

Domestic investor protection and international portfolio diversification *

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Abstract

This paper investigates the impact of minority investor protection legislation on equity cross-border investment. We show that investor protection does not exert the same attractiveness on foreign investors that indeed are influenced by their own degree of domestic protection. More precisely, we bring to light a lower sensitivity of foreign investment to destination countries' corporate governance for those investors enjoying a higher degree of investor protection at home. This suggests that investors choose the composition of their foreign portfolios scaling destination country's corporate governance by their own: a "relative" (foreign to domestic) corporate governance index is the factor homogeneously driving investors' foreign portfolio allocation. As a perverse consequence, by comparing country portfolios, those held by investing countries featuring stronger protection of minority investors' rights are relatively more tilted toward assets issued by poorly governed countries.

Keywords: International portfolio investments, Investor Protection Rights, Home bias

JEL Classifications: G11, G15, G30

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1 Introduction

This paper investigates the impact of investor protection rights on foreign portfolio investors. Since domestic sources of outside finance are limited in many countries around the world (Giannetti and Koskinen (2010)), foreign capital has become increasingly important (Bekaert et al. (2002)). However, the presence of investment barriers makes domestic investment more attractive to investors that indeed display a strong preference for domestic assets, the so-called "home bias". Among investment barriers, information asymmetries have been often advocated by the literature as a major cause of international under-diversification.

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 bias¹. This evidence is consistent with the conjecture that foreign investors are more vulnerable to information asymmetry than domestic investors. Corporate governance can partially offset this lack of information by signalling the quality of the institutions in terms of rights guaranteed to the investor (La Porta et al. (1998), LLSV (1998) henceforth), and hence, can be particularly influential on those investors, the foreign ones, more affected by information costs.

The extant literature has so far analyzed the effect of corporate governance in attracting foreign investment, disregarding the role played by legislation protecting the investor at home. The only exception to the best of our knowledge is represented by Giannetti and Koskinen (2010). In their setting the domestic investor protection is relevant to the extent that it influences the portfolio share invested in domestic assets. In a dichotomous home-foreign setting, they highlight that in weak investor protection countries, portfolio investors' foreign holdings are larger than in countries where minority shareholders are better protected.

We complement their analysis by investigating the role of domestic investor protection in shaping the composition of the foreign portfolio. In this respect, by exploiting the multidimensional investment opportunity set, we test if there are differences across investors in the response of foreign investment to destination country-specific corporate governance.

The hypothesis of an even impact of corporate governance on foreign investment is rejected by the empirical evidence that conversely suggests that laws protecting the interests of minority shareholders asymmet-

¹An analogous asymmetry between foreign and domestic investors is found in Guiso et al. (2009), where domestic investors rank their own managers higher than do foreign investors.

rically affect foreign investors featuring different investor protection rules. More precisely, we bring to light a lower sensitivity of foreign investment to destination countries' corporate governance for those investors enjoying a higher degree of investor protection at home. This suggests that investors choose their foreign portfolio's composition scaling destination country's corporate governance by their own so that the ratio foreign to domestic corporate governance results to be the factor homogeneously driving investors' foreign portfolio allocation. As a perverse consequence, this wedge in sensitivity dampens the attractiveness of well protected foreign investment relatively more than that of poorly governed countries' assets, for those investors benefiting higher investor protection standards. In other words, countries with higher corporate governance standards are relatively more underweighted in portfolios held by better regulated investing countries than in portfolios held by countries displaying low investor protection.

The remainder of this paper is organized as follows. Section 2 discusses the linkage between domestic investor protection and home bias. Section 3 describes the conceptual framework and its main testable implications. Section 4 presents the data and some descriptive statistics. Section 5 illustrates the results. Section 6 finally concludes.

2 Home bias and domestic investor protection

In this work we analyze the impact of investor protection laws on stock portfolios held by foreign investors. The index of shareholder rights adopted (antidirector rights, ADR henceforth) follows LLSV (1998) and measures how strongly the legal system favours minority shareholders against managers or dominant shareholders in the corporate decision making process².

Standard asset pricing models assuming a representative agent predict that differences in observable characteristics of the asset, such as investor rights and financial development of the issuing firm or country, should be capitalized in share prices such that investing in any stock will be a fair investment regardless of the issuer's level of investor protection (Dahlquist et al. (2003)). However, when accounting for heterogeneity across investors, the equilibrium price discount discloses only the average behavior thus inducing under- or over-investment by those investors for which the price discount is, respectively, too low or too high (Leuz et al. (2009); Giannetti and Koskinen (2010)). In particular, as noted by Leuz et al. (2009), this price discount is likely not sufficient for investors, such as foreign ones, that plausibly face information problems beyond those

²As discussed below, we consider as an alternative measure to shareholder rights, the "corrected" antidirector rights index as redefined in Spamann (2010). Our results hold under both specifications.

of domestic investors. Indeed, the 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 hypothesis³. If all investors, domestic and foreign, equally perceived the level of investor protection in country j , this would be perfectly priced and should have no impact on portfolio allocation decisions. Stronger antidirector rights would be simply reflected in higher stock market capitalization and all investors would hold the same portfolio irrespective of their nationality. The evidence of a significant positive role played by investor protection in shaping foreign portfolios precisely underlines its stronger impact for foreign investors.

However, further heterogeneity might arise also within the group of foreign investors. In particular we are interested in differences in investor protection legislation across investing countries. This heterogeneity dimension matters insofar as, for instance, investors acquainted to the domestic level of investor protection evaluate foreign protection relative to their own. In this case, the effect exerted by foreign corporate governance would be correlated with domestic investor protection and thus differences in the incentives to international portfolio diversification could emerge.

3 A conceptual framework

Our theoretical framework hinges 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 their perceived variance-covariance matrix. We adopt this approach allowing for a different investor-specific perceived variability of return for each foreign index included in the investment opportunity set⁴.

Absent any investor-specific factor, the "unbiased" portfolio holding of an asset depends, as in standard portfolio choice theory, on asset characteristics (risk and return)⁵. When considering equilibrium asset

³Gehrig (1993) and Kang and Stulz (1997), among others, focus on the role played by information asymmetry in determining the home bias evidence. See Lewis (1999) for a comprehensive review on the home bias literature.

⁴Throughout the paper we mainly refer to information barriers rather than generically to investment barriers. The reason is that the focus of the paper is on investor protection legislation that we interpret as a means to overcome information asymmetry hitting foreign investors. We are aware that not all investment barriers are due to information. For example, there may be tax reasons deterring investors from investing in country j . However, as long as these factors equally affect all investors, they should eventually influence the equilibrium market share but not the bilateral-specific investment. Alternatively, there might be a capital supply reason: foreign investors may avoid investing in country j because they may not have the same access to private control benefits as domestic investors. We account for this possibility in column 8 of Table 5, where we control for the world float portfolio (Dahlquist et al. (2003)).

⁵Details on the derivation of our stylized model are available upon request from the author.

holdings without investment barriers, all investors ought to hold the same portfolio, i.e., the value-weighted portfolio, in which each asset is weighted according to its share in world stock market capitalization. The same portfolio is still 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 the distance between the bilateral investment barrier of country l investing in country j and the average barrier calculated over all countries investing in the same asset j .

The optimal portfolio weight in asset j (w_{lj}) by country l is

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

where MS_j is the market share of asset j in the world market capitalization and D_{lj} represents the relative (to the world average) investment barriers of country l investing in asset j ⁶. Investors residing in country l will demand a share of asset j greater than its market share in proportion to $\frac{1}{D_{lj}}$, that is the reciprocal of the relative investment barrier⁷.

