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Abstract

Non professional investors display a much higher degree of home bias than financial investors suggesting that they might be more severely affected by information asymmetry issues. In particular, non professional investors, having less easily access to information on foreign firm-specific characteristics than institutional investors, will rely more heavily on country-specific factors. We test this conjecture restricting the analysis to foreign equity portfolios of four European investing countries -France, Italy, Spain and Sweden. We find, indeed, that households' portfolios are more strongly influenced by proximity variables, transparency of the destination stock market and, even more interestingly, by common-listing in the Euronext platform.

JEL: F30, G11, G15
Keywords: portfolio choice, international diversification, information asymmetries, cross-listing, household finance

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1 Introduction

Standard asset pricing models assume that assets are held by a representative agent and, even when this assumption is relaxed, little investigation is devoted to the most obvious source of heterogeneity: investment can be made by individual investors or by professionally-managed funds. Very few works analyze the different investing behavior of individuals and institutional investors. Some notable exceptions are Lakonishov and Maberly (1990)[1], Cohen (2003)[2] and Jain (2007).[3] These works, however, analyze the different trading patterns without investigating the possible different impact of information asymmetry on these two broad categories of investors.[4] The objective of the present work is testing whether investors with a different degree of sophistication are differently affected by informational asymmetry. The only paper -to our knowledge- addressing, at least partially, this issue is by Grinblatt and Keloharju (2001): they consider Finnish institutional sectors investing in *domestic* firms finding that familiarity factors[5]- distance, language and culture- play a stronger role for less sophisticated investors, such as households and non profit institutions.[6]

[1] They document differences in trading patterns of individuals and institutional investors for high frequency transactions to explain the so-called weekend effect.

[2] He finds that individuals reduce their exposure to equities more than institutions during the trough of the business cycle buying stocks from institutions after market increases and selling after market decreases.

[3] He shows that individual investors prefer to invest in dividend-paying firms whereas institutional investors- relatively lower-taxed- tend to prefer firms engaging in larger share repurchases.

[4] Actually, the informational superiority of institutional investors on individuals is a crucial point in Jain (2007) but it is postulated and never tested.

[5] Note that we will use the expression *familiarity factors* and *proximity variables* as synonims throughout the paper.

[6] Grinblatt and Keloharju (2001) analyze domestic investment in Finnish firms considering their distance, language and culture with respect to the investor (6% of the Finnish population speaks Swedish, and there are also differences in terms of cultural background).

However, proximity variables represent a quite narrow subset of proxies capturing investment barriers. Other relevant factors might indeed differently impact portfolio positions according to the degree of sophistication of investors thus weakening or further reinforcing the proximity effect. We depart from Grinblatt and Keloharju (2001) work since, allowing for international portfolio diversification, we can test the different role of a larger set of country-specific variables in driving portfolio allocation decisions. In particular, households, typically non professional investors, will have less easily access to information on *firm-specific* characteristics than institutional investors and will be more influenced by *country-specific* factors. We focus on *foreign* investment at *market level* rather than on *domestic* investment at *individual firm level* (Grinblatt and Keloharju, 2001). Furthermore, relying on the international equity dataset, we consider, beyond the proximity variables, also other country-specific factors capturing informational barriers and which might potentially have a different impact for investors with various degrees of sophistication.

The higher degree of *home bias* in households' portfolios with respect to professional investors is a signal that they might be more severely affected by information asymmetry and, consequently, are likely to benefit more from its alleviation. We test this conjecture considering the determinants of *foreign* equity portfolios of households[7] and professional investors for four European investing countries -France, Italy, Spain and Sweden. In our work, we investigate the impact of informational asymme-

[7]Note that, throughout the paper, we adopt the term *households* meaning *households and no profit organizations*. In fact, for data comparability across countries and for data matching between *CPIS* and *OECD National Accounts* (see Appendix C) we consider non profit organizations-representing an almost negligible fraction- and households as the same consolidated sector. The results of Grinblatt and Keloharju (2001) on the similar responsiveness of households and non profit organizations to geographical and cultural distances seem to legitimate this consolidation.

try for households and financial investors by considering the different role of country-specific factors in foreign equity portfolios. We consider, among the country-level determinants, proximity variables such as distance, common border and common language. They have been extensively used in the trade literature as determinants of trade flows between countries and, more recently, the same approach has been used for equity flows (Portes et al., 2001; Portes and Rey, 2005) and equity holdings (Chan et al., 2005 among the others). However, these variables have been included considering, as investor, either the overall economy (Lane and Milesi-Ferretti, 2005, 2007; Sorensen et al., 2007; Amadi, 2004; Faruqee et al., 2004) or mutual funds (Chan et al., 2005). We consider, instead, as in Grinblatt and Keloharju (2001), different institutional investing sectors in order to detect whether the strength of the impact of proximity variables on stockholding is related to the degree of sophistication of the investor. Furthermore, previous literature has mainly documented that unenforceable contracts, legal and regulation complexity unequivocally deter foreign *direct* investments. Recently, Gelos and Wei (2005) find that country transparency affects also *portfolio* investment in emerging markets. We check the role of "opacity" in determining foreign portfolio investments in developed markets and test whether this role - if any- is stronger for less sophisticated investors to which firm-specific information may be available less easily than to financial investors. Finally, firms' stocks listing in foreign markets have evidenced to alleviate informational asymmetries and to be more present in foreign portfolios (Dahlquist and Robertsson, 2001; Pagano et al., 2002). Ahearne et al. (2004) show that, at aggregate level, the higher the portion of a country's market that has a public US listing the higher the country's

weight in the US portfolio. However, the literature has never explicitly tested, to the best of our knowledge, the informational effect of stock market consolidation. The merger of national exchange markets into a common exchange market might, in fact, play a role in reducing information asymmetry and its effect on portfolio allocation might depend on the investor's degree of sophistication. We consider the role of the common exchange market Euronext, controlling for the liquidity effect in order to disentangle the informational component.

Our results point out to a stronger impact of proximity variables and transparency of the destination stock market for households. Moreover, we find a crucial role of common-listing, controlling for liquidity, *only* for less sophisticated investors: firms publicly listing in a common exchange -such as Euronext- are subject to standardized regulations and homogenizations of accounting rules with the effect of alleviating information asymmetry for households directly investing in the stock market.

Before proceeding with the analysis, it is worth making two important considerations.

The first point concerns households' *a priori* choice to invest their financial wealth directly on the stock market or through financial intermediation. Households may decide to invest directly in the stock market since the higher expected gain (if any) determined by the intermediated investment is below the intermediation cost. Assuming that the expected reward to risk ratio of intermediated investment is common knowledge and that all households face the same cost for intermediation, the choice on whether investing directly or not depends on the household-specific degree of information affecting the (perceived) riskiness of *direct investment*. In these terms,

considering different degree of information level in the households, we can imagine a marginal investor for which the cost of indirect investment equals the benefit in terms of reduced perceived return variability. All investors with an information level lower than the marginal investor will buy the financial intermediation service while households with an easier access to information than the marginal investor will choose to invest directly on the stock market. The focus of this work is on different strategies of end-investors and, consequently, we restrict the analysis to the self-selected better informed investing households who decide to invest directly on the stock market. Hence, our results, revealing the stronger impact of information asymmetry for households than for financial institutions, do hold for a self-selected better informed fraction of households and should hold, even more severely, for the (unobservable) fraction of households investing indirectly through financial institutions.

