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*Home Country Bias: Does Domestic Experience Help
Investors Enter Foreign Markets?*

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Home country bias:

Does domestic experience help investors enter foreign markets?

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Home country bias:
Does domestic experience help investors enter foreign markets?

Abstract

This paper investigates whether investors' domestic experience helps them enter foreign markets. We show that investors first invest in domestic securities and only some time later they invest abroad in foreign securities. We also show that investors who trade more often in the domestic market start to invest abroad earlier. Our findings suggest that the experience investors acquire while they trade in the domestic market is a key reason why active investors enter the foreign market earlier. A reason is that highly educated investors as well as investors with more financial knowledge, arguably those for whom learning by trading is the least important, do not need to trade as much in the domestic market before they start investing in foreign securities. Another reason is that investors who start investing in foreign securities are able to improve on their performance afterwards. This improvement in performance constitutes further evidence that the home country bias is costly, thereby confirming that there are gains for investors from investing abroad.

1 Introduction

The home country bias remains one of the most important puzzles in international finance. The relatively low correlation between stock returns of various countries and the potential benefit from international diversification have been known for decades.[1] Yet, the vast majority of investors still do not invest in foreign securities or only hold a very small portion of their portfolios in foreign securities. By investing largely in their home country, investors may accept a far from optimal combination of portfolio return and volatility. In this paper, we attempt to contribute to the literature on home country bias by investigating individual investors' decision to make their first investment in foreign equities abroad. We are particularly interested in finding out if investors' experience in the domestic market accelerates their decision to "enter" foreign markets and whether this decision affects their performance.

It is by now well established that investors tend to overweight domestic equities and underweight international equities when they select their investment portfolios.[2] French and Poterba (1991), for example, document that the fraction of U.S. equity portfolios invested abroad is very small.[3] Oehler, Rummer and Wendt (2008) provide evidence of home country bias among German investors, and Karlsson and Norden (2007) provide similar evidence among Swedish investors. This bias also appears to extend to Portugal, the country of origin of our data, since only 4% of Portuguese investors have investments in foreign securities.[4]

There is also evidence that home-country bias is costly. Lewis (1999), for example, shows that there are substantial gains when moving from investing fully in the S&P 500 index to a partial investment in a fund that emulates the MSCI Europe, Australia and Far East index. Bailey, Kumar and Ng (2008), in turn, show that the mean monthly portfolio return of foreign-inclined investors is only slightly higher than that of their domestic benchmarks, but

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[1]See, for example, Levy and Sarnat (1970).

[2]Researchers have found other forms of "home" bias. Coval and Moskowitz (1999), for instance, find that U.S. fund managers exhibit a strong preference for firms with local headquarters. Huberman and Sengmuller (2004), in turn, find that employees tend to invest a large proportion of their retirement plans in their own company's stock.

[3]For more recent evidence on US investors' home country bias see Kyrychenko and Shum (2005), Campbell and Kraeussl (2007), Kho, Stulz and Warnock (2006) and Cai and Warnock (2006).

[4]This figure includes direct investments in individual foreign securities, investments in ADRs and investments in mutual funds that invest in foreign securities.

the later investors experience a much higher volatility and lower Sharpe ratios.

Given the benefits from investing in foreign securities, the natural question to ask is why so few investors pursue these investments? Researchers have proposed several explanations for the home country bias. Adler and Dumas (1983) and Cooper and Kaplanis (1994), for example, suggest that this bias arises because home assets provide better hedges against country specific risks. Black (1974), Stulz (1981), and Kang and Stulz (1997), in turn, claim it arises because the costs of international diversification exceed the corresponding gains, whereas French and Poterba (1991) and Uppal and Wang (2003) argue that it results from systematic differences in return expectations across investors. Graham, Harvey and Huang (2005) put forth an explanation based on investors' competence. They suggest that investors are willing to invest in foreign securities only after they fill competent about the benefits and risks involved in these investments. Lastly, Kilka and Weber (2000) and Strong and Xu (2003) provide a behavioral explanation for the home country bias: this bias arises because investors tend to be more optimistic towards home markets than towards international markets.[5]

Researchers have found supporting evidence for some of these theories.[6] Graham, Harvey and Huang (2005), for instance, find that investors with more competence are more likely to invest in international assets. Vissing-Jorgensen (2003) finds that high wealth households are more likely to invest in foreign securities, and argues that this is consistent with high wealth households paying the information cost associated with investing in foreign assets. Kilka and Weber (2000) and Strong and Xu (2003) find that investors are more optimistic towards their home markets than they are about foreign markets.

In this paper, we attempt to add to this literature by investigating whether investors' domestic experience help them invest for the first time in foreign securities abroad. We start out by documenting that there is a "life cycle" effect in individuals' investment choices in the

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[5]Other explanations for the home country bias, as reviewed in Lewis (1999) and Karolyi and Stulz (2002), include barriers to international investments, such as international taxes and government capital restrictions, information asymmetries between domestic and foreign markets (investing in foreign equity markets may require understanding foreign accounting standards and legal environments), and the prevalence of closely held firms in most countries causing the world float portfolio to be significantly different from the world market portfolio.

