \pi^B > 0$  or  $\theta^S > 0 \wedge \pi^B < 0$ , then the trade-off exists for only one type of investor protection legislation and policies need to be designed accordingly.

Let us assume that the first hypothesis is not rejected, i.e., direct effects are always positive, and let us focus on cross effects. If investor protection laws were beneficial for all foreign stakeholders – both bondholders and shareholders – we should observe an unconditionally positive impact of creditor and shareholder rights on foreign portfolio investments (hypothesis 2a) such that stronger investor protection rights would be universally advisable to increase inward investment. Conversely, if cross-effects were systematically negative (hypothesis 2b) there would be a trade-off between the effect of corporate rules on "target" investors (e.g., shareholder rights rules on shareholders) and on "non-target" investors (e.g., shareholder rights rules on bondholders), and both types of investor protection rules would have to be carefully gauged to account for the trade-off between direct and cross effects. Finally, we might observe a trade-off between direct and cross effects holding exclusively for one type of investor protection (hypothesis 2c). If  $\theta^S < 0 \wedge \pi^B > 0$ , then foreign shareholders should be negatively affected by strong creditor rights, since these can result in value-destroying processes such as mergers and acquisitions (Acharya et al. (2008)); the positive impact of shareholder rights on bondholders is less economically interpretable since bondholders have a quite low upside potential from riskier projects. Finally, the set of parameter estimates  $\theta^S > 0 \wedge \pi^B < 0$  would instead reveal that creditor rights positively affect foreign shareholders and shareholder rights negatively influence foreign bondholders. The last joint hypothesis is not rejected by the data and represents the main innovative findings of this paper: strong creditor rights – shifting the firm toward less risky behavior – affect positively

( $\theta^S > 0$ ) foreign shareholders, while strong shareholder rights – shifting the firm toward riskier projects – affect negatively ( $\pi^B < 0$ ) foreign bondholders. This evidence suggests that foreign stakeholders value risk-reducing practices more than domestic stakeholders do, thus providing support to the conjecture that foreign stakeholders are relatively more sensitive to the perceived riskiness of domestic assets.

### 3 Empirical analysis

#### 3.1 Data

We consider bilateral portfolio investments in equities and debt securities by 14 major investing countries – Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Spain, Sweden, United Kingdom, and the United States – for the period 2001–2006. We adopt the *CPIS* (*Coordinated Portfolio Investment Survey*, by IMF) dataset which has been exploited in many recent papers (Lane and Milesi-Ferretti (2007); Sorensen et al. (2007); Fidora et al. (2007)). This survey collects security-level data from the major custodians and large end-investors. Portfolio investment is broken down by instrument (equity or debt) and residence of issuer, the latter providing information on the destination of portfolio investment<sup>8</sup>.

The opportunity set is made up of 20 destination stock markets: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Italy, Japan, Korea, Mexico, Netherlands, Portugal, Singapore, Spain, Sweden, United Kingdom, and the United States<sup>9</sup>.

Finally, the full set of regressors included in the analysis is described in detail in Appendix B and its impact on portfolio investment is discussed in next session.

#### 3.2 Results

##### 3.2.1 Descriptive statistics on foreign bias

We show in Table 1 average domestic share for each investing country. For reference, we report in the second column average market share, that is, the respective fraction of world market capitalization that

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<sup>8</sup>While the CPIS provides the most comprehensive survey of international portfolio investment holdings, it is still subject to a number of important caveats. See [www.imf.org/external/np/sta/pi/datarsl.htm](http://www.imf.org/external/np/sta/pi/datarsl.htm) for more details on the survey.

<sup>9</sup>Since we focus on *foreign* portfolio allocation, the destination stock markets number 19, since the domestic country is excluded from analysis. The GLS regression is run, therefore, on 1596 observations (19 observations for each year for each investing country, with some missing values). As is common practice, Switzerland, Luxembourg and Ireland are excluded from the sample since they are considered in the international finance literature as mainly off-shore financial centers.

would prevail as optimal portfolio share under the assumption of no market segmentation. As expected, all countries display home bias; that is, they place a disproportionately high fraction of their financial wealth in domestic assets. All countries invest internally more than 50 percent of their portfolio, with Austria and Netherlands the only exceptions for stocks and Austria for bonds. Quite interestingly, the home bias in bonds is on average higher than in equities, consistent with the findings of Sorensen et al. (2007). The pervasive and persistent home bias reveals the asymmetric investment behavior of foreign and domestic investors with respect to asset-observable characteristics. In Table 2, we turn from home bias to bilateral foreign bias, computed as the ratio of actual share to market share, following equation (2). We report average bias in several destination countries, obtained by averaging across investing countries the bilateral foreign bias. There emerges a notable degree of heterogeneity in bias toward various foreign assets. To provide an economic interpretation for this measure, consider that a bias measure equal to 1 implies that the foreign asset enters the portfolio with a weight equal to its stock market share. The evidence that foreign bias is almost always below unity – i.e., the evidence that foreign assets are underweighted – is not surprising given the strong home bias reported in Table 1. Notwithstanding the larger home bias in the bond portfolio, the median foreign bias is larger for bonds than for stocks: the median destination country enters with 58 and 43 percent of their market share in the bond portfolio and stock portfolio, respectively. The stock market foreign bias ranges from 0.12 for Canada to 1.09 for Sweden, which jointly with Finland, are the only countries overweighted on average by foreign investors. In the bond market, the lowest foreign bias is found in South Korea and Japan (0.03) while the highest is found in Netherlands (1.21). Interestingly, the destination countries with a foreign bias above the median, both in the stock and in the bond portfolios, are mainly members of the European Monetary Union (EMU). These findings are consistent with the evidence of Balta and Delgado (2009) and Lane and Milesi-Ferretti (2007), who find a notable increase in foreign investments in EMU countries by EMU countries as a result of monetary integration. For our purposes, the most intriguing element is the overall heterogeneity across destination countries. This indeed suggests that there might be some country-specific effect – among which are investor protection laws – making some countries more attractive than others for foreign investors. Finally, in the last column, we report the standard deviation of the bilateral foreign bias around the average: this provides information on the dispersion of the bilateral foreign bias of various investing countries with respect to the average. The degree of dispersion, compared to the average, is quite large: on average, the standard deviation is 90 percent of the average bias for stocks, with roughly the same magnitude for bonds. The evidence of strong dispersion underlines

another interesting feature for our analytical purposes: beyond the differences between domestic and foreign investors and the differences arising from destination-country effects, there might also be investing-country effects and/or bilateral-specific components that induce differing evaluations of the same assets by different investors. This suggests the need to consider both bilateral-specific and country-specific factors as potential determinants of cross-border investment in our empirical analysis<sup>10</sup>.

### 3.2.2 Stock market

**Bilateral-specific regressors** We first account for bilateral-specific factors as the natural determinants of bilateral bias in the foreign portfolio. The first variables included in the regression analysis are the proximity variables. Market proximity captures the influence of asymmetric information on investor portfolio choice (Gehrig (1993); Brennan and Cao (1997); Kang and Stulz (1997)). Many empirical contributions find that the cultural and geographic proximity of the market has an important influence on investor stock holdings and trading (Grinblatt and Keloharju (2001); Chan et al. (2005); Portes and Rey (2005)). The regressors included are distance, common border dummy and common language dummy<sup>11</sup>. The common border (language) dummy takes the value 1 if the investing and destination country share a common border (language) and 0 otherwise. The first two variables, distance and common border, simply capture physical distance between the country of the investor and the destination country<sup>12</sup>. Since transactions in financial assets are "weightless", a role for distance may be found only if it has informational content (Portes and Rey (2005)). The role of the common language dummy is immediately interpretable, since foreign languages make collecting information more difficult. These variables play an economically and statistically significant role in explaining the dependent variable as confirmed by the sizeable adjusted-R<sup>2</sup> (0.6). The elasticity of foreign bias to relative distance is about 0.5, while sharing a common language increases portfolio bias by 16 percent ( $e^{0.151} = 1.163$ ) and a common border boosts the dependent variable by 80 percent.

We then account for other bilateral variables, capturing bilateral-specific linkages: namely, common currency area (EMU), common exchange platform (Euronext), and common legal origin. Lane and Milesi-Ferretti (2007) and Lane (2006) analyze the portfolio investment patterns of EMU countries after EMU

<sup>10</sup>Consistent with our approach, Guiso et al. (2009) find that the perceived credibility of managers in various nations depends on match-specific, destination-country-specific, and source-country-specific factors.