The second aspect worth stressing is the *direct* linkage of our research with the literature on lack of diversification of households in the stock market (Campbell, 2006)[8]. Lack of diversification and preference for local assets has been found both in aggregate data (Lewis, 1999) and in household-level data. For instance, Huberman (2001) finds that individual investors prefer to own the stocks of their local telecommunication company. Feng and Seasholes (2004) find that Chinese individ-

[8]It is interesting to note that also the literature on the so-called stockholding puzzle is, indirectly, related to our research. Guiso and Jappelli (2005) point out the (un)awareness of the menu of assets available -and so information costs and barriers- as explanation for the stockholding puzzle (or lack of participation puzzle). Merton (1987), in fact, points out that investors purchase only securities they know about. In some way, the lack of diversification can be seen as non participation to foreign stock market. In fact, if unawareness (Guiso and Jappelli, 2005) or fixed entry costs (Haliassos and Bertaut, 1995; Vissing-Jorgensen, 2003) are plausible explanations for households lack of participation to stock market, the same motives -more broadly defined as information asymmetry between home and foreign investors- can be seen as responsible of their lack of participation in foreign stock market, that is of lack of diversification of households.

ual investors overweight not only local companies but also companies traded on a local exchange suggesting a connection between cross-listing reasons and familiarity.

The fact that households are more heavily affected by informational issues is immediately evident looking at the higher fraction of domestic assets held by households than by financial investors. When restricting the analysis to foreign stocks, we find that households and non profit organization are more prone to invest in stocks closer in cultural and geographical terms, more reluctant to invest in more opaque stock markets and attracted by stocks listed in their own stock exchange. Since investing households are more heavily affected by information issues than financial institutions, the removal of these barriers should benefit households relatively more and increase their international diversification.

The paper is structured as follows. In Section 2 we illustrate the econometric setting and in Section 3 we implement the empirical analysis and derive results. Section 4 concludes.

2 Estimable equation

Our theoretical framework is very standard and simply captures the equilibrium portfolio allocations when investors are supposed to face different costs investing in N stock markets. We adopt Gehrig (1993) approach in modelling information asymmetries and, more in general, investment barriers[9]. In Gehrig (1993) contribution

[9]In order to dissipate any possible source of confusion we want immediately to define which is the interpretation of asymmetric information we will spouse throughout the paper. 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 "foreign-bias" when the domestic investors observe bad signals. What we, instead,

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. We consider this approach focussing on foreign investment only, considering a different investor-specific perceived variability of return for each foreign stock index in the investment opportunity set. Details on the derivation of the model are provided in Appendix A.

When considering different investors k in the same country l the optimal portfolio weight in asset j (w_{lj}^k) is

$$w_{lj}^k = \frac{1}{D_{lj}^k} MS_j \tag{1}$$

where MS_j is the market share of asset j and $\frac{1}{D_{lj}^k}$ represents the *relative* (with respect to world average) "advantage" of sector k in country l investing in asset j[10]. In other words, the sector k in country l will demand a share of asset j greater than its market share in proportion to $\frac{1}{D_{lj}^k}$ (inverse of relative investment cost).[11]

label "information asymmetries" 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 that of the domestic investor, though both have the same perceived 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. Our formulation is a special case of ambiguity aversion: foreign investors believe that the true variance is in the interval $[\sigma_l, \sigma_h]$ and so they behave as if the variance were σ_h. The same reasoning applies when considering the allocation in several foreign stock markets rather than the choice home-foreign assets.

[10] D_{lj}^k represents the relative barrier (with respect to world average) of sector k in country l investing in asset j.

[11] Note that if $D_{lj}^k = 1$, i.e. if the investment barrier for sector k in country l is equal to the average one then the market share of asset j will be optimally held in equilibrium.

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

The ratio $\frac{w_{lj}^k}{MS_j}$ can be interpreted as the *bias* in asset j by investor k in country l : if the actual position w_{lj}^k is larger than j's market share then there is a positive bias while a ratio lower than one reveals a negative bias. The above relation implies that the bias in asset j by investor k residing in country l depends upon the reciprocal of the bilateral specific investment barrier relative to the world average investment barrier. In other words, the larger the bilateral specific investment barrier relative to the world average the lower the actual position in a given asset[12].

Since we are considering the institutional sector as investors we estimate a separate *pooled-OLS* regression for each institutional sector k for *all* investing countries. We adopt a "Least Square Dummy Variable Estimation" with fixed effects for investing countries, time dummy and White correction of variance-covariance matrix. Since D_{lj}^k is not directly observable we have to estimate the equation making use of proxies. In order to capture the unobservable $\frac{1}{D_{lj}^k}$ variable we consider i different proxies, denoted by $rel\_proxy_{kj}^i$ to emphasize that what matters in determining the wedge between the actual position and the market share is the *relative* investment barrier with respect to the world average barrier.

[12]Our theoretical framework is equivalent to Chan et al. (2005) and Cooper and Kaplanis (1994) return-reducing approach. Also in their equilibrium condition, in fact, what matters is the investment barrier relative to the average one. Adopting this approach in which investment barriers enter in a multiplicative way, our equation, conveniently, turns out to be directly implementable and interpretable in log terms.

$$\log\left(\frac{w_{lj}^k}{MS_j}\right) = \alpha + \sum_i \beta^{i,k} \log(rel\_proxy_{lj}^{ik}) + \varepsilon_{lj}^k \tag{3}$$

However, since proxies at investor level -households or financial investors- are not available we have to rely on common country-specific variables for investors residing in the same country but we allow for a different sector-specific role of the same variables in the portfolio choice problem. In other words, in the model we assume a different perceived variance at investor level while in the empirical implementation, constrained by data availability, we just consider different elasticities of financial investors and households to the same country-specific proxy. In the actual regression analysis we also include some dummies which might, a priori, capture investment barriers. Consequently, our final estimable regression, including i regressors and n dummies, will be the following

$$\log\left(\frac{w_{lj}^k}{MS_j}\right) = \alpha + \sum_i \beta^{i,k} \log(rel\_proxy_{lj}^{i}) + \sum_n \lambda^{n,k} dummy_{lj}^n + \varepsilon_{lj}^k \tag{4}$$

After having implemented a regression for households and financial investors we test whether the coefficients are statistically different by running the following complementary regression

$$\log(w_{lj}^H) - \log(w_{lj}^F) = \delta + \sum_i \beta^{i*} \log(rel\_proxy_{lj}^{i}) + \sum_n \lambda^{n*} dummy_{lj}^n + \varepsilon_{lj}^k \tag{5}$$

where the subscripts H and F denote, respectively, households and financial investors. The coefficient β^{i*} is equal to $(\beta^{i,H} - \beta^{i,F})$ and λ^{n*} is equal to $(\lambda^{n,H} - \lambda^{n,F})$. By testing the null hypothesis that $\beta^{i*} = 0$ (and analogously for λ^{n*}) we test the hypothesis that country-level factors are equally important in determining portfolio allocation for more sophisticated investors -professional investors- and less sophisticated investors -households[13]. Results against the null hypothesis, that is coefficients significantly different from zero in the expected direction[14], support, in statistical terms, our thesis[15].