[6]Several empirical studies, including Cooper and Kaplanis (1994), Baxter and Jermann (1997), Tesar and Werner (1995), and Dahlquist et al. (2003), argue that the effects detected in this literature are too small to account for the degree of home bias observed in the data.

sense that investors first invest in domestic securities and only some time later they invest in foreign securities. We then use duration analysis to investigate if investors' domestic trading experience affects the length of time it takes them to start investing abroad. We investigate the effect of domestic trading on the timing of the decision to enter foreign markets controlling for a set of factors the previous studies find help explain the home country bias. Our findings show that *ceteris paribus* investors who trade more often in the domestic stock market wait a shorter period of time before they start to invest in foreign securities abroad. Our findings also show that married and female investors as well as older investors wait a longer period of time before they start investing in foreign securities. In contrast, wealthier investors, as well as investors with more education and those with access to more financial information start to invest in foreign securities earlier. Lastly, we find that performance in the domestic market has a nonlinear effect — investors with the worst performance as well as those with the best performance wait for a shorter period of time before they start investing in foreign securities.

Since investors need to invest abroad in order to invest in foreign securities as opposed to invest in ADRs of foreign firms listed in the Portuguese stock exchange, it is unlikely that a strategy of picking stocks randomly explains our finding that active investors wait for a shorter period of time before they start to invest in foreign securities. Therefore, in the second part of our paper, we try to explain why investors who trade more often in the domestic market tend to enter the foreign markets earlier. Following Nicolosi, Peng, and Zhu (2005), and Seru, Shumway, and Stoffman (2008), who show that investors learn by trading, we conjecture that investors who are active in the domestic market learn faster the advantages of investing in foreign securities and consequently start investing abroad earlier. Alternatively, following Odean (1999) and Barber and Odean (2000, 2002) who argue that investors tend to trade too often because they are overconfident, we conjecture that investors who are active in the domestic market are overconfident and their pursue of new trading opportunities leads them to enter foreign markets earlier. Our results generally support the learning explanation but not the overconfidence explanation. A reason is that we find that highly educated investors as well as investors with more financial knowledge, arguably those for whom learning by trading is the least important, do not need to trade as much in the domestic market before they start investing in foreign securities. Another reason is that these results continue to hold even when we account for overconfident investors. Finally, and still in support of the learning explanation

and contrary to the overconfident explanation, we find that investors who enter the foreign markets are able to improve on their performance afterwards.

Our paper adds to the literature on home country bias in some important ways. Our investigation of investors' first investment in foreign securities is novel. Understanding investors' decision to undertake this investment is important because it is arguably the most important decision they make once they decide to pursue the potential benefits from investing abroad. Our focus on individual investors (as opposed to institutional investors) and on their investments on individual securities made abroad (as opposed to investments in mutual funds of foreign securities or in ADRs) is also important because it requires more expertise and it is more revealing of investors' intent to pursue the potential benefits from foreign investments.[7] Our finding that investors learn while they trade in the domestic market and this helps them accelerate their decision to start investing in foreign securities adds support to Graham, Harvey and Huang (2005) competence theory for the home country bias, and suggests that programs aimed at improving investors' financial literacy could have an important contribution at reducing this bias. Finally, our finding that investors who enter the foreign markets are able to improve on their performance afterwards corroborates Lewis (1999) and Bailey, Kumar and Ng's (2008) finding that the home country bias is costly and confirms that there are gains for investors from entering the foreign markets earlier.

The remainder of the paper is organized as follows. The next section presents our methodology and our data sources. This section also characterizes our sample. Section 3 presents our results on the importance of domestic experience for investors' decision to invest for the first time in foreign securities. Section 4 presents the results of the tests we undertake to explain why investors who trade more often in the domestic market start to invest in foreign securities earlier. Section 5 concludes the paper with some final remarks.

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[7]Bailey, Kumar and Ng (2008), Graham, Harvey and Huang (2005), and Karlsson and Norden (2007) all investigate the home country bias based on data on individuals' portfolios. However, in Bailey, Kumar and Ng (2008) investors invest in foreign securities through ADRs which enable US investors to buy shares in foreign companies without undertaking cross-border transactions. Graham, Harvey and Huang (2005) use a survey, not actual trading data and Karlsson and Norden (2007) study portfolios which are formed as a part of the pension plan in Sweden, not direct investments in foreign equities.

2 Methodology, data and sample characterization

2.1 Methodology

Our methodology has two parts. The first part attempts to investigate if investors' trading activity in the domestic market is important at reducing their home country bias in the sense of accelerating their decision to start investing in foreign securities. The second part attempts to test some hypotheses we put forth to explain the link we identify between trading in the domestic market and the time it takes investors to start investing in foreign securities.

Our methodology relies on duration analysis which is often used to study problems that involve the passage of time before a certain event occurs. In our study, the event of interest is investors' first investment in a foreign security. We want to find out why the length of time it takes investors to start investing abroad since they start trading in the domestic stock market varies across investors. We also want to find out to what extent that length of time is affected by investors' characteristics and in particular by their investment experience at home. Duration analysis enables us to characterize the process of investors' first investment abroad more rigorously than a logit or probit regression analysis because these models can only deal with the dichotomy occurrence/non occurrence of the event. Furthermore, duration analysis is more adequate to handle time-varying explanatory variables and to accommodate data censoring.[8]

Traditional duration analysis assumes a distribution for the duration and uses maximum likelihood to estimate the effect of regressors on the expected duration.[9] However, to avoid making specific assumptions about the shape of the hazard function we consider a semiparametric approach to investigate the determinants of the hazard rate. We follow Cox (1972) who proposed a partial likelihood method (rather than a maximum likelihood) for estimating the slope coefficients β in a proportional hazard specification for the hazard function such as:

$$h(t|x_t) = h_0(t)exp(\beta^{'}x), \tag{1}$$

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[8]A typical survival time data set contains both spells for which entry and exit dates are observed as well as right censored incomplete spells. A survival time is said to be right censored when, at the time of observation, the relevant event has not yet occurred, so the total length of time between entry and exit is not known exactly.