<sup>11</sup>We recall that, to assure consistency with the theoretical framework, each variable  $X$  (dummy variables excluded) enters our regression specifications as the logarithm of the ratio of  $X$  to its world average. See Appendix B.2 for further details.

<sup>12</sup>A separate role for the border dummy can be found insofar as this variable is considered as "correcting" the distance variable, which is measured as the great circle distance between the capital cities of the destination and investing countries. Note that, consistent with the theoretical framework, the distance variable enters our regression in relative terms.

integration revealing, for both fixed securities markets and stock markets, a Euro-area bias; that is, EMU member countries disproportionately invest in one another relative to other country pairs. Moreover, after controlling for EMU integration, Giofré (2008) finds a separate role for the consolidation of stock exchanges in the Euronext platforms. This reflects, on the one hand, higher liquidity enhanced by stock market mergers (Padilla and Pagano (2005)), and on the other hand the common platform may have helped to alleviate informational asymmetries by inducing adoption of common standard accounting rules and practices. The EMU (Euronext) dummy takes the value 1 if the investing and destination countries are EMU (Euronext) members and 0 otherwise. The coefficients of both variables are positive and significant and their effect is quite large: EMU membership and Euronext membership boost bilateral bias by 2.5 times and 1.2 times, respectively.

Finally, sharing the same legal framework might encourage cross-border investment since there is less fear of unknown factors (Guiso et al. (2009); Lane (2006)). We include a dummy variable (*dummy\_eq\_law*) taking the value 1 if the investing and destination countries share the same legal framework (i.e., civil law or common law) and 0 otherwise. However, in the spirit of LLSV (1998), common law countries should provide both shareholders and creditors the strongest protection: the common law status of a destination country should represent, per se, a factor attracting foreign investors, thus reducing the role played by the same legal family factor. We therefore also interact common legal origin with a dummy taking the value 1 if the destination country belongs to the common law family and 0 otherwise, with the expectation of a negative sign. In column 2, both the *dummy\_eq\_law* and its interaction with the common law status of the destination country have expected positive and negative sign, respectively, but are not statistically significant (column (2)). However, they become very significant in statistical and economic terms when controlling for other factors (columns (3)-(7))<sup>13</sup>.

**Investor protection variables** After controlling for bilateral-specific regressors, we shift the focus of our analysis to destination-country-specific factors<sup>14</sup>. Asset-specific factors are relevant only to the extent that there is some heterogeneity in their evaluation on the part of investors. Otherwise, any asset-specific factor should be properly capitalized into the asset's market price (Dahlquist et al. (2003)). In our case, if all investing countries equally weighted a given factor, there should be no impact on portfolio bias. Conversely,

<sup>13</sup>Our results are consistent with Vlachos (2004), who shows that cultural and regulatory differences generate a negative impact on cross-country portfolio holdings.

<sup>14</sup>The regression includes fixed *investing* country effects to take into account the specificity of the investor.

if one type of investor were more heavily affected than other investors by one factor, this should play a significant role in determining portfolio allocation (Leuz et al. (2009)). More specifically, if foreign investors were particularly influenced by investor protection laws, these laws should help to explain the distance between the foreign portfolio position and what is predicted by market share.

We include first the variables capturing investor protection rights (column (3)). It is worth noting that the endogeneity critique often raised against LLSV (1998) is much less an issue here. In fact, whereas in LLSV (1998) the direction of causality between investor protection laws and development of financial markets (aggregate asset supply) is controversial, this is not the case in our analysis. The dependent variable here is the bilateral bias (bilateral asset demand), that is, the ratio between bilateral portfolio position and market share, and the direction of causality, if any, goes arguably from investor protection to portfolio bias.

Investor protection laws can influence equity portfolio bias through either "direct" or "cross" effects. The direct impact of investor protection laws is the effect of shareholder rights on foreign shareholders. The index of shareholder rights (LLSV (1998)) measures how strongly the legal system favors minority shareholders against managers or dominant shareholders in the corporate decision making process<sup>15</sup>. The cross effect is instead the effect of investor protection legislation on "non-target" investors – namely, the effect of creditor rights on foreign shareholders. Creditor rights are captured by an index aggregating the rights of secured lenders following Djankov et al. (2007)<sup>16</sup>. The index measures the legal rights of creditors against defaulting debtors in different jurisdictions, and has been interpreted by recent literature as a measure of creditor power.

Results on the direct effect of shareholder rights are qualitatively consistent with recent evidence by Leuz et al. (2009) and Thapa and Poshakwale (2009). Specifically, destination countries characterized by shareholder protection rights 1 percent higher than the average are relatively more attractive for foreign shareholders inducing a foreign bias larger by 0.4 percent. Interestingly, also the cross effect of creditor rights on stockholders is positive, statistically and economically significant, and its size constitutes one-third of the direct effect (column (4)). Creditor rights might impact, a priori, foreign equity portfolios in either direction: on the one hand, stronger creditor rights might be viewed as mitigating firm risk-taking, thereby lowering the perceived variability of the underlying asset; on the other hand, as suggested by Acharya et al.

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<sup>15</sup>As discussed below, we consider as an alternative measure to shareholder rights, the "corrected" antirector rights index as redefined in Spamann (2010). Our results hold under both specifications.

<sup>16</sup>We make use of the most recent value taken by the creditor rights index (year 2003) in Djankov et al. (2007). For all countries included in our sample, this index is identical to the creditor rights index adopted in LLSV (1998).



(2008), strong creditor protection laws might induce firms to engage in risk-reducing investments, such as diversifying acquisitions that are potentially inefficient and value reducing. Excessively strong creditor rights in default could lead to inefficient liquidations that extinguish the continuation option of a firm’s enterprise and thereby hurt stockholders. When creditor rights mandate the dismissal of management, a private cost is imposed on managers. To avoid these costs, shareholders and managers lower the likelihood of distress by reducing operating risk. If this implies a reduction in value not compensated adequately by a reduction in risk, then creditors’ rights entail dead-weight costs to firms and to the whole economy. In particular, Acharya et al. (2008) find that stronger creditor rights are associated with lower operating risk and a greater propensity to pursue diversifying acquisitions and mergers. Since corporate diversification has been shown in some studies to destroy value, strong creditor rights may have negative consequences for shareholders. The evidence in our analysis shows that strong creditor rights laws have a positive impact on shareholders, thus suggesting that the risk-reducing effect prevails over the profit-reducing effect. This outcome can be easily rationalized from a foreign investor’s perspective because, as the literature shows, foreign investors are relatively more severely affected by information asymmetry. Such investors plausibly perceive domestic assets as more risky than do domestic investors (Gehrig (1993)), such that any institutional devices allowing investors to reduce riskiness are more valuable to foreigners than to domestic investors.

To be sure that what we capture is the effect of investor protection laws, we control in column (5) for correlated confounding factors. LLSV (1998) show how creditor and shareholder rights are strongly linked to legal origin. We therefore include a series of dummies to capture the legal family of the destination country (French, English, German and Scandinavian)<sup>17</sup>. The evidence is consistent with LLSV (1998) and suggests that French and German legal origins induce lower investments<sup>18</sup>. Interestingly, even after accounting for the legal origin of the destination country, shareholder rights and creditor rights are still economically and statistically relevant in explaining foreign investment.

We then control for other destination country-specific variables potentially correlated with investor protection so that, if omitted, can bias the coefficients of the included regressors. In particular, we include

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<sup>17</sup>This is a destination-country-specific dummy and is different from the above-mentioned common legal framework variable, which is a bilateral-specific variable identifying whether investing and destination countries share the same legal framework (common law or civil law).

<sup>18</sup>Among the four dummies, we choose to drop the Scandinavian legal family dummy that should constitute the benchmark against which the impact of the other dummies is evaluated. However, this is not sufficient to estimate the legal dummy impact due to multicollinearity between the English origin dummy of the destination asset and the above-defined variable obtained by interacting the common law status of the destination country with the *dummy\_eq\_law*. We then also drop the English dummy and are therefore left with the German and French legal system.

two variables that capture the soundness of the economic environment from a more general to a more specific level: one institutional variable that is related to (control of) expropriation risk and one variable capturing the transparency of accounting rules.

Previous literature has indeed documented that fraudulent transactions, bribery, unenforceable contracts, legal and regulation complexity can significantly affect portfolio investments (Gelos and Wei (2005); Leuz et al. (2009)). Control of the risk of expropriation captures government stance toward business while accounting standards are critical to corporate governance in that they render company disclosure interpretable. Aggarwal et al. (2005), find that countries with better accounting standards, shareholder rights, legal frameworks, and firms issuing ADRs attract more US mutual fund investment relative to benchmark indices. Their results emphasize that high-quality accounting information allows foreign investors to monitor and protect their investments and to efficiently allocate capital. Analogously, we find that while control of risk of expropriation shows a non-systematic impact on foreign portfolio investment, good accounting practices have a strong and robust impact.

