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Abstract

This paper investigates the impact of domestic investor protection on equity cross-border investment. We bring to light the lower sensitivity of foreign investment to destination countries' corporate governance for those investors enjoying a higher degree of investor protection at home. This evidence is consistent with diminishing marginal returns of corporate governance in portfolio choice. Investors benefiting from high levels of rights protection at home recognize that a large fraction of their portfolio, the domestic one, significantly contributes to the optimal level of corporate governance in portfolios. Consequently, these investors are less demanding about this dimension when constructing their foreign portfolios. As an unintended consequence, all other things being equal, assets issued by foreign countries with good investor protection are severely penalized in portfolios held by investing countries featuring higher standards of corporate governance.

Keywords: Behavioral finance, international portfolio investment, investor protection rights, home bias

JEL Classifications: G11, G15, G30

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I Introduction

This paper investigates the impact of domestic investor protection rights on foreign portfolio investment. Irrespective of the benefits from the international diversification of equity portfolios documented long ago (Markowitz (1952); Sharpe (1964); Grubel (1968); Levy and Sarnat (1970); Solnik (1974)), investors still display a strong preference for domestic assets, the so-called home bias. (French and Poterba (1991); Tesar and Werner (1995), among others). As reviewed by Lewis (1999) and Karolyi and Stulz (2003), proposed explanations to this puzzling behavior refer to barriers to international investment (Stulz (1981); Tesar and Werner (1995)), behavioral bias consisting in the over-optimism of domestic investors toward domestic assets (French and Poterba (1991); Strong and Xu (2003); Li (2004)), hedging background risk such as inflation risk (Cooper and Kaplanis (1994)) or human capital risk (Baxter and Jermann (1997); Pesenti and van Wincoop (2002)), and information asymmetry between domestic and foreign investors (Grinblatt and Keloharju (2001); Chan et al. (2005); Portes and Rey (2005)).

The information-based motive has especially benefited from strong support in the empirical literature and is therefore advocated as a major cause of international underdiversification. Kang and Stulz (1997) and Dahlquist and Robertsson (2001) emphasize that large, financially solid, well-known firms are preferred by foreigners, thereby underlining the asymmetry between resident and foreign 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. This evidence is consistent with the conjecture that foreign investors are more vulnerable to information asymmetry than domestic investors are.

In this context, corporate governance can be crucially relevant to partially offset this lack of information by signaling the quality of institutions in terms of guaranteed investor rights (La Porta et al. (1998), LLSV henceforth). Corporate governance can be particularly influential on investors more affected by information costs, namely, foreign investors.

The literature so far has analyzed the effect of corporate governance in attracting foreign investment (Kho et al. (2009); Leuz et al. (2009); Giannetti and Koskinen (2010); Giofré (2013)), almost entirely disregarding the role played by legislation protecting the investor at home. The only exception, to the best of our knowledge, is the study of Giannetti and Koskinen (2010). In their setting, domestic investor protection is relevant to the extent that it influences the portfolio share invested in domestic assets: The

foreign holdings of portfolio investors in weak investor protection countries are found to be larger than in countries where minority shareholders are more strongly protected.

We complement the analysis of Giannetti and Koskinen (2010) by highlighting the role of domestic investor protection in shaping foreign portfolio composition. If domestic corporate governance has only a direct impact on foreign investment, then this should uniquely determine the choice between domestic and overall foreign shares (Giannetti and Koskinen (2010)) and should have no impact on foreign portfolio allocations across destination countries. If, instead, domestic investor protection also affects foreign investment indirectly–for instance, by altering its responsiveness to destination country-specific corporate governance-then foreign portfolio composition should be affected.

In this paper, the hypothesis of an even impact of corporate governance on foreign investment is challenged: The empirical evidence shows that laws protecting the interests of minority shareholders asymmetrically affect foreign investors, depending on the degree of investor protection at home. Specifically, we document an unintended effect of strong domestic investor protection rules: They dampen the attractiveness of well-protected foreign investment more than that of poorly governed countries' assets. Countries with higher corporate governance standards are therefore more underweighted in portfolios held by investors in more strongly regulated countries than in portfolios held by investors in countries with weak investor protection.

We argue that this evidence is consistent with decreasing marginal returns on corporate governance. Listokin (2007) suggests the presence of diminishing marginal returns on governance at the firm level, thus establishing an optimal level of governance. We follow a similar reasoning, at an aggregate level, for portfolio allocation, where corporate governance competes with other factors to determine the optimal investment pattern. Insofar as the domestic position is very large and exogenous, as in our analysis, the importance of corporate governance for foreign investments must be decreasing with the level of domestic corporate governance, even if the same optimal level of governance is assumed in portfolios across various investors.

If the degree of minority investors' protection is indeed characterized by diminishing marginal returns, investors benefiting from high levels of rights protection at home recognize that a large fraction of their portfolio, the domestic one, significantly contributes to the optimal level of corporate governance in portfolios. Consequently, these investors are less demanding about this dimension when diversifying their portfolios. The lower sensitivity to corporate governance when building foreign portfolios, reflected in a flatter response of foreign investment to foreign protection rights, penalizes destination countries featuring stronger minority

investor rights protection, which indeed appear to be more underweighted in portfolios.

We bring to light that this effect is also quantitatively important. When considering the portfolio allocation in destination countries differing by investor protection, we find that investing countries suffering weak investor protection display a 25% larger foreign portfolio bias in highly protecting countries than in less protective ones, while investors featuring high standard of corporate governance at home show a 53% lower foreign portfolio bias in highly protecting destination countries than in less protecting ones. Moreover, when considering the portfolio allocation in given destination countries made by investing countries differing by investor protection, we highlight that investors benefiting from higher standards of investor protection at home invest in strongly protecting countries up to 60% less than investors acquainted with weaker levels of domestic minority shareholder protection. These findings represent this paper's main innovative contribution to the literature and shed new light on the role of corporate governance on foreign portfolio allocation.

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, the equation to be estimated, and its main testable implications. Section 4 presents the data and some descriptive statistics. Section 5 illustrates and discusses the results. Section 6 concludes the paper.

2 Home bias and domestic investor protection

This work analyzes the impact of investor protection laws on stock portfolios held by foreign investors. The various indexes of shareholder rights adopted in this paper are related to the antidirector rights (ADR) index, which was originally developed by LLSV in their seminal paper to measure how strongly a legal system favors minority shareholders against managers or dominant shareholders in the corporate decision making process.

Standard asset pricing models assuming a representative agent predict that differences in observable asset characteristics, such as investor rights and the financial development of the issuing firm or country, should be capitalized in share prices such that investing in any stock is a fair investment, regardless of the issuer's level of investor protection (Dahlquist et al. (2003)). However, when heterogeneity across investors is accounted for, the equilibrium price discount discloses only the aggregate behavior, thus inducing under- or over-investment by those investors for which the price discount is, respectively, too low or too high (Kho et al. (2009); Leuz et al. (2009); Giannetti and Koskinen (2010)).

In particular, as noted by Leuz et al. (2009), this price discount is likely insufficient for foreign investors, who plausibly face information problems beyond those of domestic investors. Indeed, the home bias puzzle can be read as evidence of the asymmetric perceptions of asset characteristics by home and foreign investors, thus rejecting the representative agent hypothesis.[1] If all investors, domestic and foreign, equally perceive the level of investor protection in country j, this would be perfectly priced and all investors would hold the same portfolio, irrespective of nationality. Evidence of the significant positive role played by investor protection in shaping foreign portfolios underlines its stronger impact on foreign investors.

Previous work originating from LLSV emphasizes 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 one accounts for heterogeneity across investors. Recent work has highlighted the asymmetric impact of corporate governance on different categories of investors (Leuz et al. (2009); Giannetti and Koskinen (2010); Giofré (2013)). Giofré (2013) highlights how laws protecting different interests asymmetrically affect foreign stakeholders. More specifically, foreign shareholders appear to appreciate strong creditor rights, which potentially mitigate project riskiness, while bondholders are negatively affected by strong shareholder rights, which might induce firms to engage in excessively risky behavior. Giannetti and Koskinen (2010) show that investor protection impacts financial market development by influencing the demand for equity, because different classes of investors-specifically controlling shareholders and outside shareholders-can differ in the benefits accruing to them and therefore in their willingness to pay for stocks. Leuz et al. (2009) investigate the impact of firm-level corporate governance on foreign holdings and find that US investors invest less in foreign firms with poor outsider protection and opaque earnings. In particular, they find that foreign holdings in firms with poor governance are driven by information asymmetry. The authors' identification strategy relies on comparison across countries with different degrees of investor protection: Firm corporate governance within a country plays a role only when national-level institutions are poor.

However, further heterogeneity can also arise within the group of foreign portfolio shareholders. We are particularly interested in differences in investor protection legislation across investing countries. This heterogeneity dimension matters insofar as, for instance, the domestic level of investor protection with which investors are acquainted influences their evaluation of foreign investor protection. In this case, the interaction

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

between foreign corporate governance and domestic investor protection would generate an additional source of heterogeneity in international portfolio allocation.

3 A conceptual framework

Our theoretical framework hinges on equilibrium portfolio allocation in which investors are supposed to face different costs from investing in various financial markets. According to Gehrig (1993), foreign investments appear, on average, riskier to domestic investors-leading to an information-based justification for 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 set.

In the absence of any investor-specific factor, the "unbiased" portfolio holding of an asset depends, as in standard portfolio choice theory, on asset characteristics (risk and return).[2] When equilibrium asset holdings without investment barriers are considered, all investors ought to hold the same value-weighted portfolio, in which each asset is weighted according to its share in global 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 investor-specific and value-weighted portfolios. This wedge depends, in particular, on the distance between the bilateral investment barrier of country I 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) by country I is

$$w \frac{I}{D} \quad M \quad \text{or} \quad \frac{w}{M} \quad \frac{I}{D} \tag{1}$$

where M is the market share of asset j in world market capitalization and D represents the relative (to the world average) investment barriers of country I investing in asset j. Investors residing in country I will demand a share of asset j greater than its market share in proportion to $\frac{I}{D}$, that is, the reciprocal of the relative investment barrier.[3]

[2] Details on the derivation of our stylized model are available in Appendix A.

[3] Note that if D_{Ij} I, that is, if the investment barrier of country I in country j is equal to the average, then $M S_j$ is optimally held in equilibrium. Our 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.

