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Local Home Bias: Theory and New Empirical Evidence from Italy

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Abstract

This thesis examines the literature on local home bias, i.e. investor preference towards geographically nearby stocks, and investigates the role of firm's visibility, profitability, and opacity in explaining such behavior. While firm's visibility is expected to proxy for the behavioral root originating such a preference, firm's profitability and opacity are expected to capture the informational one. I find that less visible, and more profitable and opaque firms, conditionally to the demand, benefit from being headquartered in regions characterized by a scarcity of listed firms (local supply of stocks). Specifically, research estimates suggest that firms headquartered in regions with a poor supply of stocks would be worth i) 11 percent more if non-visible, non-profitable and non-opaque; ii) 16 percent more if profitable; and iii) 28 percent more if both profitable and opaque. Overall, as these features are able to explain most, albeit not all, of the local home bias effect, I reasonably argue and then assess that most of the preference for local is determined by a successful attempt to exploit local information advantage (60 percent), while the rest is determined by a mere (irrational) feeling of familiarity with the local firm (40 percent). Several and significant methodological, theoretical, and practical implications come out.

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1. Introduction

A huge number of financial studies focuses on the factors able to affect investors' asset allocation process. Although essential drivers of investors choices have already been largely detected and investigated by financial literature (see among the first Markowitz (1952)), a significant but still partially unexplored element in this sense is represented by firms' location, which indeed is nowadays more and more addressed by academics. Investor preference for domestic stocks rather than foreign ones seems in fact to be one of the main ambiguities that comes out from a theory-and-practice comparison. Such behavior, known as "home bias" (French and Poterba (1991)), is indeed at least curious after considering the overall higher risk of the not-well-diversified portfolio implied by the overweighting of domestic stocks (see Grubel (1968); Levy and Sarnat (1970); Solnik (1974); De Santis and Gerard (1997); Eldor, Pines and Schwartz (1988); Lau, Ng, Zhang (2010)). Financial research deeply focused over the topic and produced a wide variety of studies: this phenomenon emerges not only in cross-country studies, where domestic stocks are preferred to the foreign ones (French and Poterba (1991); Cooper and Kaplanis (1994); Tesar and Werner (1995))[i], but also within the borders of single countries (i.e. local home bias), where securities are preferred as a consequence of an investor's geographical closeness to the firm's headquarters (Coval and Moskowitz (1999)). Over time academics have been invited to provide interpretations to the (local) home bias, one of the most convincing of which is linked to information asymmetries. In this perspective, both domestic (Brennan and Cao (1997)) and geographically nearby firms (Coval and Moskowitz (2001)) are, correctly or not, believed to be better known with respect to the foreign/distant ones.[ii] However, in spite of the

[i] See Karolyi and Stulz (2003) and Lewis (1999) for a survey of this literature.

[ii] Barriers to capital flows created by higher transaction costs concerning foreign securities (Stulz (1981a)), withholding taxes (Black (1974)), and political risk (Feldstein and Horioka (1980)), as well as other factors such

considerable number of articles that attest the validity of an information-driven explanation of (local) home bias, mainly through the documentation of the biased portfolios' outperformance (among the others, see the studies of Shukla and Van Inwegen (1995); Choe, Kho and Stulz (2005); and Dvorak (2005) related to investors' preference for domestic stocks; and Coval and Moskowitz (2001); Hau (2001); Feng and Seasholes (2004); Ivkovic and Weisbenner (2005); Bodnaruk (2009); Teo (2009); and Agarwal and Hauswald (2010) focused in a within-country context), a growing strand of literature provides evidence that it is determined, at least partly, by behavioral and irrational factors generically referred to the concept of familiarity (see for instance Morse and Shive (2011) with reference to the home bias, and Huberman (2001) with regard to the local home bias). In this context, among the others Grinblatt and Keloharju (2001) point out that "*recent research suggests that home bias may be part of a larger phenomenon in which investors exhibit a preference for familiar companies*". As the concept of familiarity may be considered as something which is somehow part of investors' natural environment and/or cultural background, in this sense locally biased portfolios should not be able to ineludibly outperform (Kang and Stulz (1997); Seasholes and Zhu (2010); Doskeland and Hvide (2011)). Furthermore, in this case only the more sophisticated investors, regardless the location of their investments, should have greater ability to predict returns (Froot, O'Connell and Seasholes (2001); Froot and Ramadorai (2008)) and outperform (Grinblatt and Keloharju (2000); Seasholes (2000)). Thus, although recent documented phenomena such as observation learning and/or social interactions among investors (Hong, Kubik and Stein (2004)) and neighborhood word-of-mouth (Hong, Kubik and Stein (2005); Brown, Ivković, Smith and Weisbenner (2008)) help to explain the intensity of the preference for local (see also Ivkovic and Weisbenner (2007); Shive (2010)),

as the failure of purchasing power parity (PPP) (Adler and Dumas (1983); Uppal (1993)) are also advocated to explain the home bias.

researches about the underlying reasons driving the (local) home bias are far from being conclusive, and the question of whether, and to what extent, this phenomenon is driven by informational advantages rather than irrational behavior is still unsolved.

At present, even if financial literature seems far from agree about its causes, the existence of the local home bias seems indisputable (for most updated evidences see among the others Becker, Cronqvist and Fahlenbrach (2011); Jacobs and Weber (2012); Kumar, Page and Spalt (2012)). Regardless the underlying reasons of the phenomenon, investors preference for local securities is found to generate a segmentation of domestic capital markets and to naturally create a clientele of investors from the same region. In this sense, Francis, Hasan and Waisman (2008) show that bondholders tend to invest in local firms and that, compared to the urban ones, companies headquartered in remote rural areas present an higher cost of debt capital generated by a greater difficulty of the activities' monitoring. Following the contributes of Loughran and Schultz ((2004); (2005)), who first realized the relevance of geography in asset pricing, Pirinsky and Wang (2006) show that companies headquartered in the same area present strong comovement in the stock returns. Going further, Hong, Kubik, and Stein (2008) (hereafter HKS2008) have been the first to examine the implications of the phenomenon on asset pricing equilibrium. More specifically, the authors observe that investors' preference for local generates a sort of equity-market segmentation based on proximity which significantly affects stocks' market price. In detail, the price (Market-to-Book Ratio) of a non-financial firm is found to be decreasing in the ratio of the aggregate book value of firms in its region to the aggregate risk tolerance of investors in its region (proxied by the aggregate disposable income of local households), i.e. RATIO variable, according to an effect the authors name "only-game-in-town".

This Ph.D. thesis is part of this debate. In particular, I draw on recent approaches to test the local home bias (see HKS2008), and study the effect of geographical equity-market

segmentation on firms' value in the Italian context. Furthermore, this research contributes to the existing literature by discriminating between the possible causes driving the phenomenon, trough the analysis about which firms this effect is more relevant for. In other words, I first provide evidence of the local home bias in the Italian equity-market (hereafter just market) verifying whether an imbalance between the regional supply and demand of ordinary shares, proxied by the RATIO variable introduced by HKS2008, creates a local rarity/abundance effect which translates into a premium/discount of the corporate market value. In this sense, where the local supply of securities is low(high), conditionally related to an equal amount of demand by investors (i.e. where RATIO is low), the few(many) listed firms in that given region should trade at premium(discount). The same perspective can be used to link the demand for stocks to firm market value: where the local demand is high(low), conditionally related to an equal amount of supply, listed firms are expected to trade at premium(discount). In this framework, the mispricing should be linked solely to investors' preference for those stocks that are headquartered close by.

Going further, and extending the framework proposed by HKS2008, I get light on the causes of local bias by examining whether the pricing of firms that are more likely to be perceived as familiar and of those that, at the same time, are more likely to generate an information advantage which can be positively exploited by investors, is (in)dependent from local-market conditions. In other words, this Ph.D. thesis aims to deepen the knowledge about investors' preference for local securities, by investigating whether, and to what extent, the phenomenon is attributable to the successful attempt of local traders to exploit an information advantage not widely available to the public, rather than to a mere irrational behavioral bias attributable to investors' familiarity with the issuing firm. Practically, I investigate both factors so far addressed as possible main causes of the phenomenon by looking at local home bias effects upon firm's value. In this sense, if a mere behavioral

explanation as the feeling of familiarity with the local firm drives investors preference, local home bias should affect firms' value and be widespread independently from a firm's characteristics. On the contrary, information-driven explanations would require not all firms to be exposed to the phenomenon, but mainly those where the exploitation of local information is more likely. Again, when using this approach to distinguish between alternatives, an additional key role should be held by profitability. In fact, the detection of local home bias mainly in future profitable firms would suggest that local information is exploitable as being potentially profitable. In this case, this evidence would lead to the conclusion that, assuming that a local information advantage effect is in place, a local inadequate supply for stocks should not able to enhance a firm's value in case of a poor prospect of future profitability.

Operationally, I first test whether the negative relationship among RATIO and firms' Market-to-Book Ratio highlighted in the US (HKS2008) exists also in the Italian contest. Once tested the existence of local bias, in order to examine whether and to what extent the local bias is attributable to behavioral rather than rational factors, I estimate the additional and the overall local rarity/abundance effect for the subsamples of firms

(i) that are less likely to be known by the common (non-local) investor (non-visible firms);

(ii) outperforming in the following year (future profitable firms); and

(iii) within the latter, less likely to disclose information to the public, that I called (profitable and) opaque firms.

Each estimated local rarity/abundance effect verifies whether and to what extent the preference for local stocks is identifiable as inclination toward the firm's (i) visibility, (ii) profitability, or (iii) both profitability and opacity respectively. Being widespread, a mere irrational behavior would occur irrespectively, at least of the last two firms' characteristics. In

summary, the line of reasoning moves as follow. As long as the home bias relies on the simple familiarity with the issuing firm, while firm just locally perceived somehow familiar would be, *ceteris paribus*, picked by local investors, the nationally-known ones would not experience the same phenomenon. In other words, if stocks are traded exclusively on the basis of their degree of visibility among investors, firms characterized by a regional (national) visibility would be traded solely within the regional (Italian) territory. Given the existence of local bias, while for regional-visible firms I should observe a significant regional rarity/abundance effect, for the national-visible ones the same effect should be zero, as local market conditions should not be able to affect their market evaluation. Conversely, if visibility doesn't drive the trading and thus the preference for local, I would observe the same rarity/abundance effect for both types of firms (i.e. the additional rarity/abundance effect for national-visible firms would be zero). As long as firm's visibility is not negatively correlated with the level of firm's information asymmetries, if significant, the local rarity/abundance effect due to (non-)visibility represents a proxy for the non-informative component of the local bias phenomenon. On the other side, whether there was a chance to exploit an information gap that drives the preference towards local stocks, not all firms are expected to be exposed to the local home bias, but mainly those where a valuable informational advantage between local and non-local investors exists and can be exploited i.e. opaque companies. Indeed these firms are characterized by higher information asymmetries as a consequence of their attempt to mask their true value. Moreover, the finding that the local home bias is confineable only to profitable firms would drive to the conclusion that local information is really exploitable as potentially profitable, as investors would not exhibit the same preference for poorly performing local stocks. Given the existence of local bias, under the null that all investors have the same information, profitable firms should be traded uniformly over the whole national territory and the rarity/abundance effect for profitable

firms should be zero. As long as firm's visibility and firm's profitability are not negatively correlated, if significant, the local rarity/abundance effect due to profitability implies the presence of an information advantage due to proximity owned by local investors, and represents a proxy for the informed component of the local bias phenomenon. Going further, the local investors' information advantage should be more pronounced in relation to those firms that manipulate earnings to mask their true performance, i.e. opaque firms. Therefore, if significant, the (additional) rarity/abundance effect for profitable and opaque firms is a further proof that proximity generates an information advantage. Summing up, consistently with these arguments, in a behavioral perspective the local equity-market conditions should significantly affect corporate market value solely for locally known firms, while the rational perspective implies that local equity-market conditions are significantly correlated with corporate market value just in those firms for which information asymmetries between local and non-local investors are substantial, and especially in institutional contexts in which the exploitation of any informational advantage is less penalized than elsewhere. Finally, in order to simultaneously capture the rational and the behavioral root of the local home bias, I investigate the significance of the relation between the Market-to-Book Ratio and the RATIO conditioned to the level of firm's visibility, future profitability and opacity. This allows also to control for the possible correlation that might exist among firm's visibility, profitability, and opacity, thus giving robustness to previous results. To this end, I start by applying principal component analysis (i.e. PCA) to visibility and opacity variables separately. PCAs permit to reduce the number of proxies involved, implicitly preserving the information content in each set of variables. Through PCAs, I identify three significant components: the first increasing with firm's visibility, the second with the firm's opacity measured on the basis of accounting variables, and the third with firm's opacity measured on the basis of market variables. Then, I identify visible, and opaque firms through three further dummy

variables assuming value of one for those firms showing an yearly value greater than the cross-sectional yearly median of respectively the first, second, and third PCAs' significant component, and zero otherwise. Lastly, I investigate the significance of the relation between the Market-to-Book Ratio and the RATIO conditioned to these dummy variables simultaneously considered.