The ratio $\frac{w_{lj}}{MS_j}$ can be interpreted as the bilateral foreign bias in asset j of a representative investor in country l . A portfolio share w_{lj} larger than j 's market share, that is a positive foreign bias, signals that asset j is over-weighted in country l 's portfolio, while a ratio lower than 1 signals a negative foreign bias⁸.

3.1 Estimable equation and testable implications

To estimate (1) we must provide an empirical counterpart to the variable D_{lj} , which is not directly observable. Our final estimable regression can be rewritten as follows

$$\left(\frac{w_{lj}}{MS_j} \right) = \alpha + \sum_{i=1, \dots, I} \beta^i X_{lj}^i + \sum_{n=1, \dots, N} \lambda^n Y_{lj}^n + \varepsilon_{lj} \quad (2)$$

We consider i bilateral-specific proxies, denoted by X_{lj}^i and n dummy variables Y_{lj}^n to capture bilateral

⁶Note that if $D_{lj} = 1$, i.e., if the investment barrier of country l in country j is equal to the average, then MS_j is optimally held in equilibrium.

⁷Our theoretical framework is equivalent to the return-reducing approach of Cooper and Kaplanis (1994) and Chan et al. (2005). In fact, in equilibrium, what matters is the investment barrier relative to the average.

⁸Our stylized theoretical setting ignores relevant factors such as inflation and exchange rate uncertainty, like many other models that focus on barriers to international investment (Dahlquist et al. (2003)). Since these factors are unlikely to be strongly correlated with investor protection laws, they are not expected to undermine our results. See Lewis (1999) and Karolyi and Stulz (2003) for a review of the effects of inflation and exchange rate uncertainty on portfolio choice.

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 β 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 stocks⁹.

All equilibrium factors, that is factors that are common to all investors, domestic and foreign, are captured on the left-hand side by the market share, 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 and a wedge emerges between the actual position (w) and the market share.

To estimate the above parameters, we adopt a feasible Generalized Least Squares specification that assumes the presence of cross-section heteroskedasticity and includes fixed effects for investing countries, time dummies, with a cross-section weight correction of the variance-covariance matrix¹⁰.

When including also K variables capturing destination-specific factors, such as the antidirector rights index, our specification becomes the following¹¹

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

Let us extract the destination country j 's ADR (Z_j^K) from the pool of K destination country factors.

$$\left(\frac{w_{lj}}{MS_j}\right) = \alpha + \sum_{i=1,\dots,I} \beta^i X_{lj}^i + \sum_{n=1,\dots,N} \lambda^n Y_{lj}^n + \sum_{k=1,\dots,K-1} \delta^k Z_j^k + \delta^K Z_j^K + \varepsilon_{lj} \quad (4)$$

Our conjecture is that the sensitivity of foreign portfolio investment to country j 's ADR can depend on investor's own ADR. To test the hypothesis that Z_j^K equally affects all foreign investing countries we check if its coefficient δ^K does not vary across investing countries featuring different degrees of investor protection. This case is represented, in a stylized fashion, in Figure 1, panel a)¹². If the hypothesis of equal

⁹We recall that all variables that capture bilateral investment barriers enter our specification in relative terms, i.e., relative to the average world investment barrier.

¹⁰As 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 are left qualitatively unaffected under this alternative specification. Note that censoring is not an issue in our setting since our dependent variable is foreign bias – rather than foreign portfolio share – that is an unbounded variable.

¹¹Destination specific variables equally affecting all investors are already priced by the markets and captured by the denominator of our dependent variable, that is the market share. Since our dependent variable refers to foreign positions uniquely, the evidence of a non null coefficient of a destination specific variable implies its different impact on portfolio positions of foreign versus domestic investors.

¹²Note that Figure 1 is aimed to provide a graphical representation of the main idea of the paper. The regression line is therefore represented, for ease of exposition, as a univariate regression of the dependent variable w/MS on ADR . Moreover, neither the intercepts nor the slope are meant to reflect any quantitative result of the paper.

δ^K across investing countries were not rejected by the data we would observe the same regression slope for the two groups of countries. Notice that, even if this condition held, our specification including investing country fixed effects would allow for differences in the intercept thus ensuring, for instance, a lower foreign investment by investing countries with higher domestic ADR, in line with Giannetti and Koskinen (2010)'s findings¹³.

In Section 5.2 we show that the coefficient relative to the destination country-ADR, δ^K , estimated in the sub-sample of investing countries featuring ADR below the median \bar{Z}_l^K , is statistically different from the δ^K estimated in the sub-sample of investing countries featuring ADR above the median. This suggests that the magnitude of the coefficient can be investing country-specific so that δ_l^K should replace δ^K in equation (5) to reflect the different sensitivity to country j 's ADR across investing countries.

$$\left(\frac{w_{lj}}{MS_j}\right) = \alpha + \sum_{i=1,\dots,I} \beta^i X_{lj}^i + \sum_{n=1,\dots,N} \lambda^n Y_{lj}^n + \sum_{k=1,\dots,K-1} \delta^k Z_j^k + \delta_l^K Z_j^K + \varepsilon_{lj} \quad (5)$$

We represent this finding in panel b) of Figure 1. We show that the coefficient of Z_j^K for investing countries with stronger investor protection legislation is significantly lower than that of countries with weaker corporate governance rules. This figure highlights an interesting ensuing implication of this wedge in sensitivity of foreign portfolios to ADR_j : the distance between the two regression lines increases for higher values of the ADR index. This entails that, by comparing the foreign portfolios of investing countries featuring different level of investor protection, destination countries with relatively higher ADR are those relatively more underweighted in the portfolio of investors enjoying higher protection at home.

If we expect the sensitivity of foreign portfolios to foreign ADR to negatively depend on country l 's own ADR (Z_l^K)

$$\delta_l^K = \delta^K f(Z_l^K)$$

we can specify the $f(\cdot)$ function as

$$f(Z_l^K) \equiv \frac{1}{Z_l^K} \quad (6)$$

Then we can conveniently rewrite $\delta_l^K Z_j^K = \hat{\delta}^K Z_{lj}^K$ and our final specification can read as

¹³Notice that the inclusion of investing-country fixed effects prevents us from including any investor-specific variable, such as the domestic investor protection.

$$\left(\frac{w_{lj}}{MS_j}\right) = \alpha + \sum_{i=1,\dots,I} \beta^i X_{lj}^i + \sum_{n=1,\dots,N} \lambda^n Y_{lj}^n + \sum_{k=1,\dots,K-1} \delta^k Z_j^k + \hat{\delta}^K Z_{lj}^K + \varepsilon_{lj} \quad (7)$$

where differences in the coefficient δ_l^K are absorbed in the "ADR ratio", $Z_{lj}^K \equiv \frac{Z_j^K}{Z_l^K}$, a bilateral-specific regressor that ensures a common coefficient $\hat{\delta}^K$. For this specification to hold for all investing countries, the hypothesis $\hat{\delta}_l^K \Big|_{Z_l^K < \bar{Z}_l^K} = \hat{\delta}_l^K \Big|_{Z_l^K > \bar{Z}_l^K}$ must be not rejected by the data, as shown in Section 5.3.2 and in Figure 1, panel c).

4 Data and descriptive statistics

4.1 Data

We consider foreign bilateral portfolio investments in equities 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 2001–2006¹⁴. 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); Foad (2011)). 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 investment¹⁵.