[9]A rigorous treatment of duration analysis may be found in Wooldridge (2002). For a more advanced treatment see Lancaster (1990) monograph.

where $h_0(t)$ is the baseline hazard, which is common to all units of observation, x is a vector of regressors and β is the vector of parameters. Taking logs to both sides of equation (2) we have:

$$log(h(t|x_t)) = log(h_0(t)) + \beta' x. \tag{2}$$

We can easily see that β_j measures the semi-elasticity of the hazard with respect to x_j. In the above specifications, the vector x is constant but the Cox model can also handle time-varying explanatory variables.[10]

Our first objective is to investigate if investors' trading experience in the domestic market, as determined by their number of trades in each quarter, accelerates their decision to start to invest abroad. We investigate this effect controlling for a set of factors which researchers have found to help explain home-country bias. As many of these factors change with time, we estimate our models with time-varying explanatory variables. We provide different values for our explanatory variables for each interval between $t = 0$ and $t = ti$, the terminal point at which exit or censoring takes place.[11] The time interval that we consider in our analysis is the quarter. In the Robustness section we discuss what happens when we use the year interval instead.

Following Karlsson and Norden's (2007) finding that demographical features help explain the home country bias we control for investors' gender, marital status and age when they start their trading activity. Following Graham, Harvey and Huang (2005) finding that more competent investors are more likely to invest in foreign securities, we control for the education of investors. Following Vissing-Jorgensen (2003) finding that wealthy investors tend to hold more foreign assets we attempt to control for investors' wealth by controlling for their job (our closest proxy for wealth). We further control for whether the investor has a time deposit and whether the investor has a mortgage or a consumer loan as these will likely affect his wealth. Following Kilka and Weber (2000) and Strong and Xu (2003) finding that investors are more optimistic towards their home markets than they are about foreign markets, we control for the performance of the Portuguese stock market relative to the European markets. Finally,

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[10] Despite the fact that most relevant variables change with duration, in some cases they change at a slower pace than a typical duration. For that reason, they are often treated as if they were constant. See Lancaster (1990), p. 21.

[11] See Lancaster (1990), p. 23, for a discussion of some of the issues associated with these models.

we control for investor' residence since investors who live in the metropolitan areas are usually more educated and are more likely to be wealthier and employed in the financial sector and consequently to have access to better quality information.

In the Robustness section we further control for a set of other factors that could affect investors decision to invest in foreign securities, including whether investors have made investments in derivatives, whether they have investments in mutual funds of domestic securities or investments in mutual funds of foreign securities. Recall, that we define the timing of investors' entry abroad based on their investments in individual foreign stocks and do not consider for this purpose their investments in foreign mutual funds. Since derivatives tend to be complex financial instruments, we would expect that investors who make investments in these assets to be more sophisticated and consequently to start investing abroad earlier. Similarly, since investments in mutual funds of foreign securities require more information and probably more expertise than investments in domestic stocks, we would expect that investors who make investments in foreign mutual funds to start investing abroad earlier. On the other hand, some of these investors may see these funds as a substitute for their investments in individual stocks abroad. So, investors with stakes in foreign mutual funds may choose to start investing in foreign stocks earlier or later than the remaining investors. In contrast, since investments in mutual funds of domestic securities require the least information and expertise, we would expect that investors with stakes in these mutual funds to wait longer before they start investing abroad.

We also investigate the robustness of our findings when we account for investors' performance in the domestic stock market. Investors who perform poorly in the domestic market may have added incentives to start investing abroad in an attempt to improve on their performance. On the other hand, to the extent that domestic performance signals investors' capabilities and expertise in making the right investments, those investors that do well at home may be more capable and consequently start investing abroad earlier. We attempt to account for these differences by controlling for a set of dummy variables (one for each quartile) covering the distribution of investors' performance in the domestic market.

The second part of our methodology attempts to identify the reason(s) behind the link we identify between trading in the domestic market and the time it takes investors to start to invest abroad. We focus on two potential explanations for that link. Following the

studies by Nicolosi, Peng and Zhu (2005) and Seru, Shumway and Stoffman (2008), who show that investors learn by trading, a potential reason why investors who trade more often in the domestic market enter earlier in the foreign market is because of the experience they accumulate while trading in the domestic market. If this were the explanation for our finding, then we would expect domestic trading to be more important for those investors who can learn the most with trading experience, in other words less educated investors and investors with less financial knowledge and information. To investigate this hypothesis, we expand our duration model to include some alternative proxies of investors' education and financial knowledge and their interaction with investors' domestic trading. If investors indeed learn while they trade in the domestic market and this helps them enter abroad, then we would expect our proxies for investors's knowledge and financial education to have a positive sign and their interaction with their domestic trading activity to have a negative sign.

An alternative explanation for our finding is that active investors in the domestic market start investing abroad earlier because these investors are overconfident. The literature on behavioral finance, including Odean (1999) and Barber and Odean (2000, 2002), shows that overconfident investors trade too often. From this perspective, it is possible that overconfidence leads investors to trade too often in the domestic market and motivates them to start investing abroad in their quest for new trading opportunities. If this were indeed the explanation for our finding, then we would expect the aforementioned interactions to be insignificant since there is no apparent reason for overconfidence to correlate with investors' education or financial knowledge. Further, those interactions should also loose their significance once we control for overconfident investors.

Finally, we attempt to disentangle these two alternative explanations for our finding by investigating the performance of investors after they start investing abroad. Following Odean (1999) and Barber and Odean (2000) finding that overconfident investors tend to underperform, we hypothesize that if overconfidence is the reason why active investors in the domestic market start to invest in foreign securities earlier, then their performance should remain unchanged after they enter the foreign market. In contrast, if investors learn while they trade in the domestic market and this drives them to start investing in foreign securities then we should observe an improvement in the performance of these investors. We use standard multivariate analysis to investigate if investors' entry to the foreign markets improve their performance. We

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review our data sources next.