3 Empirical analysis

We consider, for the period 2001-2004, four European investing countries -France, Italy, Spain and Sweden- for which the breakdown by sector holder in *CPIS* (*Coordinated Portfolio Investment Survey*, by IMF) is available and for which we found data on the fraction of equity assets held by various institutional sectors within a country (*OECD, National Accounts, Financial Balance Sheets)*[16]. Many recent papers rely on the *CPIS* data source (Lane and Milesi-Ferretti, 2005, 2007; Faruqee et al., 2004;

[13]In this paper we focus on the informational motive ignoring any other factor such as hedging motives. This restricted perspective, although debatable, is supported by two key considerations. The first one is that hedging motives have shown to have a negligible explanatory power for the home bias phenomenon (Cooper and Kaplanis, 1994; Baxter and Jermann, 1997). The second is that, in order to significantly affect our results, one should claim that the excluded factors are expected to have a different impact for different investors. In fact, the effect of all possible determinants -not only hedging motives- left out of the analysis do cancel out if they enter simmetrically for all investors so leaving unaffected our results.

[14]The sign of the coefficient depends on whether the proxy is aimed at capturing investment barrier rather than reduction in investment barrier.

[15]Please note that the above regression (**??**) allows to test the difference in coefficients without performing the Wald test which would require a computationally heavier procedure -for instance a Seemingly Unrelated Regression- in order to compare coefficients of separate regressions.

[16]See Appendix C for further details on data.

Sorensen et al., 2007) but none -to the best of our knowledge- exploits the breakdown by investing sector.

We consider two investing categories: the *households*' sector comprising households and non profit organizations and the *financial investors*' sector comprising banks, pension funds and insurance companies, mutual funds and other financial auxiliaries.

The destination stock markets are 20 countries: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Hong Kong, Italy, Japan, Korea, Mexico, Netherlands, Portugal, Singapore, Spain, Sweden, United Kingdom, United States[17].

The way different variables affect foreign holdings depends on how domestic and foreign investors evaluate these factors for investment purposes. The total market capitalization in any country must be held in aggregate by some investors so a country cannot be underweighted in portfolio by all investors. French and Poterba (1991) suggest that investors may simply be relatively more optimistic about their domestic markets. This assertion is confirmed by Strong and Xu (2003) and Li (2004) showing, using different datasets, as fund managers or investors in general are more optimistic about their home stock market. Notwithstanding the notable attempts proposed in the literature (Lewis, 1999), the strong familiarity factor behind *home bias* is still hard to be captured making asymmetric- for domestic and foreign investors- the impact of an observable stock characteristic on investment decisions. If a country-

[17]Since we focus on *foreign* portfolio allocation, the destination stock markets are 19 as the domestic country is excluded from the analysis. The Pooled-OLS regression is run, therefore, on 304 observations (19 observations for each year, for each investing country).

specific factor lowers costs symmetrically for home and foreign investors there will be no impact on foreign position. If, on the contrary, it lowers (increases) the deadweight cost for foreign more than for domestic investors then more (fewer) foreign investors will be attracted to invest in the country and fewer (more) domestic will hold local equities.

When looking at the portfolio composition into domestic and foreign equities in table 1 we find some interesting regularities. First, all four countries considered display *home bias* with a domestic position ranging from 0.55 to 0.78. Second, the *home bias* for households is much larger than for financial investors: the domestic share for households ranges from 0.76 for Italy to 0.94 for Spain while for professional investors the range goes from 0.29 for Italy to 0.60 for France. This preliminary evidence suggests that, at least for the countries considered, investment patterns for households and financial investors might be quite different and it is worth investigating whether a similar degree of diversity is present also within the foreign portfolio and which are its main determinants. Since now on, in our work we will ignore any explicit explanation relative to the *home bias* phenomenon and focus on the determinants of foreign positions[18].

[18]Even though domestic positions are not explicitly investigated here, they, of course, enter indirectly in our analysis since the weight of each foreign stock index in the overall portfolio depends also on the domestic share.

3.1 Portfolio determinants of households and financial investors

We claim that since households have less easily access to foreign firm-level information they rely much more heavily on country-level factors.

In this section we consider results from regression (4): results for financial investors and households are reported in table 2 and table 3, respectively. Results are also shown for the representative national investor (table 4) to allow comparison with financial investors and households. Discussion on the statistical significance of the difference households-financial investors is deferred to the next section (table 5).

3.1.1 Indirect barriers

Proximity variables The first variables included in the regression analysis are the proximity variables. Market proximity captures the influence of asymmetric information on investor's portfolio choice (Gehrig, 1993; Brennan and Cao, 1997; Kang and Stulz, 1997). Grinblatt and Keloharju (2001), Faruqee et al.(2004), Chan et al. (2005), Portes and Rey (2005) and Lane and Milesi-Ferretti (2005, 2007) all find that the cultural and geographic proximity of the market has an important influence on investor stock holdings and trading.

The variables we include as capturing proximity are distance, common border dummy and common language dummy[19]. The first two variables simply capture physical distance between the country of the investor and the destination country[20].

[19] See Appendix B for further details.

[20] A separate role for the dummy border can be found when considering this variable as "correcting" the distance variable which is measured as the great circle distance between the capital cities of the destination and investing country. Please note that the variable entering our regression is the

Since transactions in financial assets are "weightless" a role for distance may be found only if it has an informational content (Portes and Rey, 2005). The role for the common language dummy is more easily interpretable as foreign languages makes more difficult collecting information and this is likely to be a serious issue mainly for non professional investors.

We expect to find a stronger role of proximity variables for households than for financial investors, as already found by Grinblatt and Keloharju (2001) for Finland. The first noticeable result, looking at columns (1) in Table 2 and Table 3, is the strong explanatory power of these regressors. The *Adj-*R^2 is indeed 39% for professional investors and to 52% for households denoting a relatively stronger role for households. The second point to stress is that the impact of the proximity variables is strongly significant in statistical terms and quite large in economic terms for both financial investors and households. Finally, the coefficients are much larger for households than for financial investors. The point estimate of the elasticity between the ratio of portfolio share to market share and the distance is about -1.3 for households and -0.9 for financial investors while point estimates are more than twice as large for households in the proximity dummies (border and language). In particular, contiguity enhances the portfolio share to market share ratio by more than 50% for financial investors ($e^{0.448} = 1.565$) while for households sharing a common border induces investments such that the portfolio share to market share ratio is 2.5 times larger. Sharing a common language has almost the same quantitative effect than contiguity for financial investors while it has a much stronger impact for households

relative distance between investing and destination country (see Appendix B for further details).

increasing portfolio share to market share by 6 times.

Transparency We include, as potential explanatory variable, an index capturing the degree of opacity of the destination countries (Kurtzman et al., 2004).[21] The empirical literature on financial investments has assessed the relevance of small scale risks: fraudulent transactions, bribery, unenforceable contracts, legal and regulation complexity unequivocally deter investment. Previous literature has mainly documented that these institutional factors affect foreign *direct* investments. Recently, Gelos and Wei (2005), adopting opacity indexes similar to the one considered here, find that country transparency affects also *portfolio* investment in emerging markets. We check whether a role of opacity in foreign *portfolio* investments exists also when restricting the analysis to developed stock markets and whether this role - if any- is stronger for less sophisticated investors to which firm-specific information may be available less easily than to financial investors.