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 States¹⁶.

The full set of regressors included in the analysis is described in detail in Appendix A while its impact on portfolio investment is discussed in next sections.

¹⁴The CPIS survey is now available until 2009. However, since the number of observations is sufficient to provide consistent estimates, we chose to constrain our sample to the pre-financial crisis period. Indeed, properly dealing with the crisis would entail taking into account its asymmetric effect on different economies, according to the evolution of the contagion. This issue obviously deserves a separate much deeper investigation.

¹⁵While 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 for more details on the survey.

¹⁶Since 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 a common practice, Switzerland, Luxembourg and Ireland are excluded from the sample since considered as mainly off-shore financial centres.

4.2 Descriptive statistics

4.2.1 Domestic and foreign bias

Table 1 shows the average domestic portfolio share held by each investing country. For reference, we report in the second column the average market share. The "home bias" statistic, a widely used measure of underdiversification, can be calculated as the ratio of domestic share to market share: A value larger than 1 signals a disproportionate investment in domestic assets. As expected, all countries display home bias: The pervasiveness and magnitude of home bias underlines the asymmetric investment behavior of foreign and domestic investors with respect to asset-observable characteristics. All countries invest internally more than 50 percent of their portfolio, with Austria and Netherlands as the only exceptions¹⁷.

Table 1 also reports the ADR index (LLSV (1998)) associated to each investing country. At the bottom of the table we compute the correlation coefficient of the ADR index with, alternatively, domestic share investment, market share and home bias. In bold characters we report statistically significant correlation coefficients¹⁸. Consistently with Giannetti and Koskinen (2010), countries better protecting shareholder rights show more concentrated portfolios in domestic assets (column (a), $\rho = 0.69$).

However, this does not necessarily imply that countries characterized by better protection of shareholder rights diversify less effectively their portfolios. Indeed, consistently with the literature originated from LLSV (1998), the effect of investor protection also operates through the traditional channel: Strong shareholder rights are associated with higher stock market development captured by the country's share in world market capitalization (column (b), $\rho = 0.50$). Finally, we compute in column (c) the correlation coefficient between the ADR index and the "home bias" statistic. This correlation coefficient shows a negative sign but is not statistically different from zero: Countries with better investor protection are characterized by more domestically concentrated portfolios but, being also those featuring higher market share, do not display a higher home bias than less protected countries. Since aggregate supply in equilibrium equals aggregate demand, domestic and foreign, the evidence that home bias is not significantly correlated with investor protection suggests that the effect operating through stock market development counteracts the domestic

¹⁷We focus on the determinants of foreign equity portfolios. Domestic positions, though not explicitly investigated here, indirectly impact our analysis: The weight of each foreign stock index in the overall portfolio indeed depends on the domestic share. See Giannetti and Koskinen (2010) for a more specific discussion of the implications of minority investor rights on home equity bias.

¹⁸Our test statistic for the correlation coefficient is $t = \rho \sqrt{\frac{n-2}{1-\rho^2}}$ where n is the number of observations, ρ is the correlation coefficient and t is distributed like a T-student with $(n - 2)$ degrees of freedom. Statistically significant coefficients are meant at 5% level of confidence interval.

demand. In sum, no clear pattern on the relation between domestic investor protection and international diversification emerges when restricting to domestic portfolio positions.

We then devote our attention from the domestic to the complementary foreign portfolio share and turn from home bias to bilateral foreign bias, computed as the ratio of actual share to market share, following equation (2). In Table 2 we report the average foreign share and the corresponding fraction of world stock market capitalization in columns (a) and (b), respectively. Column (c) shows the average bias in several destination countries, obtained by averaging across investing countries the bilateral foreign bias. To provide an economic interpretation for this measure, consider that a foreign bias equal to 1 implies that foreign assets enter portfolios with a weight equal to its stock market share. The pervasive evidence that the average foreign bias is almost always below unity—i.e., the evidence that foreign assets are generally underweighted—is the mirror image of the strong home bias reported in Table 1. Beyond this common picture of major stock markets, a notable degree of heterogeneity in bias toward various foreign assets emerges: There might exist country-specific factors—among which are investor protection laws—making some countries more attractive than others to foreign investors.

The foreign bias ranges from 0.12 for Canada to 1.09 for Sweden which is the only country, jointly with Finland, overweighted on average by foreign investors. Interestingly, the destination countries with a foreign bias above the median (0.426) are mainly members of the European Monetary Union (EMU). These findings are consistent with the evidence reported by Balta and Delgado (2009) and Lane and Milesi-Ferretti (2007), who find a notable increase in investment in the Euro area by EMU countries as a result of monetary integration. Finally, column (d) reports the standard deviation of the bilateral foreign bias around the average, a measure providing information on the dispersion of the bilateral foreign bias displayed by various investing countries with respect to the same asset. Also along this dimension the degree of dispersion is quite large being the standard deviation almost 90 percent of the average bias for stocks: There must exist investing countries' specificities affecting international diversification patterns.

The correlation coefficient between the ADR index and the average foreign share is positive but not statistically significant (column (a)), while the correlation with the market share is again positive and statistically significant (column (b), $\rho = 0.41$). The correlation of ADR with the average foreign bias (column (c)) is negative but not statistically significant, suggesting that the positive significant effect on the denominator, the market share (column (b)), compensates the positive non significant effect on the numerator, the average foreign share (column (a)). Also, the standard deviation of the foreign bias is

negatively, though non significantly, related to the antidirector rights index (column (d)).

Finally, we compute the correlation between the dispersion in foreign bias and the absolute distance between the ADR index and its median, taking value 3. If our conjecture is correct and investors evaluate foreign corporate governance with respect to their own then portfolio investment must depend on the relative position of destination country's ADR with respect to investing country's ADR. Accordingly, we should find that the closer is country j 's ADR to the median the larger is the dispersion in foreign bias. Indeed, if the distance of country j 's ADR from the median were zero, half investing countries would feature an ADR's index below the median and hence would find attractive asset j while the highly protected half of countries would be more prone to domestic investment. Conversely, when considering very polarized cases, i.e., assets issued by countries affording either extremely weak or extremely strong investor protection, there will be a more uniform evaluation by investing countries on the asset. In support of our conjecture, we find a negative and statistically significant correlation (column (e), $\rho = -0.43$) between the standard deviation of the foreign bias and the absolute distance between country j 's ADR and its median value¹⁹.

4.2.2 Further descriptive statistics

Strong investor protection, by promoting inward and discouraging outward investment, should be negatively correlated with net asset positions. The ADR measure adopted in this paper (LLSV (1998)) captures the degree of protection of minority shareholders and its effect on investment decisions relies on its role of facilitating access to external finance through reduction of information asymmetry. This effect should therefore be detected when analyzing portfolio rather than direct investments and equity assets rather than fixed-term securities. If we found instead this relation to hold not only for equity portfolio investments but also for other classes of assets our thesis could be questioned and the doubt of a spurious relationship would legitimately arise.