2.2 Data

Our main data source is a proprietary database made available to us by one of the largest Portuguese financial intermediaries which documents the history of individual investors' trades in securities and mutual funds over a decade. The database reports detailed information on the accounts of individual investors who traded in securities, including mutual funds, at least once over the period that goes from January 1997 through September of 2006. The information available in the database for each investor account can be grouped in socio-economic information and financial information. Socio-economic information includes investor's age, gender, marital status, home address (zip code), education and occupation.

With regards to financial information, our database reports information about the assets and liabilities of each investor, including information on whether the investor has a savings account and whether the investor has personal loans and mortgages. More importantly given our purpose, our database reports detailed information on the trading activity of each investor.

For each asset that the investor trades, the database reports the date of the transaction, the type of transaction (buy or sell), the price, the number of securities traded and the description of the asset (ISIN code and name of asset).[12] We use this description of assets to distinguish trades in domestic assets from those in foreign assets, and to identify trades that are in stocks, bonds, derivatives and mutual funds. We also use that information to distinguish direct investments in foreign securities listed outside Portugal from investments in securities of foreign firms that are listed in the Portuguese stock market. Since we want to focus on investors' decision to enter abroad by making investments in foreign securities listed outside their home country we drop from our sample investors who make investments in securities of foreign firms listed in the domestic market. This alternative avenue to invest in foreign securities is not relevant for Portuguese investors since during the sample period there were only 3 foreign firms listed in the Lisbon Stock Exchange.

Finally, by combining that information with data from the Information Disclosure System of the Portuguese Securities Commission (CMVM), which describes the asset composition

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[12]We use Bloomberg to get future price information on the securities traded by our investors.

of each mutual fund, we are able to identify those investors who invest in foreign securities through mutual funds. We do not consider these investments to determine when an investor first invests abroad in part because it is not entirely clear that investors are aware of that particular aspect of mutual funds. Quite often the selection of the mutual fund is made by an adviser at the bank as opposed to a choice of the investor. At any rate, as we noted above, we do control for investors that make investments in foreign mutual funds in our duration analysis.

2.3 Sample characterization

Our database has information for 918,246 investors. To construct our sample, we begin by dropping from this universe 60,999 investors who reside abroad as their foreign holdings may have been acquired in their country of residence rather than in Portugal. Next, we drop 1370 investors who make investments in the stock of foreign corporations listed in the Portuguese stock exchange since we want to focus on investments in foreign securities made abroad. We further drop investors who do not have any trading activity during the sample period, and investors whose starting trading date was prior to our sample period since we do not have the complete history of their trading activity. Lastly, since we do not have information for all of the investors in our database on the date they opened a trading account with our bank either because this information is missing or because the investor appears in our database as a result of a bank acquisition by our bank, we drop all investors whose first security trade during the sample period is a sale because these investors were already active before the sample period.[13]

That selection criteria left us with a sample of 136,166 investors, of which 3,252 made their first investment in individual foreign securities during our sample period. This is the sample we consider in our investigation. In the Robustness section, we discuss the implications for our findings when we further limit our sample to the set of investors whose starting trading date is after the beginning of the sample period.[14]

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[13]Most of the investors appear in our database because they are clients of our bank, which is one of the largest banks in the country. Since this bank was involved in some acquisitions during the sample period and it merged the clients of the target banks into its database in some cases we are unable to identify the investor's starting trading date.

[14]This criteria still does not rule out the possibility that some of these investors have already had trading activity before joining our bank. To reduce concerns with these investors we further search the trading activity

It is apparent from the composition of our sample that only a small number of investors invest in foreign securities even when we consider their trading activity over a decade, an indication that the home county bias remains a very important problem. Further, even among investors who eventually invest in foreign securities, many of them wait quite some time before they start making these investments confirming that there is a life cycle effect in these investments. Only 650 of those 3,252 investors invest in a foreign security in their first year of activity. By the end of the third year of activity about half of them have entered the foreign market, but after five years more than one third of those investors have not still made their first investment in foreign securities.

Table 1 compares our sample of investors who enter foreign securities markets with those investors who invest only in domestic securities throughout the sample period (included in the latter are also those investors who have holdings in mutual funds that invest in foreign securities). There we can see that more active investors in the domestic market are more likely to invest in foreign securities abroad. Table 1 also shows that investors who are more prone to take risks, male and single investors, are more likely to invest in securities abroad. More educated investors (with a college degree) and investors with more financial knowledge (those with a high level of financial literacy as well as those who invest in derivatives) are also more likely to invest in foreign securities. Wealthier investors (those with highly skilled jobs and those with a time deposit and with no loans) also have a higher probability of investing in foreign securities.

Finally, the bottom panel of Table 1 shows that investors who make foreign investments have better investment skills because they outperform the remaining investors. Since we do not have information on the composition of the portfolios for all investors in our sample, we opted to follow Seru, Shumway and Stoffman (2008) and measure the performance of investors by the 30-day average return of stocks purchased in each quarter. This is a measure of investor performance in the sense that it captures the investor ability to make good investment choices. According to this measure of performance, both investors who invest only in domestic securities as well as those who invest in foreign securities have negative returns, but those who make foreign investments have better returns. Importantly, investors who enter the foreign markets

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of investors during the sample period and drop those investors who sell securities for which we do not observe their acquisitions.

are able to improve their performance once they start investing in securities abroad.