**Substitutes for investor protection rules** In principle, a strong system of legal enforcement could substitute for weak rules: active and well functioning courts can serve as recourse for investors aggrieved by management (LLSV (1998)). To account for this substitution effect, we control for ownership concentration and efficiency of the judicial system, which can substitute for legal protection in an environment of poor investor protection.

**Ownership concentration** A potentially powerful substitute for poor legal structure is ownership concentration. In the presence of poor investor protection, ownership concentration becomes a substitute for legal protection (LLSV (1998)). Some concentration of ownership within a firm is typically efficient in providing managers incentives to work and in providing large investors incentives to monitor managers and thus increase the value of the firm (Shleifer and Vishny (1986)). However, some dispersion of ownership is also desirable to diversify risk.

We incorporate the effect of ownership concentration using two alternative procedures. First of all we account for it by correcting the foreign bias portfolio for the fraction of shares closely held (column (5a)). Second, we consider the impact of ownership on foreign portfolio bias and its indirect impact through shareholder rights (column (6)). Let us illustrate the first procedure. Dahlquist et al. (2003) estimate the

fraction of shares closely held across 51 countries, finding that on average 32 percent of shares are not available for trading and cannot therefore be held by foreign investors. This illustrates a measurement error in the size of domestic and foreign bias that was neglected by previous literature. These authors construct the world *float* portfolio, which considers only shares that can actually be held by investors. Following Dahlquist et al. (2003), we consider the fraction of closely held shares as exogenous, thus making it relatively easy to correct the exogenous asset supply and to compute the corrected bias measure. The dependent variable to be explained in column (5a) is therefore changed as the share in the world *float* portfolio now replaces the market share in the denominator of the foreign bias measure. In principle, this measurement error, albeit relative to the dependent variable, can potentially affect our results, since countries with stronger protection rights are those with a lower proportion of closely held shares. In column (6a), we report results after adopting the world float portfolio. Interestingly, we observe a stronger direct and cross impact of investor protection rights: the impact of shareholder rights is more than twice as large while the impact of creditor rights is more than three times larger<sup>19</sup>.

Secondly, in column (6), we include ownership concentration directly, as a possible determinant of foreign position: this is an alternative way to account for closely held shares, since countries with the largest fraction of closely held shares are also those in which ownership concentration is stronger. Moreover, the inclusion of ownership concentration allows to consider it as a determinant of the demand side more than as a factor correcting the supply side. Ownership concentration per se might have an impact on foreign bias since expropriation by controlling shareholders could be perceived as particularly dangerous by foreign minority shareholders. We observe indeed that countries with higher ownership concentration attract less foreign investment. Furthermore and even more interestingly for our analysis, we can also expect a significant coefficient of the variable obtained interacting ownership concentration with shareholder protection. On the one hand, ownership concentration could affect portfolio investment through investor protection laws since the more concentrated the ownership structure in the economy, the more important are shareholder protection rights that defend minority shareholders. On the other hand, investor protection laws could

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<sup>19</sup>Previous studies that analyze the effect of governance on foreign investments provide a mixed picture. Dahlquist et al. (2003) find that differences in investor rights and financial development across countries cannot explain the portfolio investment of US investors when including the float portfolio as determinant. However, Leuz et al. (2009) find opposite results when considering heterogeneity in governance practices across US firms: some firms can be underweighted and other overweighted resulting in no effect in the aggregate. Although keeping an aggregate perspective similar to Dahlquist et al. (2003), we shift from a US-based perspective to a cross-section of investing countries diversifying their portfolios and obtain results consistent with Leuz et al. (2009). Moreover, our specification allows us to overcome the serious issue of low number of observations (about 20) in Dahlquist et al. (2003), a factor that can have severely undermined the statistical inference on the estimated coefficients of investor protection variables.

influence the level of ownership concentration: Shleifer and Wolfenzon (2002) assess that ownership is more concentrated when investor protection is weaker and LLSV (1998) argue that the weaker the investor protection, the more incentive toward ownership concentration. These two effects are in contrast with one another and it is impossible a priori to predict the sign of the coefficient for the interaction of shareholder rights with ownership concentration. In our regression, the positive sign of the interacted variable seems to suggest that the first effect prevails on the second even though the estimated coefficient is not statistically significant<sup>20</sup>.

**Efficiency of the judicial system** Finally, the efficiency of the judicial system can act as the most obvious substitute mechanism for poor investor protection laws. If this is the case, we should observe that the stronger the efficiency of the judicial system, the lower the impact of investor protection laws. In column (6), we interact shareholder rights with the efficiency of the judicial system to infer how the importance of the law on the books depends on the degree of efficiency of the judicial system. What we observe is in line with the findings of LLSV (1998) and in contrast with the substitutability hypothesis: while stronger efficiency of the judicial system has not a significant impact per se, it reinforces the role played by investor protection on foreign investments; that is, the laws on the books are more effective when they are better enforced.

**Robustness** For robustness check we consider as an alternative to shareholder rights as defined in LLSV (1998), the "corrected" antidirector rights index as refined in Spamann (2010)<sup>21</sup>. The author, by a reexamination of the legal data, derives more precise estimates of antidirector rights leading to corrections for forty-three of the forty-six countries analyzed in LLSV (1998). The difference between corrected and original values is such that many empirical results established using the original indexes may not be replicable with corrected values<sup>22</sup>. Consequently, our results may be potentially invalidated when considering Spamann (2010) indexes. In column (6a) we report results when the original LLSV (1998) indexes are replaced by the revised Spamann (2010) indexes. Our results are robust to the alternative revised specification of antidirector rights: the coefficient of the Spamann (2010) index is even more significant, in statistical and

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<sup>20</sup>It is often recommended in statistics textbooks to *center* continuous variables (subtract the mean) before interacting them, to make the effects more easily interpretable. This recommendation is fulfilled here since, consistent with the theoretical model, all continuous variables are entered in logs and in relative terms with respect to the world average (i.e., their logs are demeaned).

<sup>21</sup>See Spamann (2010) for further details on the corrected index.

<sup>22</sup>As stressed by Spamann (2010), Djankov et al. (2008) adopted a "revised" version of the antidirector rights index incorporating most of the corrections suggested in an early manuscript of the Spamann (2010) article.

economic terms, and most of other coefficients are basically unaffected by the alternative specification. Interestingly, the coefficient of the interaction between ownership concentration and the corrected measure of shareholder protection remains positive but becomes large and significant: the more concentrated the ownership structure in the economy, the more important is the role played by shareholder protection rights for foreign investors.

In summary, we underscore that both shareholder rights and creditor rights positively influence foreign portfolio investments. Foreign stock portfolio investments are attracted by strong shareholder rights, which better protect portfolio minority investors. Also, strong creditor rights, by mitigating excessive risk exposure, turn out to benefit foreign shareholders, who are more sensitive to information asymmetry than domestic shareholders. Quite interestingly, the cross effect, that is the coefficient of creditor rights, is comparable in size to the coefficient of shareholder rights. This piece of evidence suggests that ignoring the cross effect of investor protection laws entails missing a prominent component of the incentives provided by corporate governance for foreign investors.

### 3.2.3 Bond market

**Bilateral specific regressors** We now replicate the same analysis, taking the perspective of foreign bondholders. Our objective is to identify the direct and cross effect of investor protection laws on cross-border investment in fixed securities.

Following the above analysis, we first consider bilateral-specific variables as determinants of heterogeneity in portfolio position, then focus on destination-specific variables.

In column (1) we show that the distance variable has a significant impact on bondholders, with a coefficient even larger than for stockholders, while the border dummy shows a counterintuitive negative coefficient. The language dummy is strongly significant, even more so than for stocks: sharing a common language has the effect of increasing the dependent variable by 2.7 times. When controlling for other determinants, this effect is significantly reduced to 35 percent, but is still twice as large as the corresponding effect for stocks. In column (2), the EMU dummy coefficient appears to be quite large and strongly significant: the common currency area determines an impact almost five times larger for member countries. The effect is stronger than in the stock market case while sharing a common stock exchange (Euronext), which plays an important role for stockholders, does not positively affect bondholders. This latter piece of evidence shows that the information content of the common Euronext platform does not spillover from the stock market to the bond

market. The *dummy\_eq\_law* variable shows a negative sign but this seems to be the result of an omitted variable problem. Indeed, after controlling for other correlated factors, the impact of this variable turns out to be positive while its interaction with the common law nature of the destination countries results not significantly affecting foreign portfolio investments (columns (6)-(7))<sup>23</sup>.