The ratio $\frac{w}{M}$ can be interpreted as the bilateral foreign bias in asset **j** of a representative investor in country I. A portfolio share w larger than **j**'s market share signals that asset **j** is overweighted in country I's portfolio, while a ratio lower than one signals that asset **j** is underweighted.[4]

3.I Estimable equation

To estimate (1), we must provide an empirical counterpart to the factor D , which is not directly observable and needs to be proxied by measurable variables. Our estimable regression can be written as follows:

$$\frac{w}{M} \quad a+ \sum_{i=1,..,I} j^{3i}X^{i} + \sum_{n=1,..,N} \grave{A}^{n}Y^{n} + \sum_{k=1,..,K-1} 6^{k}Z^{k} + \sum_{k=1,..,K-1} B^{k}Z^{k} + 6^{K}ADR \; + B^{K}ADR \; + rADR \cdot ADR \; + c \tag{2}$$

This equation assumes that the wedge between the actual portfolio position w and the market share M is explained by **i** bilateral-specific proxies (X), n bilateral-specific dummy variables (Y), and K variables capturing country-specific factors. Destination-specific variables equally affecting all investors are priced by the markets. Since our dependent variable refers to foreign positions uniquely, evidence of a non-null coefficient for a destination-specific variable implies its different impact on portfolio positions held by foreign versus domestic investors. From these country factors we single out our main variable of interest, the antidirector rights index, and denote by 6^{K}, B^{K} and **r**, respectively, the coefficients of the destination ADR index (ADR), of the investing country ADR index (ADR), and of their interaction term.

For the sake of notational simplicity, we omit in the above equation the time subscript for the dependent variable and for the time-varying regressors. Consistently, time dummies that are present in all regression specifications are not explicitly reported.

To estimate the above parameters, a feasible generalized least squares (GLS) regression is implemented to correct for the presence of cross-sectional heteroskedasticity and robust standard errors are computed through a cross-section weight correction of the variance-covariance matrix. Indeed, due to substantial heterogeneity in the sample of countries, some countries' portfolios are likely to display more noise than others and estimation techniques need to properly account for this issue through a weighted regression.

[4] Our 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)). We only partially account for exchange rate uncertainty by controlling for the common currency dummy. 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.

Alternative regression approaches, such as Tobit or standard ordinary least squares (OLS), are considered as robustness checks of our findings, which appear quite stable across different estimation techniques.

3.2 Testable implications

If our findings are in line with the existing literature, we should expect a positive coefficient δ^K and a negative coefficient β^K. Leuz et al. (2009), among others, highlight that destination country corporate governance (ADR) helps foreign investors reduce the informational gap with respect to local investors. To conjecture on the impact of domestic investor protection (ADR) on foreign bias, we rely on Giannetti and Koskinen (2010). These authors derive a model where, for a given wealth distribution, participation in the domestic stock market is lower in countries with poor investor protection because they offer lower security returns. This finding implies that portfolio investors from countries with weak investor protection invest abroad more than those from countries with stronger investor protection.

The literature is not helpful, however, in formulating predictions of the sign of the coefficient γ of the interaction term between ADR and ADR . If the null hypothesis of $\gamma = 0$ is not rejected by the data, we would infer that the same regression slope δ^K holds across investing countries featuring different levels of the internal protection of minority investor rights. The alternative hypothesis to the null $\gamma = 0$ can a priori have either sign. A coefficient $\gamma > 0$ could be interpreted as follows: Investors enjoying stronger governance rules at home are more sensitive to corporate governance when allocating their foreign portfolio. Conversely, a coefficient $\gamma < 0$ would suggest the opposite scenario: A high standard of corporate governance at home makes investors less sensitive to investor protection when choosing foreign investments. Our analysis is mainly aimed at establishing which of these two interpretations is validated by the data.

4 Data and descriptive statistics

4.1 Data

We analyze foreign portfolio investments in equities over the period 2001-2006. We adopt the Coordinated Portfolio Investment Survey (CPIS) dataset, released by the IMF, which has been used in many recent papers (Fidora et al. (2007); Lane and Milesi-Ferretti (2007); Sorensen et al. (2007); Foad (2011); Giofré

(2013)).[5] This survey collects security-level data from the major custodians and large end-investors. Portfolio investments are broken down by instrument (equity or debt) and the issuer's residence, the latter providing information on the portfolio investment destination.[6]

The CPIS survey is available for more recent years. We chose, however, to limit our sample to the pre-financial crisis period as we thought that properly dealing with the crisis would deserve a separate, more thorough investigation.

The sample of countries we mainly rely upon consists of 14 major investing countries-Austria, Belgium, Canada, Denmark, Finland, France, Germany, Italy, Japan, the Netherlands, Spain, Sweden, the United Kingdom, and the United States—and 20 destination stock markets–Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Italy, Japan, Korea, Mexico, the Netherlands, Portugal, Singapore, Spain, Sweden, the United Kingdom, and the United States. This sample is labeled the "main" sample throughout the paper and was mainly selected according to the criterion of data reliability.[7] Even though our investment opportunity set is restricted to 20 out of the more than 200 countries available in the CPIS dataset, excluded countries cover, on average, less than 3 percent of total stock market participation. In Section 5.2, we run robustness checks with a larger, though less reliable, sample to dispel the legitimate doubt that the non-random "main" sample can produce biased results.

The dependent variable and the full set of regressors included in the analysis are discussed below and described in detail in Appendix B.

4.2 Descriptive statistics

4.2.1 Regressors

Table 1 shows descriptive statistics of the main regressors included in our specification. The first three regressors capture the main variable of interest and measure the degree of protection of minority shareholder rights. The introduction of the LLSV ADR index, aimed at quantifying legal rules, constituted a

[5] The CPIS survey is now available for more recent years. However, since the number of observations is sufficient to provide consistent estimates, we limit our sample to the pre-financial crisis period. Properly dealing with the crisis would entail taking into account its asymmetric effect on different economies, according to the evolution of the contagion. This important issue obviously deserves a separate, more thorough investigation.

[6] 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 for more details on the survey.

[7] As is common practice, Switzerland and Ireland are excluded from the sample because the international finance literature considers them mainly off-shore financial centers. They enter our analysis, however, for robustness checks, when the sample is enlarged to include all available observations ("full" sample).

pathbreaking innovation and was widely influential, leading to the publication of over a hundred empirical papers. For comparability with previous works, we also adopt this index in our robustness checks. However, this index has been severely criticized for its ad hoc nature, mistakes in its coding, and, most recently, conceptual ambiguity in the definitions of some of its components (Pagano and von Thadden (2005); Spamann (2010)). Subsequently, new versions of antidirector rights have been developed to address these criticisms, in particular, the "revised" ADR index (Djankov et al. (2008)) and the "corrected" ADR index (Spamann (2010)). Though we test the robustness of our findings under all three definitions of minority shareholder protection, we opt for the revised ADR as the principal index for two reasons. First, it allows comparing our findings on foreign investment with the results of Giannetti and Koskinen (2010), the paper most closely related to ours; second, it is the index that allows for greater coverage of countries in our robustness checks.

The other regressors represent the set of controls. The first three controls are time-varying institutional variables drawn from the Wold Bank's Worldwide Governance Indicators (WGI). In particular, we include, among these indexes, variables for political stability, the control of corruption, and the rule of law. Three time-invariant country governance variables drawn from LLSV are also adopted as alternatives: the control of risk of expropriation, accounting standards and the efficiency of the judicial system. The last variable captures capital mobility, that is, restrictions to the inflow and outflow of capital, and is obtained from the Economic Freedom Network.

It is worth stressing that the absolute magnitude of the variables included does not affect per se the size of the corresponding coefficients, since all variables, for consistency with the analytical framework, enter our regression specification in relative terms.

4.2.2 Preliminary statistics

Strong investor protection, by promoting inward investment and discouraging outward investment, should be negatively correlated with net asset positions. The antidirector rights index measures the degree of protection of minority shareholders. This effect should therefore be detected when analyzing portfolio investments rather than direct investments and equity assets rather than fixed-term securities. If we find this relation to hold not only for equity portfolio investments but also for other financial instruments, the doubt of a spurious relation, would legitimately arise.

In Table 2 we first compute the correlation between foreign direct investments and domestic investor protection (column (a)). The influence of legislation protecting minority investors is expected to be null

and, indeed, the correlation is non-significant. When considering, in column (b), net foreign portfolio investments–including both fixed-term securities and equities–the negative correlation results again not statistically significant. Finally, when viewed from the net foreign portfolio equity position, the financial aggregate directly influenced by ADR according to our thesis, the correlation becomes more negative and statistically significant.

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

4.2.3 Dependent variable: Foreign bias

Table 3a 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 the domestic share to the market share: A value larger than one would signal a disproportionate investment in domestic assets. As expected, all countries display home bias. The pervasiveness and magnitude of home bias point to 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 portfolios, with Austria and the Netherlands as the only exceptions.[8] Since our focus is on foreign portfolio investment, we report in column (c) of Table 3a the overall foreign bias, that is, the ratio between the foreign share (one minus the actual home share) and the foreign market share (one minus the home market share). Column (d) shows the revised ADR index associated with 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 overall foreign bias. We report statistically significant correlation coefficients in boldface. Consistent with Giannetti and Koskinen (2010), countries with stronger shareholder rights protection show portfolios more concentrated in domestic assets (column (a), $p = 0.524$) and lower overall foreign bias than countries with weaker protection (column (c), $p = -0.575$).

[8] We 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.

We then devote our attention to foreign portfolio composition, computing the bilateral foreign bias as the ratio of the actual share to the market share, following equation (1). In Table 3b we report in columns (a) and (b), respectively, the average foreign share and the corresponding fraction of world stock market capitalization. Column (c) shows the average bias in several destination countries, obtained by averaging the foreign bias across investing countries. To provide an economic interpretation for this measure, consider that an average foreign bias in country j equal to one implies that country j's assets enter foreign portfolios with an average weight equal to country j's stock market share. The pervasive evidence that the average foreign bias is almost always below unity-that is, evidence that foreign assets are generally underweighted-is the mirror image of the strong home bias that can be read from Table 3a. Beyond this common picture, a notable degree of heterogeneity in bias toward various foreign assets emerges: There must exist country-specific factors-among which are investor protection laws—that make some countries more attractive than others to foreign investors.