3   Investing in foreign securities for the first time

We present in this section the results of our survival analysis of the length of time it takes an investor to start investing in individual foreign securities. We identify that length of time by the age of the investor's trading account at the time of his first investment in foreign securities and measure that age by the number of days that elapsed since the investor started to invest in individual securities or mutual funds and the date of the investor's first investment in foreign (individual) securities.

Table 2 presents the results of our investigation of the determinants of that age using the Cox proportional hazard model with time-varying covariates. We report the coefficients rather than hazard ratios (exponential coefficients) because our main interest is in the direction of the effects, rather than their magnitude. A positive coefficient indicates that an *increase* in the associated explanatory variable *increases* the hazard of the first investment in foreign securities in any given year. In other words, a positive coefficient means the explanatory variable *speeds up* investors' decision to start investing in foreign securities. Though not included in the table, all of the models were estimated with a set of year dummies to account for potential time effects on investors' decision to go abroad.[15]

A quick look at the first row of Table 2 shows that in all of the models there is a negative correlation between the trading experience of the investor in the domestic market and the length of time it takes the investor to start investing in foreign securities. Investors who are more active in the domestic market enter foreign markets earlier. Model 1 shows that this association holds when we control for investors' demographical determinants, including their gender, marital status and age, and when we account for their place of residence. According

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[15]These dummies are also important to account for potential changes in the way the stock markets operated during the sample period. For instance, in 2002, the Portuguese stock market joined the Euronext. This could have affected investors' choice of investments because it allowed Portuguese investors to access foreign securities traded in one of the other four European Euronext markets (Amsterdam, Bruxelles, Paris and UK for derivatives) quicker and at lower cost. We did investigate if the membership of the Portuguese stock exchange in the Euronext had an effect on Portuguese investors' home bias, but we did not find it led to a reduction in the time it takes investors to start investing abroad. This could also be attributed to the fact that most of our sample is for the post Euronext period.

to this model, married and female investors as well as older investors wait a longer period of time before they start investing in foreign securities. These findings are consistent with the literature which finds these investors to be less prone to take on risk.[16] Still according to model 1, investors who reside in the largest cities (Lisbon and Oporto) are more likely to start investing in foreign securities earlier. This result may be attributable to the additional information available to these investors since financial institutions are predominantly located in these cities. The place of residence could also capture a wealth effect since wealthier investors tend to live in the largest cities or even a financial knowledge effect since jobs in the financial sector are predominantly located in those cities.

In the remaining models of Table 2, we add sequentially controls for a set of other factors that are likely to affect the timing of investors' decision to start investing abroad. In Model 2 we attempt to control for investors' education by including a set of dummy variables to distinguish investors according to their level of education. The results confirm that investors with more education — investors with a college degree as well as those with an intermediate college education — start to invest in foreign securities earlier than investors that only have the basic education.

In Models 3 through 5 we attempt to control for investors' wealth. In Model 3, we distinguish investors according to their employment. Our results confirm that investors with highly skilled jobs, likely the wealthiest investors, are the first to start investing abroad. Interestingly skilled workers are last to enter the foreign markets. This is because our omitted employment category in Model 3 is dominated by retirees, which is likely to include an important share of wealthy investors. In Model 4, we control for investors with a savings account and in Model 5 we account for investors with mortgages and those with consumer loans. The results of these controls confirm our finding that wealthier investors start to invest in foreign securities earlier.[17] Investors that have mortgages spend more time on the domestic market. In contrast, those with a bank savings account enter the foreign securities market earlier, though this difference is not statistically significant.

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[16]See Barber and Odean (2001) and Goetzmann and Kumar (2008) for evidence that married and female and older investors have less appetite for risk.

[17]This result is consistent with Vissing-Jorgensen's (2003) finding that high wealth households are more likely to invest in foreign securities.

Finally, in Model 6 we investigate if the performance of the Portuguese stock market (relative to European markets) plays an important role on the timing of investors' decision to invest abroad. Contrary to what one might expect we do not find that the relative performance of the domestic market affects investors' decision to go abroad. It is possible, though, that part of this effect is being picked up by the time dummies we have in our models to account for any potential time effects on investors' investment choices.

The results we presented thus far show that investors who trade more often in the domestic market start to invest in foreign securities earlier than investors who are not very active in the domestic market. Our results also show that this finding is robust to a large set of investor characteristics, including gender, age, place of residence, education, employment and wealth. These findings are robust. Importantly, they also do not suffer from survivorship bias. We have in our sample *all* trades from *all* investors regardless of whether they stopped trading prior to the end of the sample period. In the next subsection, we continue our investigation of the robustness of this finding to several other factors that could also play a role on investors' decision to start to invest in foreign securities.

3.1 Robustness tests

Table 3 presents the results of a set of tests we have undertaken to investigate the robustness of our key finding. All of the tests were estimated using the controls in Model 6 of Table 2, but in the interest of space we omit these controls and report only the results on our key variable — Log Trades — and the new controls we consider in each test. The first row of Table 3, which reports the coefficient on the Log Trades, shows that our finding that investors who trade more often in the domestic market start to invest in foreign securities earlier continues to hold in all robustness tests.

Models 1 through 3 investigate the importance of three other investment decisions of investors, namely whether they invest in derivatives, whether they invest in mutual funds made of national securities and whether they invest in mutual funds made of foreign securities. The dummy variables we consider to control for these investment decisions are time varying, that is, they take the value one after the date investors make their investments in each of these assets, respectively. Model 1 shows that investors who invest in derivatives are more likely to start investing in foreign securities earlier, probably because these are the most sophisticated

investors. Model 2 shows that investors who invest in national mutual funds tend to wait longer before they invest in foreign securities, though the difference is not statistically significant. In contrast, according to model 3 investors who have holdings of mutual funds made of foreign securities start to invest abroad earlier. Investments in these funds, therefore, function as a complement rather than a substitute for investments in foreign securities.