**Investor protection variables** As for stocks, destination-country-specific factors could be responsible for heterogeneity in portfolio bias to the extent that these factors do not evenly affect all investors. We first focus on the direct effect, i.e. on the effect of creditor rights on foreign bondholders. The adopted measure of creditor rights indicates how easily a creditor may exercise her rights or how easy it is to foreclose on collateral (LLSV (1998)). We expect strong creditor rights to induce more investment in debt securities, as investors are better protected against the risk of default.

What we immediately observe in column (3) is that the coefficient of creditor rights is instead negative. These findings are at odds with our predictions, but the type of index of investor protection adopted necessitates a caveat: while shareholder rights is an indicator well tailored for our purposes, the interpretation of the variable that captures creditor rights is less straightforward. There are different types of creditors, with different interests; protecting the rights of some creditors might have the effect of reducing the rights of others. Senior loans have priority over bondholders, preferred shareholders, and common stockholders in the event of default. In assessing creditor rights, LLSV (1998) take the perspective of senior secured creditors, as most debt around the world is of that type. In case of a default, senior secured creditors may have a simple interest in taking possession of collateral no matter what happens to the firm, whereas junior unsecured creditors may wish to preserve the firm so that they can possibly get some of their money back in case the firm eventually makes some profits. What we actually observe in our analysis is the effect of senior secured creditor rights on bond investments such that we can expect a less clear-cut direct effect than for the stock portfolio<sup>24</sup>. However, insofar as particular legitimate interests are better protected in an institutional environment more effectively guaranteeing individual rights, we should observe, after controlling for other

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<sup>23</sup>In the first specifications, when the coefficient of the *dummy\_eq\_law* is (counterintuitively) negative, the interaction of the *dummy\_eq\_law* with the dummy capturing the common versus civil law origin of the destination country is (counterintuitively) positive: it has an opposite sign with respect to the *dummy\_eq\_law*, confirming the conjecture that the common law legal origin of the destination country mitigates the effect of sharing the same legal background. The interaction turns out to be non-significant in the full specification case, where the equal law variable becomes, consistent with the expectation, positive and significant.

<sup>24</sup>The cross effect of creditor rights on foreign shareholders discussed in the previous subsection, is much less controversial; it indeed captures how foreign shareholders benefit from the protection of interests limiting downside risk, regardless of the nature of the protected creditor.

correlated determinants, a positive influence of creditor rights on foreign bondholders. This is indeed the case: after controlling for the role played by the efficiency of the judicial system, creditor rights are found to positively affect bond bias (column (6)-(7))<sup>25</sup>.

The predicted direction of the cross effect, namely the effect of shareholder rights on bondholders, is theoretically not so obvious.

On the one hand, an effective corporate governance mechanism can affect bond yields and ratings through its impact on the default risk of the firm. Indeed, efficient governance mechanisms reduce potential conflicts of interest between management and providers of capital through effective monitoring. This can reduce expropriation or misallocation of funds, improve the firm's productivity and disclosure and could be perceived positively by bondholders, resulting in a reduction in the default risk of the firm and thus predicting a positive impact of strong shareholder rights on bondholders.

On the other hand, bondholders and shareholders can also have conflicting interests. In particular, bondholders and stockholders can disagree about the amount of risk the firm should take. Jensen and Meckling (1976) and Myers (1977) detail how the existence of outstanding debt creates a moral hazard problem where stockholder interests diverge from the interests of creditors. Jensen and Meckling (1976) underline how highly leveraged firms, i.e., firms where creditors are more at risk, have incentives to engage in risky asset portfolios because of information asymmetry. If we view the equity of a leveraged firm as equivalent to a call option, we can easily see how shareholders have incentive to increase the riskiness of the firm: the payoff to shareholders is unbounded, so there is some positive probability of a large payoff, whereas debt holders' payoff is limited. The moral hazard problem can of course be mitigated using restrictive covenants, but the costs of writing and enforcing these contracts are not economically trivial. Furthermore, even costly and severe constraints can leave open opportunities to shift risks and rewards.

On an empirical level, Klock et al. (2004) investigate the impact of anti-takeover provisions on wealth transfers between stockholders and bondholders. Bondholders, by definition, have a limited upside potential and significant downside risk. Takeovers, which increase the financial risk of the firm by adding debt, can therefore result in wealth transfer from bondholders to shareholders. This suggests that provisions shifting power from managers to shareholders can result in shareholder expropriation of bondholder wealth.

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<sup>25</sup>We made several attempts to find a more specific measure capturing bondholders rights but we could not find any valuable alternative. Lacking a specific measure, we chose therefore to adopt a general index capturing, albeit imprecisely, protection afforded to creditors. The correct positive sign recorded in the full specification regressions reassures us about the reliability of the index.

Market-based data provide evidence that antitakeover amendments, although not beneficial to stockholders, are viewed positively in the bond market: strong antitakeover provisions (weak shareholder rights) are indeed associated with a lower cost of debt financing. This analysis strongly suggests that it is important to examine the effects of governance provisions on all classes of securities before concluding that particular provisions are desirable. Cremers et al. (2007) emphasize how policies benefiting stockholders do not generally benefit bondholders. In particular, various governance mechanisms available to shareholders can have different consequences for bondholders. For example, acquisitions and disciplinary takeovers can benefit target shareholders but also hurt target bondholders by adding more debt to the firm as firm leverage generally increases after a takeover. This increase in leverage can reduce the value of outstanding bonds, not only by increasing the probability and the deadweight costs of a possible future bankruptcy, but also by reordering the priority of claims in bankruptcy.

However, the cost of debt, which is the focus of the above-mentioned contributions, does not reveal the existence of differences in the effects that these conflicting interests can generate on foreign investors with respect to home country investors, because what is priced by the market is aggregate behavior. Ultimately, the question of the impact of shareholder protection provisions on foreign bondholders is an empirical one and depends on foreigners' perception of the balance between various interests.

To estimate the cross effect of investor protection on bondholders, we add in column (4) the shareholder rights variable to our specification and find a negative but not precisely estimated impact on bondholders. After controlling for the legal family of the destination country and the soundness of the economic system (column (5)), which are correlated with investor protection legislation in the destination country, the negative cross effect of shareholder rights emerges more clearly although it is statistically different from zero only at the 15 percent confidence level. Control of expropriation risk and accounting transparency, when statistically significant, have the expected positive sign and are quite large in size.

**Substitutes for investor protection rules** In column (6) we observe that after accounting for the efficiency of the judicial system, the impact of creditor rights and shareholder right becomes well-defined: the former is positive while the latter is negative, and both are statistically significant. We also control for possible mechanisms of substitution between the role played by creditor rights and law enforcement. Analogously to what we have found for shareholder rights, the coefficient of the interaction of the efficiency of the judicial system with creditor rights is positive. This suggests that the efficiency of the judicial system



amplifies the effect of creditor rights, consistently with previous findings in the literature<sup>26</sup>. LLSV (1998) stress the complementarity between investor protection and legal enforcement and more recently, Safavian and Sharma (2007) highlight that the effectiveness of creditor rights on bank credit is strongly linked to the efficiency of contract enforcement. The risk run by creditors mainly consists of default risk and the priority of claimants such that the role played by the judicial system is inevitably particularly relevant.

**Robustness** As a robustness check we adopt in column (6a) the Spamann (2010) index as alternative to the shareholder right index proposed by LLSV (1998). Our results still hold under this alternative specification, and the size of the coefficient of shareholder rights and creditor rights benefits from the adoption of the Spamann (2010) index, becoming more significant in economic terms.

Our findings uncover for bondholders a positive role played by creditor rights conditional on the efficiency of the judicial system, and a negative impact of shareholder rights, which are perceived to increase the default probability. Strong shareholder rights can be detrimental to foreign bondholder interests as they can induce excessive risk-taking behavior in firms.