As far as I know, this study is the first to test this conjecture. I run the analysis within the Italian context since its peculiar cultural, economic and institutional scene makes the country an ideal setting to study the phenomenon investigated[iii]. In fact, on one side, the spatial distribution of listed firms in Italy, and its historical and legal context make the analysis not only interesting from an academic standpoint but also desirable since very likely the local home bias phenomenon (and its implications) may assume relevant proportions. On the other side, Italian bank oriented economy as well as other differences among the Italian and US frameworks (La Porta, Lopez-De-Silanes, Shleifer and Vishny (1997), (1998)) allow to internationalize the results obtained taking into account, at the same time, single countries' peculiarities. In detail, the spatial distribution of Italian listed firms, highly geographically clustered among few different areas, particularly around Rome, the capital, and Milan, which is the primary Italian economic and financial center, is different from the geographical location of potential demand (investors), more geographically widespread around the country (Baschieri, Carosi, Mengoli, (2010)). This feature makes likely to observe local relevant unbalances between the demand and supply for stocks, which is the precondition for a profitable application of the framework proposed by HKS2008. Second, the average (median) surface of the Italian regions corresponds to 4.97 (5.79) percent of the whole Italian territory, which is approximately the same critical area (cr. the 5.28 percent of the U.S. surface) that

[iii] See Mengoli, Pazzaglia and Sapienza (2009) for an overview of the Italian institutional and corporate governance setting.

Ivkovic and Weisbenner (2005) consider in order to distinguish "local" and (they find) better informed investors from the non-local and (they find) worse informed ones. Again, since the Italian equity-market is almost entirely dominated by ordinary shares and domestic firms, I am able to accurately estimate the overall supply of equity instruments in each considered geographical area. More specifically, the entire population of primarily listed firms at Milan Stock Exchange over the period investigated (December 31, 1999 - December 31, 2007) consists of 428 firms corresponding to 2,977 firm-year observations. Among these, only 6 firms (corresponding to 24 firm-year observations) quoted solely non-ordinary shares, and only 1 firm (corresponding to 1 firm-year observation) is non-domestic. Moreover, although well known, dual-class firms are frequent in Italy (Zingales (1994); Nenova (2003)) but the weight of non-ordinary shares over the whole Italian equity-market capitalization is substantially irrelevant - I estimate the 3.99 percent on average per year over the investigated period - and decreasing in time (Bigelli, Mehrotra, and Rau (2012)). Another reason that makes Italy an excellent research context to study the local home bias phenomena is that Italian economy is widely recognized as one of the most informational opaque (Bhattacharya and Daouk (2002); Mengoli, Pazzaglia and Sapienza (2011)), as well as characterized by a very low effectiveness of insider trading law (Bhattacharya and Daouk (2002)). The combination of these elements makes highly realistic the eventual illegal exploitation of the informational advantage that might be acquired locally (see among others Meulbroek (1992)), and its possible incorporation in market prices (Bajo, Bigelli, Hillier and Petracci (2009)). In such a context, advantages related to soft-information should be more valuable and related dynamics should emerge stronger (Agarwal and Houswald (2010)). According to the hypotheses of this study, when linked to the proximity, this geographical component of firm value would therefore represent the informational feature of local bias I estimate. Considering another point of view, borrowing the Grinblatt and Keloharju (2001)'s argument, the political

history of Italy, which before its unification (in 1861) was split for centuries in numerous kingdoms and city-states often hostile to each other, makes extremely likely the persistence of a cultural geographic segmentation at regional level – actually represented by the cultural and economic gap between the northern and southern areas of the country. This aspect could eventually deepen the local home bias effect by exacerbating its behavioral component (Grinblatt and Keloharju (2001)). Finally, researches conducted in Italy already provide evidences of the role of territoriality on the economic development of the country: Guiso, Sapienza and Zingales (2004) for instance highlight a positive effect of the regional financial development on the economic success of the same geographical area. This further shows how the peculiarities of the Italian context and its features locally considered may actually impact in its economic and financial environment, and increases the interest in the following analysis.

This study considers a panel of 2,463 firm-year (end) observations over the period 1999-2007, where each observation is a firm headquartered within the Italian borders and listed on the Milan Stock Exchange (Italian Stock Exchange). Considering non-financial companies only, after controlling for firm's size, future growth opportunity and equity profitability, I find that isolated firms actually benefit from the effect of a regional stock supply scarcity which translates into higher market value. As expected, given the distinctive characteristics of the Italian equity-market, the magnitude of the local rarity/abundance effect is about 44 percent stronger than that documented by HKS2008 for the US, suggesting that country features may actually play a crucial role for the local home bias phenomenon. More notably, I find that the effect is not indiscriminately widespread among non-financial firms, being significantly stronger for the less visible, more profitable and more opaque, in line with the hypotheses of this study. In general terms, if a firm moves from a region to another facing a decrease in the RATIO equal to 56 basis points (in the remainder of the study I'll use this

hypothetic variation of the RATIO variable since it is the one used by HKS2008 and therefore it allows a comparison between the two studies), holding else equal, the implied increase in the firm's stock price is about 11.66 percent. Controlling also for firm's press coverage and age, the magnitude of the effect decreases up to 6.59 percent. Stepping forward, the local rarity/abundance effect is found to be on average about the 70 (68.23) percent stronger for less visible firms while not significant for the more visible ones; about the 60 (61.82) percent stronger for profitable firms and not significant for the non-profitable ones, and more than twice stronger (135.98 percent) for both profitable and opaque firms while only about the 15 (15.69) percent stronger for the profitable but non-opaque ones. Once merged the analysis of visibility, profitability and opacity, consistently with my previous findings, I find that the local rarity/abundance effect is inversely driven by firm's visibility and that it increases with firm's profitability and opacity. In other words, all other things being equal, the estimates of this study suggest that a firm headquartered in a region where the supply for stocks is poor with respect to the demand would be worth, whether compared to a company located in a region which does not presents the same imbalance between local demand and supply (and is thus characterized by an higher RATIO of 0.56 basis points), i) 11 percent more if non-visible, non-profitable and non-opaque; ii) 16 percent more if non-visible, but profitable and non-opaque; and iii) 28 percent more if non-visible, but profitable and opaque. Overall, as these features are able to explain most, but not all, of the local home bias effect, I reasonably argue and then assess that most of the preference for local is determined by a successful attempt to exploit a local information advantage (60 percent) while the remaining part is determined by a mere (irrational) feeling of familiarity with the local firm (40 percent).

These findings contribute to the existing literature in several ways. First of their kind, at least with reference to the Italian equity-market, results further confirm the existence of the

local home bias (Coval and Moskowitz (1999)) and extend out of sample HKS2008 results, thus providing further robustness to their findings. In light of the peculiarities of the research context, the greater magnitude of the RATIO's effect documented with respect to the American equity-market is consistent with previous findings suggesting that the local home bias phenomenon is significantly influenced by cultural (cf. Grinblatt and Keloharju (2001), and Morse and Shive (2011)) as well as institutional factors (cf. Bhattacharya and Daouk (2002)). In this sense, the relation among insider trading law and investors' preference for local has not been addressed yet by financial literature, but represents a promising field of investigation.

Analyzing the single causes driving the phenomenon, this study's findings on dynamics related to firm's future profitability are new in literature. Notably, I find that firms that will outperform in the following year are more intensively traded within the region they are headquartered in than elsewhere. More simply, neighboring investors appear to be more skilled in selecting the most profitable firms. Overall these evidences, besides supporting the existence of an informational advantage held by local investors, are also strongly consistent with that strand of literature showing that the closer are the players (analysts and banks) to the issuing firms, the better is their forecasting ability on firm's profitability (see among the others Malloy (2005), Bae, Stulz and Tan (2008), Degryse and Ongena (2005), and Agarwal and Hauswald (2010)). Again, besides findings related to the role exerted by firm's profitability, also those referred to the influence of opacity on investors' choices are new in financial literature. At this regard, I find that the effect of local equity-markets conditions on corporate market value is leveraged by firm's opacity. These evidences are consistent and complement results of Bae, Stulz and Tan (2008) and Kumar(2009). In detail, Bae, Stulz and Tan (2008) find that local analysts' informational advantage is closely tied to the quality of information disclosure, while Kumar (2009) shows that investors exhibit a positive bias-

uncertainty relation, i.e. investors exhibit stronger bias when stocks are more difficult to evaluate, and that informed trading intensity is higher among stocks where individual investors exhibit stronger behavioral biases. Finally, results on visibility are strongly consistent with a behavioral origin of the phenomenon, and in particular with previous evidences showing that the local home bias is stronger toward stocks issued by companies visible to investors (Huberman (2001)), and weaker with reference to the more nationally known firms and for the more sophisticated investors (Grinblatt and Keloharju (2001)).

In general terms, the contemporary evidence of the double nature, informational and behavioral, of local bias is new and helps to settle the so-called home bias puzzle by providing a link between evidences so far conflicting. As both effects are in place, some investors trade local stocks because they are somehow familiar, while other traders select local securities since better informed. The proportion (of the trading activity) of the latter on (the one of) the former becomes essential in determining and interpreting evidences on local bias. Obviously, solely in context with the predominance of informed traders with respect to the biased ones, locally biased portfolios will generate extra-performances (see among the others Ivkovic and Weisbenner (2005)). In the opposite situation, i.e. the predominance of non-informed investors, the same result is likely to not hold (see among the others Seasholes and Zhu (2010)). Informed traders are likely to be the more sophisticated ones, since the preference for local is found strongly increasing with the degree of the firm's tendency to manipulate earnings, (Bae, Stulz, and Tan (2008)). Consistently with this interpretation, the literature fails to document an extra-performance of locally biased portfolios just in relation to non-institutional investors (Døskeland and Hvide (2011); Seasholes and Zhu (2010)). This research results show that the general tendency to trade in local stocks, as well the probability to get outperformance from this strategy strongly increases with the uncertainty. Future research will therefore have the task to understand which factors are able to move the balance

between the rational and the behavioral component of local bias. Beyond the central role that with respect to the rational component of local home bias is surely played by the enforcement of the insider trading law and the practices of corporate information disclosure, I believe that the degree of cultural integration is a key-factor. People tend to interact with similar, and to share beliefs and perceptions (Hong, Kubik and Stein (2004); Ivković and Weisbenner (2007); Brown, Ivković, Smith and Weisbenner (2008)). The greater the cultural segmentation, the greater is likely to be the equity-market segmentation and the persistence of a bias, and ultimately the profitable exploitation of such market disturbances. In this perspective, the fact that the local rarity/abundance effect observed in Italy, is on average the 50 percent stronger than in the US (almost 2.5 times if restricted to non-visible, profitable and opaque firms) could be explained.

From a practical point of view, once highlighted the over-valuation of non-financial securities issued by firms located in geographical areas characterized by an excess of demand for local stocks, several subsequent policy implications come to light. These companies could in fact gain from their feature of "rarity" together with the preference of a large audience of local investors: for instance, the initial public offering of firms headquartered in areas not populated by listed firms would face, *ceteris paribus*, a lower risk of failure, since the issued securities are more likely to meet the marginal investor's preference. The same conclusions might be applied for seasonal equity offerings: in both events the cost of capital would shrink. Moreover, the local context could for instance represent a sort of poison pill against hostile takeovers because of the overestimation of these securities due to their territorial feature. To future research the task to make light on these issues.

Again, this research highlights the so far unexplored role of firms' location as a determinant of firms' market evaluation giving useful directions in terms of pricing, but also helps to discriminate among the firms that may actually exploit the rarity effect and benefit

from the evaluation that derives from company's territoriality. In this sense, in context with the predominance of informed traders with respect to the biased ones, the presence of a stock supply scarcity would not be sufficient to enhance opaque firms' market evaluation if these companies are not expected to be profitable in the future. In fact, as already stated, firms' could not exploit the territoriality effect just because they are located in areas of the county not populated by other companies, but necessarily need to be characterized by specific features that may help them to catch the informed (i.e. profitability and opacity features) or behavioral (i.e. non-visibility or, better, local-visibility feature) component of local home bias.

The remainder of the study is structured as follows. Section 2 presents the state of the art and reports the principal findings of the literature over the home bias topic. The roots of the phenomena are investigated by distinguishing in particular among investors' protection and corporate governance (Section 2.1.1.), information asymmetries (Section 2.1.2.), and behavioral factors (Section 2.1.3.). Moreover, a specific section (Section 2.2.) deepens the state of the art about the local home bias phenomenon by analyzing the pertinent literature. Section 3 presents the data, with a specific focus on data sources and sample selection (Section 3.1.), and on the variables definition (Section 3.2.). Section 4 describes the methodology used in the study, i.e. the multivariate regression procedure (Section 4.1.) and the PCA – Principal Component Analysis methodology (Section 4.2.). Section 5 presents the results, reporting evidences of the Italian equity-market segmentation due to local bias, and investigating the role exerted by firms' visibility, firm's profitability and firms' opacity in determining such segmentation. Finally, Section 6 concludes.