The foreign bias ranges from 0.118 for Canada to 1.089 for Sweden, which, along with Finland, are the only countries that are 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 Lane and Milesi-Ferretti (2007) and Balta and Delgado (2009), 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 foreign bias around the average, a measure providing information on the dispersion of the foreign bias across investing countries. The degree of dispersion is quite large, since the standard deviation is almost 90 percent of the average bias for stocks: Investing countries' specificities must therefore affect international diversification patterns.

The correlation coefficient between the revised ADR index and the statistics reported in columns (a)-(d) is negative but not statistically significant, notwithstanding the strongly negative and significant correlation coefficient with overall foreign bias shown in Table 3a (column (c)). This finding suggests that the effect of investor protection on international portfolio diversification is far from trivial and needs to be properly captured in a multivariate setting.

5 Results

Our analysis aims to detect the determinants of the wedge between foreign portfolio investment and stock market share (w / M). 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 therefore cannot be held by foreign investors. This induces a measurement error in the size of domestic and foreign bias that was neglected by previous literature. The authors construct a world fioat portfolio that considers only shares that can actually be held by investors by correcting for the fraction of closely held shares. In our analysis, we consider the fraction of closely held shares as exogenous, correct the asset supply, and compute the corrected bias measure accordingly. In regressions, the share in the world float portfolio replaces the market share as the denominator of the foreign bias measure, our dependent variable.

5.1 Main findings

In column (1) of Table 4, we report the results from a regression including the main variable of interest in this paper, the domestic level of investor protection (ADR), as the only covariate (with the exception of time dummies). Unless otherwise specified, hereafter ADR indicates the revised ADR (Djankov et al. (2008)) in relative terms, that is, scaled by its world average.

The coefficient is negative and statistically significant (-0.289), consistent with the findings reported by Giannetti and Koskinen (2010). Since this factor is time invariant, it cannot be identified if fixed investing-country effects are accounted for. Therefore, this coefficient captures all factors that are specific of the investing country. To disentangle the role of ADR , we must therefore control for other investing country-specific factors and other drivers of international investors.

Even though the model specification of Giannetti and Koskinen (2010) is quite different from ours and their analysis cannot be fully replicated in our setting, we follow their specification as far as possible to enable a more direct comparison with their findings. In particular, Giannetti and Koskinen (2010) consider, beyond the investor protection rights index, the distance between investing and destination countries, an index of capital mobility and other institutional controls: In column (2) of Table 4, we then report our results under such a specification involving the above-mentioned regressors.

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)). The variable

distance is measured as the great-circle distance between the capital cities of the destination and investing countries. Since transactions in financial assets are "weightless", a role for distance can be found only if it has informational content (Portes and Rey (2005)). Institutional barriers to capital mobility can deter investors from investing in foreign countries. The strand of literature trying to explain the lack of portfolio diversification through the existence of barriers to international investment dates back to contributions by Black (1974), Errunza and Losq (1981), and Stulz (1981). Since the relaxation of capital controls over the last decades has not induced a significant parallel drop in home bias, the direct transaction cost explanation has been considered inadequate (Ahearne et al. (2004)). However, there could be institutional linkages between the openness of capital markets and the development of investor protection in a given country and this correlation could bias our results. We control for this possibility by accounting for inward and outward capital mobility proxied by an index measuring the restrictions imposed by different countries on capital flows derived from the Economic Freedom Network (e.g., Chan et al. (2005) adopt the same index). This index (from zero to 10) measures the restrictions countries impose on capital flows, assigning a lower rating to countries with more restrictions on foreign capital transactions.

Finally, in column (2) of Table 4, for comparability with Giannetti and Koskinen (2010), we control for institutional factors, specific of the investing country, that are potentially correlated with ADR and which, if omitted, can bias the coefficient of ADR . Previous literature has documented that fraudulent transactions, bribery, unenforceable contracts, and legal and regulatory complexity can significantly affect portfolio investment (Gelos and Wei (2005); Leuz et al. (2009)). We consider institutional indicators drawn from the WGI (World Bank), available annually since 1996, allowing us to introduce time-varying country controls. In particular, we include indexes capturing political stability, the control of corruption, and the rule of law variable. The first index captures perceptions of the government's ability to formulate and implement sound policies and regulations that permit and promote private sector development. The second variable captures perceptions of the extent to which public power is exercised for private gain. The third index captures perceptions of the quality of contract enforcement, property rights, the police, and the courts.[9]

After distance, capital mobility, and investing country factors are controlled for, the coefficient of ADR remains negative and statistically significant, in line with Giannetti and Koskinen (2010), although its size is reduced to -0.121.

However, the literature has emphasized the importance of other determinants of international portfolio

[9] For the sake of brevity, the coefficients of these controls are not explicitly reported.

holdings. For consistency with the literature on gravity models, we first include in column (3) of Table 4, beyond distance, also common border, common language, and colonial dummies. Many empirical contributions indeed 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 common border (language) dummy takes the value one if the investing and destination country share a common border (language) and zero otherwise. A role for the border dummy can be found insofar as this variable is considered to correct the distance variable. A common language can encourage investment, since foreign languages make collecting information more difficult. Finally, to capture cultural and/or historical ties, we check whether countries are tied by colonial heritage. The dummy common colony variable takes the value one if the considered pair of countries shares a similar colonial history. These variables play an economically and statistically significant role in explaining the dependent variable, with the common border dummy having a particularly strong impact (0.650).[10]

We then account, in column (3) of Table 4, for other variables capturing bilateral-specific linkages, namely, the common currency area of the European Monetary Union (EMU), and common legal origin. The EMU dummy takes the value of one if the investing and destination countries are EMU members and zero otherwise. The coefficient is positive and significant: EMU membership increases portfolio shares by 0.330. Our findings are qualitatively consistent with the evidence of Lane and Milesi-Ferretti (2007) and Balta and Delgado (2009), who find a notable increase in foreign investments in the euro area by EMU countries due to monetary integration.

Finally, sharing the same legal origin might encourage cross-border investment, since there is less fear of unknown factors (Vlachos (2004); Lane (2006); Guiso et al. (2009)). We include a dummy variable that takes the value of one if the investing and destination countries share the same legal family (English, French, German, or Scandinavian) and zero otherwise. This dummy variable has a positive and significant impact, increasing the foreign bias by almost 0.094.

The inclusion of these controls is demonstrated as crucial: On the one hand, it doubles the adjusted-R^2 of the regression (from 0.22 to 0.45); on the other hand, it further decreases the size of the ADR coefficient, making it no longer significant.

In column (4) of Table 4, we include the destination country's ADR ($ADR^{}$): Its coefficient is not statistically different from zero and the significance of the ADR coefficient is not restored. Note that these are

[10] Note that the statistical significance of the colonial dummy becomes more stable when considering the full sample.

the coefficients' estimates of a regression specification, where an equal coefficient for ADR across investing countries is assumed. The strong heterogeneity of portfolio holdings across investing countries, which emerges in the descriptive statistics commented upon above, suggests, however, a divergent evaluation of the same asset characteristics, not only between foreign and domestic investors, but also among foreign investors. We conjecture that the non-significant coefficients of ADR and ADR hide a notable heterogeneity across investing countries and we argue that the degree of ADR enjoyed at home by investors (ADR) can be pivotal in explaining this evidence.

To test this conjecture, we check if the impact of ADR differs among foreign investors and, more specifically, if the different attractive force exerted by ADR on foreign investments depends upon the level of ADR . In column (5) of Table 4, we report the results from a regression specification that includes both the ADR index of the destination country (ADR) and its interaction with a dummy variable (dum_high_ADR), which takes on the value of one if the investing country ADR is higher than the average (4.22) and zero otherwise. In this specification, the absence of the ADR variable as a separate regressor allows us to control for investing country-specific effects that also capture, for instance, cross-sectional differences in wealth. In the model developed by Giannetti and Koskinen (2010), differences in wealth indeed generate different allocations between foreign and domestic portfolio investors and, importantly, can determine different incentives to invest domestically and abroad for investors with various degrees of investor protection at home. The coefficient of the ADR factor is quite high and significant (0.448) and reflects the impact of country **j**'s ADR when dum_high_ADR is equal to zero, that is, when ADR is below average. The negative coefficient of the interaction variable (-0.512) stresses that the higher ADR , the less important the role of foreign corporate governance in determining foreign investment.

The positive and significant coefficient of ADR is consistent with recent evidence reported by Kho et al. (2009), Leuz et al. (2009), Giannetti and Koskinen (2010), and Thapa and Poshakwale (2011). [11] Specifically, we find that increasing the ADR index by one with respect to the average induces a 0.448 increase in foreign bias.

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 their evaluation of the same

[11] It is worth noting that the endogeneity critique often raised against LLSV is much less of an issue here. For LLSV, the direction of causality between investor protection laws and the 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 the bilateral portfolio position and the market share, and the direction of causality, if any, arguably goes from investor protection to portfolio bias rather than vice versa.

factor; that is, they evaluate investor protection rights asymmetrically. This outcome can be easily rationalized from a foreign investor's perspective because, as the literature shows, foreign investors are more severely affected by information asymmetry (Leuz et al. (2009)). Such investors plausibly perceive assets as riskier 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.

In column (6) of Table 4, we consider the ADR index for both the investing and destination countries and their interaction term (ADR · ADR). We find that, controlling for proximity factors, the coefficient of the ADR index is positive and statistically significant (β^{K} 0.403), the coefficient of the ADR variable (θ^{K} 0.303) is still positive and statistically different from zero, while the coefficient of the interaction term (ADR · ADR) is negative and statistically different from zero (ζ −0.417). In column (7), we report the corresponding results under a full regression specification, that is when controlling for time-varying institutional variables both at the investing- and at the destination-country levels (β^{K} 0.384, θ^{K} 0.451, ζ −0.599). These findings provide original evidence of the role of ADR on international portfolio diversification: The impact of the investing country's investor protection on foreign bias is definitely positive for ADR equal to zero and its impact decreases as long as ADR increases.