Model 4 attempts to control for investors' performance in the domestic market. Investors with a poor performance may have added incentives to start investing abroad in order to improve their performance. On the other hand, investors with a strong performance in the domestic market — most likely those that are most sophisticated — may feel more certain of their capabilities and decide to start to invest abroad earlier. In order to allow for this nonlinear effect of performance, we account for investors' performance in the domestic market through a set of four dummy variables — one for each quartile of the performance distribution. Our results confirm that investors with the weakest performance in the domestic market as well as those with the strongest performance wait for a shorter period of time before they start to invest abroad.

In addition, we have undertaken the following robustness tests (results available from the authors upon request). All of the models we report in Tables 2 and 3 were estimated with time varying covariates taking the quarter as the unit of time. Using instead the year as the relevant unit of time does not change our findings. We have considered in our analysis all of the investors that make at least one trade during the sample period. Dropping from the sample less active investors (those that make less than 5 trades over the sample period) affects the significance of some of our covariates but it does not have a significant effect on our key variable — the log of trades. Lastly, as we noted the date when investors opened a trading account with our bank is sometimes missing in our database. When we selected our sample we dropped investors whose first trade was a sale because these investors were already active prior to the beginning of the sample period. To reduce concerns that some of the remaining investors may too have been active in the domestic market prior to us following them, we further dropped from our sample all investors that sell a security that was not acquired during the sample period. Again, our key result with regards to the importance of domestic trading on the timing to start investing in foreign securities remains unchanged.

The evidence we presented in this section shows that *ceteris paribus* investors who

trade more often in the domestic stock market wait a shorter period of time before they start to invest in foreign securities. Our results, however, are silent with respect to the reason(s) behind that link. As we discussed in the Introduction, it is unlikely that a random strategy of investment selection explain our findings because investors in our sample have to invest abroad in order to invest in foreign securities. Instead, active investors may start to invest abroad earlier because they are overconfident and therefore trade too often. Alternatively, these investors enter the foreign market earlier because they learn while they trade in the domestic market and this helps them with their foreign investments. In the next section, we investigate if these hypothesis explain our finding.

4   Does domestic experience help investors to invest abroad?

If the reason why active investors in the domestic market enter foreign markets earlier is because they learn while they trade and this helps them to start to invest abroad, then highly educated investors and investors with more financial knowledge should not need to trade in the domestic market as much as the remaining investors before they first invest abroad. To investigate this hypothesis, we start by identifying three proxies for investors' education in general and their financial knowledge in particular. The first proxy distinguishes investors who are highly educated. Our second proxy distinguishes investors who are more likely to have financial knowledge either because they are economists, managers or employees of banks. Our third proxy distinguishes investors who make investments in derivatives. Since these are usually complex financial instruments, we assume that these investors have more financial knowledge.

To test our hypothesis we interact each of these proxies with investors' trading activity in the domestic market. This interaction term will tell us if highly educated investors and investors with more financial knowledge need to trade as much in the domestic market as the remaining investors before they start to invest in individual foreign securities.

The results of these tests are reported in models 1 through 3 of Table 4. A quick look at these models reveals two important findings. First, all of our proxies are positive and, with the exception of the variable that distinguishes investors who have investments in derivatives, they are all statistically significant. These findings confirm that highly educated investors as well as investors with more financial knowledge do not spend as much time in the

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domestic market before they start investing abroad. Second, the interaction of these variables with investors' trading activity in the domestic market is negative and highly significant in all three models. Thus, everything else equal, more educated investors as well as those with more financial knowledge do not need to trade as much in the domestic market as the remaining investors before they make their first investment abroad.

This finding is consistent with the hypothesis that investors learn while they trade in the domestic market and this helps them make the decision to start to invest abroad. Further, this finding does not appear to be consistent with the other hypothesis we have put forth that active investors start to invest abroad earlier because they are overconfident since there is no apparent reason for overconfidence to correlate with investor's education or financial knowledge.

To investigate more directly if overconfidence is the key reason why active investors in the domestic market wait for a shorter period of time before they start to invest abroad, we reestimate models 1 through 3 of table 4 after we control for overconfident investors. We follow Goetzmann and Kumar (2008) and Bailey, Kumar and Ng (2008) and classify an investor as overconfident if his trading activity is in the top quartile of the distribution on investors' trading activity *and* his performance is in the bottom quartile of the distribution on investors' performance. The results of these tests are reported in models 4 though 6 of table 4. They confirm that those investors who are likely to be overconfident wait a shorter period of time before they make their first investment in foreign securities. More importantly, however, controlling for these investors has no major effect on the interaction variable. Comparing models 1 though 3 of table 4 with models 4 through 6 it is apparent that controlling for overconfident investors either leaves the interaction variable unaffected or it reduces it only marginally and without affecting its statistical significance. These results further suggest that overconfidence is not the key reason why investors who are active in the domestic market wait for a shorter period of time before they make their first investment abroad.

4.1 Do foreign investments improve investors' performance?

An alternative way to ascertain if learning by trading in the domestic market as opposed to overconfidence drives our result on investors' decision to start investing abroad is to investigate their performance afterwards. Following Odean (1999) and Barber and Odean (2000) finding

that overconfident investors trade too much and this leads to poor performance, we posit that that if the reason why active investors enter the foreign market earlier is because they are overconfident, then their performance should not improve afterwards. Alternatively, if investors learn as they trade and this helps them go abroad then we should observe an improvement in their performance afterwards.