In Table 3 we first compute the correlation between Foreign Direct Investments (FDI) and domestic investor protection (column (a)). The influence of legislation protecting minority investors is expected to be null and indeed the correlation coefficient is positive non significant. Conversely, when considering in column (b) net Foreign Portfolio Investments (FPI)—including both fixed-term securities and equities—a negative correlation, though still not significant, emerges. Note that even when considering the net FPI position

¹⁹The United States, displaying strong shareholder rights and large domestic investment, cover almost half of the world stock market capitalization and could drive somehow our results. Dropping the US from the sample leaves our correlation figures almost unchanged.

scaled by the country market share to account for heterogeneity in the size of the economies analyzed, the correlation becomes more negative but still non significant (column (b1)). Finally, when looking at the net Foreign Portfolio Equity position, the financial aggregate directly influenced by ADR according to our thesis, the correlation becomes more negative (columns (c)-(c1)-(c2)) and significant, both when scaled down by the stock market capitalization of the country (column (c1)) and when considering the ratio Foreign Portfolio Equity Assets to Foreign Portfolio Equity Liabilities (column (c2))²⁰.

These preliminary statistics suggest the existence of a relationship between the domestic ADR and international equity portfolios. However, this linkage need to be confirmed through a multivariate analysis to identify the specific contribution of investor protection rights on top of other competing explanatory variables.

5 Results

The statistics on foreign bias discussed above reveal a great deal of heterogeneity across both destination and investing countries and point to the importance of analyzing the specific allocation pattern of various foreign investors. The existence of national specificities makes actually crucial to control for bilateral-specific factors whose impact cannot be priced by the market. In this paper we argue that foreign and domestic ADR play a role in determining cross-border equity positions. However, other factors influencing international portfolio investments need to be accounted for.

5.1 Proximity regressors

In particular, the literature has stressed how 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)).

In column 1 of Table 4 we report a first specification explaining bilateral portfolio bias (w_{lj}/MS_j) that includes standard gravity variables such as distance, common border dummy and common language

²⁰The U.S., featuring high ADR, display a quite remarkable difference between the net FPI position and the net Foreign Portfolio Equity position. Our results are however not driven by the US as the correlations are substantially unchanged dropping the US out of the sample.

dummy²¹. 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 the physical distance between investing and destination country. Since transactions in financial assets are "weightless", a role for distance may be found only if it has informational content (Portes and Rey (2005))²². 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 with a particularly strong impact of the common border dummy, quantitatively even larger (0.55) than the median value taken by the foreign bias variable (0.43)²³.

We then account for other variables capturing bilateral-specific linkages: namely, common currency area (EMU), and common legal origin. The EMU dummy takes the value 1 if the investing and destination countries are EMU members and 0 otherwise. The coefficient is positive and significant and its effect is quite large: EMU membership boosts bilateral bias by 0.3 compared to non member countries. Our findings are consistent with the evidence of Lane and Milesi-Ferretti (2007) and Balta and Delgado (2009), who find, as a result of monetary integration, a notable increase in foreign investments in the Euro area by EMU countries.

Finally, sharing the same legal origin might encourage cross-border investment since there is less fear of unknown factors (Lane (2006); Guiso et al. (2009)). We include a dummy variable taking the value 1 if the investing and destination countries share the same legal family (English, French, German or Scandinavian) and 0 otherwise²⁴. The coefficient is positive as expected: Sharing a common legal origin determines an increase in the foreign bias by 0.04 percentage points. At a first glance, the economic impact of this variable may appear almost negligible but is quite relevant in relative terms as determines an increase by 10% of the median value taken by the dependent variable.

Overall, these bilateral-specific factors have a quite strong explanatory power of foreign portfolio bias, as confirmed by the sizeable adjusted-R² (0.49).

²¹We recall that deviations of portfolio investment from the market share can be explained by deviations of investment barriers from the average. Accordingly, all regressors, except dummy variables, enter our specification as ratios with respect to the average. See Appendix A.2 for further details.

²²A 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.

²³Note that there are no zeros in the dataset considered. This allows us to disregard the problem often encountered in the trade literature, where the presence of many zeroes can dramatically affect the results.

²⁴Our results are consistent with Vlachos (2004), who shows that cultural and regulatory differences generate a negative impact on cross-country portfolio holdings.

5.2 Destination country's ADR

After controlling for proximity regressors, we shift our analysis to the ADR index, the variable representing the focus of our paper. Any asset-specific factor should be properly capitalized into the asset's market price (Dahlquist et al. (2003)) unless there is any heterogeneity in its evaluation on the part of investors.

To test this effect we proceed in two steps. First, we test the existence of an ADR effect by running regression (5). If foreign and domestic investing countries equally weighed ADR, this factor should have no impact on investment and portfolio bias. A non null coefficient of ADR would thereby reveal a significant role of investor protection laws in explaining the distance between the foreign portfolio position and what is predicted by market share.

Second, we test if this effect differs among foreign investors and, more specifically, if the different impact of ADR in attracting foreign investments depends upon the level of ADR benefited by investors at home.

Results on the positive effect of shareholder rights on foreign investments are shown in column 2 of Table 4 and are qualitatively consistent with recent evidence reported by Leuz et al. (2009) and Thapa and Poshakwale (2011). Specifically, we find that an increase by 1 of the ADR index with respect to the average induces an eight percentage points increase in foreign bias²⁵.

The evidence that country j 's ADR significantly impacts foreign investment implies that, within the universe of investors holding assets j , domestic and foreign investors differ in the evaluation of the same factor, that is, they asymmetrically evaluate investor protection rights. 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 (Leuz et al. (2009)). Such investors plausibly perceive 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.

Moreover, the strong heterogeneity of portfolio holdings across investing countries suggests a divergent evaluation of the same asset characteristics not only between foreign and domestic investors but also among foreign investors. We conjecture that the ADR afforded in the investing country is a pivotal factor to explain this evidence.

²⁵It is worth noting that the endogeneity critique often raised against LLSV (1998) is much less an issue here. In fact, in LLSV (1998) the direction of causality between investor protection laws and development of financial markets (aggregate asset supply) is controversial. In our setting instead the dependent variable is the bilateral foreign bias, 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 rather than vice versa.

We split our sample of investing countries according to their own level of domestic ADR. We report in columns 2a (2b) results when restricting the sample to investing countries featuring a level of domestic ADR below (above) the median²⁶. Focusing on the coefficient of the ADR index we observe that the impact of this variable is higher for investors benefiting relatively lower protection at home (0.14 versus 0.09).

In column 3 we report results from a regression specification over all investing countries, including both the ADR index of the destination country (ADR_j) and its interaction with the ADR index of the investing country (ADR_i)²⁷. The coefficient of the pure ADR_j factor is quite high and significant (0.27) and reflects the impact of country j 's ADR when ADR_i equals 0. As far as the ADR_i increases the effect of corporate governance in attracting foreign investment decreases as displayed by the negative and significant coefficient of the interacted variable (-0.20). This result confirms that the ADR level prevailing in the investing country significantly influences the impact of the destination country's ADR on foreign portfolio investment.

5.2.1 Other destination-specific factors

We now control for other destination-specific factors, potentially correlated with ADR, that, if omitted, can bias the coefficients of the included regressors.

Previous literature has documented that fraudulent transactions, bribery, unenforceable contracts, legal and regulation complexity can significantly affect portfolio investments (Gelos and Wei (2005); Leuz et al. (2009)).

We account for two institutional variables that capture the soundness of the economic environment from a more general to a more specific level: The first one is related to (control of) expropriation risk while the second one captures the transparency of accounting rules. 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, and legal frameworks 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. Our results in column 4 emphasize a strong effect of good accounting practices and a non-significant impact of risk of

²⁶Note that we are here excluding the observations relative to countries whose ADR is equal to the median (Finland, France and Sweden) to avoid arbitrary grouping. We checked that including these countries in either group provides consistent results.