The hypothesis of r 0 is rejected by the data in support of the hypothesis of a negative coefficient. This finding is confirmed in column (7a) of Table 4, where the time-varying country factors are replaced by time-invariant variables. In so doing, on the one hand, we lose the time variability; however, on the other hand, we might be able to better control for confounding factors and capture the role of investor protection, which is time invariant as well. We account for institutional variables that capture the soundness of the economic environment. The first one is related to (the control of) expropriation risk, while the second one captures the transparency of accounting rules. Control of the risk of expropriation captures a government's 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 investments relative to benchmark indices. Finally, a solid system of legal enforcement could substitute for weak "laws on the books": Active and well-functioning courts can serve as a recourse for investors aggrieved by management (LLSV). The signs and statistical significance of the coefficients of our variables of interest are maintained.

The impact of ADR is significantly lower for investing countries with stronger investor protection legislation. This finding lends support to the interpretation that investors aim to reach an optimal level

of corporate governance in their overall portfolios. With diminishing returns on corporate governance and exogenous domestic position, a high standard of corporate governance at home makes investors less sensitive to the issue when choosing foreign investments and thus less hostile to weak investor protection. An interesting implication of this evidence is that foreign destination countries with higher ADR values are those more penalized in the portfolios of investors enjoying higher protection at home.

5.2 Robustness (I): Sample size and estimation techniques

In Table 5 (columns (1)-(3)), we check the validity of our findings for different country samples. For ease of comparison, in column (1) we report the results from column (7) of Table 4. First, in column (2), we drop Hong Kong and Singapore from the opportunity set to control for explicit or implicit restrictions on non-OECD foreign investments, especially for pension funds and life insurance companies.[12] Finally, we consider in column (3) the largest possible sample allowed by data availability (full sample), which includes 20 investing countries and 45 destination countries.[13] With the caveat on data reliability already discussed above, we show that our findings are robust to these sample selection checks: We document a remarkable reduction in the size of the relevant coefficients when considering the full sample, but the signs and statistical significance are preserved.

Columns (3a) and (3b) of Table 5 test the robustness of our findings to estimation techniques alternative to feasible GLS. Since in the full sample a large number of bilateral observations is equal to zero, we implement a Tobit regression to allow for the possibility that the observed distribution of equity holdings is censored at zero.[14] Such censoring is plausible, given the restrictions on shorting equity holdings in many countries (Lane and Milesi-Ferretti (2007)). Note, however, that the CPIS dataset also reports (very few) negative holdings, which are excluded from this analysis.[15] The results under this alternative regression technique confirm our previous findings. In column (3b) we also run a standard OLS regression with White heteroskedasticity-consistent standard errors and the significance of the estimated coefficients is unaffected.

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

[13] The destination countries included in the full sample are: Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Denmark, Egypt, Finland, France, Germany, Greece, Hong Kong, India, Indonesia, Ireland, Israel, Italy, Japan, Jordan, Malaysia, Mexico, the Netherlands, New Zealand, Norway, Pakistan, Peru, Philippines, Portugal, Singapore, South Africa, South Korea, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Thailand, Turkey, the United Kingdom, the United States, Venezuela, Zimbabwe.

[14] Note that right-censoring is not an issue in our setting because our dependent variable is foreign bias (not foreign portfolio share), which is unbounded from above.

[15] While there are more than 300 zero observations, negative holdings number fewer than 20.

5.3 Robustness (II): ADR indexes

We also check the validity of our findings under alternative specifications of protection rights indexes. This is necessary both because ADR is a crucial variable in the paper and because, as shown in Figure 1, there are substantial differences between the three indexes.

Spamann (2010) finds that the differences between the corrected and the original values are such that many empirical results established using the original LLSV indexes may not be replicable with the corrected values. Consequently, our results could also be invalidated by the use of alternative indexes.

Table 6 reports results in which the original LLSV ADR index (columns (1) and (2)) and the Spamann ADR index (columns (4) and (5)) replace the revised ADR index (columns (1) and (3) in Table 5). We calculate estimates from the three indexes for the main and full samples.[16]

Interestingly, in our analysis, alternative indexes do not deliver dramatically different results as in other empirical works. The graph in Figure 1 can be helpful in illustrating the rational of this outcome. Figure 1 reports the relative ADR index, which is the index scaled by its world average (a value equal to one on the y-axis signals that the index is equal to the average), and shows how remarkably these three indexes differ for the countries included in our sample.

We identify the countries whose ranking in terms of minority shareholder protection changes more drastically from the original LLSV ADR index to the new indexes. We note that three countries-France, South Korea, and the United States-were classified below (or above) the average in the original classification of LLSV and have switched to above (or below) the average for the revised versions of the index (revised or Spamann ADR). A consistent part of the literature spurred by the seminal paper of LLSV generally investigates the linkage between ADR and financial market development, often using the countries' legal origin as an instrument to retrieve consistent estimates. The fact that France and Korea, both civil law countries with modest stock market capitalization relative to their GDP, have been upgraded to above average ADR and, even more importantly, the fact that the United States, a common law country with high stock market capitalization relative to their GDP, has been downgraded to below average ADR may have significantly contributed to the invalidation of previous findings.

We document that the linkage between ADR and our dependent variable, that is, the wedge between actual foreign investment and that predicted by market share, also holds under the choice of the original

[16] The number of observations in the full sample differs across ADR indexes: 4609 for the revised ADR, 4501 for the LLSV ADR index, and 4233 for the Spamann ADR index.

LLSV ADR index. To further support this conjecture, we run a regression that excludes France, South Korea, and the United States from the full sample ("full_test", columns (3), (6), and (7) in Table 6): When comparing these columns with the corresponding full-sample ones, we observe that our findings are substantially unaffected by the exclusion of the three countries for all ADR indexes considered.

5.4 On the interaction between domestic and foreign ADR

To understand in more detail the effect of investor protection on foreign portfolio investment, we analyze in Tables 7, 8a, and 8b the statistical and economic impacts of ADR and ADR on foreign investment, taking into account their interaction.

Specifically, in Table 7 we estimate the range of ADR , over which the investor's ADR negatively (positively) influences foreign bias, by analyzing the overall impact of ADR on foreign bias. The negative interaction effect between ADR and ADR can be read in terms of a twofold effect of domestic investor protection: On the one hand, it directly enhances foreign investment; on the other hand, it indirectly dampens the positive effect of ADR . To capture the overall impact, we need to find the value $\overline{ADR}$ at which these two different forces offset each other. It is the value of ADR such that

$$\beta^{K} ADR + r ADR \cdot ADR \quad ADR \,(\beta^{K} + r ADR) \quad 0 \quad \overline{ADR} \quad -\beta^{K}/r \qquad (3)$$

Recalling that the ADR index enters our regression in relative terms-that is, as a ratio to the world average-we can infer the threshold level ADR^{*} such that $\overline{ADR} \quad \frac{ADR^{*}}{g}$. For ADR $> ADR^{*}$, foreign assets are relatively more present in portfolios held by investing countries with a low ADR than in those of investing countries with a higher ADR .

If ADR^{*} goes above (below) the range of observable ADR values, then good corporate governance countries will hold, on average, more (fewer) foreign assets in portfolios, regardless of the type of country issuing them. In particular, an ADR^{*} value below the range would be in line with Giannetti and Koskinen (2010). In this case, we would record a generally lower foreign investment induced by greater domestic investor protection. Our contribution would then be confined to highlighting different levels of responsiveness to foreign corporate governance by investors acquainted with various levels of domestic protection, which, in turn, generates differences in foreign portfolio composition.

If, instead, ADR^{*} falls within the range, then our contribution would be much more suggestive: A higher

ADR , other things being equal, determines a higher foreign bias in countries with relatively weak investor protection and a lower foreign bias in countries with stronger minority shareholder rights protection.

To discriminate between these two cases, we need to estimate $\overline{ADR}\ -\beta^{K}/r$, as in equation (3). Since it is a function of estimated parameters, we need to construct the confidence interval for this point estimate to test whether ADR^{*} is significantly different from zero and thus provide support for either of the two hypotheses.

$\overline{ADR}$ is distributed as follows:

$$\overline{ADR} \qquad (-\beta^{K}/r \quad) \tag{4}$$

where is derived following the delta method.[17]

Since regressors enter in relative form in our specification, (4) provides the distribution of the antidirector rights index relative to the average. We retrieve the threshold as the original ADR^{*} value and consistently derive the relative standard errors.

We show in Table 7 ADR^{*}, with relative standard errors in parentheses, across various samples and ADR specifications: This threshold level falls within the range, being significantly higher than zero and different from the lower bound for the three indexes considered.[18]

Finally, in Figure 2, we provide a graphical representation of the overall impact of relative ADR on foreign bias, taking into account the interaction between ADR and ADR . The graph plots the bilinear form involving foreign bias and the two ADR indexes over the relevant domain, using the regression coefficients in Table 4, column (7).

To provide a taste of the economic relevance of the phenomenon, we show in Tables 8a and 8b the effect of ADR on portfolio shares. Table 8a reports the portfolio composition (relative to the year 2006) for a few illustrative cases. We consider the portfolio weightings (w) of five investing countries (Italy, the Netherlands, Austria, Spain, and the United Kingdom) in eight destination countries (Italy, Portugal, the Netherlands, Austria, the United Kingdom, Spain, Hong Kong, and Singapore), all featuring extreme levels of revised ADR (L countries feature Low rev_ADR index, ranging from two to 2.5; H countries feature

[17] See, for example, Weisberg (Weisberg) for a description of the delta method.

[18] Considering the rev_ADR index, the threshold level for the main sample is different from the lower bound (2) at the 5% confidence interval level. The corresponding threshold level for the full sample is larger than the upper bound (5). However, this estimate is quite imprecise (standard error equal to 1.3): Both the hypotheses of a threshold equal to five and equal to four cannot be rejected at the 10% confidence interval level.

High rev_ADR index equal to five).[19] We report the float-market shares (M) of the destination countries considered and their sum, by block (L countries, H countries). We compute the mean portfolio weights for each destination country j, that is, the average investment across various investing countries, and report their sum, by block (e.g., sum LH is the sum of the mean portfolio weights held by L investing countries in H destination countries), and the corresponding portfolio bias in parenthesis (w/ M).

First, we note that, as far as the countries included are concerned, the market share of countries with very high standards of corporate governance is almost four times larger than that of countries featuring weak minority shareholder protection. Second, while both blocks of investing countries –L and H– invest a larger portfolio share in highly protective countries, this difference is more marked in the case of L investing countries: These invest 5.8% of their overall portfolio in H countries and 3.0% in L countries, while H investing countries invest 2.3% in H countries and 2.1% in L countries.