To provide further robustness to our most innovative result, that is the evidence of negative cross effects of shareholder rights on bondholders, we directly test the impact of one specific legislation that potentially favours shareholders to the detriment of bondholders. In particular, as discussed above, the negative cross effects could be related to the antitakeover legislation that can asymmetrically impact bondholders and shareholders (Klock et al. (2004)). We directly test the impact of antitakeover legislation on bondholders, adopting the takeover index recently developed by Nenova (2006)<sup>27</sup>. In column (7) the shareholder index is replaced by the takeover index and the sign of the coefficient remains negative<sup>28</sup>. It points to the advocated antitakeover legislation as one specific legal mechanism potentially responsible of the negative impact of shareholder right protection on foreign bondholders. Nenova (2006) shows that the takeover index is significantly and positively correlated with the level of takeover activity, as measured by the volume of takeovers, and Rossi and Volpin (2004) demonstrates that the takeover index is highly positively correlated

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<sup>26</sup>From a mirror perspective, this result can be read as enforcement of rules being effective on foreign bondholders only in a context where creditor rights are well-established. The effectiveness of the judicial system per se shows a counterintuitive negative impact on foreign bondholdings. However, to measure its global effect, it is necessary to account also for the additional effect mediated by creditor rights, that is indeed positive and very large. The final impact of the efficiency of the judicial system on foreign bondholdings crucially depends on the value taken by the interacted variable: it is positive only for countries with highest creditor rights (top thirty percent of the distribution, averaging across regression specifications in (6)-(7)).

<sup>27</sup>See Nenova (2006) for a detailed discussion on the components of the takeover index.

<sup>28</sup>In column (7) the number of observations drops to 1417 because the Nenova (2006) index is not available for two destination countries, Portugal and Denmark, that are therefore excluded from the sample.

with investor protection. It should then be not so surprising that we find a negative coefficient of its impact on bondholders. What instead is not so obvious is the large size of the impact of the takeover index on foreign debt investment. Since both shareholder rights and takeover indexes enter our regression in relative terms, i.e., as logarithm of the ratio of the index with respect to the average, the magnitude of the coefficient cannot be ascribed to the different unit of measure but rather to the explanatory power of the regressor<sup>29</sup>. Comparing column (6) with column (7), we note that the elasticity of the foreign portfolio bias to the relative takeover index is indeed five times larger than the elasticity with respect to shareholder rights. Specifically, a country with a relative shareholder rights index higher by 1 percent determines a reduction in foreign portfolio bias by 0.3 percent for bondholders while the same variation in the takeover index causes a reduction in portfolio bias by 1.5 percent. These results strongly support takeover legislation as one specific legal feature that might asymmetrically influence inward bond and stock investment.

Finally, we confirm and reinforce the evidence on the relatively strong importance of cross effects over direct effects. In fact, the role of creditor rights is comparable in size for shareholders and for bondholders while the negative impact of shareholder rights protection on bondholders turns out to be generally greater (in absolute value) than its positive direct impact on foreign stock positions. These results suggest that policies designed to attract foreign investments ought to take into account the interaction of multiple governance mechanisms, since the cross effects of investor protection laws are not necessarily second order effects.

## 4 Summary and conclusions

We investigate the impact of investor protection laws on foreign bilateral investment, namely foreign equity portfolio investments and foreign bond portfolio investments. The empirical literature has shown that market capitalization as a whole depends positively on investor protection but these findings do not permit disentangling foreign from domestic effects. Asset prices in fact reflect the joint behavior of foreign and domestic investors and we must examine foreign allocation decisions to uncover the impact of corporate governance on foreign stakeholders. Analogously, results on the impact of shareholder rights and creditor rights on firm value or debt cost hide the role played by foreign investors.

Our results show, first, that investor protection laws have a significant impact on foreign investments,

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<sup>29</sup>Furthermore, the scale factor becomes irrelevant when variables are expressed in logarithmic terms as eventual differences in scale are fully captured by the intercept.

thus implying differing effects of corporate governance provisions on domestic versus foreign investors. These findings are consistent with results in Leuz et al. (2009) relative to outward equity investment by US firms. We generalize their results to different investing countries and to debt securities. Specifically, we find that strong shareholder rights (creditor rights) stimulate foreign equity (bond) portfolio investments. Since foreign investors are mostly affected by information asymmetry issues, these findings can also be interpreted as corporate governance rules serving as a means to overcome information asymmetries and thereby to enhance international diversification. Secondly, our findings highlight how laws protecting different interests asymmetrically affect foreign stakeholders. This result represents the most innovative contribution of the paper to the extant literature. More specifically, we highlight that foreign shareholders appreciate strong creditor rights, which potentially mitigate the riskiness of projects, while bondholders are negatively affected by strong shareholder rights, which might induce the firm to engage in excessively risky behavior. Importantly, our results are robust to a different specification of shareholder rights and reveal that the negative cross effect on foreign bondholders can be plausibly ascribed to antitakeover legislation asymmetrically influencing inward bond and stock investment.

The immediate implication to draw from this picture is that strengthening investor protection is not a universally desirable policy. Specifically, our results suggest that stronger creditor rights are helpful in attracting foreign investment, while stronger shareholder rights are effective in attracting foreign equity investment but may deter foreign bond investment in equal measure. Thus, the choice to reinforce shareholder rights can be read as a choice to benefit foreign shareholders to the detriment of foreign bondholders. In particular, evidence for the relatively strong impact of the cross effect of investor protection laws over the direct effect suggests that ignoring cross effects entails not only missing one aspect of the overall picture, but possibly most of it.

It is worth stressing now two major limitations that challenge the generalisability and validity of our findings. First, our work is limited to the investigation of the effects of investor protection rights on cross-border investments, while a more comprehensive analysis should be performed to derive general welfare conclusions on the desirability of stronger or weaker investor protection. Moreover, we consider the determinants of foreign investments, leaving unexplored the effect on domestic investors. For instance, it may be the case that strong creditor laws attract foreign shareholders but deter domestic ones; that is, in the presence of strong creditor rights, firms are more prone to engage in risk-reducing investments such as diversifying acquisitions that are potentially inefficient and value reducing for the domestic investors'

perceived level of riskiness (Acharya et al. (2008)). On the other hand, strong shareholder rights are found to negatively impact foreign bondholders, but this may not be the case for domestic bondholders, who may benefit from better shareholder governance. Unfortunately, domestic positions are harder to investigate due to the limited number of available observations (one for each investing country for each available year) and to the difficulty in capturing the determinants of home bias. Second, our stylized theoretical setting ignores inflation and exchange rate uncertainty, like many other models that focus on barriers to international investment (Dahlquist et al. (2003)). These factors are undoubtedly relevant and may represent an additional source of asymmetry between foreign and domestic investors<sup>30</sup>. However, they are unlikely to be strongly correlated with investor protection laws and therefore are not expected to undermine our results<sup>31</sup>.

With the above-mentioned caveats in mind, our findings may also contribute to the literature on the failure of convergence in investor protection legislation. Djankov et al. (2008) find no convergence in creditor scores. La Porta et al. (2000) reject the hypothesis of legal convergence of rules and enforcement mechanisms toward some successful standard of effective investor protection. Mansi et al. (2009) claim that competition on legal dimensions in terms of their effectiveness in attracting investment does not imply that all jurisdictions need to or should converge to the single best or worst alternative. Consistently, our findings may provide a rationale for the evidence of no convergence toward the strongest investor protection setting; that is, the level of investor protection in each country is endogenously determined by the balance of many forces – among them, the political choice to promote inward investment and to favour particular categories of investor may play an especially important role.

In the aftermath of the recent global financial crisis, the shared view is to implement more regulation to constrain financial institutions from taking excessive risk and to protect investors. However, as underlined by Bruno and Claessens (2007), there can emerge costs from overregulation and regulations need to be well designed. Accordingly, our findings emphasize the need to accurately evaluate direct and indirect consequences of strengthening regulations.

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<sup>30</sup>See Lewis (1999) and Karolyi and Stulz (2003) for a review of the effects of inflation and exchange rate uncertainty on portfolio choice.

<sup>31</sup>Similarly to Dahlquist et al. (2003), our results still hold, in the presence of inflation and exchange rate uncertainty, provided that returns are real, that purchasing power parity holds, and that there is an asset that has a risk-free real return.

**Table 1. Home equity bias**

This table reports, for both stock and bond portfolios, the domestic share and the market share of each investing country. The reported figure are averages over the period 2001-2006. *Source:* Coordinated Portfolio Investment Survey (IMF) and Datastream (Thomson Financial)

	<i>Stock market</i>		<i>Bond market</i>	
	<i>domestic share</i>	<i>market share</i>	<i>domestic share</i>	<i>market share</i>
<i>Austria</i>	0.362	0.002	0.404	0.007
<i>Belgium</i>	0.509	0.007	0.611	0.013
<i>Finland</i>	0.603	0.006	0.522	0.003
<i>France</i>	0.681	0.046	0.571	0.047
<i>Germany</i>	0.502	0.035	0.737	0.072
<i>Italy</i>	0.629	0.023	0.788	0.049
<i>Netherlands</i>	0.289	0.019	0.569	0.022
<i>Spain</i>	0.772	0.018	0.713	0.024
<i>Canada</i>	0.825	0.029	0.931	0.021
<i>Denmark</i>	0.554	0.004	0.796	0.008
<i>Japan</i>	0.709	0.107	0.835	0.148
<i>Sweden</i>	0.550	0.010	0.739	0.008
<i>United Kingdom</i>	0.652	0.087	0.478	0.040
<i>United States</i>	0.814	0.436	0.943	0.413

**Table 2. Foreign equity bias**

This table reports the average and standard deviation of portfolio bias by the fourteen investing countries in each destination country index (head of rows) included in the opportunity set. Statistics are reported for both stock market and bond market.