Interestingly, this relative opacity index shows the expected negative sign for both investors but is statistically significant *only* for households (column 2). The elasticity is higher than 1 so quite large in economic terms: an increase of the relative opacity index by 50% halves the portfolio share to market share ratio. After the inclusion of the opacity index, the proximity variables coefficients appear substantially unchanged for professional investors, where this proxy has no significant impact, but also coefficients of proximity variables for households are only modestly affected. Therefore, our results seem to suggest that transparency of a country enhances foreign *portfolio* investments alleviating information asymmetry *only* for non

[21] We consider as regressor the relative opacity index, i.e. the country opacity relative to the average world opacity (see Appendix B for further details).

professional investors.

Common exchange market: Euronext Finally, we consider the "natural experiment" Euronext creation to test whether *common-listing*, that is listing on a common exchange platform, has any effect on stock portfolio decisions and whether the impact, if any, depends upon the sophistication of the investor. Ahearne et al. (2004), Pagano et al. (2002), Dahlquist and Robertsson (2001) and Sarkissian and Shill (2004) evidence how foreign firms publicly listing in a common exchange, subject to standardized regulations and homogenizations of accounting rules, are preferred by investors since cross-listing has the effect of reducing information asymmetry[22]. Following this perspective, we consider the effects of the Euronext creation. In September 2000 the Euronext is formed by the stock exchanges of Paris, Brussels and Amsterdam. In February 2002 Euronext continues to grow and merges with the Portuguese exchange[23]. We add the Euronext-dummy to our regression in order to check whether forming a common stock exchange with standardized financial regulations may be perceived by investors as a reduction of information barriers. Moreover, if the common listing has an informational content then we would expect it to be stronger for households than for financial investors who may rely more easily on other more specific (and costly) sources of information. Results reported in column 3, indeed, support our conjecture. The coefficient has the expected positive sign for both kinds

[22]Following a similar perspective, Vlachos (2004) highlights the relevance of regulatory harmonization as determinant of cross-country portfolio holdings based on the *CPIS* dataset.

[23]In 2002 Euronext merges also with the LIFFE (*London International Financial Futures and Options Exchange*). This merger is, however, not considered here since it is a future exchange and not strictly a stock exchange. In April 2007, Euronext merged with *NYSE* (New York Stock Exchange) creating the larger stock exchange in the world. For obvious reasons, this merger cannot be object of investigation in the present work.

of investors but is large and statistically significant *only* for households: trading in a common stock exchange platform increases the portfolio share to market share ratio by about three times.

Control for liquidity Padilla and Pagano (2006) have recently found that the integration of the Amsterdam, Brussels, Lisbon and Paris exchanges in a single platform resulted in a significant increase in liquidity[24]. Therefore, in order to exactly pick up the informational Euronext effect, it is crucial accounting also for liquidity. We consider a variable capturing the relative illiquidity of the market adopted by Bortolotti et al. (2007). It is a measure of price impact which is the aggregate version of Amihud (2002) illiquidity measure. The market illiquidity of a stock market is defined as the ratio of absolute return on the stock index to turnover, capturing the response of the stock index return to turnover. Since our portfolio holdings are recorded at annual frequency we need an average annual illiquidity measure. We compute the illiquidity of a stock market in year t as the annual average of daily illiquidity where d represents the day, $|R_{dt}|$ is the absolute return on day d and D is the number of trading days in year t.[25] $TURN_{dt}$ represents the total value of shares traded scaled by total daily market capitalization.

$$illiq_t = \frac{1}{D} \sum_{d} \frac{|R_{dt}|}{TURN_{dt}}$$

The higher the reaction of stock index return to a given turnover rate, the higher

[24] Sarkissian and Shill (2004) point out some evidence on the role of liquidity in the choice of listing abroad.

[25] The index return and turnover rates are computed as the weighted average of all stocks included in the index (each stock is weighted by its relative stock market capitalization).

the illiquidity of the stock market. In particular we consider the logarithm of the relative illiquidity measure capturing the relative illiquidity of the stock market j relative to the world illiquidity[26]. Results in column 4a show that the illiquidity measure has the expected negative sign and is significant for both types of investors, although the coefficient point estimate is more than two times larger for households than for financial investors. The same result applies when considering the annual turnover rate (column 4b) as alternative[27], and more commonly adopted, measure of liquidity (Levine, 1997; Dhalquist and Robertsson, 2001; Lane and Milesi-Ferretti, 2007)

$$turn_t = \frac{1}{D} \sum_d TURN_{dt}$$

These results confirm that the Euronext dummy has an informational content *per se* further stressing the high relevance of aggregate informational barriers for less sophisticated investors[28].

[26] The same procedure is followed when we consider the turover rate as alternative to the illiquidity measure.

[27] The two alternative measures of liquidity/illiquidity we consider have an average correlation coefficient equal to -0.53. It evidences, on one side, the existence of a strong linkage among them and, on the other, the fact that they must capture different aspects as their correlation coefficient is far below unity. As pointed out in Bortolotti et al. (2007), the Amihud (2002) index is a better proxy for market (il)liquidity than the turnover ratio since the latter may not account for all aspects of market liquidity (Hasbrouk, 2003).

[28] As pointed out by Padilla and Pagano (2005), the merger of stock exchanges also determines a reduction in direct costs. However, since financial investors are those who more frequently turnover their portfolios they should be more affected than households by these costs. Under this consideration, the fact that the Euronext-dummy plays a role for households supports even more strongly our informational hypothesis.

Control for EMU Finally, since members in Euronext are also EMU members, the Euronext effect could simply capture the relative attractiveness of EMU countries for EMU due to elimination of exchange rate risk documented in the recent literature (Lane and Milesi-Ferretti, 2007; Berkel, 2004). We therefore include the EMU dummy in our analysis in order to disentangle the *informational* impact of Euronext[29]. Results in columns 4a and 4b show that the Euro dummy is, for both investors, economically and statistically relevant: sharing a common currency determines portfolio share to market share ratio much larger than for non members of currency unions (5 times larger for financial investors and more than 8 times larger for households). It is worth noticing that controlling for liquidity and for the EMU dummy does actually reduce the impact of the Euronext dummy for households but the coefficient remains very large: investing in countries listing in a common exchange market increases the dependent variable by 2.4 times rather than by 3 times.

3.1.2 Additional results and robustness check

Return-chasing or contrarian trading? In Gompers and Metricks (2001) love for liquidity as well as contrarian trading behavior are identified as characteristics of large investors. Since households are, typically, small investors, there might be some variables included in our analysis correlated with past reward to risk ratio and so influencing our results. We therefore include the relative lagged Sharpe ratio[30] in our regression analysis showing the relative results in column 5 of each table[31]. We

[29]Note that, among investors, Italy and Spain are EMU but not Euronext members and, among destination countries, Austria, Finland, Germany, Italy, Spain are EMU but not Euronext members

[30]See Appendix B for details.

[31]Lane and Milesi-Ferretti (2005) consider the same regressor finding mixed results on its significance for the representative country investor.

find no significant role for lagged Sharpe ratio neither for households nor for financial investors and other coefficients are left almost unchanged.