2. Literature review

2.1. Domestic bias

The advantages of international diversification of equity portfolios are widely documented in financial literature. Indeed, the existence of a relatively high degree of positive correlation within an economy suggests the possibility that risk reduction can actually be facilitated by diversifying portfolios internationally. In this sense, Grubel (1968), Levy and Sarnat (1970), Solnik (1974), and Eldor, Pines and Schwartz (1988) have been among the first to show how investors can reach an optimal risk-return profile by creating the so-called "global market portfolio", which is obtained by allocating wealth among securities issued by firms belonging to different countries, that enter in portfolio with proportion to the ratio between domestic and global equity market capitalization. From a theoretical point of view, investors' aim should be the maximization of their expected utility $E[U(W_1)]$ (see Markowitz (1952)), which is function of the mean and variance of wealth (W_1) distribution (i.e. $E[U(W_1)] = E(W_1) - \eta Var(W_1)$, where η is a positive parameter that considers investors' risk aversion). This implies, *ceteris paribus,* the optimization of the expected return for a given amount of risk or, equivalently, the minimization of portfolio variance for a given level of expected return. Under the hypothesis of investors' mean-variance preference and non-perfect correlation (i.e. lower than one) among the returns of different countries' securities, the global market portfolio would decrease the variance for all possible theoretical levels of performance: through the decrement of assets' specific risk, the overall risk of the investment would be reduced but not at the expense of performance. In this sense, global diversification generates a better risk-return profile with respect to the domestic one, such as global capital market bears less systematic risk than any country's internal capital market (Solnik (1974)), thanks to the low correlation of foreign investments with the shocks that may affect domestic market. For this reason, in a hypothetical word with no artificial barriers to investments,

investors – regardless their location – should hold the same efficient portfolio in which any country's securities enter with proportion to their market share of the global economy (i.e. global market portfolio).

In this context, investor preference for domestic stocks rather than foreign ones is one of the main ambiguities that comes out from a theory-and-practice comparison. Such behavior, known as "home bias" (French and Poterba (1991)), is definitely at least curious since costly after considering the overall higher risk of the not-well-diversified portfolio implied by the overweighting of domestic stocks (Grubel (1968)). At this regard, De Santis and Gerard (1997) quantified the expected extra return from international diversification for a US investor on a value on average around the 2.11 percent per year over the period 1970-1994. Moreover, this return seems not to be affected by the increasing level of integration of international markets, but rather seems to be ignored by investors which do not trade according to a diversification strategy turned to catch it. In this sense, French and Poterba (1991) have been the first to highlight that investors exhibit a strong bias toward national stocks, showing that Japanese traders invest more than 98 percent of their wealth in domestic assets; the percentage "decreases" to 94 percent for US investors and to 82 percent for the English ones: in all cases the weight attributed to domestic stocks is considerably higher than the global market share of investors' home country. The existence of this phenomenon has more recently been tested also by Sercu and Vanpée (2007) which illustrate the intensity of home bias by measuring the difference between the proportion of domestic equity (% domestic in total equity) in a country's portfolio and the relative market capitalization (% domestic market cap in world market) at the end of 2005 in a sample of 42 different nations. Results are reported in Table 1 and show that – despite the increasing integration of international markets (Amadi (2004)) – more than 20 years after French and Poterba (1991)

pioneering contribution all the countries involved in the analysis still persists holding significantly biased equity portfolios.

Table 1 – Home bias in equity portfolios based on CPIS data, December 2005

Portfolio holding data are from the CPIS. Market capitalizations are from the World Federation of Exchanges. The home bias in equity portfolios is calculated by subtracting the proportional market capitalization (% Market cap in world market) from the proportion of domestic equities (% domestic in total equity) in a country's portfolio. All figures are in USD million.

Country	Domestic Market Capitalization	Foreign Assets	Foreign Liabilities	Domestic Equity Holdings	% Market cap in world market	% domestic in total equity	HOME BIAS
Argentina	47,590	9,558	1,971	45,619	0.1	82.7	82.6
Australia	804,015	126,418	158,336	645,679	1.9	83.6	81.7
Austria	126,309	63,566	36,647	89,662	0.3	58.5	58.2
Belgium	286,326	202,205	86,028	200,297	0.7	49.8	49.1
Brazil	474,647	2,809	99,706	374,941	1.1	99.3	98.1
Canada	1,482,185	363,067	296,496	1,185,688	3.5	76.6	73.0
Chile	136,493	23,016	5,942	130,551	0.3	85.0	84.7
Colombia	50,501	1,009	1,186	49,315	0.1	98.0	97.9
Czech Republic	53,798	4,386	6,549	47,249	0.1	91.5	91.4
Denmark	187,161	88,038	39,293	147,868	0.4	62.7	62.2
Egypt	79,509	898	4,513	74,996	0.2	98.8	98.6
Finland	228,266	64,471	117,041	111,225	0.5	63.3	62.8
France	1,769,569	529,289	600,072	1,169,497	4.2	68.8	64.6
Germany	1,221,106	528,153	507,419	713,687	2.9	57.5	54.6
Greece	145,121	8,326	28,003	117,117	0.3	93.4	93.0
Hong Kong	1,054,999	227,834	119,234	935,765	2.5	80.4	77.9
Hungary	32,576	1,749	13,297	19,279	0.1	91.7	91.6
India	1,069,046	36	100,805	968,242	2.5	100.0	97.4
Indonesia	81,428	93	17,275	64,153	0.2	99.9	99.7
Israel	122,578	8,169	35,864	86,714	0.3	91.4	91.1
Italy	798,073	416,446	242,896	555,177	1.9	57.1	55.2
Japan	5,542,716	408,575	929,135	4,613,580	13.2	91.9	78.7
Korea	718,011	13,913	187,502	530,508	1.7	97.4	95.7
Malaysia	180,518	1,550	23,240	157,278	0.4	99.0	98.6
Mexico	239,128	3,041	75,378	163,750	0.6	98.2	97.6
Netherlands	575,843	478,427	349,158	226,685	1.4	32.1	30.8
New Zealand	40,593	21,785	8,194	32,398	0.1	59.8	59.7
Norway	190,952	125,677	54,982	135,971	0.5	52.0	51.5
Philippines	39,818	184	5,696	34,122	0.1	99.5	99.4
Poland	93,602	1,671	14,754	78,848	0.2	97.9	97.7
Portugal	75,066	15,762	19,714	55,352	0.2	77.8	77.7
Russia	527,022	336	48,128	478,894	1.3	99.9	98.7
Singapore	257,341	67,592	54,970	202,370	0.6	75.0	74.3
South Africa	549,310	60,756	58,874	490,436	1.3	89.0	87.7
Spain	959,910	122,870	185,435	774,475	2.3	86.3	84.0
Sweden	420,953	202,216	124,792	296,161	1.0	59.4	58.4
Switzerland	935,448	357,270	400,885	534,563	2.2	59.9	57.7
Thailand	123,885	1,217	25,746	98,139	0.3	98.8	98.5
Turkey	161,538	90	26,503	135,034	0.4	99.9	99.5
United Kingdom	3,058,182	992,737	1,217,227	1,840,956	7.3	65.0	57.7
United States	17,000,805	3,317,705	1,664,493	15,336,311	40.5	82.2	41.7
Venezuela	7,316	405	586	6,729	0.0	94.3	94.3
Total	**41,949,250**	**8,863,315**	**7,993,970**	**33,955,281**	**100.0**		

Source: P. Sercu and R. Vanpée, 2007, *Home Bias in international equity portfolios: a review*, working paper

As Sercu and Vanpée (2007) results highlight, so far the phenomenon appears to be stronger in particular in the emerging markets, while it slightly lowered in the most developed

countries. For instance, in 2005 Japanese investors allocated the 91.9 percent of their wealth in the Japanese market, a percentage moderately lower than the 98 percent documented by French and Poterba (1991). More notably, UK and US wealth invested in domestic assets in 2005 is considerably lower than previous estimates, being equal to the 65 and 82.2 percent respectively.

At present, the existence of home bias seems indisputable (see among the others Lewis (1999); Karolyi and Stulz (2003) for a survey of this literature, and Sercu and Vanpée (2008) or Morse and Shive (2011) for the most updated evidences on the phenomenon). Given the apparent irrationality of investors' behavior, which seem to refuse the so-called "free lunch" (in this case a portfolio risk reduction obtained without a discount in terms of return), over time academics have been invited to provide explanations to the phenomenon. Initial interpretations – which subsequently proved not to be conclusive – focused on barriers to capital flows (Errunza and Losq (1985)) created by higher costs of transactions in foreign securities (Stulz (1981a); Martin and Ray (2004)), withholding taxes (Black (1974)), as well as other factors such as the currency risk (Fidora, Fratzscher and Thimann (2007)), countries' accounting environment (Bradshaw, Bushee and Miller (2004); Covrig, Defond and Hung (2007); Young and Guenther (2003)) and the failure of purchasing power parity (PPP) (Adler and Dumas (1983)). In presence of international barriers, in fact, the highest transaction costs in foreign securities would make domestic stocks more attractive and the world market portfolio inefficient (Stulz (1981a)). In this sense, Martin and Ray (2004) develop a model in which foreign assets' demand decreases non-linearly with transaction costs and show that a severe equity home bias can be the result of small transaction costs. In this perspective, the turnover rate of portfolios' foreign component should be lower with respect to the domestic one. However, Tesar and Werner (1995) show exactly the opposite by estimating a higher turnover rate in portfolio for foreign assets than for the domestic ones for German, Canadian,

Japanese, and English investors. This evidence suggests that traders would not be adversely affected by the higher costs associated with operations in foreign securities but that they would have an active role toward these, reacting to changes in global economic conditions through changes in composition and size of the non-national component of portfolio, which would in any case be negligible if compared with the total amount of wealth invested in domestic securities. More recently Warnock (2002), reexamining Tesar and Werner (1995) findings, highlights that foreign turnover rates are much lower than previously estimated and similar to the domestic ones. However, this latter result, obtained by considering transaction data on 41 markets, confirms Tesar and Werner (1995) intuition and further supports the idea that transaction costs do not affect investors' tendency to trade in foreign securities, failing as an explanation for home bias. Table 2 reports a list of the reference papers focused on transaction costs as a possible explanation for the phenomenon, along with a brief summary of the main findings of each study.

Table 2 – Transaction costs

The first part of Table 2 summarizes the most relevant papers which identify transaction costs as a cause of the home bias phenomenon. The second part of the table presents the studies which question and contest the above mentioned theory. The table summarizes the paper's author(s) (column 2), the journal and year of publication (column 3 and 4 respectively), and reports a brief summary of the main findings (column 5), allowing a comparative view of the papers' contents. In each section papers are sorted by year of publication.

Factor driving home bias	Authors	Journal	Year	Main findings
TRANSACTION COSTS	Stulz	The Journal of Finance	1981	For investors who face barriers to international investments the world market portfolio is inefficient, as it is costly to hold foreign assets.
	Martin and Ray	Journal of International Economics	2004	A severe equity home bias can also be the results of small transaction costs.
	Criticism			
	Tesar and Werner	Journal of International Money and Finance	1995	The high turnover rate on foreign equity investments with respect to the domestic ones suggests that transaction costs are an unlikely explanation for home bias.
	Warnock	Journal of International Money and Finance	2001	Foreign turnover rates are similar to the domestic ones, therefore transaction costs cannot be the cause of home bias.

A further possible explanation originally provided for the home bias phenomenon focuses on the idea that explicit barriers to international investments in the form of an higher taxation on non-domestic assets should be able to induce short positions on foreign securities. Indeed, this would lead asset prices to deviate from the international CAPM predictions unless barriers are ineffective (Black (1974)). However, French and Poterba (1991) highlight how domestic investors expect a return from domestic assets higher of several hundreds of basis point than would be desirable solely on the basis of fiscal asymmetries; for this reason the lack of diversification would be linked to an investors' conscious choice rather than to institutional constraints. On the same line, Cooper and Kaplanis (1994) emphasize this aspect by estimating the costs consistent with the level of home bias observed in investors' portfolios: for a level of risk aversion coherent with the empirical valuation of domestic markets' risk premium, estimated costs are several percentage points higher than the actual ones, thus discarding fiscal barriers as the cause of the home bias. The list of papers on the topic is reported in Table 3.

Table 3 – Fiscal barriers

The first part of Table 3 summarizes the most relevant papers which identify fiscal barriers as a cause of the home bias phenomenon. The second part of the table presents the studies which question and contest the above mentioned explanation for the home bias. The table summarizes the paper's author(s) (column 2), the journal and year of publication (column 3 and 4 respectively), and reports a brief summary of the main findings (column 5), allowing a comparative view of the papers' contents. In each section papers are sorted by year of publication.

Factor driving home bias	Authors	Journal	Year	Main findings
FISCAL BARRIERS	Black	Journal of Financial Economics	1974	Explicit barriers to international investments in the form of an high taxation on foreign securities generate short positions on non-domestic assets.
	Criticism			
	French and Poterba	American Economic Review	1991	Investors hold nearly all wealth in domestic assets, and expect a return from domestic assets much higher of than the one expected on foreign assets.
	Cooper and Kaplanis	The Review of Financial Studies	1994	Home bias cannot be explained by inflation hedging or direct costs to international investments for a level of risk aversion coherent with the empirical valuation of domestic markets' risk premium.