*Source:* Coordinated Portfolio Investment Survey (IMF)

	<i>Stock market</i>		<i>Bond market</i>	
	<i>average bias</i>	<i>standard deviation of bias</i>	<i>average bias</i>	<i>standard deviation of bias</i>
<i>Austria</i>	0.426	0.394	0.817	0.788
<i>Belgium</i>	0.469	0.455	0.559	0.492
<i>Finland</i>	1.001	0.811	0.974	0.922
<i>France</i>	0.665	0.461	0.601	0.446
<i>Germany</i>	0.743	0.830	0.773	0.638
<i>Italy</i>	0.439	0.263	0.634	0.502
<i>Netherlands</i>	0.921	0.542	1.208	0.844
<i>Portugal</i>	0.426	0.461	0.769	0.774
<i>Spain</i>	0.481	0.284	0.680	0.569
<i>Australia</i>	0.160	0.156	0.215	0.105
<i>Canada</i>	0.118	0.132	0.147	0.101
<i>Denmark</i>	0.367	0.398	0.604	0.689
<i>Japan</i>	0.179	0.101	0.026	0.037
<i>Mexico</i>	0.192	0.188	0.189	0.148
<i>Sweden</i>	1.089	2.018	0.908	1.302
<i>United Kingdom</i>	0.481	0.231	0.488	0.242
<i>United States</i>	0.224	0.164	0.117	0.072
<i>South Korea</i>	0.237	0.189	0.025	0.016
<i>Hong Kong</i>	0.151	0.146	0.287	0.712
<i>Singapore</i>	0.244	0.196	0.218	0.399
<i>median</i>	0.426		0.580	

**Table 3. Bias in foreign equity portfolios**

This table reports results of the feasible GLS regression as in (3a) in the text. The dependent variable is the logarithm of the foreign portfolio BIAS, i.e., the ratio of portfolio share to market share,  $\log(w_{lj}/MS_j)$ , where the subscript  $lj$  represents the couple investment country  $l$ -destination country  $j$ . In column (5a) the dependent variable is foreign portfolio bias corrected for the fraction of shares closely held Dahlquist et al. (2003). Further details on the derivation of the dependent variable are provided in Appendix B.1. In column (6a) the shareholder rights' index (LLSV (1998)) is replaced by the antidirector rights index corrected by Spamann (2010). Each regressor  $X$  (dummy variables excluded) is expressed as the logarithm of the ratio of  $X$  to its world average. Further details on the variables included as regressors are provided in Appendix B.2. Constants and time dummies are included but not reported. Cross-section weights standard errors (d.f. corrected) are reported in parentheses. \*\*\*, \*\*, and \* indicate significance at the 1, 5, and 10% levels, respectively.

<i>Bias in foreign equity portfolios</i>								
	(1)	(2)	(3)	(4)	(5)	(5a)	(6)	(6a)
<i>rel_dist</i>	-0.480 *** ( 0.019 )	-0.358 *** ( 0.019 )	-0.374 *** ( 0.019 )	-0.360 *** ( 0.019 )	-0.314 *** ( 0.020 )	-0.241 *** ( 0.023 )	-0.320 *** ( 0.020 )	-0.308 *** ( 0.019 )
<i>dummy_lang</i>	0.151 ** ( 0.071 )	0.181 * ( 0.096 )	0.181 * ( 0.094 )	0.156 * ( 0.094 )	0.126 ( 0.086 )	-0.113 ( 0.102 )	0.056 ( 0.084 )	0.055 ( 0.084 )
<i>dummy_border</i>	0.592 *** ( 0.071 )	0.419 *** ( 0.064 )	0.478 *** ( 0.062 )	0.518 *** ( 0.063 )	0.495 *** ( 0.060 )	0.740 *** ( 0.068 )	0.525 *** ( 0.057 )	0.506 *** ( 0.057 )
<i>dummy_emu</i>		0.914 *** ( 0.058 )	0.932 *** ( 0.056 )	0.921 *** ( 0.056 )	1.071 *** ( 0.084 )	1.300 *** ( 0.096 )	1.219 *** ( 0.055 )	1.221 *** ( 0.055 )
<i>dummy_euronext</i>		0.221 ** ( 0.096 )	0.226 ** ( 0.091 )	0.273 *** ( 0.092 )	0.480 *** ( 0.084 )	-0.042 ( 0.096 )	0.387 *** ( 0.083 )	0.446 *** ( 0.082 )
<i>dummy_eq_law</i>		0.019 ( 0.047 )	0.259 *** ( 0.051 )	0.921 *** ( 0.056 )	0.639 *** ( 0.059 )	0.953 *** ( 0.068 )	0.669 *** ( 0.066 )	0.591 *** ( 0.056 )
<i>dummy_eq_law*comm_law</i>		-0.075 ( 0.111 )	-0.578 *** ( 0.120 )	-0.700 *** ( 0.122 )	-1.339 *** ( 0.130 )	-1.868 *** ( 0.152 )	-1.389 *** ( 0.142 )	-1.233 *** ( 0.123 )
<i>dummy_german</i>					-0.214 *** ( 0.056 )	0.125 * ( 0.065 )	-0.434 *** ( 0.058 )	-0.382 *** ( 0.057 )
<i>dummy_french</i>					-0.099 * ( 0.054 )	0.919 *** ( 0.063 )	-0.094 ( 0.062 )	-0.104 * ( 0.060 )
<i>rel_shrights</i>			0.419 *** ( 0.043 )	0.440 *** ( 0.043 )	0.405 *** ( 0.043 )	1.109 *** ( 0.050 )	0.263 *** ( 0.061 )	0.289 *** ( 0.074 )
<i>rel_shrights*rel_eff_jud</i>							1.636 *** ( 0.300 )	2.091 *** ( 0.355 )
<i>rel_shrights*rel_concentr</i>							0.211 ( 0.153 )	1.062 *** ( 0.142 )
<i>rel_credrights</i>				0.155 *** ( 0.035 )	0.221 *** ( 0.038 )	0.738 *** ( 0.045 )	0.312 *** ( 0.041 )	0.398 *** ( 0.048 )
<i>rel_control_risk_expr</i>					0.041 ( 0.233 )	-0.038 ( 0.271 )	0.393 ( 0.343 )	-0.796 ** ( 0.357 )
<i>rel_account</i>					1.212 *** ( 0.107 )	2.000 *** ( 0.124 )	0.695 *** ( 0.131 )	1.060 *** ( 0.144 )
<i>rel_eff_jud</i>							0.199 ( 0.138 )	-0.250 ( 0.188 )
<i>rel_concentr</i>							-0.449 *** ( 0.056 )	-0.625 *** ( 0.048 )
<i>#obs</i>	1579	1579	1579	1579	1579	1579	1579	1579
<i>Adj-R<sup>2</sup></i>	0.60	0.70	0.73	0.73	0.77	0.74	0.79	0.79

**Table 4. Bias in foreign bond portfolios**

The table reports results of the feasible GLS regression as in (3b) in the text. The dependent variable is the logarithm of the portfolio BIAS, i.e., the ratio of portfolio share to market share,  $\log(w_{lj}/MS_j)$ , where the subscript  $lj$  represents the couple investment country  $l$ -destination country  $j$ . Further details on the derivation of the dependent variable are provided in Appendix B.1. In column (6a) the shareholder rights' index (LLSV (1998)) is replaced by the antidirector rights index corrected by Spamann (2010). In column (7) the shareholder rights' index is replaced by the takeover index developed by Nenova (2006). Each regressor  $X$  (dummy variables excluded) is expressed as the logarithm of the ratio of  $X$  to its world average. Further details on the variables included as regressors are provided in Appendix B.2. Constants and time dummies are included but not reported. Cross-section weights standard errors (d.f. corrected) are reported in parentheses. \*\*\*, \*\*, and \* indicate significance at the 1, 5, and 10% levels, respectively.