Restrictions to capital mobility Finally, we add, as further control, a variable capturing direct investment barriers that is restrictions to international capital mobility. 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), Stulz (1981) and Errunza and Losq (1981). Since the relaxation of capital controls occurred over the last decades has not significantly induced a parallel drop in *home bias,* the direct transaction costs' explanation has been considered an inadequate explanation of portfolio holdings (Ahearne et al., 2004; Berkel, 2004). In fact, we find the same results when considering the representative country investor in table 4: column 6 shows how capital control variables have no impact on foreign portfolio holdings[32]. However, it is worth stressing that the institutional explanation has revealed to be unsatisfactory when considering aggregate investment by the *representative* country investor or by particular institutional investors, typically mutual funds (Chan et al., 2005). In fact, direct costs might have, *a priori*, a different impact on households and financial investors since they operate on a diverse scale[33]. Consequently, we include here the direct costs' explanation of cross-border investment as it could interact with our results on informational barriers.

[32]When considering only OECD destination countries, the "source component" of capital control is statistically significant. Note that table 4, considering all institutional sectors, includes also government and non financial corporations (excluded from the analysis) beyond households and financial institutions.

[33]Financial investors, typically larger and more sophisticated, may be rationally less affected by costly procedures to foreign investment.

Since it is not so easy to identify a bilateral specific cost, C_{lj}, it is decomposed into two components: the "source component" (C_l), i.e. the costs that investor faces to transfer funds out of her own country l, and the "host component" (C_j), i.e. the cost faced to "enter"country j.

$$\log(\frac{1}{D_{lj}}) = a \log \underbrace{(\frac{1}{D_l})}_{source} + b \log \underbrace{(\frac{1}{D_j})}_{host}$$

We adopt an index measuring the restrictions countries impose on capital flows derived from the *Economic Freedom Network* (Chan et al., 2005, among the others, adopt the same index)[34]. It is an index (0-10) assigning a lower rating to countries with more restrictions on foreign capital transactions[35]. We consider the relative host (source) capital mobility index, that is the index of capital mobility of the destination market j (investing country l) divided by the average capital mobility index.

Our results, displayed in column 6, show how the "source component" of capital mobility variables has, indeed, a relevant explanatory power for both types of investors with a stronger impact for households.

Summing up, the important result is that, even after controlling for past reward to risk ratio and capital control, our results on the different impact of country-level informational asymmetry are still there.

No Hong Kong and Singapore Finally, we run the above regression excluding Hong Kong and Singapore from the pool of destination stock markets for

[34]Edison and Warnock (2003) propose an alternative measure of capital controls based on International Finance Corporation's (IFC) emerging market indices. However, it cannot be adopted here since we restrict the analysis to developed countries.

[35]See Appendix B for further details.

two kind of reasons. The first one is that they play also a relevant role as offshore financial centers and it might have the effect of distorting investors' decisions for reasons lying beyond the scope of this work. The second motive is related to possible (explicit or implicit) constraints, especially for pension funds and life-insurance companies (Davis, 2001), restricting non-OECD foreign asset holdings. The results are displayed in the last column of each table: the significance and the magnitude of regression coefficients remain unchanged and our results are not affected by the exclusion of Hong Kong and Singapore.

A final consideration comes from the comparison of table 2, 3 and 4. As it can be noticed, the results in table 4 referred to the whole investing economy, are fairly similar to table 2 which refers to institutional investors. It goes in the direction of confirming Chan et al (2005)'s conjecture that mutual funds investment patterns - and, more in general, institutional investors' patterns- reflect the investment behavior of the representative investor of a country. At the same time, the neat difference in results between households and the overall economy reveals that the *representative country investor* is far from "representing" the *representative household*.

3.2 Testing differences households-financial investors

To test the different impact of informational barriers on households portfolio choice with respect to financial investors, we run regression (5) where the dependent variable is the $\log(w_{lj}^H / w_{lj}^F)$ and the coefficients exactly capture the *wedge* in sensitivity to country-level factors by households with respect to financial investors. Results are reported in table 5. Had the effect of one regressor been equal for households and

professional investors we should have observed its coefficient equal to zero, or not significantly different from zero. For instance, the hypothesis of null coefficient for distance is not rejected so revealing that the effect of this variable on the two kinds of investors is not statistically different. For the other proximity variables (border and language), for opacity and the Euronext dummy the coefficient is statistically different from zero[36] underlying a significant different impact of these variables on households and financial investors in the expected direction. Summing up, with the exception of distance, for all other variables capturing information asymmetry at country-level the effect on households is statistically larger than on financial investors.

Sensitivity analysis: one country out As a final robustness check, we consider whether our results, based on a pooled regression including four countries, are driven by one particular investing country. We display our regression results in columns 2a, 3a, 4a and 5a of table 5 when, respectively, France, Italy, Spain or Sweden are excluded from the sample[37]. The coefficients show some variability when one country is excluded[38] but the evidence shows that our results are -comfortingly- not driven by one single country since the wedge households-financial investors remains even after the alternative exclusion of all countries. In columns (#b) the same results are reported when only OECD countries are included in the pool of destination countries. Under all sample specifications, the variables proxying information

[36] Also the host capital control variable, the EMU-dummy and illiquidity show a significant different impact for households and financial investors.

[37] When France is excluded from the sample, the Euronext dummy is, necessarily, excluded from the regression.

[38] The variability of coefficients is quite reasonable since the exclusion of one country represents a reduction by one-forth of the overall sample size. The *Adj-*R^2 also displays some variability: it is basically unaffected by the exclusion of Italy, remarkably decreased by the exclusion of France and Sweden while remarkably increased when Spain is neglected.

asymmetry -with the exception of distance- display a significantly larger impact for households than for professional investors confirming our initial conjecture[39].

4 Conclusions

We analyze the determinants of foreign portfolio allocations of more sophisticated investors -financial investors- and less sophisticated investors -households- in four European countries, France, Italy, Spain and Sweden. Different degree of sophistication implies different access to firms' specific information and it may result in different demand patterns. We evidence that households' foreign portfolio investments are more heavily influenced by country-level informational barriers. In particular, we uncover for households a stronger impact of proximity variables, transparency of the destination stock market and a relevant role for the common stock exchange market - Euronext - in enhancing information disclosure. This evidence highlights that differences in the investment patterns of households and institutional investors might be driven by the different degree of sophistication. Consequently, technological advances reducing "distance" among markets and any effort of improving transparency on financial markets will plausibly result in a higher international portfolio diversification of households' portfolio investment. Furthermore, this is the first work, to our knowledge, detecting a significant informational role of the Euronext stock exchange merger: less informed investors seem to benefit from the information disclosure mech-

[39]It is worth pointing out how our results are not driven by the different positions of households and financial investors in domestic assets. In fact, the logarithmic specification makes coefficients invariant to scale factors. In other words, if the households' foreign portfolio *composition* were equal to the financial investors' one except for the *dimension* of the foreign portfolio in the overall portfolio, the coefficients on our regressors would be identical and the scale factor would be captured by the intercept.

anisms connected with the common listing. In this turmoil period of stock market consolidations, this result suggests that the convergence towards a common exchange platform might represent an effective mechanism alleviating information asymmetry and enhancing international diversification for households.

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A Theoretical framework

Our theoretical framework is very standard and simply captures the equilibrium portfolio allocations when investors are supposed to face different costs investing in N stock markets. We assume our investor maximizes the expected value of a constant relative risk aversion utility function

$$U(W) = -\exp\left(-\lambda \frac{W}{W_0}\right)$$

where λ is the coefficient of relative risk aversion and W is financial wealth.