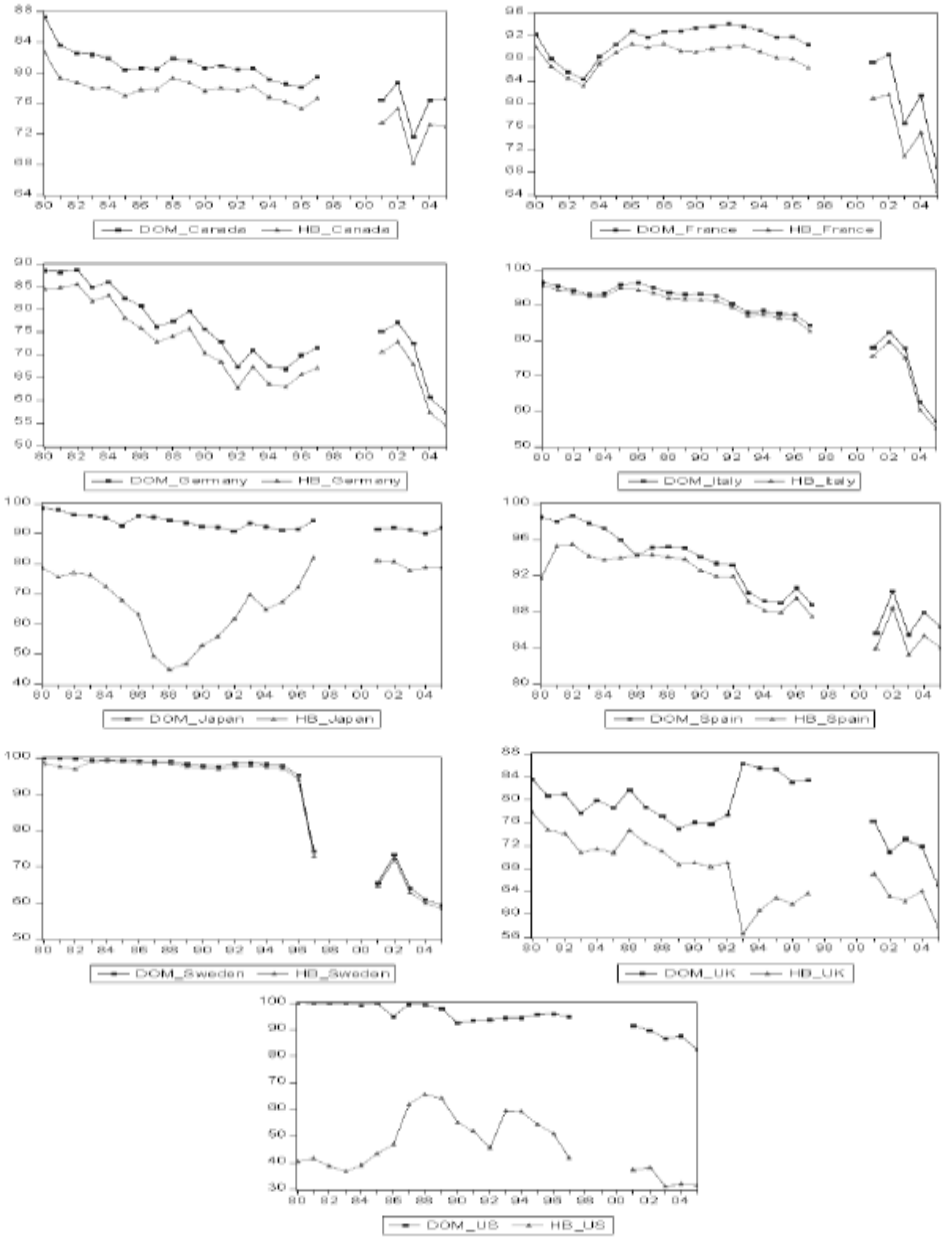
All the above mentioned explanations for the home bias focus on micro-structural and/or fiscal barriers to non-national investments but, as highlighted, proved over time not to be conclusive; a further element addressed by academics as cause of the phenomenon originates from the evidence that for many investors the trading in non-national securities would be restrained because of the difficulty to obtain foreign currency and because of the additional risk related to the currency exchange rate. In this context, Fidora, Fratzscher and Thimann (2007) focus on the role of real exchange rate volatility as a determinant of international portfolio allocation decisions, by distinguishing between stock and bond markets. In particular, they show that home bias is stronger for assets with lower local currency return volatility, i.e. portfolio underdiversification is higher for bonds than for equities, and that a reduction of monthly real exchange rate volatility from its sample mean to zero would diminish equity home bias by 20 percentage points on average, and bond home bias up to 60 percent.

The progressive liberalization and the integration process that involved several financial markets since the early nineties allowed academics to empirically test whether this facilitation to invest in foreign markets actually reduced the home bias phenomenon. At this regard, it is worthy of note the fact that this integration process has been particularly intense in the European Union, where the monetary unification also removed the currency risk for abroad investments. Considering this aspect, Schoenmaker and Bosch (2008) analyze the effect of European markets' integration by testing whether the arrival of Euro effectively caused a decline in the home bias. Their empirical findings suggest that the phenomenon actually reduced in Europe, and that this decline is not temporary but is mainly related to the elimination of the exchange rate risk within the European Union (where the home bias declines much more than elsewhere). Similarly, Baele, Pungulescu and Ter Horst (2007), investigating to what extent ongoing integration eroded the equity domestic bias on 25

different markets, find evidences that regional integration relates significantly to the decrease of the home bias, especially in the Euro area. In a different contribution Amadi (2004) associates the home bias reduction to the free trade and globalization, the advent of the internet and the rise of emerging markets and mutual fund investments, which would significantly promote foreign diversification. On the same line, Sercu and Vanpée (2007) show the evolution of home bias over time for both European and non-European countries, and argue that the phenomenon slightly decreased over the years even for those countries non-affected by the currency unification. Figure 1 presents authors' results, and depicts the evolution of the percentage of domestic equities in total equity portfolio for Canada, France, Germany, Italy, Japan, Spain, Sweden, UK and US over the period 1980-2005. Data highlight that, for all the countries involved in the analysis, there's a straightforward trend toward more international diversification and that, despite this trend, home bias is a still persistent phenomenon which needs other explanations to be found in order to justify its origins.

Figure 1 – Home bias over time

DOM_Country represents the evolution of the percentage of domestic equities in the total equity portfolio and HB_Country represents the equity home bias percentage. Portfolio holdings data from 1980 to 1997 are from the OECD, data from 2001 to 2005 are from the IMF. Pattern breaks in the chart after 2001 are due to the fact that the OECD and the IMF use different data collection methods and reporting standards.



Source: P. Sercu and R. Vanpée, 2007, *Home Bias in international equity portfolios: a review*, working paper

The list of papers which relate the home bias to the exchange rate risk is reported in Table 4, along with a brief description of the studies' main findings.

Table 4 – Exchange rate risk

The first part of Table 4 summarizes the most relevant papers which identify in the exchange rate risk a cause of the home bias phenomenon. The second part of the table presents the studies which question and contest the above mentioned explanation for the home bias. The table summarizes the paper's author(s) (column 2), the journal and year of publication (column 3 and 4 respectively), and reports a brief summary of the main findings (column 5), allowing a comparative view of the papers' contents. In each section papers are sorted by year of publication.

Factor driving home bias	Authors	Journal	Year	Main findings
EXCHANGE RATE RISK	Amadi	Working Paper	2004	Home bias reduced over time for free trade and globalization, the advent of the internet and the rise of emerging markets and mutual fund investments.
	Fidora, Fratzscher and Thimann	Journal of International Money and Finance	2007	Home bias is stronger for assets with lower local currency return volatility.
	Baele, Pungulescu and Ter Horst	Journal of International Money and Finance	2007	Home bias decreased sharply at the end of the 1990s, and this development is linked to globalization and regional integration.
	Schoenmaker and Bosch	Investment Management and Financial Innovations	2008	The arrival of Euro caused a permanent decline in home bias.
	Criticism			
	Sercu and Vanpée	Working Paper	2007	Home bias slightly decreased over the years even for countries non-affected by the currency unification.

A not fully explored strand of literature highlights the role of accounting barriers to international investments, by showing how the home bias might actually be interpreted as consequence of investors' choice not to invest in countries characterized by a different accounting environment with respect to the domestic one. In this sense, countries where financial accounting environments lead to a higher disclosure of relevant accounting informations lower foreign investors information costs, and more likely have international capital mobility (Young and Guenther (2003)). Consistently with previous findings, Bradshaw, Bushee and Miller (2004) show that companies exhibiting higher levels of US GAAP (i.e. Generally Accepted Accounting Principles) also present a greater US institutional ownership. Similarly, Covrig, Defond and Hung (2007) assert that the voluntarily adoption of IAS (i.e. International Accounting Standards) improve a firm's capital allocation efficiency

by attracting foreign capitals. The authors interpret these findings supposing that firms adopt IAS to provide more information or information in a form more familiar to foreign investors.

Speculation and inflation hedging are also taken into account when explanations to the domestic bias phenomenon are advocated. The failure of the purchasing power parity (PPP) would in fact induce domestic investors to choose national securities as a more efficient coverage against country specific risks. Among the firsts, Adler and Dumas (1983) highlight how the failure of purchasing power parity leads groups of investors from different countries to perceive differently the performance (in terms of real return and risk) of the same asset. In this sense, the authors emphasize how deviations from PPP are *ex ante* non-predictable but significant for both size and length: since consumption is tilted toward domestic goods, the desire to hedge against home inflation may increase the demand for domestic securities, thus generating biased portfolios. Conversely Uppal (1993), examining the impact of imperfections in the physical goods market on portfolio decisions, constructs a model that shows that more risk adverse investors would prefer foreign assets for their negative correlation with the exchange rate, that reduces the overall portfolio's risk; the author concludes that the empirically observed home bias cannot be explained solely by the high proportion of domestic products in traders' total consumption. On the same line, Cooper and Kaplanis (1994) argue that the intensity of deviations from PPP would be sufficient to explain biased portfolios – even considering fixed costs associated with the investment in foreign securities – only conditionally to a level of investors' risk aversion close to zero, a parameter quite far from reality. The list of papers which relate the home bias to the deviations from PPP and accounting environment is reported in Table 5, along with a brief description of the studies' main findings.

Table 5 – Deviations from PPP and accounting environment

The first part of Table 5 summarizes the most relevant papers which identify in the deviations from purchasing power parity a cause of the home bias phenomenon. The second part of the table presents the studies which question and contest the above mentioned explanation for the home bias. The last part of Table 5 summarizes the studies relating the home bias with a country's accounting environment. The table summarizes the paper's author(s) (column 2), the journal and year of publication (column 3 and 4 respectively), and reports a brief summary of the main findings (column 5), allowing a comparative view of the papers' contents. In each sub-section papers are sorted by year of publication.

Factor driving home bias	Authors	Journal	Year	Main findings
DEVIATIONS FROM PPP	Adler and Dumas	The Journal of Finance	1983	The failure of purchasing power parity leads groups of investors from different countries to have different yardsticks for measuring securities real return and their risks, and to create different "optimal" portfolios.
	Criticism			
	Uppal	The Journal of Finance	1993	The more risk adverse investors prefer foreign assets for their negative correlation with the exchange rate, that reduces the overall portfolio's risk.
	Cooper and Kaplanis	The Review of Financial Studies	1994	Home bias cannot be explained by inflation hedging or direct costs to international investments for a level of risk aversion coherent with the empirical valuation of domestic markets' risk premium.
ACCOUNTING ENVIRONMENT	Young and Guenther	Journal of Accounting Research	2003	Countries where financial accounting environments lead to a higher disclosure of relevant accounting informations have more likely international capital mobility.
	Bradshaw, Bushee and Miller	Journal of Accounting Research	2004	Firms with higher levels of US GAAP conformity have greater US institutional ownership.
	Covrig, Defond and Hung	Journal of Accounting Research	2007	Average foreign mutual fund ownership is significantly higher among IAS adopters.

Other studies focused on the hedging not from inflation but rather from the risk of non-financial income as an explanation of equity home bias. In this sense Bottazzi, Pesenti and Van Wincoop (1996), and Julliard (2003) highlight a negative correlation between domestic equity and human capital return, and suggest an explanatory power of the home bias for the hedging of human capital risks. On the contrary Baxter and Jermann (1997) find a positive correlation between the two factors, which implies that investors are supposed to reduce domestic equities in portfolio to hedge human capital risks.

To conclude, the presence of political risks on foreign investments (Feldstein and Horioka (1980)) has been also advocated as an explanation for the domestic bias phenomenon, as it would increase the implicit overall risk of the foreign assets making, *ceteris paribus*, the domestic ones preferable. However Frankel (1989) argues that, at least for the most developed countries, political risks are too small to justify a significant preference for national securities. In this sense, the author highlights that integration of financial markets actually eliminated the country premium but not the currency premium among countries.

The combination of these studies highlights a non insignificant problem of interpretation of the phenomenon when explanations based on market imperfections are considered alone. For this reason, financial literature tried to identify more comprehensive roots of the home bias, without denying the studies cited so far but evolving from them. In the remainder of the chapter all the most recent and discussed explanations provided by literature on the home bias phenomenon are examined, with a particular focus on the impact of the different protection which investors from different countries have from market abuses (section 2.1.1.), and the crucial role played by both information asymmetries among foreign and domestic investors (section 2.1.2.) and the feeling of familiarity perceived by these latter toward national stocks (section 2.1.3.).