<i>Bias in foreign bond portfolios</i>								
	(1)	(2)	(3)	(4)	(5)	(6)	(6a)	(7)
<i>rel_dist</i>	-0.813 *** ( 0.029 )	-0.658 *** ( 0.028 )	-0.698 *** ( 0.028 )	-0.698 *** ( 0.028 )	-0.517 *** ( 0.041 )	-0.420 *** ( 0.038 )	-0.432 *** ( 0.038 )	-0.394 *** ( 0.032 )
<i>dummy_lang</i>	1.029 *** ( 0.121 )	0.176 ( 0.147 )	0.218 ( 0.146 )	0.208 ( 0.146 )	0.267 * ( 0.136 )	0.345 *** ( 0.124 )	0.314 ** ( 0.124 )	0.260 ** ( 0.123 )
<i>dummy_border</i>	-0.060 ( 0.111 )	-0.290 *** ( 0.097 )	-0.354 *** ( 0.096 )	-0.367 *** ( 0.097 )	-0.083 ( 0.100 )	-0.065 ( 0.092 )	-0.037 ( 0.093 )	0.106 ( 0.089 )
<i>dummy_emu</i>		1.615 *** ( 0.085 )	1.614 *** ( 0.084 )	1.611 *** ( 0.084 )	1.717 *** ( 0.136 )	1.805 *** ( 0.107 )	1.816 *** ( 0.108 )	1.445 *** ( 0.108 )
<i>dummy_euronext</i>		-0.356 *** ( 0.127 )	-0.481 *** ( 0.126 )	-0.494 *** ( 0.127 )	-0.443 *** ( 0.136 )	-0.234 * ( 0.137 )	-0.217 ( 0.137 )	-0.222 ( 0.150 )
<i>dummy_eq_law</i>		-0.498 *** ( 0.069 )	-0.617 *** ( 0.070 )	-0.661 *** ( 0.082 )	0.126 ( 0.148 )	0.442 *** ( 0.132 )	0.685 *** ( 0.126 )	0.630 *** ( 0.174 )
<i>dummy_eq_law*common_law</i>		1.918 *** ( 0.178 )	2.143 *** ( 0.182 )	2.247 *** ( 0.205 )	0.563 * ( 0.307 )	-0.122 ( 0.276 )	-0.596 ** ( 0.254 )	-0.405 ( 0.346 )
<i>dummy_german</i>					-1.326 *** ( 0.140 )	-1.432 *** ( 0.124 )	-1.327 *** ( 0.124 )	-2.351 *** ( 0.210 )
<i>dummy_french</i>					-0.565 *** ( 0.133 )	-1.276 *** ( 0.141 )	-1.201 *** ( 0.135 )	-1.950 *** ( 0.198 )
<i>rel_shrights</i>				-0.073 ( 0.069 )	-0.172 ( 0.119 )	-0.349 *** ( 0.108 )	-0.448 *** ( 0.172 )	
<i>rel_takeover</i>								-1.531 *** ( 0.248 )
<i>rel_credrights</i>			-0.344 *** ( 0.055 )	-0.353 *** ( 0.055 )	-0.030 ( 0.106 )	0.374 *** ( 0.100 )	0.554 *** ( 0.106 )	0.540 *** ( 0.086 )
<i>rel_credrights*rel_eff_jud</i>						5.696 *** ( 0.614 )	6.016 *** ( 0.641 )	5.498 *** ( 0.551 )
<i>rel_control_risk_expr</i>					1.034 ( 0.658 )	7.170 *** ( 0.984 )	7.032 *** ( 1.005 )	8.266 *** ( 0.770 )
<i>rel_account</i>					0.030 ( 0.261 )	1.627 *** ( 0.314 )	2.074 *** ( 0.371 )	-0.032 ( 0.652 )
<i>rel_eff_jud</i>						-1.510 *** ( 0.357 )	-1.779 *** ( 0.421 )	-1.318 *** ( 0.281 )
<i>#obs</i>	1579	1579	1579	1579	1579	1579	1579	1417
<i>Adj-R<sup>2</sup></i>	0.56	0.65	0.66	0.66	0.70	0.74	0.74	0.78



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## A Theoretical framework

Following Merton (1969) with constant relative risk aversion utility function and constant investment opportunities the vector of optimal portfolio shares takes the well known following form:

$$\mathbf{w}^* = \frac{1}{\lambda} \boldsymbol{\Sigma}^{-1} (\bar{\boldsymbol{\mu}} - r \mathbf{i})$$

where  $\lambda$  is the coefficient of relative risk aversion,  $\mathbf{w}$  is the vector of weights,  $\bar{\boldsymbol{\mu}}$  is the vector of stock returns,  $r$  is the risk-free interest rate,  $\mathbf{i}$  is a vector of ones and  $\boldsymbol{\Sigma}$  is the variance-covariance matrix of stock returns.

We incorporate in this standard setting investment cross-border barriers following Gehrig (1993) approach. In his contribution foreign investments appear on average more risky to domestic investors -leading to an information-based justification to home bias- and the portfolio of each investor is different depending on the perceived variance-covariance matrix<sup>32</sup>. We consider this approach focusing on foreign investment only, considering a different investor-specific perceived variability of stock returns for each foreign stock index in the investment opportunity set.

Let us denote by  $\mathbf{C}_l$  the  $N \times N$  positive definite diagonal matrix of investment barriers, where the  $j$ -th diagonal element  $C_{lj}$  is the bilateral cost of holding country  $j$ 's stock by country  $l$ 's investor. Capturing  $C_{lj}$  the investment barrier cost for country  $l$  investing in  $j$ , its reciprocal  $\frac{1}{C_{lj}}$  stands for a variable capturing the investment "advantage" of country  $l$  investing in country  $j$ . Consequently, the optimal portfolio is no longer universal ( $\mathbf{w}^*$ ) but is investor-specific ( $\mathbf{w}_l$ )

$$\mathbf{w}_l = \frac{1}{\lambda} \boldsymbol{\Sigma}_l^{-1} (\bar{\boldsymbol{\mu}} - r \mathbf{i}) = \mathbf{C}_l^{-1} \boldsymbol{\Omega}^{-1} \frac{1}{\lambda} (\bar{\boldsymbol{\mu}} - r \mathbf{i}) \quad (4)$$

where  $\boldsymbol{\Sigma}_l = \boldsymbol{\Omega} \mathbf{C}_l$  (and therefore  $\boldsymbol{\Sigma}_l^{-1} = \mathbf{C}_l^{-1} \boldsymbol{\Omega}^{-1}$ )<sup>33</sup>

Therefore the equilibrium condition, equating stock demand and stock supply, will be

$$\mathbf{MS} = \boldsymbol{\Phi} \boldsymbol{\Omega}^{-1} \left[ \frac{1}{\lambda} (\bar{\boldsymbol{\mu}} - r \mathbf{i}) \right] \quad (5)$$

where  $\mathbf{MS}$  represents the vector of market shares of stock market indexes (supply side) and the right hand side is the (weighted) sum of stock indexes' demands (demand side).  $\boldsymbol{\Phi}$  is a diagonal  $N \times N$  positive definite matrix where the  $j$ -th diagonal element,  $\phi_j = \sum_{l=1}^L MS_l \frac{1}{C_{lj}}$  is the average investment "advantage" in holding asset  $j$  across investors, weighted by the market share of each investor's domestic stock market.

Let us define  $\mathbf{D}_l = \boldsymbol{\Phi} \mathbf{C}_l$ , where  $\mathbf{D}_l$  is again a diagonal  $N \times N$  positive definite matrix. We can rewrite the above expression (4) as

<sup>32</sup>In a standard setting with asymmetric information (Grossman and Stiglitz (1980)) an informed investor has a lower perceived variance due to its private signal but, at the same time, her perceived expected return is generally also different from the uninformed investor's. It implies that we should sometimes observe a "foreign-bias" when the domestic investors observe bad signals. What we, instead, label "information asymmetries" throughout the paper is closer to the concept of "model uncertainty" or "Knightian uncertainty" (Epstein and Miao (2003) and Uppal and Wang (2003)): roughly speaking, the foreign investor's perceived uncertainty is higher than the domestic investor's one, though they observe the same return. This approach may help to understand home bias because small differences in the ambiguity about the return distributions can lead to largely under-diversified portfolio holding. The same reasoning applies when considering the allocation in several foreign stock markets rather than the choice between home and foreign assets.