The expected utility may be rewritten as

$$E\left[U(W)\right] = -\exp\left[-\lambda\left(\mathbf{w}'\bar{\boldsymbol{\mu}} - \frac{\lambda}{2}\mathbf{w}'\boldsymbol{\Sigma}\mathbf{w}\right)\right]$$

where $\mathbf{w}$ is the vector of weights, $\bar{\boldsymbol{\mu}}$ is the vector of expected excess returns and $\boldsymbol{\Sigma}$ is the variance-covariance matrix of stock returns.

Maximizing the above expected utility under the constraint $\sum_{s=1}^{N} w_s = 1$ we get the standard mean-variance vector of optimal weights

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

We adopt Gehrig (1993) approach in modelling information asymmetries (and in general investment barriers). In Gehrig (1993) 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. We consider this approach focussing on foreign investment only, considering a different investor-specific perceived variability of stock returns for each foreign stock index in the investment opportunity set.

Denoting by $\mathbf{C}_l$ the matrix of investment barriers we rewrite the personalized vector of weights for each investor l in the following way

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

where $\boldsymbol{\Sigma}_l = \boldsymbol{\Omega}\mathbf{C}_l$ (and therefore $\boldsymbol{\Sigma}_l^{-1} = \mathbf{C}_l^{-1}\boldsymbol{\Omega}^{-1}$). We obtain

$$\mathbf{w}_l = \mathbf{C}_l^{-1}\mathbf{\Omega}^{-1}\frac{1}{\lambda}(\bar{\boldsymbol{\mu}} - r\mathbf{i}) \tag{6}$$

The diagonal NxN positive definite matrix $\mathbf{C}_l$ may be defined as

$$\mathbf{C}_l = \begin{bmatrix} C_{l1} & 0 & \cdots & \cdots & 0 \\ 0 & \ddots & \ddots & & \vdots \\ \vdots & \ddots & C_{lj} & \ddots & \vdots \\ \vdots & & \ddots & \ddots & 0 \\ 0 & \cdots & \cdots & 0 & C_{lN} \end{bmatrix}$$

where C_{lj} is the bilateral cost of holding country j's stock by country l's investor.

As C_{lj} stands for the investment barrier cost for country l investing in j , its reciprocal $\dfrac{1}{C_{lj}}$ stands for a variable capturing the investment "advantage" of country l investing in country j.

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

$$\mathbf{MS} = \mathbf{\Phi}\mathbf{\Omega}^{-1}\left[\frac{1}{\lambda}(\bar{\boldsymbol{\mu}} - r\mathbf{i})\right] \tag{7}$$

where $\mathbf{MS}$ represents the vector of market shares of stock market indexes (supply side) and the right hand side is the (weighted) sum of stock indexes' demands (demand side). $\mathbf{\Phi}$ is a diagonal NxN positive definite matrix

$$\mathbf{\Phi} = \begin{bmatrix} \phi_1 & 0 & \cdots & \cdots & 0 \\ 0 & \ddots & \ddots & & \vdots \\ \vdots & \ddots & \phi_j & \ddots & \vdots \\ \vdots & & \ddots & \ddots & 0 \\ 0 & \cdots & \cdots & 0 & \phi_N \end{bmatrix}$$

where $\phi_j = \sum_{l=1}^{L} MS_l \dfrac{1}{C_{lj}}$ is the average investment "advantage" in holding asset j

Let us define $\mathbf{D}_l = \mathbf{\Phi}\mathbf{C}_l$, where $\mathbf{D}_l$ is again a diagonal NxN positive definite matrix. We can rewrite the above expression (6) as

$$\mathbf{w}_l = \mathbf{D}_l^{-1}\mathbf{\Phi}\mathbf{\Omega}^{-1}\left[\tfrac{1}{\lambda}(\bar{\boldsymbol{\mu}} - r\mathbf{i})\right] \tag{8}$$

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

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

$$\mathbf{w}_l = \mathbf{D}_l^{-1}\mathbf{MS} \tag{9}$$

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

$$w_{lj} = \frac{1}{D_{lj}} MS_j \tag{10}$$

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

B Data appendix

market share

Market shares refer to the values at December, 28th of each year from 2001 to 2004.

Source: Datastream, Thomson Financial

proximity variables

Distance

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

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)

opacity index

Index capturing the degree of opacity (Kurtzman et al., 2004) of a country. It is a synthetic index capturing corruption, inefficacy of the legal system, deleterious economic policies, inadequate accounting and governance practices, detrimental regulatory structures. It is a synthetic measure (1-100) of indexes coming from 41 different sources (World Bank, IMF, International Securities Services Association, International Country Risk Guide and Individual Country's Regulations).

Euronext dummy (Common Stock Exchange dummy)

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

EMU dummy (Common Currency dummy)

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

illiquidity measure

The illiquidity measure is defined in the text. The average illiquidity is obtained as weighted (by market share) average of country stock index illiquidity. The variable included in the analysis is the relative illiquidity measure of country j, i.e. the ratio of country j illiquidity on the average illiquidity.

Source: Datastream, Thomson Financials

turnover rate

The turnover rate is defined in the text. The average turnover rate is obtained as weighted (by market share) average of country stock index turnover. The variable included in the analysis is the relative turnover measure of country j, i.e. the ratio of country j turnover on the average turnover.

Source: Datastream, Thomson Financials

relative Sharpe ratio

Similarly to Lane and Milesi-Ferretti (2007) we consider the average excess return of the country stock market relative to world return, divided by the standard

deviation of the excess return's variability.

Source: authors' calculations based on Datastream data.

capital mobility index

The *Economic Freedom Network* 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

- domestic investments by foreigners and foreign investments by local residents are unrestricted
- investments are restricted in a few industries within the countries
- investments are permitted but regulatory restrictions slow the mobility of capital
- either domestic investments by foreigners or foreign investments by local residents require approval from government authorities
- both domestic by foreigners and foreign investments by local require government approval

We consider capital mobility indexes for both the investor country's index and the destination country index as we do not have bilateral specific capital control indexes: the barrier of country l investment in country j depends both on the restrictions imposed by country l on outward investment and on the restrictions imposed by country j on inward investment.

C Derived portfolios of institutional investors

Our dependent variable is the logarithm of *foreign* portfolio shares, that is the share of each foreign stock index in the equity portfolio of a given investor. Foreign equity holdings (in US$) are derived from *Coordinated Portfolio Investment Survey (CPIS)* for the years 2001 to 2004. However, the CPIS does not provide domestic holdings. This problem is circumvented by making use of complementary data sources to derive the share of foreign assets in each portfolio (Sorensen et al., 2007; Lane and Milesi-Ferretti, 2007; Amadi, 2006). In particular, we derive the stock market capitalization of each investing country from Datastream and, from *International Financial Statistics* (*IFS*), the foreign liabilities held by each investing country and the foreign equities held by each country. Therefore, country l foreign share is given by the ratio

$$\frac{for\ equities\ held\ by\ l}{MCAP_l\ + for\ equities\ held\ by\ l - foreign\ liab\ held\ by\ l} = \frac{for\ equities\ held\ by\ l}{equities\ held\ by\ country\ l} \tag{11}$$

where the denominator represents the total amount (domestic and foreign) of equities held by country l