These figures need to be properly interpreted. First, countries with a higher market share must be, all other things being equal, more present in portfolios,which is in fact observed in the data. To account for this size effect, we consider, as in the econometric analysis, the ratio between the portfolio holding and the market share (w/ M), reported in parentheses after the sum of each block. After this normalization, we find that, consistent with our predictions, L investing countries invest more than H investing countries in H destination countries, but, contrary to our predictions, L investing countries invest more than H countries also in L destination countries. These findings would support the results in Giannetti and Koskinen (2010), since H investing countries would appear as those displaying lower foreign investments, irrespective of any peculiar characteristic of the foreign country considered.

However, as underlined above, factors other than investor protection indexes can play an important role in explaining the portfolio weightings. For instance, let us consider the relatively high portfolio share invested by L investing countries in L destination countries, countering our model's prediction. The statistic sum LL amounts to 3.0%, while sum HL is 2.1%: One can easily guess that the common currency dummy is likely largely responsible for this piece of evidence, since all L investing countries are EMU members while, among H investing countries, only Spain is. Similarly, the colonial link between the United Kingdom and Hong Kong and Singapore presumably boosts the portfolio share of H investing countries in H destination countries.

[19] Note that this table considers all countries belonging to the main sample, which feature the minimum and maximum levels of ADR. We need to consider countries taking values of rev_ADR equal to two and 2.5 to ensure sufficient variability: Italy is indeed the only investing country taking the lowest value (two).

To properly disentangle the role played by investor protection in shaping different portfolio allocations, we therefore need to capture its effect on top of the influence of competing factors. In Table 8b, we compute a table analogous to Table 8a, where the observed portfolio holdings (w) are replaced by the portfolio weightings ($\hat{w}$) predicted by corporate governance, ADR_i, ADR_j, and their interaction term, as obtained from the multivariate regression specification in column (7) of Table 4. These weightings are obtained by computing $\left| \hat{\alpha}^{K} + \hat{\beta}^{K} ADR_i + \hat{\gamma}^{K} ADR_j + \hat{\delta} ADR_i \cdot ADR_j \right|$ for each country pair in the table. Since the coefficient estimates refer to an econometric specification that controls for other drivers of international portfolios, we expect these predicted portfolio shares to provide illustrative examples of the economic importance of corporate governance in our analysis.

This is indeed the case. As in Table 8a, both blocks of investing countries allocate larger portfolio shares in H destination countries, featuring larger market shares. When normalizing for the market share (predicted foreign bias in parentheses), however, the statistics confirm the expectations: H investing countries invest more in L destination countries and L investing countries invest more in H destination countries. In particular, we observe that L investing countries display a 25 percent higher predicted foreign bias in H destination countries than in L destination countries.(0.35 versus 0.28). Conversely, H investing countries show a 53 percent lower foreign bias in H destination countries than in L destination countries (0.15 versus 0.32).

When considering the investments in given destination countries made by different investing countries, being the market share constant, we can directly compare predicted portfolio shares. All ADR–predicted portfolio shares in Table 8b fall below the corresponding actual shares in Table 8a, but the width of the decrease differs across investing countries: The aggregate portfolio share sum LL predicted by corporate governance (1.0%) is far below that observed in the raw data (3,0%) while the reduction is more modest for the share sum HL (from 2.1% to 1.2%), thus showing that factors other than corporate governance play a more important role in the investments of L investing countries in L destination countries. The relative reduction of portfolio share in H destination countries is instead quite similar across investing countries (sum LH from 5.8% to 4.9% and sum HH from 2.3% to 2.0%), thus reflecting a more even impact of confounding factors on investments in H destination countries.

We also note that while the wedge in investment in L destination countries is modest across investing countries and, as shown, strongly dependent on other controlling factors, the distance in the portfolio share invested in H countries is quite large and mostly independent of controls. Both Tables 8a and 8b indeed

show that investors benefiting from very strong protection at home invest in highly protecting countries a portfolio share that is 60% lower than the corresponding share of investors residing in weakly protecting countries (2.0% versus 4.9% in Table 8b, 2.3% versus 5.8% in Table 8a).

If the sensitivity of foreign investment to ADR is dampened by the level of ADR, then ADR loses its signaling role for investors residing in highly protecting countries. This turns out to marginally benefit destination countries with a lower ADR, but more evidently damages countries with a high ADR, which are heavily underweighted in their portfolio.

6 Summary and conclusions

This paper investigates the impact of domestic investor protection laws on foreign equity portfolios. We bring to light the lower sensitivity of foreign investment to destination countries' corporate governance for those investors enjoying a higher degree of investor protection at home. Investors who benefit from strong domestic legislation favoring minority shareholders are less demanding about corporate governance in foreign countries when choosing their diversification patterns.

This evidence suggests that investors aim for an optimal level of investor protection in portfolios. With diminishing returns on corporate governance and exogenous domestic position, a high standard of corporate governance at home makes investors less sensitive to the issue when choosing foreign investments and thus less hostile to weak investor protection. An interesting unintended effect of this phenomenon is that destination countries with a higher ADR index are penalized more in the portfolios of investors enjoying stronger domestic protection. Hence, for these investors, compared to those enjoying weaker investor protection at home, domestic investment turns out to more severely crowd out investments in strongly governed foreign countries. More precisely, the lower overall foreign investment of strongly governed countries highlighted in the recent literature (Giannetti and Koskinen (2010)) hides a peculiar allocation of the foreign portfolio: All other things being equal, countries with stronger investor rights protection invest less in countries with governance standards above the median.

Importantly, this effect is also economically relevant. When considering portfolio allocations in different destination countries, the corresponding market shares must be properly accounted for and any comparison should rely on foreign bias statistics: Investing countries with weak investor protection display a 25% larger foreign portfolio bias in highly protecting countries than in less protecting ones while investing countries

with high standard of corporate governance show a 53% lower foreign portfolio bias in highly protecting countries than in less protecting ones. When comparing, instead, portfolio allocations in the same destination countries made by different investing countries, being the market share dimension constant, we can directly focus on portfolio share. The portfolio share invested in countries more protective of shareholder rights is up to 60% lower for investing countries featuring high standards of corporate governance, compared with investing countries with weak minority shareholder protection. These results represents the main innovative contribution of this paper and shed new light on the linkage between investor protection and international portfolio diversification and, more broadly, on the determinants of foreign portfolio allocation.

Studying how investor protection rights affect incentives to diversify abroad has 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, makes resident investors acquainted with higher standards of investor protection tilt their portfolios toward foreign countries with poorer corporate governance. Our work is limited to the detection of the effect of investor protection rights on cross-border investments. A more comprehensive welfare analysis is encouraged to derive sounder conclusions on the desirability of stronger investor protection to enhance global international portfolio diversification. Moreover, by extending the sample period after 2006, further research would allow to investigate the evolution of these newly discovered portfolio relationships in the post-financial crisis period.

Table I. Regressors: Descriptive statistics

This table reports descriptive statistics, averaged across countries, relative to the regressors included in the analysis. Source: LLSV, Djankov et al. (2008), Spamann (2010), Aggregate Governance Indicators (World Bank), Economic Freedom Network

	Regressors				
	mean	median	st.dev	min	max
LLSV ADR index	3.0	3.0	1.5	0.0	5.0
revised ADR index	3.7	3.5	0.9	2.0	5.0
Spamann corrected ADR index	4.1	4.0	1.0	2.0	6.0
control of corruption	4.1	4.4	0.7	2.1	5.1
rule of law	3.9	4.1	0.6	2.0	4.4
regulatory quality	3.9	4.0	0.4	2.8	4.4
control of risk of expropriation	9.3	9.6	0.7	7.3	10.0
accounting standards	66.3	64.5	10.4	36.0	83.0
efficiency of judicial system	8.8	9.8	1.7	5.5	10.0
capital mobility	7.1	7.3	1.4	3.7	9.6

Table 2. Financial aggregates and investor protection

This table reports different financial aggregates (in millions of US dollars) by investing countries, reported by row. Column (a) reports the net position in foreign direct investments (FDI). Column (b) reports the net position in foreign portfolio investment (FPI). Column (c) shows the net FPI equity position. Finally, column (d) reports the antidirector rights index following Djankov et al. (2008). The figures in bold refer to statistically significant correlation coefficients.

Source: CPIS (IMF), International Financial Statistics (IMF), International Direct Investments (OECD), Datastream (Thomson Financial), and Djankov et al. (2008).

	Financial aggregates			
	Net FDI	Net FPI	Net FPI equity	rev_ADR
	(a)	(b)	(c)	(d)
Austria	4.85E+03	-9.40E+04	7.34E+03	2.5
Belgium	4.79E+05	2.91E+05	1.47E+05	3
Finland	-7.36E+05	-8.92E+04	-6.87E+04	3.5
France	-2.84E+08	-1.62E+02	-1.77E+02	3.5
Germany	-8.61E+08	-3.85E+02	2.12E+02	3.5
Italy	2.92E+05	-3.41E+05	1.67E+05	2
Netherlands	8.87E+04	-9.54E+04	-1.29E+04	2.5
Spain	5.45E+05	-3.79E+05	-1.27E+05	5
Canada	5.75E+05	-1.70E+05	1.01E+05	4
Denmark	1.75E+05	-2.44E+04	3.75E+04	4
Japan	-2.85E+08	7.10E+02	-4.30E+02	4.5
Sweden	8.11E+04	-6.82E+04	3.81E+03	3.5
United Kingdom	-2.84E+08	-2.49E+02	-1.67E+02	5
United States	-2.82E+08	-2.88E+03	7.60E+02	3
	(a;d)	(b;d)	(c;d)	
correlation	-0.081	-0.035	-0.492	

Table 3a. Overall foreign bias and ADR: Descriptive statistics

This table reports the domestic share, the market share, and the overall foreign bias of each investing country. The reported figures are averages over the period 2001-2006. The overall foreign bias in column (c) is computed as the ratio of the foreign share (one minus the domestic share reported in column (a)) to the foreign market share (one minus the domestic market share), that is, (c) $\frac{1-(a)}{1-(b)}$. The index _ADR reported in column (d) captures antidirector rights following Djankov et al. (2008). The figures in bold refer to statistically significant correlation coefficients.