²⁷As stressed above, the "pure" ADR_i factor cannot be separately identified due to the presence of fixed investing country effects.

expropriation on foreign portfolio investment.

Finally, a solid system of legal enforcement could substitute for weak "law on the books": Active and well functioning courts can serve as recourse for investors aggrieved by management (LLSV (1998)). We control for the role of the efficiency of the judicial system in attracting foreign investments. In column 4 we show that this variable has a positive but not precisely estimated effect.

The introduction of these control factors moderately reduces the impact of ADR_j but further reinforces the negative impact of the variable interacted with ADR_l . This corroborates our conjecture that the level of ADR afforded to investors in the source country is an important factor affecting the strength of attraction exerted by host country's corporate governance on inward investment²⁸.

5.3 Bilateral-specific ADR

We conjecture that foreign investment choices depend upon a variable capturing the foreign relative to domestic ADR. Indeed, when controlling for bilateral-specific variables such as distance, language, common currency and common legal origin, we assume that bilateral investment patterns depend on the "distance" between some characteristics of the destination asset and the corresponding values taken in the investing country. In other words, foreign investment and home bias are determined, among other factors, by the existence of barriers whose magnitude is measured relatively to the domestic environment. We claim that the above evidence suggests that a similar logic should be followed to properly seize the role of investor protection. When including investor protection as a pure destination-specific factor, we implicitly assume it has the same effect on all foreign investors. The preliminary regression results described above show that it is unlikely the case and, more specifically, that the way foreign investment relies upon foreign ADR may be related to the level of domestic ADR.

We consider in Table 5 different measures of investor protection capturing the relative destination country's corporate governance with respect to the investing country's one. Accounting for a relative measure allows to understand why, for given level of investor protection, one asset is more underweighted in portfolio by countries characterized by a relatively higher level of investment protection at home.

²⁸One could argue that these findings simply reflect the positive correlation between the level of investor protection in country l and the domestic share (Giannetti and Koskinen (2010)). However, on the one hand, the measure we adopt as dependent variable consists of portfolio bias rather than portfolio share and our preliminary statistics have revealed this to be not significantly correlated with ADR when restricting to domestic holdings. On the other hand, more crucially, our regression specification includes investing country-fixed effects that should account for national specificities, such as systematic differences in domestic positions across investing countries.

We adopt in column 1 a quite general indicator, a dummy variable taking value 1 if the destination country's ADR is larger than the investing country's one and 0, otherwise. The coefficient of this variable is positive and significant (0.05) and the strength of its impact is expected to be independent on the level of domestic ADR since this is already captured by the bilateral dummy variable. In fact, in column 2 we show that the interaction of the dummy variable with the level of internal investor protection is not significant.

Hence we run a regression based on equation (7) and replace the bilateral dummy variable with a continuous relative measure of corporate governance, the "ADR ratio" (ADR_j/ADR_l), i.e., the ratio between country j 's and country l 's ADR²⁹. In column 3 we show that this ratio has a positive significant impact equal to 0.05: An ADR ratio higher by 1 increases the foreign bias by 5 percentage points.

In column 4, we include the squared term of the ADR ratio to account for eventual non linearity in the effect of this relative ADR index. We find that indeed the overall effect is parabolic: The coefficient of the linear term increases by more than three times (from 0.05 to 0.16) and the coefficient of the squared term is negative and significant, though not very large³⁰.

Finally, we include other institutional variables potentially correlated with the ADR ratio. In column 5 we control for risk of expropriation, accounting standards and efficiency of the judicial system. For consistency, we introduce these variables in ratio forms, i.e., as the ratio of the value taken in the destination country to the value taken in the investing country. The coefficient of the ADR ratio is almost halved but remains still quite large and significant.

5.3.1 Robustness checks

For robustness check, we first of all correct the foreign bias portfolio for the fraction of closely held shares. 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 induces 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, correct the asset supply and compute the corrected bias measure. In column 6 the share in the

²⁹A linear relation, such as the difference in ADR between destination and investing country, would not fulfil the objective: The investing country's ADR would be fully captured by the country fixed effect and would not contribute to explain the variability of the ADR_j 's coefficient across investing countries.

³⁰The coefficient of the squared term (in absolute terms) is below 15% of the coefficient of the linear term thus ensuring that, for the whole range of ADR indexes considered here, the overall effect is positive.

world *float* portfolio replaces the market share as denominator of the foreign bias measure, our dependent variable³¹. Results after adopting the world float portfolio confirm previous findings with an even stronger impact of investor protection rights³².

Second, we adopt as an alternative to ADR, the "corrected" ADR index as refined in Spamann (2010)³³. The author, by a reexamination of the legal data, derives more precise estimates of ADR leading to corrections for forty-three out 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. Consequently, also our results may be potentially invalidated. In column 7 the original LLSV (1998) indexes are replaced by the revised Spamann (2010) indexes. Our results appear robust to the alternative revised specification of antidirector rights: The coefficient of the ADR ratio modified according to the Spamann (2010) index is even more significant, in statistical and economic terms (0.18), and most of other coefficients are basically unaffected by the alternative specification.

As a final robustness check for our results, we drop Hong Kong and Singapore from the opportunity set to control for explicit or implicit restrictions about non-OECD foreign investments, especially for pension funds and life insurance companies³⁴. The coefficient of the ADR ratio is still positive and statistically significant (0.12).

5.3.2 More on the ADR ratio's coefficient

In Table 6 we test the hypothesis that the coefficient of the ADR ratio is indeed independent on the degree of domestic investor protection. Similarly to Table 4, we split the sample of investing countries into those below and above the median (columns (a) and (b), respectively). First, we test in columns (1a) and (1b) the dummy variable version of the bilateral corporate governance measure, controlling for standard proximity regressors. We find that the coefficients for countries with ADR below and above the median are,

³¹This measurement error affects the dependent variable and should not econometrically bias our estimated coefficients, since should reflect in the error term. However, ignoring it can potentially affect our results, since countries with stronger protection rights are those with a lower proportion of closely held shares.

³²Previous 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).

³³See Spamann (2010) for further details on the corrected index.

³⁴According to Davis (2001), geographical constraints to institutional investors should be negligible for the sample of investing countries and the period analyzed here.

respectively, 0.10 and 0.09, and the hypothesis of equal coefficient cannot be rejected.

In columns (2a) and (2b) we report results when the variable adopted is the ADR ratio in its linear and squared term: The coefficients of the ADR ratio are 0.20 and 0.19 for countries below and above the ADR median, with a non significant difference between the two.

Finally, in columns (3a) and (3b) we report results for a specification controlling also for expropriation risk, accounting standards and efficiency of the judicial system, all in ratio forms. The coefficient of the ADR ratio for the group of countries featuring an ADR index below the median is 0.17 while the coefficient for the other group of countries is 0.18 and the distance between the two figures is statistically non significant. Hence, the hypothesis of an equal impact of the ADR ratio across investing countries is not rejected in all regression specifications.

These findings supports the adoption of the ADR ratio as a potentially valid proxy to seize the corporate governance factor evenly driving investors' choices in their international diversification patterns.

6 Summary and conclusions

This paper investigates the impact of investor protection laws on foreign equity portfolios.

We highlight that strong investor protection attracts foreign investments but does not exert the same attractiveness on all foreign investors. More precisely, the effectiveness of foreign corporate governance in attracting investment negatively depends on the degree of protection enjoyed by the investor at home.