As far as the portfolio at institutional sector level is concerned, very few countries in CPIS provide details on the breakdown by sector holder and many countries report incomplete surveys. From CPIS data on foreign holdings by institutional sector we derive the ratio of foreign holdings by sector k on the total amount of equities held by country l

$$\frac{for\ equities\ held\ by\ sector\ k\ in\ l}{equities\ held\ by\ country\ l} \tag{12}$$

In order to obtain the domestic holding position for each investing sector we rely on an additional data source, the *OECD National Accounts, Financial Balance Sheets* providing information on the fraction of wealth, split by instrument (equities, short term securities, long term securities, etc.), held by a particular institutional sector. Therefore, we derive for each institutional sector k in each country l the ratio

$$\frac{equities\ held\ by\ sector\ k\ in\ l}{equities\ held\ by\ country\ l} \tag{13}$$

Finally, by taking the ratio of (12) to (13), we can recover the ratio we are interested in, that is the foreign share in each institutional sector's equity portfolio allowing to derive the share of each foreign country in each sector's portfolio.

$$\frac{for\ equities\ held\ by\ sector\ k\ in\ l}{equities\ held\ by\ sector\ k\ in\ l} \tag{14}$$

The investing countries considered -France, Italy, Spain and Sweden- are the only large investing countries providing the sectoral breakdown of equity holdings in the *CPIS* and in the *OECD* database.

The households' sector in the text is the aggregation of the *Household* sector with the *Other* sector (non profit Organizations serving Households). The financial sector is obtained by merging *Monetary authorities*, *Banks* and *Other Financial Institutions*. The sectors *General Government* and *Non Financial Companies* are not considered in the analysis.

Tables

Table 1. Domestic share in equity portfolio (by investor type)

The table shows the average portfolio shares in domestic equities for the period 2001-2004. The first row refers to the overall economy, the second and third row refer, respectively, to financial investors and to households and non profit organizations. Portfolio shares are reported for the four investing countries considered in the analysis. Data are derived relying upon *CPIS* and *OECD, National Accounts, Financial Balance Sheets* (See Appendix B for further details).

	FRANCE	ITALY	SPAIN	SWEDEN
SHARE IN DOMESTIC STOCK MARKET				
- overall economy	*0.69*	*0.64*	*0.78*	*0.55*
- financial institutions	*0.60*	*0.29*	*0.33*	*0.34*
- households and NPOs	*0.90*	*0.76*	*0.94*	*0.83*

Table 2. Role of country factors in portfolio allocation: financial institutions

The table reports results of the pooled OLS regression as in (4) in the text. A "Least Square Dummy Variable Estimation" with fixed effects for investing countries is implemented. The dependent variable is the logarithm of the ratio of portfolio share to market share, $\log(w_{lj}^F/MS_j)$, where the subscript lj represents the couple investment country l -destination country j while the superscript F represents the "financial institutions" sector in country l. Details on the variables included as regressors are provided in Appendix A. Data on w_{lj}^F are at December, 31th of each year (2001-2004) while regressors (when time variant) are average value within the relevant year to avoid endogeneity issues. In column (8) Hong Kong and Singapore are excluded from the pool of destination countries. Constants and time dummies are included but not reported. White (1980) cross-section standard errors (d.f. corrected) are reported in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.

	financial institutions							
	(1)	**(2)**	**(3)**	**(4a)**	**(4b)**	**(5)**	**(6)**	**(7)**
								(OECD only)
log(dist/av_dist)	-0.956***	-0.949***	-0.932***	-0.530***	-0.529***	-0.528***	-0.453***	-0.376***
	(0.106)	(0.111)	(0.115)	(0.094)	(0.096)	(0.094)	(0.098)	(0.103)
dummy_border	0.448**	0.468**	0.483**	0.252*	0.259*	0.252*	0.276*	0.383***
	(0.188)	(0.198)	(0.197)	(0.147)	(0.151)	(0.147)	(0.145)	(0.137)
dummy_lang	0.448**	0.437*	0.442*	0.948***	0.911***	0.945***	1.020***	0.852***
	(0.228)	(0.252)	(0.250)	(0.278)	(0.269)	(0.277)	(0.322)	(0.313)
log(opacity/av_opacity)		-0.080	-0.094	-0.397	-0.404	-0.391	-0.072	-0.148
		(0.328)	(0.327)	(0.281)	(0.285)	(0.286)	(0.249)	(0.248)
Euronext dummy			0.251	-0.052	-0.039	-0.052	-0.042	0.068
			(0.222)	(0.230)	(0.237)	(0.230)	(0.221)	(0.221)
log(illiq_out/av_illiq)				-0.231*		-0.231*	-0.222*	-0.159
				(0.136)		(0.136)	(0.124)	(0.121)
log(turn_out/av_turn)					0.213			
					(0.148)			
EMU dummy				1.604***	1.598***	1.604***	1.535***	1.373***
				(0.212)	(0.205)	(0.213)	(0.210)	(0.206)
rel_Sharpe ratio						0.005	0.008	-0.012
						(0.022)	(0.022)	(0.021)
log(cap_mob_out/av_cap_mob)							1.038*	1.501***
							(0.543)	(0.536)
log(cap_mob_in/av_cap_mob)							-0.506	-0.533
							(1.392)	(1.498)
Observations	304	304	304	304	304	304	304	272
Adj-R^2	0.39	0.39	0.39	0.48	0.48	0.48	0.49	0.47

Table 3. Role of country factors in portfolio allocation: households and non profit organizations

The dependent variable is the logarithm of the ratio of portfolio share to market share, $\log(w^H/MS_j)$, where the subscript lj represents the couple investment country l -destination country j while the superscript H represents the "households and non profit institutions" sector in country l. Otherwise the table is the same as table 2. Constants and time dummies are included but not reported. White (1980) cross-section standard errors (d.f. corrected) are reported in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.

households and no profit organizations								
	(1)	**(2)**	**(3)**	**(4a)**	**(4b)**	**(5)**	**(6)**	**(7)**
								(OECD only)
log(dist/av_dist)	-1.279***	-1.170***	-1.091***	-0.559***	-0.558***	-0.552***	-0.433***	-0.300***
	(0.177)	(0.182)	(0.176)	(0.118)	(0.127)	(0.118)	(0.116)	(0.095)
dummy_border	0.881***	1.174***	1.240***	0.949***	0.967***	0.947***	0.985***	1.134***
	(0.251)	(0.295)	(0.269)	(0.203)	(0.212)	(0.203)	(0.203)	(0.194)
dummy_lang	1.821***	1.656***	1.679***	2.498***	2.395***	2.486***	2.606***	2.285***
	(0.233)	(0.233)	(0.231)	(0.230)	(0.211)	(0.225)	(0.289)	(0.331)
log(opacity/av_opacity)		-1.166***	-1.227***	-1.571***	-1.591***	-1.548***	-1.039***	-1.167***
		(0.387)	(0.386)	(0.297)	(0.308)	(0.298)	(0.297)	(0.286)
Euronext dummy			1.162***	0.874***	0.900***	0.872***	0.880***	0.889***
			(0.358)	(0.306)	(0.299)	(0.307)	(0.300)	(0.306)
log(illiq_out/av_illiq)				-0.590***		-0.589***	-0.575***	-0.433***
				(0.146)		(0.145)	(0.124)	(0.111)
log(turn_out/av_turn)					0.529***			
					(0.165)			
EMU dummy				2.120***	2.101***	2.118***	2.009***	1.711***
				(0.226)	(0.218)	(0.225)	(0.232)	(0.218)
rel_Sharpe ratio						0.018	0.023	-0.021
						(0.028)	(0.030)	(0.022)
log(cap_mob_out/av_cap_mob)							1.651***	2.461***
							(0.557)	(0.447)
log(cap_mob_in/av_cap_mob)							0.782	0.490
							(1.151)	(1.103)
Observations	304	304	304	304	304	304	304	272
Adj-R^2	0.52	0.55	0.55	0.69	0.69	0.69	0.70	0.72