To investigate this hypothesis, we consider a multivariate model in which the dependent variable is the performance of the investor. We follow Seru, Shumway and Stoffman (2008) and measure the performance of investors by the 30-day average return of stocks purchased in each quarter. The independent variables of this model are the explanatory variables we used in our duration analysis. In addition, we add a dummy variable to distinguish those investors who start to invest in foreign securities during the sample period, and a dummy variable to identify the performance of these investors in the time period after they make their first investment in foreign securities. The results of this test are reported as Model 1 of Table 5. They show that investors who make foreign investments on average appear to have better investment skills because they outperform the remaining investors. More importantly, our results show that these investors are able to improve their performance once they start to invest in foreign securities. This finding is confirmed in model 2 which we estimate with investor-fixed effects to account for other potential relevant characteristics of investors that we were not taken into account with our set of controls.

These results seem to run counter the overconfidence explanation for the link we identify between investors' domestic trading activity and the time it takes them to start to invest abroad. In contrast, that improvement in performance appears to be consistent with the hypothesis that investors learn while they trade in the domestic market and this experience helps them start making investments abroad.

5   Final remarks

This paper adds to the literature on home country bias by investigating whether investors' experience in the domestic market help them first enter foreign markets. Our investigation of the length of time it takes investors to start investing in foreign securities shows that investors who trade more often in the domestic market start to invest abroad earlier. We argue that the experience investors obtain while trading in the domestic market as opposed to overconfidence

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is the key driver behind that finding. A reason is that we find that highly educated investors as well as investors with more financial knowledge, arguably those for whom learning by trading is the least important, do not need to trade as much in the domestic market before they start to invest in foreign securities abroad. Another reason is that these results continue to hold even when we account for overconfident investors. Yet, another reason consistent with this explanation is that investors are able to improve on their performance after they enter the foreign market.

Our results are novel and they help us understand the home country bias. Our finding that investors need to acquire experience in the domestic market before they adventure into the foreign markets adds support to Graham, Harvey and Huang's (2005) theory that investors are willing to invest in foreign securities only after they fill competent about the benefits and risks involved in these investments. Further, our finding that investors who enter foreign markets are able to improve on their performance adds support to the claim that the home country bias is costly and confirms that there are benefits for investors from entering the foreign markets earlier.

Table 1

Sample characterization: Who invests abroad?[a]

Variables	Investors who invest in:		Difference	T Statistic
	domestic securities	foreign securities		
A: Investors' characteritics				
Male	65.9	84.4	-18.6	-29.52***
Age[b]	50	50	0	-0.13
Married	65.7	62.5	3.2	3.85***
Education				
Basic	17.8	6.9	10.9	19.62***
Intermediate	46.7	34.9	11.8	11.51***
High	35.6	58.2	-22.6	-21.43***
Employment				
Unemployed	21.2	14.2	6.9	11.34***
Skilled	26.3	15.6	10.7	16.78***
Highly skilled	52.5	70.1	-17.6	-22.04***
Residence				
Lisboa	26.5	36.2	-9.6	-11.69***
Oporto	13.7	14.1	-0.4	-0.67
Other	51.1	41.8	9.3	10.96***
Time deposit	23.3	31.7	-8.4	-10.49***
Mortgage	17.1	15.1	2.0	3.26***
Consumer loan	9.8	8.3	1.5	3.12***
Financial Literacy	3.9	8.1	-4.2	-8.85***
B: Portfolio composition				
% with derivative investments	5.9	6.5	-0.6	-1.40
% with domestic mutual funds	21.7	45.6	-24.0	-28.12***
% with foreign mutual funds	1.8	16.9	-15.1	-23.71***
C: Trading history: Annual average number of trades in[c]				
domestic mutual funds	1.23	5.44	-4.21	-6.61***
domestic securities	1.46	14.83	-13.37	-23.53***
foreign mutual funds	1.09	5.02	-3.93	-17.39***
D: Investors' performance[d]				
Before investing abroad	-0.024[e]	-0.020	-0.004	-4.28***
After investing abroad		-0.013		
Difference		-0.007		
T Statistic		-5.48***		

[a] Basic: indicates the investor has only up to four years of education. Intermediate: indicates the investor has up to twelve years of education. High: indicates the investor has a high degree. Retired: also includes unemployed, students and unskilled employment. Skilled: includes all employment categories which require some skill. Highly skilled: includes all employment categories which required highly skilled workers. Time deposit: Indicates the investor has a time deposit. Mortgage: Indicates the investor has a mortgage. Consumer loan: Indicates the investor has a consumer loan. Financial literary: Indicates those investors who have a financial profession including economists, managers and employees of banks. Variables measured at the time investors make their first investment in foreign securities or at the end of the sample for those investors that never invest in foreign securities, unless we indicate otherwise.

[b] Measured at the time investors start their activity.

[c] Averages computed over the entire sample period.

[d] Performance measured by the 30-day average return of stocks purchased in each quarter.

[e] To be more precise, this measures the performance over the entire sample period of investors that never invest in foreign securities.