2.1.1. Investors' protection and corporate governance

Recent studies suggest that corporate governance at firm level and investors' protection at country level can be driver for equity home bias. Considering at first this latter element, investors protection may be defined as the set of efforts and activities to observe, safeguard and enforce the rights and claims of a person in his role as an investor. According to the literature on the topic (see among the others Dahlquist, Pinkowitz, Stulz and

Williamson (2003); Giannetti and Koskinen (2004); Stulz (2005); Kho, Stulz and Warnock (2009); and Giannetti and Koskinen (2010)), firms in countries with low levels of investors protection would be more severely underweighted by traders belonging to states characterized by higher protection levels. In general terms in fact, insider shareholders in unprotective countries will tend to form blocks or to hold large stakes in order to hedge against market abuses and/or to extract private benefits, while foreigners will not invest in the same companies to avoid the higher risk of expropriation. According to this view, Stulz (2005) focuses on firms' ownership in poorly governed countries where the risk of state expropriation is high, and argues that these nations have a smaller fraction of wealth owned by foreign investors because insiders find it optimal to hold large stakes, while outsiders don't trade in countries where corporate insiders may pursue their own interests at the expense of foreign investors. This evidence has been more recently confirmed by Kho, Stulz and Warnock (2009), that show how, in countries with weak governance, concentrated ownership is optimal: retail investors, which are not protected from law against market abuses and expropriation risk, will form controlling blocks to hedge themselves against these abuses. Thus in an ideal world, firms that are able to attract foreigners as large block-holders would increase their value because of the signal of a commitment to consume fewer private benefits. Consistently with previous findings, Giannetti and Koskinen ((2004); (2010)) show that in countries with low investors protection, wealthy investors aim to become controlling shareholders in order to extract private benefits. This implies that stocks' expected return is lower when investors' protection is weak and that non-wealthy individuals from these countries will exhibit a *good country bias,* by investing more in foreign nations which provide higher shareholders protection. Considering a different aspect of the same phenomenon, Dahlquist, Pinkowitz, Stulz and Williamson (2003) justify the home bias showing that, as firms in countries with weak investor protection are controlled by large

shareholders, only a fraction of the shares issued by these companies can actually be freely traded. In this sense, holding the world market portfolio for an investor would be rather difficult. To support this last point of view, Table 6 reports the data used by the authors and referred to a sample of 51 countries in year 1997. In particular, the table shows for every considered country the number of firms covered by the Worldscope database (column 2), the number of companies for which ownership data are available (column 3), and the estimate of the fraction of closely-held shares (column 4). Finally, column 5 indicates the market value of the firms for which the authors have information about closely-held shares, while column 6 reports the total market value of the country's firms, and column 7 computes the percentage of the market capitalization of the country represented by the firms for which the authors have information about closely-held shares. As expected, US is the nation with the lowest value-weighted controlling ownership (i.e. 7.94%), while UK ranks second (i.e. 9.93%).

Table 6 – Closely-held shares

The second column shows the number of firms in each country for which Worldscope has information for 1997. The third column reports the number of firms for which ownership data are available, while the fourth column reports the estimate of the fraction of closely-held shares for every country. Fifth column shows the market value of the firms for which the authors have information about closely-held shares; the sixth column reports the market value of the country's firms, and in the last one is computed the percentage of the market capitalization of the country represented by the firms for which the authors have information about closely-held shares.

Country	No. of Firms (i)	No. of Firms with Closely-Held Shares Data (ii)	% of Market Cap. Closely Held (iii)	Market Cap. of Firms with Closely-Held Shares Data (iv)	Total Market Cap. ($ Mil) (v)	Sample Firm % of Total Market Cap. (iv)/(v) (vi)
Argentina	43	14	52.68%	37,764	59,252	63.73%
Australia	279	268	24.85%	257,422	295,785	87.03%
Austria	90	42	54.85%	31,627	35,724	88.53%
Belgium	115	98	47.14%	133,346	136,965	97.36%
Brazil	149	23	67.13%	121,861	255,478	47.70%
Canada	483	125	48.82%	156,119	567,635	27.50%
Chile	81	75	64.94%	53,888	72,046	74.80%
China	79	64	68.74%	14,941	206,366	7.24%
Czech Rep.	8	8	78.10%	4,818	12,786	37.68%
Denmark	182	119	25.10%	85,557	93,766	91.24%
Egypt	5	3	40.55%	1,388	20,830	6.66%
Finland	105	92	23.49%	72,200	73,322	98.47%
France	546	475	37.98%	558,215	674,368	82.78%
Germany	605	492	44.74%	811,349	825,233	98.32%
Greece	107	23	75.18%	3,383	34,164	9.90%
Hong Kong	392	387	42.73%	373,916	413,323	90.47%
Hungary	26	16	49.48%	11,432	14,975	76.34%
India	282	33	40.32%	26,838	128,466	20.89%
Indonesia	130	122	68.97%	25,079	29,105	86.17%
Ireland	57	54	13.06%	47,068	49,371	95.34%
Israel	54	20	58.01%	10,092	45,268	22.29%
Italy	194	87	37.54%	257,611	344,665	74.74%
Japan	2409	2392	38.38%	2,330,318	2,216,699	105.13%
Jordan	4	2	65.55%	1,079	5,446	19.82%
Korea, South	301	296	39.23%	35,924	41,881	85.78%
Luxembourg	17	6	66.74%	11,867	33,892	35.02%
Malaysia	432	420	52.15%	85,255	93,608	91.08%
Mexico	78	11	26.15%	40,240	156,595	25.70%
Morocco	8	6	48.93%	4,531	12,177	37.21%
Netherlands	196	158	33.74%	465,149	468,736	99.23%
New Zealand	52	51	77.48%	26,933	30,511	88.27%
Norway	123	112	41.07%	63,497	66,503	95.48%
Pakistan	95	16	77.37%	5,893	10,966	53.74%
Peru	33	6	68.60%	1,720	17,586	9.78%
Philippines	108	42	51.13%	6,315	31,361	20.13%
Poland	41	24	64.26%	3,939	12,135	32.46%
Portugal	63	48	35.04%	44,827	38,954	115.08%
Singapore	219	215	57.10%	107,452	106,317	101.07%
Slovakia	2	1	50.79%	222	1,826	12.18%
South Africa	196	182	52.86%	144,091	232,069	62.09%
Spain	154	113	42.12%	154,716	290,383	53.28%
Sri Lanka	12	12	19.15%	670	2,096	31.94%
Sweden	193	172	20.99%	259,614	272,730	95.19%
Switzerland	187	140	25.73%	234,537	575,338	40.77%
Taiwan	166	15	22.26%	31,384	287,813	10.90%
Thailand	243	123	57.83%	7,306	23,538	31.04%
Turkey	78	58	70.86%	22,424	61,090	36.71%
U.K.	1510	1474	9.93%	1,933,420	1,996,225	96.85%
U.S.	484	464	7.94%	6,907,039	11,308,779	61.08%
Venezuela	18	2	61.53%	6,169	14,581	42.31%
Zimbabwe	6	6	36.63%	455	1,969	23.08%

We use December 1997 prices, and splice fiscal year-end prices when December 1997 prices are unavailable. In all the firms, only 57 prices are other than December year-end. The percentage of market capitalization closely held in column (iii) is computed using only firms for which ownership data is available on Worldscope.

Source: Dahlquist *et al*, 2003, Corporate Governance and the Home Bias, Journal of Financial and Quantitative Analysis, Vol.38, No. 1, pp. 87-110

Except for Ireland, Sri Lanka, US, and UK, no country has a value-weighted controlling ownership lower than 20%. Only seven countries have value-weighted controlling ownership between 20% and 30%, while twenty-three countries have the value of the variable in excess of 50%. Moreover, as emerges from the last column of the table, nineteen nations have closely-held shares for more than 80% of the market's capitalization. In light of the data provided, the authors argue that investors cannot invest in the global market portfolio in a economy with controlling shareholders, because they would be limited in the fraction of shares that they can hold: the prevalence of closely-held firms in most countries would therefore help to explain why these countries exhibit a significant home bias and why US investors underweight foreign stocks.

In order to overcome, or at least soften, structural and legal issues of their home country market as the low investors' protection, firms could opt to cross-list in other markets that do not present the same features. Indeed, this strategy would naturally lead to an higher internationalization of the shareholders base. In this sense, Pagano, Randl, Roell and Zechner (2001) highlight how some stock-exchanges have over time attracted a relevant number of cross-listings, becoming more international in character. The authors observe that a company's decision to cross-list is related to the characteristics both of the country where the market is located, rather to those of the exchange itself, and of the firm's home country exchange. In particular, European firms appear more likely to cross-list in larger and more liquid markets where several companies belonging to the same industry already cross-listed Specifically, the preference is stronger toward countries with better investor protection and more efficient courts and bureaucracy, but not with more stringent accounting standards. In that case, in fact, the benefits of cross listing would be offset by the higher costs of adapting to the host market standards.

According to a wide literature, the better protection of shareholders would not only reduce minorities' risk of expropriation and increase the international investors' base, but would also enhance firm evaluation (see La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997), (2000), (2002); Chan, Covrig and Ng (2009)). In this sense, La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997) show that countries that protect shareholders better, have more valuable stock markets, larger numbers of listed securities per capita, higher rate of IPO activity, and higher Tobin's Q and market valuation than companies headquartered in unprotective countries. In a subsequent contribution, La Porta, Lopez-de-Silanes, Shleifer and Vishny (2000) highlight how the level of investors' protection and the regulation of financial markets are deeply rooted in the legal structure of each country and in the origin of its laws (i.e. common low or civil law). Specifically, the authors find that common law countries have the strongest protection of outside investors (both shareholders and creditors) whereas French civil law countries have the weakest one. Empirically, strong investor protection is associated with effective corporate governance, as reflected in valuable and broad financial markets, dispersed ownership of shares and efficient allocation of capital across firms. Again, La Porta, Lopez-de-Silanes, Shleifer and Vishny (2002), using a sample of 371 large firms from 27 wealthy economies, highlight how the better protection of outside shareholders promotes financial market development and enhance companies' market value. This because outside investors are willing to pay more to purchase stocks, thanks to the lower risks of controllers expropriations. In line with other evidence previously reported, company ownership would thus be therefore more internationally dispersed in countries where minority shareholders have strong legal protection, and firm evaluation would be higher. On the same line, Chan, Covrig and Ng (2009) argue that the riskiness of countries with smaller degrees of home bias is more widely distributed between local and foreign investors, enhancing firms' value. Using stockholdings information of about 24,000 mutual funds from 31 countries worldwide, the

authors provide evidence that the deviations of equity allocations of domestic investors from standard international asset allocation models have substantial impacts on firms' market evaluation. The valuation benefits associated with global risk sharing between foreign and domestic investors suggest that companies could improve their market value and hence lower their cost of capital through raising money in international markets (i.e. attracting more foreign investments in their firms) and through reducing the proportion of shares held by domestic investors. The list of papers which relate the home bias to the countries' weak investor protection is reported in Table 6, along with a brief description of the studies' main findings.

Table 7 – Weak investors' protection

Table 7 summarizes the most relevant papers which identify in the weak investors' protection a cause of the home bias phenomenon. The table summarizes the paper's author(s) (column 2), the journal and year of publication (column 3 and 4 respectively), and reports a brief summary of the main findings (column 5), allowing a comparative view of the papers' contents. Papers are sorted by year of publication.

Factor driving home bias	Authors	Journal	Year	Main findings
WEAK INVESTORS' PROTECTION	La Porta, Lopez-de-Silanes, Shleifer and Vishny	Journal of Financial Economics	2000	Strong investor protection is associated with effective corporate governance, dispersed ownership of shares and efficient allocation of capital across firms.
	Pagano, Randl, Roell and Zechner	Working Paper	2001	European firms are more likely to cross-list in larger and more liquid markets with better investor protection. Cross-listing decision is related to the characteristic of both the destination and home country.
	La Porta, Lopez-de-Silanes and Shleifer	Working Paper	2002	Firm in countries where minority shareholders have a better protection have a higher market evaluation.
	Dahlquist, Pinkowitz, Stulz and Williamson	The Journal of Financial and Quantitative Analysis	2003	The prevalence of closely-held firms in most countries helps explain why these countries exhibit domestic bias and why US investors underweight foreign stocks.
	Giannetti and Koskinen	Working Paper	2005	In countries with low investors protection, wealthy investors aim to become controlling shareholders in order to extract private benefits.
	Stulz	The Journal of Finance	2005	Corporate insiders pursue their own interests at the expense of outside investors. In countries where this problem is significant, diffuse ownership is inefficient.

Table 7 (continued)

Factor driving home bias	Authors	Journal	Year	Main findings
WEAK INVESTORS' PROTECTION	Kho, Stulz and Warnock	Journal of Accounting Research	2009	Foreign portfolio investors show more home bias toward countries with poor governance because of the limits of the insiders' concentrated ownership.
	Chan, Covrig and Ng	Journal of International Economics	2009	Home bias affects firm evaluation at both country and firm level. The riskiness of countries with smaller degrees of home bias is more widely distributed between local and foreign investors, increasing firms' value.
	Giannetti and Koskinen	Journal of Financial and Quantitative Analysis	2010	Investors' participation in the domestic stock market and home equity bias are positively related to investors' protection.