Table 4. Role of country factors in portfolio allocation: all investors

The dependent variable is the logarithm of the ratio of portfolio share to market share, $\log(w_{lj}^{TOT}/MS_j)$, where the subscript lj represents the couple investment country l -destination country j while the superscript TOT indicates the "representative investor" in country l. Otherwise the table is the same as table 2 and table 3. Constants and time dummies are included but not reported. White (1980) cross-section standard errors (d.f. corrected) are reported in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.

	all institutional sectors							
	(1)	**(2)**	**(3)**	**(4a)**	**(4b)**	**(5)**	**(6)**	**(7)**
								(OECD only)
log(dist/av_dist)	-0.867***	-0.885***	-0.860***	-0.510***	-0.507***	-0.509***	-0.472***	-0.391***
	(0.115)	(0.114)	(0.119)	(0.106)	(0.104)	(0.106)	(0.113)	(0.107)
dummy_border	0.683***	0.634**	0.655**	0.447**	0.450**	0.446**	0.459**	0.578**
	(0.221)	(0.228)	(0.227)	(0.216)	(0.215)	(0.216)	(0.216)	(0.211)
dummy_lang	0.305	0.333	0.340*	0.696***	0.709***	0.694***	0.731***	0.534***
	(0.205)	(0.208)	(0.256)	(0.251)	(0.237)	(0.250)	(0.274)	(0.282)
log(opacity/av_opacity)		0.192	0.173	-0.124	-0.120	-0.119	-0.036	-0.049
		(0.394)	(0.391)	(0.340)	(0.348)	(0.343)	(0.169)	(0.312)
Euronext dummy			0.365	0.038	0.057	0.037	0.047	0.163
			(0.224)	(0.259)	(0.263)	(0.261)	(0.255)	(0.256)
log(illiq_out/av_illiq)				-0.041		-0.040	-0.036	0.040
				(0.172)		(0.173)	(0.169)	(0.172)
log(turn_out/av_turn)					0.079			
					(0.161)			
EMU dummy				1.397***	1.406***	1.396***	1.362***	1.168***
				(0.271)	(0.264)	(0.271)	(0.267)	(0.276)
rel_Sharpe ratio						0.004	0.005	-0.019
						(0.026)	(0.027)	(0.030)
log(cap_mob_out/av_cap_mob)							0.507	1.014*
							(0.614)	(0.586)
log(cap_mob_in/av_cap_mob)							-0.943	-0.902
							(1.525)	(1.627)
Observations	304	304	304	304	304	304	304	272
Adj-R²	0.38	0.38	0.38	0.44	0.44	0.44	0.44	0.40

Table 5. Test of different impact of country factors for households and financial investors

The dependent variable is the logarithm of the ratio of portfolio share of households to portfolio share of financial investors, $\log(w_{lj}^H) - \log(w_{lj}^F)$, where the subscript lj represents the couple investment country l -destination country j while the superscript H and F represent, respectively, "households and non profit institutions" and "financial institutions" in country l. Columns (#a) report values when Hong Kong and Singapore are included in the regression while in columns (#b) values are referred to the case in which only OECD destination countries are considered. . Constants and time dummies are included but not reported. White (1980) cross-section standard errors (d.f. corrected) are reported in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels, respectively.

Test difference households-financial investors										
	all countries		*no France*		*no Italy*		*no Spain*		*no Sweden*	
	(1a)	**(1b)**	**(2a)**	**(2b)**	**(3a)**	**(3b)**	**(4a)**	**(4b)**	**(5a)**	**(5b)**
log(dist/av_dist)	0.020	0.076	0.062	0.066	-0.042	0.034	0.056	0.150**	0.038	0.106**
	(0.060)	(0.056)	(0.098)	(0.100)	(0.066)	(0.064)	(0.077)	(0.060)	(0.075)	(0.066)
dummy_border	0.709***	0.751***	0.851***	0.835***	0.752***	0.834***	0.556***	0.668***	0.659***	0.669***
	(0.149)	(0.152)	(0.223)	(0.217)	(0.126)	(0.122)	(0.167)	(0.172)	(0.207)	(0.210)
dummy_lang	1.585***	1.432***	1.452***	1.418***	1.462***	1.269***	1.927***	1.617***	1.432***	1.204***
	(0.151)	(0.146)	(0.262)	(0.260)	(0.169)	(0.153)	(0.163)	(0.199)	(0.160)	(0.129)
log(opacity/av_opacity)	-0.968***	-1.019***	-0.942***	-0.982***	-1.005***	-1.061***	-0.893***	-1.034***	-0.962***	-0.943***
	(0.151)	(0.149)	(0.202)	(0.202)	(0.177)	(0.175)	(0.169)	(0.152)	(0.177)	(0.183)
Euronext dummy	0.921***	0.821***	-	-	1.156***	1.0786***	0.635***	0.567**	0.967***	0.863***
	(0.236)	(0.238)			(0.240)	(0.243)	(0.239)	(0.244)	(0.235)	(0.239)
log(illiq_out/av_illiq)	-0.353***	-0.274***	-0.348***	-0.312***	-0.384***	-0.286***	-0.198**	-0.106	-0.474***	-0.386***
	(0.063)	(0.067)	(0.091)	(0.095)	(0.085)	(0.085)	(0.088)	(0.086)	(0.067)	(0.070)
EMU dummy	0.474***	0.338**	0.520***	0.476**	0.053	-0.143	0.825***	0.620***	0.542***	0.433**
	(0.125)	(0.138)	(0.185)	(0.201)	(0.169)	(0.169)	(0.140)	(0.148)	(0.098)	(0.100)
rel_Sharpe ratio	0.015	-0.010	0.005	-0.011	0.011	-0.018	0.022	-0.008	0.026	0.002
	(0.014)	(0.014)	(0.016)	(0.017)	(0.018)	(0.016)	(0.019)	(0.015)	(0.015)	(0.016)
log(cap_mob_out/av_cap_mob)	0.613*	0.960***	0.390	0.426	0.292	0.719	1.377***	1.919***	0.399	0.822*
	(0.314)	(0.332)	(0.448)	(0.496)	(0.416)	(0.441)	(0.326)	(0.267)	(0.379)	(0.429)
log(cap_mob_in/av_cap_mob)	1.288	1.023	1.599*	1.192	1.068	0.605	0.588	1.025	1.432	1.116
	(0.890)	(0.887)	(0.948)	(0.951)	(1.663)	(1.707)	(1.129)	(1.179)	(0.886)	(0.881)
Observations	304	272	228	204	228	204	228	204	228	204
Adj-R^2	0.40	0.44	0.30	0.31	0.41	0.47	0.56	0.62	0.31	0.33