Table 2

Determinants of investors' first investment in foreign securities[a]

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Log Trades	0.539***	0.532***	0.526***	0.527***	0.525***	0.524***
	(36.62)	(36.09)	(35.34)	(35.34)	(35.17)	(35.08)
Married	-0.194***	-0.183***	-0.183***	-0.183***	-0.177***	-0.177***
	(4.88)	(4.61)	(4.50)	(4.50)	(4.35)	(4.35)
Male	0.556***	0.540***	0.521***	0.520***	0.529***	0.529***
	(11.13)	(10.79)	(10.11)	(10.08)	(10.25)	(10.24)
Age	-0.006***	-0.004***	-0.005***	-0.005***	-0.006***	-0.006***
	(4.82)	(2.71)	(3.47)	(3.48)	(3.96)	(3.96)
Lisbon	0.369***	0.292***	0.284***	0.284***	0.284***	0.284***
	(9.57)	(7.45)	(7.17)	(7.17)	(7.16)	(7.17)
Oporto	0.097*	0.043	0.024	0.022	0.019	0.019
	(1.83)	(0.80)	(0.44)	(0.41)	(0.35)	(0.35)
Highly educated		0.787***	0.705***	0.702***	0.707***	0.706***
		(8.65)	(7.54)	(7.50)	(7.55)	(7.54)
Intermediate		0.388***	0.367***	0.367***	0.375***	0.375***
		(4.16)	(3.88)	(3.88)	(3.96)	(3.95)
Highly skilled			0.098*	0.097*	0.112**	0.112**
			(1.79)	(1.76)	(2.04)	(2.04)
Skilled			-0.237***	-0.237***	-0.230***	-0.230***
			(3.52)	(3.51)	(3.41)	(3.41)
Time deposit				0.038	0.053	0.052
				(0.98)	(1.35)	(1.33)
Mortgage					-0.187***	-0.187***
					(3.66)	(3.66)
Consumer loan					0.048	0.049
					(0.74)	(0.75)
Net European rent						-0.485
						(1.49)
LR > χ^2	6385	6519	6374	6374	6421	6421
H0: proportional hazard						
Prob($> \chi^2$) for H0	0.000	0.000	0.000	0.000	0.000	0.000
Observations	942887	942887	914703	914703	914657	914657
Investors	136166	1361666	131464	131464	131452	131452
Failures	3252	3252	3172	3172	3172	3172

[a] The education dummy left out is Basic, which includes investors with up to four years of education. The employment dummy left out is Retired, which includes investors that are retired, unemployed, as well as those with unskilled employment. Results computed with our sample of investors that trade in securities, using time-varying covariates measured quarterly.

Table 3

Robustness tests[a]

Variables	(1)	(2)	(3)	(4)
Log Trades	0.517***	0.528***	0.518***	0.525***
	(34.65)	(34.77)	(34.80)	(35.11)
Derivatives	0.558***			
	(6.91)			
National Funds		-0.063		
		(1.29)		
Foreign Funds			0.711***	
			(9.87)	
Performance:Q1				-0.011
				(0.21)
Performance:Q2				-0.202***
				(4.01)
Performance:Q3				-0.229***
				(4.74)
$LR > \chi^2$	6435	6421	6437	6471
H0: proportional hazard				
$Prob(> \chi^2)$ for H0	0.000	0.000	0.000	0.000
Observations	914657	914657	914657	914657

[a] Performance: Qi with i={1,2,3} indicates the investor had a performance as measured by the average return of stocks purchase in the 30 days following each purchase in the first (lowest performance), second and third quartile, respectively. Results computed with our sample of investors that trade in securities, using time-varying covariates measured quarterly.

Table 4

Learning by trading in the domestic market[a]

Variables	(1)	(2)	(3)	(4)	(5)	(6)
Log Trades	0.549***	0.529***	0.543***	0.538***	0.518***	0.531***
	(31.84)	(34.72)	(35.19)	(30.73)	(33.50)	(33.86)
High Education	0.894***	0.682***	0.705***	0.868***	0.657***	0.679***
	(7.76)	(7.26)	(7.53)	(7.49)	(6.99)	(7.24)
High Education x Log Trades	-0.068***			-0.068***		
	(2.77)			(2.74)		
Financial Literacy		0.471***			0.441***	
		(3.01)			(2.77)	
Financial Literacy x Log Trades		-0.092*			-0.087*	
		(1.90)			(1.76)	
Derivatives			0.194			0.213
			(1.29)			(1.40)
Derivatives x Log Trades			-0.111***			-0.099**
			(2.59)			(2.28)
Overconfidence				0.630***	0.626***	0.612***
				(12.25)	(12.18)	(11.90)
$LR > \chi^2$	6427	6432	6426	6437	6444	6436
H0: proportional hazard						
$Prob(> \chi^2)$ for H0	0.000	0.000	0.000	0.000	0.000	0.000
Observations	914657	914657	914657	914657	914657	914657

[a] Results computed with our sample of investors that trade in securities, using time-varying covariates measured quarterly.

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Table 5

Investing in foreign securities and investor performance[a]

Variables	(1)	(2)
Ex post performance	0.008***	0.009***
	(5.18)	(4.52)
Foreign investor	0.005***	
	(4.51)	
Married	-0.001	
	(0.19)	
Male	0.004***	
	(6.92)	
Age	0.001***	
	(4.20)	
Lisbon	0.003***	
	(5.74)	
Oporto	-0.002***	
	(3.22)	
Intermediate	0.001	
	(0.52)	
Highly educated	0.002*	
	(1.81)	
Highly skilled	0.001	
	(1.09)	
Skilled	-0.001	
	(1.06)	
Time deposit	0.003***	
	(5.49)	
Mortgage	-0.002***	
	(2.67)	
Consumer loan	-0.001*	
	(1.66)	
Net European rent	-0.136***	-0.228***
	(23.63)	(29.61)
Constant	-0.028***	-0.020***
	(19.52)	(72.91)
R^2	0.0026	0.3388
Cross-sections included	129453	134951
Total panel (unbalanced) observations	297933	308775

[a] Results computed with our sample of investors that trade in securities. Model 1 estimated with panel least squares. Model 2 estimated with panel least squares and investor fixed effects.

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