As well as weak investor protection at country level, policies at firm level and in particular the quality of a firm corporate governance may impact on the home bias. Indeed, firm's weak corporate governance increases both the likelihood of expropriation risk for outside investors and the ownership concentration for insiders (Giannetti and Simonov (2006); Kho, Stulz, and Warnock (2009)), reduces information disclosure and transparency (Aggarwal, Klapper, and Wysocki (2005); Leuz, Lins and Warnock (2009)), and firm value (King and Segal (2003)), thus discouraging foreign ownership and increasing portfolio biases (see among the others Dahlquist and Robertsson (2001); Ferreira and Matos (2008); Kim, Sung, and Wei (2008)). In this sense, Giannetti and Simonov (2006), analyze whether investors take into account the quality of corporate governance when selecting stocks, and argue that the quality of a company's corporate governance affects not only the stocks held in investors' portfolios but also the probability that new investors buy securities of a firm. In fact, inside investors or individuals connected with them are more likely to invest in weak corporate governance companies since can extract private benefits, while foreign investors are reluctant to purchase securities of these firms, in order to minimize the expropriation risk. Similarly, Kho, Stulz, and Warnock (2009) merge corporate finance theories of insider

ownership with portfolio theories of home bias, proving that foreign investors exhibit a large home bias against countries with poor governance because their investment is limited by insider's high optimal ownership and domestic monitoring shareholders in response to the governance. The authors show that foreign investors from "good governance" countries have a comparative advantage as insider monitors in poorly governed countries, so that the relative importance of foreign direct investment is negatively related to the quality of governance. Moreover, US investors are found to increase their holdings of shares in Korean firms which improve their corporate governance. Considering the same framework, Kim, Sung, and Wei (2008) study investors' stock level of foreign investment in Korea and test whether the degree of control-ownership disparity among investor's home countries affects portfolio choices. Results suggest that the nature of corporate governance affects investment choices, and that high-disparity stocks in Korea are disfavored by investors from low-disparity countries, while investors from high-disparity countries are neutral. With reference to firm evaluation, King and Segal (2003) show that Canadian listed firms trade at discount with respect to the US ones and that this discount is tied to their weaker corporate governance. At the same time, Canadian firms can enhance their market evaluation and reduce US portfolio bias by cross-listing on a US exchange. Other studies show that institutional investors have a strong preference toward stocks of large firms with strong governance indicators (Ferreira and Matos (2008)), and non-dominant owners (Dahlquist and Robertsson (2001)).These results point to a clear relationship between corporate governance and shareholder base, and show that a firm can effectively use corporate governance in order to expand its ownership structure.

Considering the way in which corporate governance impact on firm's disclosure and transparency, Aggarwal, Klapper, and Wysocki (2005) examine the relation between US mutual fund investment allocation and firm level policies, and highlight how these latter are

related to greater transparency and disclosure, being positively associated with US investments. Therefore, the authors suggest that disclosure can potentially mitigate a country's other institutional deficiencies that affect foreign institutional investment. Again, the high quality of accounting and disclosure policies are found able to create an environment conducive to foreign investments. On the same line, Leuz, Lins and Warnock (2009), analyzing 4,409 firms located in 29 different countries, argue that foreigners invest less in firms that reside in countries with poor disclosure and outsider protection, and have ownership structures that are conducive to governance problems. This effect is greater when earnings are opaque and this indicates that information asymmetries and monitoring costs faced by foreign traders likely drive the results. In fact, firms with suspect governance structures require more monitoring than well governed companies, and are more costly for foreign investors. This explanation, associating corporate governance and information asymmetries, leads to a second macro-group of home bias' explanations, which is linked to the asymmetric information between firms' insiders and outsiders. To conclude, Table 8 reports the list of the main studies relating the home bias to firm corporate governance.

Table 8 – Weak corporate governance

Table 8 summarizes the most relevant papers which identify in firms' corporate governance a cause of the home bias phenomenon. The table summarizes the paper's author(s) (column 2), the journal and year of publication (column 3 and 4 respectively), and reports a brief summary of the main findings (column 5), allowing a comparative view of the papers' contents. Papers are sorted by year of publication.

Factor driving home bias	Authors	Journal	Year	Main Findings
WEAK CORPORATE GOVERNANCE	Dahlquist and Robertsson	Journal of Financial Economics	2001	Foreigners tend to underweight firms with a dominant owner, while prefer large firms with high market liquidity and presence in international markets.
	King and Segal	Working Paper	2003	Canadian listed firms trade at discount with respect to US listed firms because of a weaker corporate governance in Canada than in US. This helps to explain US portfolio home bias.
	Aggarwal, Klapper, and Wysocki	Journal of Banking and Finance	2005	Firm level policies related to greater transparency and disclosure are positively associated with US investments.

Table 8 (continued)

Factor driving home bias	Authors	Journal	Year	Main Findings
WEAK CORPORATE GOVERNANCE	Giannetti and Simonov	The Journal of Finance	2006	Investors who enjoy security benefits are reluctant to invest in firms with weak corporate governance.
	Ferreira and Matos	Journal of Financial Economics	2007	Institutional investors have strong preference for stocks with strong governance indicators. Foreign investors overweight firms cross-listed in the US and members of MSCI World Index.
	Kim, Sung, and Wei	Working Paper	2008	Investors from ownership-control low disparity in Korea disfavor high-disparity stocks in Korea.
	Kho, Stulz, and Warnock	Journal of Accounting Research	2009	Foreign investors exhibit a large home bias against countries with poor governance because their investment is limited by insider's high optimal ownership and domestic monitoring shareholders in response to the governance.
	Leuz, Lins and Warnock	Review of Financial Studies	2009	Foreigners invest less in firms that reside in countries with poor disclosure and outsider protection, and have ownership structures that are conducive to governance problems.

2.1.2. Information asymmetries

As emerged so far from the analysis of the literature focused on the home bias, market imperfection as well as issues at both country and firm level like weak investor protection and corporate governance are far from giving convincing explanations for the phenomenon. Over time, a leading role as cause of the domestic bias has been taken by information asymmetries, which at present are considered as one of the most plausible driver of the phenomenon (see among the others Gehrig (1993), Brennan and Cao (1997); Dvorak (2005); Bae, Stulz and Tan (2008); Sercu and Vanpée (2008)). Indeed, information asymmetries give rise to an adverse selection problem when investors transact in foreign markets (Akerlof (1970); Milgrom (1981)), influencing the investment decisions of non-domestic traders which do not expect to receive a fair return based on the prices at which locals negotiate. In fact, as domestic traders would hardly find and interpret informations about foreign companies

because of legal, regulatory and accounting differences among countries, risk adverse investors would prefer to allocate their wealth on assets which they can be better informed on, and that are perceived as less risky, i.e. domestic assets. Home bias theory related to information immobility would this way replace the one related to capital immobility. This strand of literature has been initially explored by Gehrig (1993) that constructs a model that shows that home bias emerges quite naturally when domestic investors are on average better informed about national securities. In a subsequent contribution, Brennan and Cao (1997) study the consequences of the better information within-countries than between-countries, by developing a model of international equity portfolio flows that relies on informational differences between foreign and domestic investors. The authors find that US purchases of equities in developed foreign markets tend to be positively associated with the foreign market return, and this is consistent with US investors being worse informed about foreign markets than about the local one. On the contrary, foreign purchases of US equities show no relation with the American stock-market returns, providing evidence that strangers are as well informed about US markets as US residents. In a subsequent contribution, Brennan, Cao, Strong and Xu (2005) show that there is a link between information disadvantages and the expectations about a market, by developing the implications of the asymmetric information theory for changes in a market's degree of bullishness reported by domestic and foreign investors. In particular, the authors find that there is a strong tendency for foreign institutional investors to become more bullish about a certain market following a positive return on that market. This provides further support for the hypothesis that information asymmetry is an important determinant of international capital flows, and that on average foreign investors have an information disadvantage with respect to the domestic ones. In line with previous contribution, a wide number of empirical studies in literature provide evidence that information asymmetry is significant in explaining the observed international portfolio

pattern. In this sense, Aeharne, Griever and Warnock (2004) measure the effect of direct barriers to international investments and show that information asymmetries, generated by both the poor quality and the low credibility of financial information in many countries decrease US foreign investments. At this regard, some firms have reduced these costs by publicly listing their securities in the United States, and all the non-US countries whose firms do not alleviate these costs by opting into the US regulatory environment are found to be more severely underweighted in US equity portfolios. Portes and Rey (2005), using 1456 transaction data over the period 1989-1996, focus on international equity flows and argue that capital markets are not frictionless but are segmented by informational asymmetries or familiarity effects, which are proxied by the physical distance between two countries. In this sense, the geography of information would be the main determinant of the pattern of international transactions. Similarly, Faruquee, Li and Yan (2004) observe that investors tend to hold more securities in countries closer to them in distance, and estimate that if the distance between two countries doubles, the cross-border equity holdings reduces by 68%, providing a test on the validity of the theoretical models that are based on information asymmetries. Continuing the analysis started by Merton (1987) – who argues that investors prefer stocks of bigger and better known companies – Kang and Stulz (1997) analyze the causal relationship between information asymmetries and home bias studying foreign ownership of Japanese equity over the period 1975-1991. The authors hypothesize that information asymmetries do not affect all securities in a similar way; for this reason traders investing in non-domestic securities are not supposed to hold the market portfolio of the foreign nation, but are expected to select exclusively the better known assets. Analysis' results are consistent with these hypothesis: foreign investors tend to underweight companies which are small, leveraged, characterized by low level of export, and whose information are less readily available. Moreover, several studies (see Fama and French (1992); Daniel and

Titman (1997)) identify these companies as riskier but better performing, confirming that not holding their shares is not an efficient allocation strategy. Again, Dahlquist and Robertsson's (2001) analysis over foreign ownership in Swedish firms confirm previous findings: in particular, large firms which pay low dividends but with large cash positions, and firms with high market liquidity and presence in international markets are preferred by non-Swedish investors.

Following the line of reasoning of the above mentioned studies, whether an actual informational advantage owned by domestic investors over their home market drives the trading in national stocks, a rational expectation is them both to obtain higher portfolio returns than foreign traders, and to face a lower variance in the biased portfolio. In this sense, following Van Nieuwerburg and Veldkamp (2009), information immobility would not solely generate the home bias, but would also be desirable, as source of potential portfolio extra-returns. Indeed, when investors have to choose the securities to focus their attention on, their aim is to make their set of information as different as possible from the average information widespread in the market, in order to earn the maximum difference between market price and expected payoff with the additional information. Thus, it would be rational to focus on what is better known since the beginning, i.e. domestic assets. In this sense, informational immobility would persist not because investors can't access to information about foreign equity or because they are expensive, but because of the conscious choice not to evaluate them. Therefore, specializing on what is already better known would be a better strategy, and traders with rational expectations strengthen informational asymmetries as cause of home bias. On the same line Gorman and Jorgensen (2002) argue that benefits from international diversification are non easily catchable and that it is strategic to focus on those securities over which it is easier to have informational advantages. In this sense, Zhou (1998) builds a model in which rational investors trade securities strategically according to their perceptions about

economic states, and in which a stock's risk premium is negatively proportional to the information precision regarding its return: the more information is transmitted, the smaller equity premium is required. Results show that high quality insider information shared only by a small number of agents is considerably valuable, and may allow agents with insider information to make large extra-profits.

Empirically, on one hand Shukla and Van Inwegen (1995), controlling for differential tax treatment and for fund expenses, show that UK money-managers underperform with respect to the US ones when they trade on US securities. Similarly Hau (2001) confirms previous results by examining the trading profits of 756 professional traders located in 23 different cities of eight European countries, where domestic investors are defined as traders located in Germany and/or in cities outside Germany but German. Notably, the author presents evidence that foreign traders in non-German-speaking financial centers have inferior trading profits in their proprietary trading of German stocks. Foreign underperformance is not only statistically but also economically significant in magnitude and occurs for large blue-chip stocks. On the same line, Choe, Kho, and Stulz (2005) – using Korean data –find that foreign money managers pay more than the domestic ones when they buy securities, and receive less when they sell. More specifically, the sample average daily trade-weighted disadvantage of foreign money managers is 21 basis points for purchases and 16 basis points for sales. Dvorak (2005), using transaction data from Indonesia, shows that in the medium (intramonth) and short (intraday) term clients of local brokerages have higher profits than clients of global brokerages. This suggests that the former have a short-lived information advantage, and that the latter are better at picking long-term winners, leading to the conclusion that their edge is related to their experience and expertise rather than to inside information. Moreover, domestic clients of global brokerages are found to earn more than foreign clients of global brokerages, suggesting that the combination of local information and

global expertise leads to higher profits. Again, Ivkovic, Sialm and Weisbenner (2008) find that the stock trades by households with concentrated portfolios outperform those with diversified portfolios. The excess return is stronger for investors with large account balances and over securities non-included in the S&P 500 Index, reflecting a successful exploitation of informational asymmetries.