Indeed, foreign investment held by investors enjoying a higher degree of domestic investor protection shows a lower sensitivity to destination countries' corporate governance. This suggests that investors choose the composition of their foreign portfolios scaling destination country's corporate governance by their own: it is the ratio foreign to domestic corporate governance the factor homogeneously driving investors' foreign portfolio allocation.

These findings have ensuing perverse implications: by comparing country portfolios, destination countries with a relatively higher ADR index are relatively more underweighted in the portfolio of investors enjoying higher domestic protection. Hence for these investors –compared to those enjoying weaker investor protection at home– domestic investment turns out to more severely crowd out investment in better governed foreign countries.

Studying how investor protection rights affect the incentives to diversify abroad entails relevant policy

implications in terms of the desirability of strengthening investor protection. Our findings suggest that the influence of antidirector rights on cross-border investment is subject to a trade-off: Strong investment protection at home, on the one hand, attracts inward investment but, on the other hand, tilts investors' portfolios toward foreign assets issued by countries with relatively lax corporate governance. Our setting however just focuses on the effect of investor protection rights on cross-border investments. Further research and a more comprehensive analysis are encouraged to derive general welfare conclusions on the desirability of stronger investor protection to enhance global international portfolio diversification.

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Tables

Table 1. Domestic stock market

This table reports the domestic share and the market share of each investing country. The reported figure are averages over the period 2001-2006. Figures in bold characters refer to statistically significant correlation coefficients. *Source*: Coordinated Portfolio Investment Survey (IMF), Datastream (Thomson Financial) and LLSV (1998).

	<i>Domestic market</i>		
	<i>domestic share</i>	<i>market share</i>	<i>shareholder rights index</i> [†]
	(a)	(b)	(c)
<i>Austria</i>	0,362	0,002	2
<i>Belgium</i>	0,509	0,007	0
<i>Finland</i>	0,603	0,006	3
<i>France</i>	0,681	0,046	3
<i>Germany</i>	0,502	0,035	1
<i>Italy</i>	0,629	0,023	1
<i>Netherlands</i>	0,289	0,019	2
<i>Spain</i>	0,772	0,018	4
<i>Canada</i>	0,825	0,029	5
<i>Denmark</i>	0,554	0,004	2
<i>Japan</i>	0,709	0,107	4
<i>Sweden</i>	0,550	0,010	3
<i>United Kingdom</i>	0,652	0,087	5
<i>United States</i>	0,814	0,436	5
	(a:c)	(b:c)	(a/b;c)
correlation	0,689	0,502	-0,308

Notes: †: The index captures antidirector rights (ADR), following LLSV (1998).

Table 2. Foreign stock markets

This table reports the average foreign share (a), the market share (b), the average foreign bias (c) and the standard deviation of portfolio equity bias (d) displayed by the fourteen investing countries in each destination country index (head of rows) included in the opportunity set. The shareholder rights index of the destination countries is reported in column (e). Figures in bold characters refer to statistically significant correlation coefficients. *Source:* Coordinated Portfolio Investment Survey (IMF), Datastream (Thomson Financial) and LLSV (1998).

	<i>Foreign market</i>				
	<i>average foreign share*</i>	<i>market share</i>	<i>average foreign bias**</i>	<i>st. dev. foreign bias***</i>	<i>shareholder rights index[†]</i>
	(a)	(b)	(c)	(d)	(e)
<i>Austria</i>	0,001	0,002	0,426	0,394	2
<i>Belgium</i>	0,003	0,007	0,469	0,455	0
<i>Finland</i>	0,006	0,006	1,001	0,811	3
<i>France</i>	0,031	0,046	0,665	0,461	3
<i>Germany</i>	0,026	0,035	0,743	0,830	1
<i>Italy</i>	0,010	0,023	0,439	0,263	1
<i>Netherlands</i>	0,017	0,019	0,921	0,542	2
<i>Portugal</i>	0,001	0,002	0,426	0,461	3
<i>Spain</i>	0,009	0,018	0,481	0,284	4
<i>Australia</i>	0,003	0,019	0,160	0,156	4
<i>Canada</i>	0,003	0,029	0,118	0,132	5
<i>Denmark</i>	0,001	0,004	0,367	0,398	2
<i>Japan</i>	0,019	0,107	0,179	0,101	4
<i>Mexico</i>	0,001	0,006	0,192	0,188	1
<i>Sweden</i>	0,011	0,010	1,089	2,018	3
<i>United Kingdom</i>	0,042	0,087	0,481	0,231	5
<i>United States</i>	0,098	0,436	0,224	0,164	5
<i>South Korea</i>	0,003	0,012	0,237	0,189	2
<i>Hong Kong</i>	0,003	0,022	0,151	0,146	5
<i>Singapore</i>	0,001	0,005	0,244	0,196	4
	(a:e)	(b:e)	(c:e)	(d:e)	(d; e-median(e))
correlation	0,352	0,412	-0,308	-0,234	-0,430

Notes:

[†]: The index captures antidirector rights (ADR), following LLSV (1998).

*: The average foreign share in country j is computed as simple average of the portfolio share in country j (w_{lj}) by different investing countries l . An alternative specification where each investing country enters the average weighted by its market capitalization delivers similar results.

** : The average foreign bias in country j is computed as simple average of the bias in country j (w_{lj}/MS_j) by different investing countries l . An alternative specification where each investing country enters the average weighted by its market capitalization delivers similar results.

***: The standard deviation of foreign bias in country j is computed as the cross-sectional standard deviation around the mean of country l 's foreign bias in country j .

Table 3. Alternative financial aggregates

This table reports different financial aggregates of the investing countries reported by row. In column (a) we report the Net position in Foreign Direct Investments (FDI). Column (b) and (b1) report, respectively, the Net position in Foreign Portfolio Investment (FPI) and the Net FPI scaled by the market capitalization of the investing country. In column (c) we report the Net FPI equity position, in column (c1) the Net FPI equity scaled down by the stock market capitalization of the investing country, and in column (c2) the ratio of the FPI equity asset item to the FPI equity liability item. Finally, column (d) reports the antidirector rights index following LLSV (1998). Figures in bold characters refer to statistically significant correlation coefficients.

Source: Coordinated Portfolio Investment Survey (IMF), International Financial Statistics (IMF), International Direct Investments (OECD), Datastream (Thomson Financial) and LLSV (1998).