Source: CPIS (IMF), Datastream (Thomson Financial), and Djankov et al. (2008).

	Overall foreign bias			
	actual home share	home market share	overall foreign bias	rev_ADR
	(a)	(b)	(c)	(d)
Austria	0.362	0.002	0.639	2.5
Belgium	0.509	0.007	0.495	3
Finland	0.603	0.006	0.400	3.5
France	0.681	0.046	0.335	3.5
Germany	0.502	0.035	0.515	3.5
Italy	0.629	0.023	0.379	2
Netherlands	0.289	0.019	0.725	2.5
Spain	0.772	0.018	0.232	5
Canada	0.825	0.029	0.180	4
Denmark	0.554	0.004	0.447	4
Japan	0.709	0.107	0.326	4.5
Sweden	0.550	0.010	0.454	3.5
United Kingdom	0.652	0.087	0.381	5
United States	0.814	0.436	0.330	3
	(a;d)	(b;d)	(c;d)	
correlation	0.524	-0.020	-0.575	

Table 3b. Foreign bias and ADR: Descriptive statistics

This table reports the average foreign share, the market share, the average foreign bias, and the standard deviation of portfolio equity bias displayed by the 14 investing countries in each destination country index (by rows) included in the opportunity set. Column (e) shows the index _ADR capturing antidirector rights (Djankov et al. (2008)). The average foreign share in country **j** (column (a)) is computed as the simple average of the portfolio share in country **j** (w) by different investing countries **i**. The average foreign bias in country **j** (column (b)) is computed as the simple average of the bias in country **j** (w / M) by different investing countries **i**. The standard deviation of foreign bias in country **j** (column (d)) is computed as the cross-sectional standard deviation around the mean of country **i**'s foreign bias in country **j**. The figures in bold refer to statistically significant correlation coefficients.

Source: CPIS (IMF), Datastream (Thomson Financial), and Djankov et al. (2008).

	Foreign bias				
	average foreign share	market share	average foreign bias	st. dev. foreign bias	rev_ADR
	(a)	(b)	(c)	(d)	(e)
Austria	0.001	0.002	0.426	0.394	2.5
Belgium	0.003	0.007	0.469	0.455	3
Finland	0.006	0.006	1.001	0.811	3.5
France	0.031	0.046	0.665	0.461	3.5
Germany	0.026	0.035	0.743	0.830	3.5
Italy	0.010	0.023	0.439	0.263	2
Netherlands	0.017	0.019	0.921	0.542	2.5
Portugal	0.001	0.002	0.426	0.461	2.5
Spain	0.009	0.018	0.481	0.284	5
Australia	0.003	0.019	0.160	0.156	4
Canada	0.003	0.029	0.118	0.132	4
Denmark	0.001	0.004	0.367	0.398	4
Japan	0.019	0.107	0.179	0.101	4.5
Mexico	0.001	0.006	0.192	0.188	3
Sweden	0.011	0.010	1.089	2.018	3.5
United Kingdom	0.042	0.087	0.481	0.231	5
United States	0.098	0.436	0.224	0.164	3
South Korea	0.003	0.012	0.237	0.189	4.5
Hong Kong	0.003	0.022	0.151	0.146	5
Singapore	0.001	0.005	0.244	0.196	5
	(a;e)	(b;e)	(c;e)	(d;e)	
correlation	-0.068	-0.055	-0.317	-0.225	

Table 4. Foreign bias and revised ADR: Main findings

This table reports the results of the feasible GLS regression as in Section 3.1. The dependent variable is the foreign portfolio bias, that is, the ratio of the portfolio share to the market share (w / M) where the subscript ij represents the investing country i –destination country j pair. The market share is 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. Each regressor X (dummy variables excluded) is expressed as the ratio of X to its world average. The ADR index adopted is drawn from Djankov et al. (2008). Further details on regressors (time-varying and time-invariant country controls) are provided in Appendix B.2. Columns (7) and (7a) report results with time-varying and time-invariant controls, respectively. . Constants and time dummies are included but not reported. Cross-section weights corrected standard errors (d.f. corrected) are reported in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.

	Main findings							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(7a)
rev_ADR_i	-0.289 ***	-0.121 ***	0.044	0.035		0.403 **	0.384 **	0.561 ***
	(0.068)	(0.045)	(0.042)	(0.042)		(0.170)	(0.161)	(0.166)
rev_ADR_j				-0.058	0.448 ***	0.303 *	0.451 ***	0.531 ***
				(0.048)	(0.154)	(0.172)	(0.16)	(0.167)
$rev\_ADR_j * rev\_ADR_i$					-0.512 ***	-0.417 **	-0.599 ***	-0.647 ***
					(0.162)	(0.186)	(0.177)	(0.183)
$dist_{ij} dum\_lang_{ij}$		-0.421 ***	-0.199 ***	-0.198 ***	-0.095 ***	-0.198 ***	-0.141 ***	-0.226 ***
		(0.018)	(0.019)	(0.019)	(0.018)	(0.019)	(0.020)	(0.020)
dum_border_{ij}			0.094 **	0.098 ***	0.137 ***	0.103 ***	-0.027	0.008
			(0.036)	(0.036)	(0.037)	(0.036)	(0.038)	(0.038)
dum_colony_{ij}			0.650 ***	0.647 ***	0.677 ***	0.647 ***	0.744 ***	0.631 ***
			(0.040)	(0.040)	(0.038)	(0.04)	(0.039)	(0.039)
dum_EMU_{ij}			0.024	0.024	0.003	0.025	0.160 ***	0.066
			(0.041)	(0.040)	(0.037)	(0.040)	(0.042)	(0.042)
$dum\_eq\_leg\_origin_{ij}$			0.330 ***	0.321 ***	0.459 ***	0.328 ***	0.324 ***	0.441 ***
			(0.032)	(0.034)	(0.033)	(0.034)	(0.033)	(0.037)
cap_mob_j			0.094 ***	0.093 ***	0.106 ***	0.092 ***	0.201 ***	0.158 ***
			(0.027)	(0.027)	(0.024)	(0.027)	(0.027)	(0.027)
cap_mob_i		0.109 ***	0.106 ***	0.113 ***	0.110 ***	0.110 ***	-0.046	-0.044
		(0.036)	(0.036)	(0.036)	(0.032)	(0.036)	(0.042)	(0.046)
		0.355 ***	0.388 ***	0.385 ***	0.068	0.385 ***	0.130 **	0.131 **
		(0.069)	(0.063)	(0.062)	(0.068)	(0.062)	(0.064)	(0.065)
constant	YES	YES	YES	YES	YES	YES	YES	YES
time dummies	YES	YES	YES	YES	YES	YES	YES	YES
investing country-fixed effects	NO	NO	NO	NO	YES	NO	NO	NO
time-varying dest. country controls	NO	NO	NO	NO	NO	NO	YES	NO
time-varying inv. country controls	NO	YES	YES	NO	NO	NO	YES	NO
destination-country controls	NO	NO	NO	NO	NO	NO	NO	YES
investing-country controls	NO	NO	NO	NO	NO	NO	NO	YES
#obs	1587	1587	1587	1587	1587	1587	1587	1587
Adj-R^2	0.01	0.22	0.45	0.45	0.55	0.46	0.54	0.52

Table 5. Robustness: Sample size and regression techniques

This table reports the results of the feasible GLS regression as in Section 3.1. The dependent variable is the foreign portfolio bias, that is, the ratio of the portfolio share to the market share (w / M) where the subscript ij represents the investing country i —destination country j pair. The market share is 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. Each regressor X (dummy variables excluded) is expressed as the ratio of X to its world average. The ADR index adopted is drawn from Djankov et al. (2008). Further details on regressors (time-varying and time invariant country controls) are provided in Appendix B.2. Column (1) replicates, for ease of comparability, column (7) of Table 4, based on the main sample (14 investing economies, 20 destination economies). In column (2) the main sample is restricted to OECD countries, that is, excludes Hong Kong and Singapore. In column (3) the results are reported for the "full" sample (20 investing countries, 45 destination economies). Columns (1)-(3) report results under a feasible GLS specification. Columns (3a) and (3b) report results under a Tobit and an OLS regression specification run on the "full" sample. Note that the reported R^2 for the Tobit model is the McFadden-R^2 computed as $(1 - LI/L0)$, where L0 and LI are the constant-only and full-model log-likelihood values, respectively.

Constants and time dummies are included but not reported. Cross-section weights corrected standard errors (d.f. corrected) are reported in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.

	Robustness: sample size and regression techniques				
sample:	main	OECD only	full	full	
estimation techniques:	GLS			TOBIT	OLS
	(1)	(2)	(3)	(3a)	(3b)
rev_ADR_i	0.384 **	0.339 *	0.598 ***	0.926 ***	0.778 ***
	(0.161)	(0.179)	(0.145)	(0.333)	(0.294)
rev_ADR_j	0.451 ***	0.472 **	0.871 ***	1.125 ***	1.021 ***
	(0.16)	(0.186)	(0.156)	(0.354)	(0.34)
rev_ADR_j *rev_ADR_i	-0.599 ***	-0.541 ***	-0.704 ***	-0.753 *	-0.662 *
	(0.177)	(0.206)	(0.161)	(0.397)	(0.380)
$dist_{ij}$	-0.141 ***	-0.136 ***	-0.157 ***	-0.621 ***	-0.479 ***
	(0.020)	(0.022)	(0.013)	(0.151)	(0.056)
dum_lang_{ij}	-0.027	-0.005	-0.046 **	-0.079	-0.046
	(0.038)	(0.042)	(0.018)	(0.117)	(0.107)
dum_border_{ij}	0.744 ***	0.740 ***	1.088 ***	2.613 ***	2.584 ***
	(0.039)	(0.041)	(0.050)	(0.458)	(0.445)
dum_colony_{ij}	0.066	0.121 ***	0.128 ***	0.903 *	0.635 *
	(0.042)	(0.046)	(0.035)	(0.494)	(0.326)
dum_EMU_{ij}	0.324 ***	0.322 ***	0.669 ***	0.378 **	0.409 **
	(0.033)	(0.034)	(0.039)	(0.177)	(0.166)
$dum\_eq\_leg\_origin_{ij}$	0.201 ***	0.200 ***	0.035 **	0.240 ***	0.265 ***
	(0.027)	(0.028)	(0.018)	(0.090)	(0.094)
constant	YES	YES	YES	YES	YES
time dummies	YES	YES	YES	YES	YES
investing country-fixed effects	NO	NO	NO	NO	NO
time-varying controls	YES	YES	YES	YES	YES
capital mobility	YES	YES	YES	YES	YES
#obs	1587	1421	4609	4609	4609
Adj-R^2	0.54	0.56	0.30	0.05	0.18

Table 6. Robustness: ADR measures

This table reports the results of the feasible GLS regression as in Section 3.1. The dependent variable is the foreign portfolio bias, that is, the ratio of the portfolio share to the market share (w / M) where the subscript ij represents the investing country i —destination country j pair.. The market share is 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. Each regressor X (dummy variables excluded) is expressed as the ratio of X to its world average. The ADR index adopted in columns (1)-(3) is drawn from LLSV. The ADR index adopted in columns (4)-(6) is drawn from Spamann (2010). Column (7) uses the revised ADR (Djankov et al. (2008)). Further details on the variables included as regressors (time-varying and time invariant country controls) are provided in Appendix B.2. In columns (1) and (4), the country sample is the main one (14 investing countries, 20 destination countries); in columns (2) and (5), the sample is the "full" one (20 investing countries, 45 destination economies); in columns (3), (6), and (7) the "full" sample excludes the United States, France, and South Korea, the countries that underwent the most radical variation in their index from the original LLSV ADR.