Bae, Stulz, and Tan (2008) extend the information asymmetries setting with reference to financial analysts and analyze whether analysts resident in a country make more precise earnings forecasts for domestic firms. Using a sample of 32 countries over the period 2001-2003, the authors find an economically and statistically significant local analyst advantage even after controlling for various determinants of forecast accuracy. In particular, analysts' local advantage is found to be higher in countries where earnings are more smoothed and less information is disclosed by firms. Moreover, it is negatively related to whether a firm has foreign assets or is participated by foreign investors and by institutions, while it is positively related to holdings by insiders. Considering a sample of European analysts earning forecasts, Orpurt (2004) reaches the same conclusion. Going further, the author argues that information driven forecasting advantages may stem from a better access to information or to a better information processing, but may also be motivated by a larger clientele effect of by lower costs to gather information.

On the other hand, a different strand of literature contest the validity of an information driven explanation for the home bias, by finding inverse results. In this sense, Grinblatt and Keloharju (2000) using daily data for the 16 largest Finnish stocks over a two-year period, find that foreign investors tend to be momentum investors, purchasing past winning stocks and selling past losers. In particular, the authors find that foreign investors are able to buy more stocks that perform well over the next 120 trading days than domestic retail investors, thus outperforming the investments of Finnish households. Distinctions in behavior are

consistent across a variety of past-return intervals, even after controlling for behavioral differences. On the same line, Seasholes (2000) highlights information advantages for foreign capital flows into Taiwan and Thailand and provides evidence that foreign investors buy (sell) ahead of good (bad) earning announcements in Taiwan, while domestic investors do the opposite. Froot, O'Connell, and Seasholes (2001), and Froot and Ramadorai (2008) support this conclusion, extending the analysis to several different countries. In particular, Froot, O'Connell, and Seasholes (2001) use flow data to show that foreign investors trade ahead of better returns, though Griffin, Nardari, and Stulz (2007) find that this effect is mostly due to contemporaneous price pressure. Froot and Ramadorai (2008) attempt to distinguish between the information advantage and the price pressure hypotheses, using data on institutional equity flows from the United States to a cross section of 25 countries. Their results are consistent with foreigners having better information than local investors and that information, rather than price pressure is responsible for the observed predictability of domestic equity returns by cross-border flows. According to these latter studies, foreign investors would have an advantage over domestic institutions because of the more experience of their personnel, and thanks to the access to more proprietary research.

Given the studies mentioned so far, whose list and evolution over time is reported in Table 9, there seems to be no real consensus on whether domestic investors outperform the foreign ones, and the question of whether and, above all, to what extent, local bias is driven by informational advantages rather than other factors remains unsolved.

Table 9 – Information asymmetries

The first part of Table 9 summarizes the most relevant papers which identify in the information asymmetries a cause of the home bias phenomenon. The second part of the table presents the studies which question and contest the above mentioned theory. The table summarizes the papers' author(s) (column 2), journal and year of publication (column 3 and 4 respectively), and reports a brief summary of the main findings (column 5), allowing a comparative view of the papers' contents. In each section papers are sorted by year of publication.

Factor driving home bias	Authors	Journal	Year	Main Findings
INFORMATION ASYMMETRIES	Gehrig	Scandinavian Journal of Economics	1993	Home bias emerges naturally when investors are better informed about domestic stocks.
	Shukla and Van Inwegen	Journal of Economics and Business	1995	UK money-managers underperform with respect to the US ones when they trade on US securities.
	Kang and Stulz	Journal of Financial Economics	1997	Foreign investors hold more disproportionately shares of large firms, with good accounting performance and low leverage.
	Brennan and Cao	The Journal of Finance	1997	When foreign and domestic investors are differently informed, portfolio flows between the two countries will be a linear function of the contemporaneous returns on all national market indices.
	Zhou	Journal of Economic Dynamics and Control	1998	High quality insider information shared only by a small number of agents is considerably valuable, and may allow agents with insider information to make large extra-profits.
	Dahlquist and Robertsson	Journal of Financial Economics	2001	Foreigners tend to underweight firms with a dominant owner, while prefer large firms with high market liquidity and presence in international markets.
	Hau	The Journal of Finance	2001	Foreign traders in non-German-speaking financial centers have inferior trading profits in their proprietary trading of German stocks. Moreover, there is an information advantage due to corporate headquarters proximity for high-frequency trading.
	Gorman and Jorgensen	Multinational Finance Journal	2002	Benefits from international diversification are non easily catchable.
	Ahearne, Griever and Warnock	Journal of International Economics	2004	Information asymmetries impact on international investment and are tied to the poor quality and low credibility of financial information in many countries. Foreign countries whose companies opt into the US regulatory system alleviate information costs and are less underweighted in US portfolios.
	Faruquee, Li and Yan	Working Paper	2004	Investors tend to hold more securities in countries close to them in distance.
	Orpurt	Working Paper	2004	Local analysts forecast earnings more accurately than non-local analysts.

Table 9 (continued)

Factor driving home bias	Authors	Journal	Year	Main Findings
INFORMATION ASYMMETRIES	Brennan, Cao, Strong and Xu	Journal of Financial Economics	2005	There is a strong tendency for foreign institutional investors to become more bullish about a certain market following a positive return on that market. This support the hypothesis that information asymmetry is an important determinant of international capital flows.
	Choe, Kho, and Stulz	The Review of Financial Studies	2005	Foreign money managers pay more than the domestic ones when they buy securities, and receive less when they sell.
	Dvorak	The Journal of Finance	2005	In the medium (intramonth) and short (intraday) term clients of local brokerages have higher profits than clients of global brokerages.
	Portes and Rey	Journal of International Economics	2005	Capital markets are not frictionless but are segmented by informational asymmetries or familiarity effects, which are proxied by the physical distance between two countries.
	Bae, Stulz, and Tan	Journal of Financial Economics	2008	Analysts make more precise earnings forecasts for domestic firms, especially in countries where earnings are more smoothed and less information is disclosed by companies.
	Ivkovic, Sialm and Weisbenner	Journal of Financial and Quantitative Analysis	2008	Stock trades by households with concentrated portfolios outperform those with diversified portfolios
	Sercu and Vanpée	Review of Finance	2008	Equity home bias is related to a mixture of risks and frictions, as information asymmetries and institutional factors.
	Van Nieuwerburg and Veldkamp	The Journal of Finance	2009	Investors with rational expectations reinforce information asymmetries, aiming is to make their set of information as different as possible from the average information widespread in the market.
	Criticism			
	Grinblatt and Keloharju	Journal of Financial Economics	2000	Foreign investors tend to buy past winning stocks and to sell past losers, while domestic investors behave the opposite. Therefore, foreign investors portfolio outperforms the households ones.
	Seasholes	Working Paper	2000	Foreign investors buy (sell) ahead of good (bad) earning announcements in Taiwan, while domestic investors do the opposite.
	Froot, O'Connell, and Seasholes	Journal of Financial Economics	2001	There is some ability for international inflows to forecast returns.

Table 9 (continued)

Factor driving home bias	Authors	Journal	Year	Main Findings
INFORMATION ASYMMETRIES	Froot and Ramadorai	The Review of Financial Studies	2008	Information rather price pressure is responsible for the observed predictability of domestic equity returns by cross-border flows.

2.1.3. Behavioral factors

All the home bias' explanations focused on micro-structural, accounting, and fiscal barriers, as well as those which consider investors' protection, firms' corporate governance and information asymmetries between insiders and outsiders to explain international underdiversification of portfolios are based on the assumption that individuals are perfectly rational. In this sense, home bias would be generated by the deliberate systematic individuals' attempt to exploit an informational advantage or to avoid the trading in securities to which are associated higher direct and indirect costs because of their geographic location. However, psychologist and economists show how in practice investors systematically deviate from the optimal, efficient behavior: among the others, Barber and Odean (1999) state that "*People do not always behave rationally, and although departures from rationality are sometimes random, they are often systematic*". With the development of prospect theory of Kahneman and Tversky ((1979), (1992)) behavioral finance emerged and affirmed as an established research area which enriches economic knowledge by incorporating the aspects of human nature in financial models. Indeed, Shefrin (2002) describe this new field of study as the interaction between psychology and finance.

In general terms, behavioral finance studies highlight how individual biases can actually impact on portfolio decision, thus inducing a non-efficient allocation of wealth (Heath and Tversky (1991); Odean (1998a); Barber and Odean (2001), (2002), (2008)). In this sense, Heath and Tversky (1991) show how people are disposed to pay a significant premium to bet on their own judgment when they consider themselves as competent, even

over an equiprobable chance. According to their results, the willingness to bet on an uncertain event depends not only on the likelihood of the event but also on people's knowledge of the relevant context. The authors call the phenomena "competence hypothesis" and hypothesize that it might help to explain why investor are willing to concentrate their portfolios over a small number of stocks which are presumably more familiar and over which investors perceive themselves as more competent. Similarly, Odean (1998b) highlights how investors are excessively active on financial markets because of the overvaluation of both the quality of their information and of their knowledge about the value of a financial security. In practice, this behavior lowers overconfident investors' expected utility because of an excessive trading, and leads them to hold riskier portfolios than do rational investors with the same level of risk aversion. On the same line, Barber and Odean (2001) show that overconfident investors trade too much and find that man are more overconfident than women, especially in a male dominated realm such as finance. Males are found to overestimate the precision of their own informations and, consequently, perform worse than women, which behave more rationally. In a subsequent contribution, Barber and Odean (2002) find that those investors that during the nineties switched from phone-based to online trading reduced their trading profitability. As reduction in market frictions, such as the shrinkage of trading costs, are not able to explain these findings, overconfidence and illusion of knowledge and control are advocated as drivers of investors' behavior. Taking into account other biases that may impact on portfolio composition, Barber and Odean (2008) show that – as attention is a scarce resource – individual traders cannot focus on the knowledge of the thousands of securities that they can potentially purchase, and tend to buy exclusively the attention grabbing stocks, as those more frequently reported in the news. Moreover, the buying behavior is found to be more heavily influenced by attention than the selling one.

Applying this last perspective and considering the not conclusive explanations provided by literature to the domestic bias phenomenon, Kho, Stulz and Warnock (2009) affirm: "*However, except for behavioral biases, the reasons for the home bias advanced by this literature cannot explain the magnitude of the home bias*". Indeed, many researchers focused on this new viewpoint in order to find alternative explanations for the domestic bias. In this sense, Kilka and Weber (2000), in a cross-cultural study involving students from Germany and United States, asked subjects to give probability estimates on future prices of stocks belonging to the two countries: results show that individuals feel more optimistic about their own country's stocks, highlighting a superior overconfidence toward domestic than foreign markets. On the same line, Strong and Xu (2003), analyzing a survey conducted every month by Merrill Lynch on 250 large fund managers around the world (i.e. Merrill Lynch Monthly Fund Manager Survey), find that fund managers from the UK, US, Japan, and continental Europe show a significant relative optimism towards their home equity markets, which leads them to overweight domestic securities with respect to the foreign ones. Lutje and Menkhoff (2007) analyzing the result of a questionnaire survey performed over 234 German equity and bond managers, show that fund managers reveal home bias even in a setting without investment restrictions. Indeed, they are found to show overoptimism toward domestic stocks, as well as strong risk aversion and wishful thinking, thus behaving in accordance with the herd, which insures against negative deviation from the benchmark. Moreover, the authors restrict these findings to equity fund managers.

In contrast with previous findings which relate domestic bias to investors' overconfidence toward their own markets, Graham, Harvey and Huang (2009) highlight how investors who feel competent trade more often and have more internationally diversified portfolios. Coherently with Barber and Odean (2001), male investors with larger portfolios or more education are found to perceive themselves as more competent and overconfident.

Similarly Dorn and Huberman (2005), combining survey responses and trading records of German retail broker's clients from 1995 to 2000, find no evidence for overconfidence as an explanation for portfolio decisions. In particular, self-reported risk aversion is found to be the most important determinant of both portfolio diversification and turnover; other things equal, investors more risk tolerant hold less diversified portfolios and trade more aggressively.

Considering a different bias that may affect investors' behavior, Solnik (2008) explains portfolios' international underdiversification using regret theory (Bell (1982); Loomes and Sugden (1982)), which assumes that agents base their decisions not only on expected payoffs but also on expected regret. In this sense, investors would rationally add foreign stocks to their portfolios for their potential to overperform national equity and for their risk-return diversification benefits. Although, when the foreign component of portfolio underperforms the domestic one, investors would feel the pain of regret, and would therefore take into account aversion to regret and risk simultaneously when allocate their wealth. This implies the expected return of foreign equity equals to that dictated by CAPM plus a regret premium. In equilibrium, it would be sufficient to have regret in a single country to observe home biased portfolio.