<i>Alternative financial aggregates</i>							
	<i>Net FDI</i>	<i>Net FPI</i>	<i>Net FPI/mcap</i>	<i>Net FPI equity</i>	<i>(Net FPI equity)/(mcap equity)</i>	<i>(foreign equity assets)/(foreign equity liabilities)</i>	<i>shareholder rights index[†]</i>
	(a)	(b)	(b1)	(c)	(c1)	(c2)	(d)
<i>Austria</i>	4,85E+03	-9,40E+04	-1,76E-01	7,34E+03	2,20E-01	1,36E+00	2
<i>Belgium</i>	4,79E+05	2,91E+05	3,68E-01	1,47E+05	7,16E-01	4,93E+00	0
<i>Finland</i>	-7,36E+05	-8,92E+04	-2,43E-01	-6,87E+04	-3,59E-01	4,50E-01	3
<i>France</i>	-2,84E+08	-1,62E+02	-4,61E-05	-1,77E+02	-1,26E-04	6,99E-01	3
<i>Germany</i>	-8,61E+08	-3,85E+02	-7,70E-05	2,12E+02	2,12E-04	1,57E+00	1
<i>Italy</i>	2,92E+05	-3,41E+05	-8,36E-02	1,67E+05	2,74E-01	3,50E+00	1
<i>Netherlands</i>	8,87E+04	-9,54E+04	-4,10E-02	-1,29E+04	-3,50E-03	9,84E-01	2
<i>Spain</i>	5,45E+05	-3,79E+05	-1,50E-01	-1,27E+05	-2,11E-01	4,64E-01	4
<i>Canada</i>	5,75E+05	-1,70E+05	-8,63E-02	1,01E+05	1,17E-01	2,40E+00	5
<i>Denmark</i>	1,75E+05	-2,44E+04	-4,61E-02	3,75E+04	2,69E-01	1,81E+00	2
<i>Japan</i>	-2,85E+08	7,10E+02	6,39E-05	-4,30E+02	-1,20E-04	4,95E-01	4
<i>Sweden</i>	8,11E+04	-6,82E+04	-2,69E-01	3,81E+03	4,83E-02	1,26E+00	3
<i>United Kingdom</i>	-2,84E+08	-2,49E+02	-4,49E-05	-1,67E+02	-6,80E-05	8,33E-01	5
<i>United States</i>	-2,82E+08	-2,88E+03	-8,11E-05	7,60E+02	5,59E-05	1,30E+00	5
	(a;d)	(b;d)	(b1;d)	(c;d)	(c1;d)	(c2;d)	
correlation	0,030	-0,249	-0,345	-0,429	-0,573	-0,594	

Table 4. Bias in foreign equity portfolios–destination-specific ADR

This table reports results of the feasible GLS regression as in Section 3.1 in the text. The dependent variable is the foreign portfolio bias, i.e., the ratio of portfolio share to market share, (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 A.1. In column (2a) and (2b) we restrict, respectively, to bottom (below the median) and top (above the median) investing countries by level of ADR. Each regressor X (dummy variables excluded) is expressed as the ratio of X to its world average. Further details on the variables included as regressors are provided in Appendix A.2. Constants, investing country dummies 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 portfolio</i>					
	<i>destination country ADR</i>					
	(1)	(2)	(2a)	(2b)	(3)	(4)
<i>dist_{ij}</i>	-0,077 *** (0,011)	-0,081 *** (0,011)	-0,106 *** (0,019)	0,002 (0,008)	-0,083 *** (0,012)	-0,081 *** (0,012)
<i>dum_lang_{ij}</i>	0,192 *** (0,037)	0,163 *** (0,039)	0,809 *** (0,085)	-0,117 *** (0,024)	0,204 *** (0,041)	0,183 *** (0,042)
<i>dum_border_{ij}</i>	0,553 *** (0,033)	0,560 *** (0,033)	0,366 *** (0,044)	0,241 *** (0,030)	0,567 *** (0,033)	0,552 *** (0,033)
<i>dum_EMU_{ij}</i>	0,306 *** (0,028)	0,323 *** (0,028)	0,292 *** (0,038)	0,564 *** (0,058)	0,328 *** (0,030)	0,364 *** (0,031)
<i>dum_eq_leg_origin_{ij}</i>	0,037 * (0,020)	0,050 ** (0,020)	0,077 ** (0,032)	-0,005 (0,017)	0,069 *** (0,022)	0,120 *** (0,022)
<i>shrights_j</i>		0,077 *** (0,019)	0,143 *** (0,038)	0,093 *** (0,015)	0,268 *** (0,063)	0,207 *** (0,062)
<i>shrights_j*shrights_l</i>					-0,199 *** (0,054)	-0,228 *** (0,053)
<i>contr_risk_expr_j</i>						0,161 (0,141)
<i>account_j</i>						0,461 *** (0,066)
<i>eff_jud_j</i>						0,054 (0,063)
<i>#obs</i>	1579	1579	684	567	1579	1579
<i>Adj-R²</i>	0,49	0,49	0,56	0,41	0,50	0,53

Table 5. Bias in foreign equity portfolios–bilateral-specific ADR

This table reports results of the feasible GLS regression as in Section 3.1 in the text. The dependent variable is the foreign portfolio bias, i.e., the ratio of portfolio share to market share, (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 A.1. In columns (6) the dependent variable is foreign portfolio bias corrected for the fraction of shares closely held Dahlquist et al. (2003). In columns (7) the shareholder rights' index (LLSV (1998)) is replaced by the antidirector rights index corrected by Spamann (2010). In columns (8) we exclude from the sample non-OECD destination countries, i.e., Hong Kong and Singapore. Further details on the variables included as regressors are provided in Appendix A.2. Constants, investing country dummies 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 portfolio</i>							
	<i>bilateral specific ADR</i>						<i>Robustness</i>	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>dist_{ij}</i>	-0,078 *** (0,011)	-0,080 *** (0,012)	-0,081 *** (0,012)	-0,084 *** (0,011)	-0,078 *** (0,012)	-0,093 *** (0,034)	-0,079 *** (0,012)	-0,087 *** (0,014)
<i>dum_lang_{ij}</i>	0,190 *** (0,037)	0,191 *** (0,037)	0,190 *** (0,038)	0,170 *** (0,038)	0,143 *** (0,040)	0,025 (0,106)	0,143 *** (0,040)	0,196 *** (0,047)
<i>dum_border_{ij}</i>	0,552 *** (0,033)	0,554 *** (0,033)	0,573 *** (0,033)	0,576 *** (0,033)	0,563 *** (0,033)	0,480 *** (0,100)	0,565 *** (0,033)	0,555 *** (0,035)
<i>dum_EMU_{ij}</i>	0,312 *** (0,000)	0,047 ** (0,020)	0,332 *** (0,029)	0,331 *** (0,029)	0,353 *** (0,030)	0,855 *** (0,099)	0,343 *** (0,030)	0,373 *** (0,033)
<i>dum_eq_leg_origin_{ij}</i>	0,044 ** (0,020)	0,554 ** (0,033)	0,048 ** (0,020)	0,055 *** (0,020)	0,099 *** (0,020)	0,226 *** (0,074)	0,109 *** (0,022)	0,104 *** (0,023)
<i>dum (shrights_j/shrights_l)>1</i>	0,046 ** (0,020)	0,038 * (0,022)						
<i>[dum (shrights_j/shrights_l)>1]*shrights_l</i>		0,024 (0,042)						
<i>shrights_j/shrights_l</i>			0,054 *** (0,015)	0,156 *** (0,027)	0,083 *** (0,029)	0,632 *** (0,101)	0,175 * (0,103)	0,123 *** (0,034)
<i>(shrights_j/shrights_l)²</i>				-0,017 *** (0,004)	-0,010 ** (0,004)	-0,046 ** (0,019)	-0,008 (0,041)	-0,014 *** (0,005)
<i>contr_risk_expr_j/contr_risk_expr_l</i>					0,287 ** (0,129)	4,412 *** (0,436)	0,171 (0,142)	-0,123 (0,192)
<i>account_j/account_l</i>					0,377 *** (0,059)	1,652 *** (0,195)	0,360 *** (0,063)	0,363 *** (0,068)
<i>eff_judj/eff_jud_l</i>					-0,003 (0,057)	-3,108 *** (0,179)	0,112 * (0,067)	0,119 (0,075)
<i>#obs</i>	1579	1579	1579	1579	1579	1579	1579	1421
<i>Adj-R²</i>	0,49	0,49	0,50	0,51	0,53	0,28	0,54	0,53