Constants and time dummies are included but not reported. Cross-section weights corrected standard errors (d.f. corrected) are reported in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.

	Robustness: ADR measures						
sample:	main	full	full_test	main	full	full_test	full_test
ADR index	LLSV ADR			Spamann ADR			revised ADR
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
ADR_i	0.199 ***	0.743 ***	1.098 ***	0.297 *	0.303	0.307	1.080 ***
	(0.060)	(0.197)	(0.238)	(0.152)	(0.273)	(0.326)	(0.364)
ADR_j	0.111 *	1.013 ***	1.269 ***	0.491 ***	0.557 *	0.620 *	1.407 ***
	(0.061)	(0.193)	(0.218)	(0.157)	(0.324)	(0.340)	(0.387)
$ADR_j * ADR_i$	-0.349 ***	-1.296 ***	-1.619 ***	-0.268 *	-0.373	-0.409	-0.921 **
	(0.068)	(0.258)	(0.296)	(0.144)	(0.289)	(0.316)	(0.429)
$dist_{ij} dum\_lang_{ij}$	-0.145 ***	-0.501 ***	-0.618 ***	-0.152 ***	-0.487 ***	-0.516 ***	-0.694 ***
	(0.022)	(0.084)	(0.097)	(0.020)	(0.086)	(0.070)	(0.118)
dum_border_{ij}	0.082 *	0.134	0.077	0.064	-0.013	-0.069	-0.156
	(0.049)	(0.111)	(0.132)	(0.049)	(0.122)	(0.139)	(0.137)
dum_colony_{ij}	0.720 ***	2.559 ***	3.225 ***	0.766 ***	2.580 ***	3.172 ***	3.195 ***
	(0.038)	(0.455)	(0.548)	(0.039)	(0.472)	(0.551)	(0.529)
dum_EMU_{ij}	0.204 ***	0.804 **	1.032 **	0.096 **	0.841 *	0.987 **	1.113 **
	(0.041)	(0.375)	(0.444)	(0.043)	(0.442)	(0.465)	(0.496)
$dum\_eq\_leg\_origin_{ij}$	0.307 ***	0.355 **	0.337 *	0.320 ***	0.331 **	0.301 *	0.358 **
	(0.034)	(0.168)	(0.178)	(0.032)	(0.166)	(0.172)	(0.179)
	0.213 ***	0.298 ***	0.363 ***	0.191 ***	0.306 ***	0.366 ***	0.304 ***
	(0.029)	(0.094)	(0.113)	(0.029)	(0.101)	(0.119)	(0.11)
constant	YES	YES	YES	YES	YES	YES	YES
time dummies	YES	YES	YES	YES	YES	YES	YES
investing country-fixed effects	NO	NO	NO	NO	NO	NO	NO
time-varying controls	YES	YES	YES	YES	YES	YES	YES
capital mobility	YES	YES	YES	YES	YES	YES	YES
#obs	1587	4501	3781	1587	4501	3781	3781
Adj-R^2	0.55	0.07	0.21	0.56	0.12	0.26	0.19

Table 7. Interaction between domestic and foreign ADR

This table reports the threshold value ADR^* obtained as in equation (4), in various regression specifications. The standard errors in parentheses are constructed following the delta method. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.

	Threshold ADR_j^*					
ADR index:	revised ADR		LLSV ADR		Spamann ADR	
sample:	main	full	main	full	main	full
	(1)	(1a)	(2)	(2a)	(3)	(3a)
	2.704 ***	5.187 ***	2.285 ***	2.294 ***	4.505 ***	3.296 ***
	(0.422)	(1.292)	(0.387)	(0.280)	(0.525)	(0.933)

Table 8a. Economic significance: actual portfolio weights

This table reports the portfolio composition (relative to the year 2006) in a few illustrative cases. We consider the portfolio weightings (w) by five investing countries in eight destination countries, all featuring extreme levels of ADR (Djankov et al. (2008)).We report the float-market shares (M) of the destination countries considered and the their sum, by block (''Low rev_ADR'' or ''High rev_ADR''). We also compute the mean portfolio weights for each destination country and report their sum, by block (e.g., ''sum LH'' is the sum of the ''mean'' portfolio weights held by ''Low rev_ADR''-investing countries in ''High rev_ADR''-destination countries) and the corresponding ''portfolio bias'' (w/ M).

			Low rev_ADR						High rev_ADR					
			2	2.5	2.5	2.5			5	5	5	5		
		destination countries:	Italy	Portugal	Nethe rlands	Aus tria	sum		Unite d Kingdom	Spain	Hong Kong	Singapore	sum	
		market share (MS):	1.9%	0.2%	1.4%	0.2%	3.7%		9.9%	1.6%	1.8%	0.4%	13.7%	
		actua l ptf share	w	w	w	w			w	w	w	w		
		investing countries:												
Low rev_ADR	2	Italy	-	0.1%	1.1%	0.3%			1.3%	0.4%	0.1%	0.0%		
	2.5	Nethe rlands	1.7%	0.2%	-	0.4%			9.2%	0.8%	0.7%	0.5%		
	2.5	Aus tria	1.0%	0.0%	1.5%	-			3.0%	0.5%	0.6%	0.1%		
							sum LL						sum LH	
							w (w/MS)						w (w/MS)	
		mean	1.3%	0.1%	1.3%	0.3%	3.0% (0.82)		4.5%	0.6%	0.5%	0.2%	5.8% (0.42)	
High rev_ADR	5	UK	1.0%	0.1%	1.5%	0.2%			-	0.9%	0.9%	0.4%		
	5	Spain	0.7%	-	0.7%	0.1%			0.8%	-	0.0%	0.0%		
							sum HL						sum HH	
							w (w/MS)						w (w/MS)	
		mean	0.8%	0.1%	1.1%	0.1%	2.1% (0.57)		0.8%	0.9%	0.4%	0.2%	2.3% (0.16)	

Table 8b. Economic significance: predicted portfolio weights

This table reports the "predicted" portfolio composition (relative to the year 2006), as driven by the model (column (7), Table 4) for a few illustrative cases. We consider the portfolio weightings predicted by the ADR factors ($\hat{w}$), that is $\hat{\beta}^{6K}_{ADR} + \hat{\beta}^{6K}_{ADR} + \hat{\gamma}_{ADR} \cdot ADR$ by five investing countries in eight destination countries, all featuring extreme levels of ADR (Djankov et al. (2008)). We report the float-market shares (M) of the destination countries considered and the their sum, by block ("Low rev_ADR" or "High rev_ADR"). We also compute the mean portfolio weights for each destination country and report their sum, by block (e.g., "sum LH" is the sum of the "mean" portfolio weights held by "Low rev_ADR"-investing countries in "High rev_ADR"-destination countries) and the corresponding "portfolio bias" ($\hat{w}$/ M).

			Low rev_ADR					High rev_ADR				
			2	2.5	2.5	2.5		5	5	5	5	
		destination countries:	**Italy**	**Portugal**	**Netherlands**	**Austria**	***sum***	**United Kingdom**	**Spain**	**Hong Kong**	**Singapore**	***sum***
		market share (MS):	1.9%	0.2%	1.4%	0.2%	***3.7%***	9.9%	1.6%	1.8%	0.4%	***13.7%***
		ADR-predicted ptf share	$\hat{w}$	$\hat{w}$	$\hat{w}$	$\hat{w}$		$\hat{w}$	$\hat{w}$	$\hat{w}$	$\hat{w}$	
		investing countries:										
Low rev_ADR	2	**Italy**	-	0.1%	0.4%	0.1%		3.8%	0.6%	0.7%	0.1%	
	2.5	**Netherlands**	0.5%	0.1%	-	0.1%		3.4%	0.5%	0.6%	0.1%	
	2.5	**Austria**	0.5%	0.1%	0.4%	-		3.4%	0.5%	0.6%	0.1%	
							sum LL					***sum LH***
							$\hat{w}$ ($\hat{w}$/MS)					$\hat{w}$ ($\hat{w}$/MS)
		mean	*0.5%*	*0.1%*	*0.4%*	*0.1%*	***1.0%*** (***0.28***)	*3.5%*	*0.6%*	*0.7%*	*0.1%*	***4.9%*** (***0.35***)
High rev_ADR	5	**UK**	0.6%	0.1%	0.4%	0.1%		-	0.2%	0.3%	0.1%	
	5	**Spain**	0.6%	0.1%	0.4%	0.1%		1.5%	-	0.3%	0.1%	
							sum HL					***sum HH***
							$\hat{w}$ ($\hat{w}$/MS)					$\hat{w}$ ($\hat{w}$/MS)
		mean	*0.6%*	*0.1%*	*0.4%*	*0.1%*	***1.2%*** (***0.32***)	*1.5%*	*0.2%*	*0.3%*	*0.1%*	***2.0%*** (***0.15***)

Figure I. ADR indexes

This figure reports the relative (to world average) ADR index for the three alternative specifications adopted. Source: LLSV, Djankov et al. (2008), and Spamann (2010)