<sup>33</sup>The matrix  $\boldsymbol{\Omega}$  is the universal variance-covariance matrix that would prevail in absence of investment barriers.

$$\mathbf{w}_l = \mathbf{D}_l^{-1} \Phi \Omega^{-1} \left[ \frac{1}{\lambda} (\bar{\boldsymbol{\mu}} - r \mathbf{i}) \right] \quad (6)$$

where  $D_{lj} = \phi_j C_{lj}$  and  $\frac{1}{D_{lj}} = \frac{\frac{1}{C_{lj}}}{\sum_{l=1}^L MS_l \frac{1}{C_{lj}}}$

and using the equilibrium condition (5) we get the following result

$$\mathbf{w}_l = \mathbf{D}_l^{-1} \mathbf{M} \mathbf{S} \quad (7)$$

or, in terms of individual asset, the following optimal portfolio weights

$$w_{lj} = \frac{1}{D_{lj}} MS_j \quad (8)$$

$MS_j$  is the market share of stock index  $j$  in the world stock market,  $\frac{1}{D_{lj}}$  represents the *relative* (with respect to world average) "advantage" of country  $l$  investing in asset  $j$ . In other words, the investor  $l$  will demand a share of assets greater than the market share in proportion to  $\frac{1}{D_{lj}}$  (inverse of relative investment cost)<sup>34</sup>. Note that if  $C_{lj} = \phi_j$ , i.e. if the investment barrier for country  $l$  is equal to the average then the investor  $l$  will hold the value market share of asset  $j$ .

In our analysis the risky portfolio shares considered can be either stocks or bonds since, as usual, the unique risk-free asset is determined as the residual portfolio position.

## B Data appendix

### B.1 Dependent variables

#### Foreign stock market portfolios

The CPIS dataset contains information on foreign holdings only and does not include domestic positions. In order to derive the foreign portfolio positions in the overall portfolio we need to retrieve the share of foreign assets. To accomplish this objective we drew from *Datastream (Thomson Financial)* the stock market capitalization of all country indexes and from the *International Financial Statistics (IFS)* the outstanding foreign equity portfolio investments and the corresponding liabilities. Accordingly we can derive the "foreign equity share" of country  $i$  at time  $t$ ,  $FS_{it}$ <sup>35</sup>

$$FS_{i,t} = \frac{(FA)_{i,t}}{(MCAP)_{i,t} + FA_{i,t} - FL_{i,t}} \quad (9)$$

where  $FA$  stands for "foreign equity assets",  $FL$  for "foreign equity liabilities" and  $MCAP$  for "stock market capitalization". After obtaining the foreign share  $FS$  it is possible to recover the share of each foreign asset in the overall portfolio.

<sup>34</sup>As in Obstfeld and Rogoff (2001), the share of country  $j$ 's equity held by country  $l$  is a decreasing (increasing) function of the bilateral trading cost (efficiency) between  $l$  and  $j$  relative to the average trading cost (efficiency) between country  $j$  and all other countries.

<sup>35</sup>Fidora et al. (2007) and Sorensen et al. (2007) follow the same procedure dealing with the CPIS dataset.

### Foreign bond market portfolios

The same procedure applies to determine the foreign bond share. The outstanding foreign fixed securities portfolio investments and the corresponding liabilities are still drawn from the *IFS* while the source for bond market capitalization is the *Bank for International Settlements (BIS) Security Statistics* containing data on international debt securities by residence of issuer and domestic debt securities by residence of issuer of all maturities and sectors. In our analysis short term and long term fixed securities are pooled together. In fact, in the *CPIS* dataset debt instruments are partly broken down by long-term debt and short-term debt, with the latter being defined as debt securities with an original maturity of up to one year. However, not all countries provide a breakdown of debt securities by maturity whereas they report the total value of debt securities. Moreover, we cannot identify amounts outstanding of debt securities by *original* maturity, as the BIS only provides a separate breakdown for debt securities with *remaining* maturity of up to one year.

#### Market share

Market shares refer to the values at the end of December of each year.

Source: Datastream, Thomson Financial

#### World float portfolio

The world float portfolio is a corrected value weighted portfolio obtained by multiplying the market share by a fraction taking into account the fraction of closely held shares (Dahlquist et al. (2003)). We convert our world market portfolio weights into world float portfolio weights (Dahlquist et al. (2003), Table 2). We keep the conversion coefficient invariant over the time period considered being the fraction of country closely-held shares quite stable over a short time horizon while the most important source of variability, the cross-sectional one, is properly taken into account.

## B.2 Regressors

To assure consistency with the theoretical framework, each variable  $X$  (dummy variables excluded) enters our regression specifications as the logarithm of the ratio of  $X$  to its world average.

#### Proximity variables

##### *Distance*

The distance is measured as the Great Circle distance in miles between capital cities of source ( $l$ ) and destination ( $j$ ) country. The average distance from a destination country ( $j$ ) is obtained as weighted (by market share) average of the distance of investing countries. The variable included in the regression is the logarithm of the ratio of the distance  $l - j$  to the average distance.

##### *Border dummy*

Dummy variable taking value of 1 if the investing country and the destination country share a common border (0 otherwise).

##### *Language dummy*

Dummy variable taking value of 1 if the investing country and the destination country share a common language (0 otherwise)

#### **Euronext dummy** (Common Stock Exchange dummy)

Dummy variable taking value of 1 if the investing country and the destination country share the Euronext stock exchange platform (0 otherwise). In our case, it coincides with a common stock exchange dummy since the investing countries considered did not merge in a common stock exchange with other countries.

#### **EMU dummy** (Common Currency dummy)

Dummy variable taking value of 1 if the investing country and the destination country are members of the European Monetary Union (0 otherwise). In our case, it coincides with a common currency dummy since do not belong to any other currency union.

### **Equal law**

Dummy variable taking value 1 if the investing country and the destination country belong to the same legal root, common law or civil law.

### **Legal origin**

Identifies the legal origin of the company law or commercial code of each country: English, French, German, Scandinavian. Due to multicollinearity, two out of four dummies are dropped in the analysis.

### **Creditor rights**

An index aggregating creditor rights, following LLSV (1998). We adopt the updated version (2002) reported in Djankov et al. (2007): for the countries included in our sample, this index is identical to LLSV (1998), except for a marginal difference in Japan, thus our results are unchanged under both specifications. A score of one is assigned when each of the following rights of secured lenders are defined in laws and regulations: 1) restrictions, such as creditor consent or minimum dividends, for a debtor to file for reorganization; 2) secured creditors are able to seize their collateral after the reorganization petition is approved, i.e. there is no automatic stay or asset freeze; 3) secured creditors are paid first out of the proceeds of liquidating a bankrupt firm, as opposed to other creditors such as government or workers; 4) management does not retain administration of its property pending the resolution of the reorganization. The original index ranges from 0 (weak creditor rights) to 4 (strong creditor rights). Since we adopt a log specification where a zero argument is not allowed, we add one unit to each score.

### **Shareholder rights**

The index captures antidirector rights, following LLSV (1998). Antidirector rights measure how strongly the legal system favors minority shareholders against managers or dominant shareholders in the corporate decision making process. This is an index formed by adding one when (1) the country allows shareholders to mail their proxy vote directly to the firm, (2) shareholders are not required to deposit their shares prior to a shareholders' meeting, (3) cumulative voting for directors or proportional representation in the board is allowed, (4) an oppressed minority mechanism is in place, (5) the minimum percentage of share capital that entitles a shareholder to call for an extraordinary shareholders' meeting is less than 10 percent, or (6) shareholders have preemptive rights that can be waived only by a shareholders' vote. The original index ranges from 0 (weak antidirector rights) to 6 (strong antidirector rights). Since we adopt a log specification where a zero argument is not allowed, we add one unit to each score.

### **Corrected Antidirector Rights Index**

The index is constructed by Spamann (2010). It is constructed as in LLSV (1998) but a reexamination of the legal data leads to corrections for thirty-three out of forty-six countries analyzed. The correlation between corrected and original values is 0.53.

### **Takeover Index**

The takeover laws index is a simple average of 12 components characterizing takeover laws around the world (See Nenova (2006) for details on the construction of the index).

### **Expropriation risk**

ICR's assessment of the risk of "outright confiscation" or "forced nationalization". Scale from zero to 10 with lower scores for higher risk (LLSV (1998)).

### **Accounting rules**

Index based on information disclosure and accounting practices (LLSV (1998)).

### **Efficiency of judicial system**

Assessment of the "efficiency and integrity of the legal environment as it affects business, particularly foreign firms" produced by Business International Corporation. Scale from zero to 10 with lower scores for lower efficiency level.

### **Ownership concentration**

Average percentage of common shares not owned by the top three shareholders in the ten largest non-financial, privately-owned domestic firms in a given country (LLSV (1998))

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