Table 6. Bias in foreign equity portfolios—Test of the ADR ratio

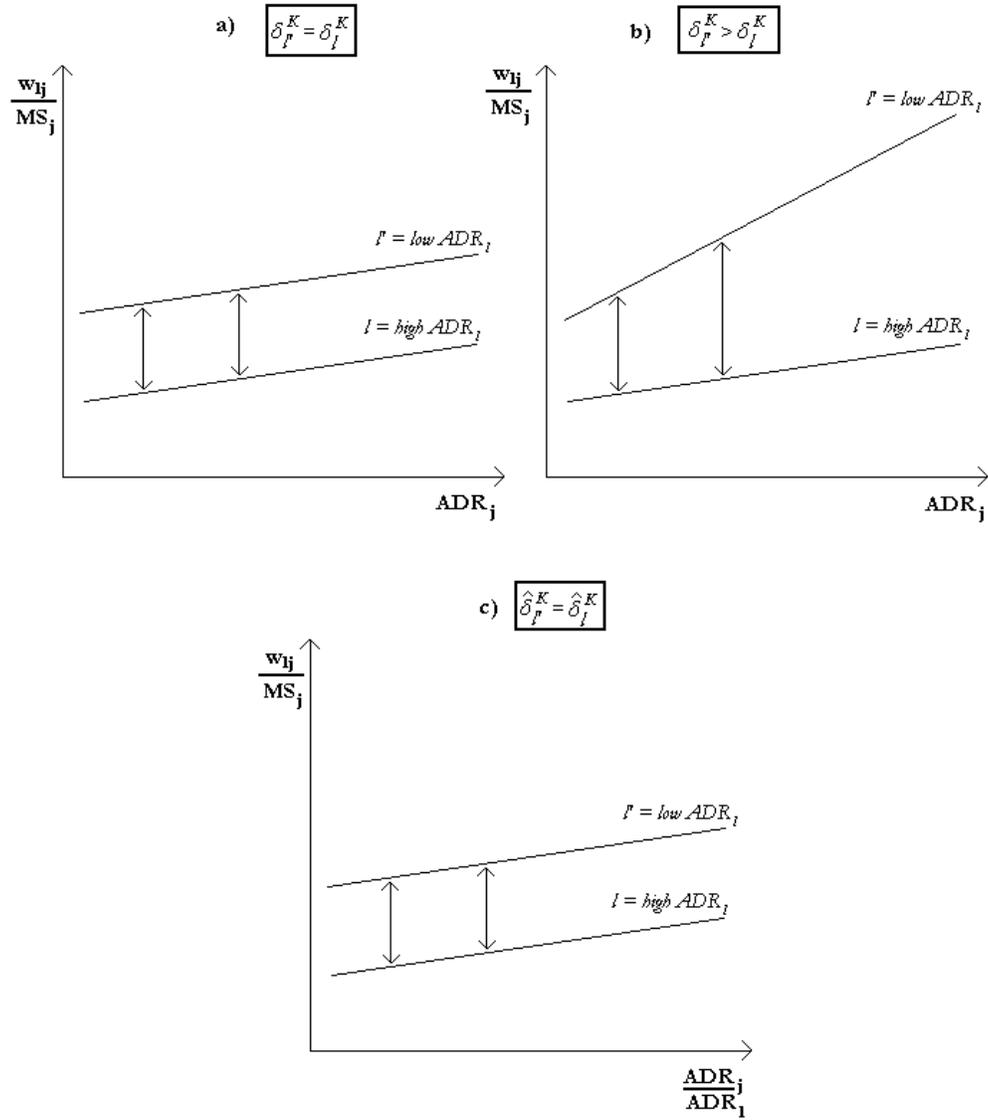
This table reports results of the feasible GLS regression as in Section 3.1 in the text. The dependent variable is the foreign portfolio bias, i.e., the ratio of portfolio share to market share, (w_{lj}/MS_j) , where the subscript lj represents the couple investment country l -destination country j . Further details on the derivation of the dependent variable are provided in Appendix A.1. In columns (a) and (b) we report, respectively, results for bottom (below the median) and top (above the median) investing countries by level of ADR. Details on the variables included as regressors are provided in Appendix A.2. Constants, investing country dummies 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 portfolio</i>					
		<i>"bottom" (a) and "top" (b) investing countries by level of shareholder protection rights</i>					
		(1a)	(1b)	(2a)	(2b)	(3a)	(3b)
$dist_{lj}$		-0,101 *** (0,019)	0,008 (0,008)	-0,109 *** (0,019)	0,001 (0,008)	-0,119 *** (0,020)	0,000 (0,008)
dum_lang_{lj}		0,829 *** (0,086)	-0,075 *** (0,022)	0,781 *** (0,083)	-0,117 *** (0,024)	0,704 *** (0,081)	-0,118 *** (0,023)
dum_border_{lj}		0,324 *** (0,042)	0,251 *** (0,030)	0,386 *** (0,043)	0,243 *** (0,030)	0,402 *** (0,044)	0,249 *** (0,030)
dum_EMU_{lj}		0,271 *** (0,037)	0,557 *** (0,059)	0,288 *** (0,038)	0,561 *** (0,058)	0,436 *** (0,042)	0,568 *** (0,060)
$dum_eq_leg_origin_{lj}$		0,057 * (0,031)	0,003 (0,019)	0,088 *** (0,032)	0,000 (0,018)	0,156 *** (0,037)	-0,002 (0,017)
$dum (shrights_j/shrights_l) > 1$		0,099 *** (0,033)	0,085 *** (0,021)				
$shrights_j/shrights_l$				0,198 *** (0,037)	0,194 ** (0,085)	0,169 *** (0,041)	0,182 ** (0,083)
$(shrights_j/shrights_l)^2$				-0,022 *** (0,005)	-0,046 (0,061)	-0,019 *** (0,005)	-0,069 (0,059)
$contr_risk_expr_j/contr_risk_expr_l$						-0,678 ** (0,302)	0,058 (0,084)
$account_j/account_l$						0,771 *** (0,100)	0,196 *** (0,042)
eff_judj/eff_jud_l						0,105 (0,109)	-0,029 (0,042)
$\#obs$		684	567	684	567	684	567
$Adj-R^2$		0,55	0,39	0,58	0,42	0,63	0,43

Figures

Figure 1. Coefficient of ADR index

This figure provides a graphical representation of the coefficient of the ADR index (δ^K) for investors with different degree of domestic ADR index. In panel a) we show the case of an even impact of country j 's ADR index (ADR_j) on investors. In panel b) we show the case of a stronger impact of country j 's ADR index (ADR_j) on investors benefiting a lower degree of investor protection at home. Panel c) shows the case of an even impact of the ADR ratio (ADR_j/ADR_l) on different investors.



A Data appendix

A.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} ³⁵

$$FS_{i,t} = \frac{(FA)_{i,t}}{(MCAP)_{i,t} + FA_{i,t} - FL_{i,t}} \quad (8)$$

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.

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 variability dimension, the cross-sectional one, is properly taken into account.

A.2 Regressors

To assure consistency with the theoretical framework, each variable X (dummy variables excluded) enters our regression specifications as 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 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)

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

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 legal origin

Dummy variable taking value 1 if the investing country and the destination country share the same legal origin of the company law or commercial code of each country (0 otherwise). The countries included in our sample belong to four legal families: English, French, German, Scandinavian.

Shareholder rights

The index captures antidirector rights, following LLSV (1998). The antidirector rights (ADR) index measures 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 require 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). To avoid ratios with 0 denominators, 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.

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.