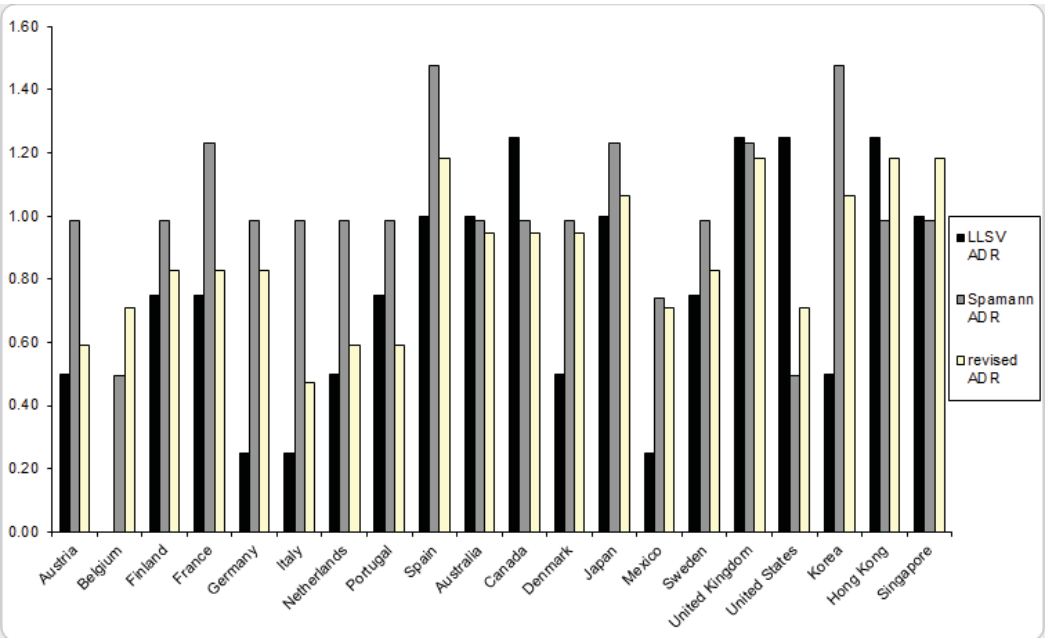
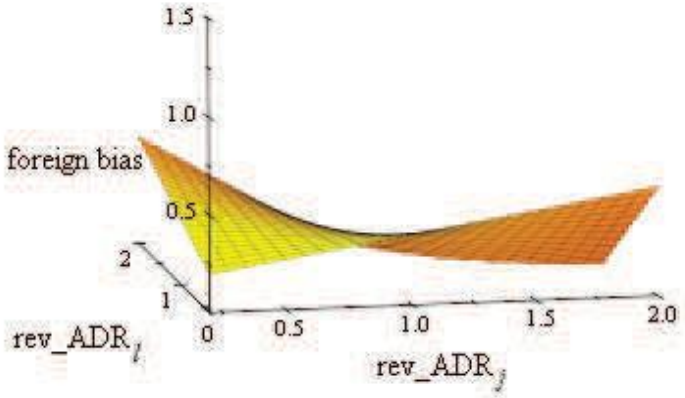


Figure 2. Foreign bias and ADR: A graph

This figure provides a stylized graphical representation of the overall impact of the ADR index (relative to the average) on foreign investment. The graph plots the bilinear form involving foreign bias and the two ADR indexes over the relevant domain using the regression coefficients in Table 4 (column (7)).



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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:

$$^{*} \quad \frac{\mathbf{I}}{\tilde{\mathrm{A}}}:E^{-1}(\quad -\quad) \tag{5}$$

where À is the coefficient of relative risk aversion, is the vector of weights, is the vector of expected stock returns, is the risk-free interest rate, is a vector of ones and :E 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[20]. 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 C the x positive definite diagonal matrix of investment barriers, where the **j** – th diagonal element C is the cost of holding country **j**'s stock by country **l**'s investor. Capturing C the investment barrier cost for country **l** investing in **j** , its reciprocal $\frac{\mathbf{I}}{\mathrm{C}}$ stands for a variable capturing the investment "advantage" of country **l** investing in country **j**. Consequently, the optimal portfolio is no longer universal (*) but is investor-specific ( )

$$\frac{\mathbf{I}}{\tilde{\mathrm{A}}}:E^{-1}(\quad -\quad) \quad C^{-1} \quad ^{-1}\frac{\mathbf{I}}{\tilde{\mathrm{A}}}(\quad -\quad) \tag{6}$$

where :E C (and therefore :E^{-1} C^{-1} $^{-1}$)[21]

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

$$^{-1} \quad \frac{\mathbf{I}}{\tilde{\mathrm{A}}}(\quad -\quad) \quad \mathbf{I} \tag{7}$$

where 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). is a diagonal x positive definite matrix where the **j** – th diagonal element, ¢p $\sum_{=1}^{2:_{\mathrm{L}}}$ M $\frac{\mathbf{I}}{\mathrm{C}}$ is the average investment "advantage" in holding asset **j** across investors, weighted by the market share of each investor's domestic stock market.

[20] 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 allocation in several foreign stock markets rather than the choice between home and foreign assets.

[21] The matrix n is the universal variance-covariance matrix that would prevail in absence of investment barriers.

Let us define D C , where D is again a diagonal x positive definite matrix. We can rewrite the above expression (6) as

$$D^{-1} \quad {}^{-1} \cdot \frac{1}{\tilde{A}}(\; - \;)^{\blacksquare} \tag{8}$$

where D cp C and $\frac{\blacksquare}{D} \quad \frac{\frac{1}{C_{\blacksquare\blacksquare}}}{2:_{L=1} \; M \frac{\blacksquare}{C}}$

and using the equilibrium condition (7) we get the following result

$$D^{-1} \tag{9}$$

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

$$w \quad \frac{\blacksquare}{D} \quad M \tag{10}$$

M is the market share of stock index **j** in the world stock market, $\frac{1}{D_{\blacksquare\blacksquare}}$ represents the inverse of relative (with respect to world average) cost of country **I** investing in asset **j**. In other words, the investor **I** will demand a share of assets greater than the market share in proportion to $\frac{1}{D_{\blacksquare\blacksquare}}$ [22]. Note that if C cp , i.e. if the investment barrier for country **I** is equal to the average then the investor **I** will hold the value market share of asset **j**.

B Data appendix

B.I 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, FM_{it}[23]

$$FM_{i,t} \quad \frac{(FA)_{i,t}}{(\; CAA_{i,t} + FA_{i,t} - FL_{i,t})} \tag{11}$$

where F A stands for "foreign equity assets", F L for "foreign equity liabilities" and C AA for "stock market capitalization". After obtaining the foreign share F M 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) and World Development Indicators (WDI, World Bank)

[22] As in Obstfeld and Rogoff (2001), the share of country **j**'s equity held by country **I** is a decreasing (increasing) function of the bilateral trading cost (efficiency) between **I** and **j** relative to the average trading cost (efficiency) between country **j** and all other countries.

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

World float portfolio

The world float portfolio is a corrected value weighted portfolio obtained in Dahlquist et al. (2003) by multiplying the market share by a fraction taking into account the fraction of closely held shares reported in Worldscope. 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.

B.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 (**I**) 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 **I – 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)

Colony dummy

Dummy variable taking value of **1** if the investing country and the destination country share a colonial linkage (0 otherwise)

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.

LLSV Antidirector Rights Index

The index captures antidirector rights, following LLSV. 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 index ranges from 0 (weak antidirector rights) to 6 (strong antidirector rights).

Revised Antidirector Rights Index

The index amends the original LLSV index (Djankov et al. (2008)). The revised index relies on the same basic dimensions of corporate law, but defines them with more precision. Both the original and the revised

anti-director rights indices summarize the protection of minority shareholders in the corporate decision-making process, including the right to vote. The index covers the following six areas: (1) vote by mail; (2) obstacles to the actual exercise of the right to vote (i.e., the requirement that shares be deposited before the shareholders' meeting); (3) minority representation on the board of directors through cumulative voting or proportional representation; (4) an oppressed minority mechanism to seek redress in case of expropriation; (5) preemptive rights to subscribe to new securities issued by the company; and (6) the right to call a special shareholder meeting. The general principle behind the construction of the revised anti-director rights index is to associate stronger investor protection with laws that explicitly mandate, or set as a default rule, provisions that are favorable to minority shareholders. Methodologically, the key difference between the original and revised indices of anti-director rights lies in the treatment of enabling provisions. See Djankov et al. (2008) for further details.

Spamann Antidirector Rights Index

The index is constructed by Spamann (2010). It is constructed as in LLSV 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.

ime invariant country controls

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).

Accounting rules

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

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 (LLSV).

ime-varying country controls

These variables are drawn from the Worldwide Governance Indicators (WGI, World Bank).

The Worldwide Governance Indicators (WGI) project reports aggregate and individual governance indicators for 213 economies over the period 1996-2010, for six dimensions of governance: Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption. The six aggregate indicators are based on 30 underlying data sources reporting the perceptions of governance of a large number of survey respondents and expert assessments worldwide. Details on the underlying data sources, the aggregation method, and the interpretation of the indicators, can be found in the WGI methodology paper (Kaufmann et al. (2010)).

The original indexes range from -2.5 to +2.5 with an average of 0. Since our variables all enter in relative terms, we use the average as denominator and to avoid the zero in the denominator we re-scale the range from 0 to 5 with an average of 2.5. Note that the descriptive statistics' table reports a mean that differs from 2.5 because it reports averages across countries included in our sample rather than global ones.

Political stability and absence of violence

This index measures the perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including domestic violence and terrorism. This index captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.

Control of corruption

This index captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

Rule of law

This index captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.

Capital mobility index

The Economic Freedom Networc constructs an index (0-10) measuring the restrictions countries impose on capital flows assigning a lower rating to countries with more restrictions on foreign capital transactions.

In decreasing rating order are ranked countries where: a) domestic investments by foreigners and foreign investments by local residents are unrestricted; b) investments are restricted in a few industries within the countries; c) investments are permitted but regulatory restrictions slow the mobility of capital; d) either domestic investments by foreigners or foreign investments by local residents require approval from government authorities; e) both domestic by foreigners and foreign investments by local require government approval.