A wide strand of literature identifies in investors' feeling of familiarity toward domestic stocks the cause of portfolio international underdiversification. Familiarity may be defined as the perception of being part of the same natural environment, as well as the sharing of a common cultural background. In this sense, a common language, the existence of bilateral trades (Chan, Covrig and Ng (2005)) as well as firms' physical presence in foreign markets (Ke, Ng and Wang (2010)) may propel international diversification, which is instead limited by the presence of a strong country nationalism (Karlsson and McQueen (2007); Morse and Shive (2011)). Chan, Covrig and Ng (2005) analyze the mutual fund holdings of 26 countries over the years 1999-2000 and distinguish between domestic bias (i.e. the

overweighting of domestic stocks) and foreign bias (i.e. the under- or overweighting of foreign securities). The authors find robust evidence that stock market development and familiarity variables such as common language, geographical proximity, and bilateral trades have significant but asymmetric effects on the domestic bias and foreign bias, and that economic development, capital controls, and withholding tax variables have significant effects only on foreign bias. In this sense, securities issued by firms headquartered in a country more remote from the rest of the world and with a different language, are particularly overweighted by domestic investors and underweighted by the foreigners. Ke, Ng and Wang (2010), analyzing the equity holdings of more than 3000 mutual funds from 22 different countries over the period 2000-2002, show that non-US mutual fund manager prefer to invest in foreign stocks whose firms have a physical presence in their home country. This behavior is found to be driven by investors' familiarity with the companies and unrelated to an information-based explanation. Moreover differences in the cultural background, country of location, and spoken language of the diverse group of mutual fund managers do not affect results. The physical presence of the foreign firm in managers' country seems in fact to be the only relevant factor affecting portfolio allocation. Results remain unchanged even after controlling for firms' international presence and worldwide visibility, which the authors measure through the firms' global operations and foreign exchange cross-listings. Karlsson and McQueen (2007) analyzing the choices of mutual funds for retirement accounts of the Swedish population, document investors' preference not for domestic assets, but for domestic fund managers (i.e. homeboy bias). The authors analyze five possible economic and behavioral alternative explanations for the phenomena, specifically focusing on asymmetric information, the preference for funds denominated in Swedish currency (in order to eliminate exchange rate risk), investors' attempt to produce benefits for local economy by investing in local securities, the preference to invest in assets perceived as familiar, and the need of being

part of a distinctive group such as a successful team, tribe, religion or race (Muller-Peters (1998); Rydgren (2004)). Results support the last two explanations for the homeboy bias, showing that it may be based on behavioral preferences related to familiarity and nationalism. On the same line, Morse and Shive (2011) show that more patriotic countries present greater levels of home bias, even after controlling for diversification benefits, informational advantages, transaction barriers and familiarity.

The analysis of the studies relating behavioral factors and information asymmetries to the domestic bias still highlight a problem if interpretation of the phenomenon, whose roots seem far from being successfully detected. Therefore, over time a growing number of studies tried to consider the whole set of possible explanations so far provided by literature, relating the home bias to both rational and behavioral factors. Indeed, according to this literature, they both would impact on the domestic bias, depending on the individual and social features from time to time considered. In this sense, Karlsson and Nordén (2007) find significant relationships among individual features and the home bias' likelihood. In particular, individuals employed in the public sector and therefore characterized by an high level of job security, are found to feel less need for international diversification but more concern for hedging domestic purchasing power parity (see also Adler and Dumas (1983)). On the contrary, an higher level of education and previous experience with risky investments would generate a smaller likelihood of home bias, according with the view that investors sophistication decreases the likelihood of biased portfolios (see also Grinblatt and Keloharju (2000)). Finally, men are found to be more biased and overconfident than women, coherently with Barber and Odean (2001), while, in contrast with Graham, Harvey and Huang (2009), overconfidence and the perception of an informational advantage over the asset class they are familiar with (i.e. domestic securities) would lead male traders to overweight national stocks. DeMarzo, Kaniel and Kremer (2004) build a model that show that the degree to which an

investor is informed affects the impact of familiarity as determinant of investment choices: the more the investors are informed, the less they are influenced by familiarity, which results to be a substitute for better information. Moreover, when some agents are subject to behavioral biases, the rational ones adopt the bias and amplify its effect. Empirically Kumar (2009) support previous findings, showing that investors present stronger behavioral biases when securities are hard to evaluate and when market uncertainty is high; at the same time informed traders are found to exploit these biases by trading more in these stocks. Concluding, the list of the main studies relating the home bias to behavioral factors is reported in Table 10.

Table 10 – Behavioral factors

The first part of Table 10 summarizes the most relevant papers which identify in behavioral factors the origin of the home bias phenomenon. The second part of the table presents the studies which question and contest the above mentioned theory. The table summarizes the paper's author(s) (column 2), the journal and year of publication (column 3 and 4 respectively), and reports a brief summary of the main findings (column 5), allowing a comparative view of the papers' contents. In each section papers are sorted by year of publication.

Factor driving home bias	Authors	Journal	Year	Main Findings
BEHAVIORAL FACTORS	Kilka and Weber	Journal of Psychology and Financial Markets	2000	Individuals feel more optimistic about their own country's stocks.
	Strong and Xu	The Review of Economics and Statistics	2003	Fund managers from the UK, US, Japan, and continental Europe show optimism towards their home equity markets, which leads them to overweight domestic securities with respect to the foreign ones.
	DeMarzo, Kaniel and Kremer	The Journal of Finance	2004	If some agents are subject to behavioral biases, rational investors adopt these biases and amplify their effects.
	Chan, Covrig and Ng	The Journal of Finance	2005	Stock market development and familiarity variables have significant impact on mutual fund domestic bias.
	Karlsson and McQueen	Working Paper	2007	Investors have a preference for domestic fund managers, and this is related to familiarity and nationalism.
	Lutje and Menkhoff	International Journal of Finance and Economics	2007	Even in a setting without investment restrictions, equity fund managers reveal home bias, which seem related to overoptimism and risk aversion.
	Karlsson and Nordén	Journal of Banking and Finance	2007	Home bias is related to both rational and irrational factors, as the desire to hedge against inflation, sophistication and overconfidence.

Table 10 (continued)

Factor driving home bias	Authors	Journal	Year	Main Findings
BEHAVIORAL FACTORS	Solnik	Working Paper	2008	Individuals take into account aversion to regret and risk simultaneously when allocate their wealth: the expected return of foreign equity equals to that dictated by CAPM plus a regret premium.
	Kumar	Journal of Financial and Quantitative Analysis	2009	Investors present stronger behavioral biases when securities are hard to evaluate and when market uncertainty is high.
	Ke, Ng and Wang	Journal of International Business Studies	2010	Familiarity drives fund managers to prefer foreign firms with a local presence in their own country.
	Morse and Shive	Journal of Financial Markets	2011	More patriotic countries present greater levels of home bias.
	Criticism			
	Dorn and Huberman	Review of Finance	2005	Self reported risk aversion is the most important determinant of portfolio diversification.
	Graham, Harvey and Huang	Management Science	2009	Investors who feel competent trade more often and have more internationally diversified portfolios.

The combination of the studies examined in Section 2.1. which show often conflicting and non-conclusive results highlights a problem of interpretation of the causes driving the home bias phenomena. The difficulties in interpreting the preference for domestic investments, raised over time the question on whether such behavior emerges also restricting the analysis within the borders of a single country (i.e. local home bias). In this case, indeed, the preference would be related solely to spatial proximity rather than to cultural, fiscal, legislative or informational barriers between countries. The following section focuses on the growing literature related to the local home bias phenomenon, whose analysis allowed to more properly address the research question investigated in the rest of the study.

2.2. Local home bias

From the analysis of the studies mentioned so far, significant difficulties in the interpretation of the phenomena emerge quite clearly. This led, in recent years, to a change in the methodological approach which brought researchers to focus on the phenomena not only in a cross-country but also in a within-country context. At this regard, several recent papers provided ample evidences that both individual and professional investors tend to tilt their portfolios towards local securities. This phenomenon, known as local home bias, appears substantial within the border of a single country, where stocks headquartered in geographically nearby locations are preferred to those headquartered in the more distant ones (see among the others Coval and Moskowitz (1999); Huberman (2001)). Being the analysis restricted to the domestic context, investors' preference would therefore be related solely to spatial proximity rather than to cultural, fiscal, legislative, or informative barriers between countries. Spatial proximity would in fact allow investors to exploit an informational advantage generated by proximity, allowing to earn substantial abnormal returns (among the others Coval and Moskowitz (2001); Ivkovic and Weisbenner (2005)), or would make traders feel more comfortable in investing in nearby firms because of the feeling of familiarity toward companies they can see and hear about every day (among the others Grinblatt and Keloharju (2001); Huberman (2001)). In this sense, both rational and behavioral explanations are so far addressed by academics for the local home bias.

From this new perspective, Coval and Moskowitz (1999), find evidence that US professional fund managers tilt their portfolios toward securities of domestic firms whose headquarters are geographically proximate to them. In particular, US institutional investors' typical portfolio is on average composed of stocks of companies located 100 miles closer to the manager's office than the average US firm. Extrapolating these findings over an international scale, such a trend would be responsible for about one third of the home bias

observed in equity portfolios. Local equity preference is found to be stronger for small and highly levered companies that produce non-internationally traded goods. As these companies are those commonly perceived as more opaque and over which local traders could possess a possible informational advantage, the authors suggest an information based explanation for local preferences. In a subsequent contribution Coval and Moskowitz (2001) go further by highlighting how the physical distance between companies' headquarter and funds' location is important in determining funds managers' performance. Indeed, as the distance between investors and investments is considered a measure of information flow, nearby traders can be identified as those possessing significant informational advantages in evaluating nearby securities. This leads active managers, overweighting proximate firms, to systematically earn substantial abnormal returns. Empirically, the average manager holds stocks on average 14 percent closer than the average investments, and realizes additional 250 basis points per annum which, adjusted for size, book-to-market equity and momentum reduce to 1.3 percent yearly. These results are strongest for funds based in remote locations, with low asset values and concentrated holdings, and for funds focused on small and growth stocks. On the same line, considering a dataset about the investments of 78,000 retail investors over the period 1991-1996, Ivkovic and Weisbenner (2005), confirm previous findings, supporting the hypothesis that locally available information is value relevant. In particular, the authors show that the subsample of investors (17 per cent of the entire sample) who invest only locally (i.e. in firms located at less than 250 miles from traders' home), make *ceteris paribus* an annual extra return of 3.2 percent on average. This performance is higher for the stocks not included in the S&P500 and therefore less visible (see among the others Shleifer (1986)). Again, Uysal, Kedia and Panchapagesan (2008) studying the acquisition decision of US public firms show how the acquirer returns in non-local transaction (i.e. transactions where the target company and the acquirer are more distant than 100 km to each other) are less than an half

than returns in local transactions. Examining the informational role of geographically proximate institutions, Baik, Kang and Kim (2010) highlight how both the level and the variation in local institutional ownership is able to predict stock returns. This effect is stronger particularly for companies characterized by an high levels of information asymmetries, i.e. small young stocks, with high return volatility and R&D intensity. Further supporting the local home bias explanation related to the informational advantage due to proximity, Feng and Seasholes (2004) show that traders living close to a company's headquarter react similarly to a public information release, and this is coherent with the assumption that nearby investors receive more precise informations about future dividends. Following the same line of reasoning, Bodnaruk (2009) show that when investors move, thus changing the proximity to investment opportunities, they adjust their portfolio composition by increasing their ownership of stocks of companies close to their new location, which allow them to generate higher risk-adjusted returns portfolios. Massa and Simonov (2006), considering a dataset collecting informations about wealth and portfolio composition of the Swedish population, show that investors do not hedge but invest in stocks geographically or professionally close and related to their non-financial income. This strategy would be information driven, allowing traders to earn higher return that they would have with an hedging strategy. On the same line Teo (2009), considering Asia-focused hedge funds, finds that those funds with a physical presence in their investment region outperform other hedge funds by over the 3.7 percent per year. Becher, Cronqvist and Fahlenbrach (2011) document that individual shareholders hold blocks in firms that are headquartered close where they live. Moreover, blocks appear not to be randomly allocated but systematically allocated based on where the benefits to additional monitoring are more significant. In this context, geographically proximate analysts are found to be more accurate than others because of the possess of an informational advantage that translates into better performance (Malloy

(2005)). According to these studies, local home bias would thus be dictated by the desire to exploit informational advantages linked to proximity.

However, in spite of the considerable number of recent articles that attest the validity of this latter explanation of local bias mainly documenting the significant portfolio abnormal return generated by proximity (see among the others Feng and Seasholes (2004); Ivkovic and Weisbenner (2005); Massa and Simonov (2006); Goetzmann and Kumar (2008); Bodnaruk (2009); Teo (2009); Baik, Kang and Kim (2010)), a growing strand of literature provides evidences that investors' preference for local is determined, at least partly, by behavioral and therefore irrational factors (see among the others Huberman (2001); Karlsson and Norden (2007); Zhu (2003)) that can be assimilated to the generic concept of familiarity with the issuing firm (Doskeland and Hvide (2011); Grinblatt and Keloharju (2001)). For instance Huberman (2001) , documenting local equity preferences at the households level, finds that the shareholders of the major providers of U.S. local telephone services, i.e. the seven U.S. Regional Bell Operating Companies tend to live in the area that the company serves. This concentration does not exist for the other "baby bell" even if listed on the same segment of the securities market, and suggests that investors' behavior is driven by their tendency to invest in the familiar, by allocating their wealth in a business that is visible to them. This basically adds a non pecuniary dimension to the traditional risk-return trade-off, which is therefore not optimized. Again, Grinblatt and Keloharju (2001) document that investors in various municipalities in Finland prefer to hold and trade stocks of Finnish companies geographically proximate to them, that publish their annual reports in Finnish, and whose CEOs has the same cultural background. Indeed, these firm would be perceived as the more familiar. Moreover, the distance effect is found to be particularly strong for those firms whose geographic proximity to traders is lower than 100 kilometers, and is weaker for the more nationally known companies and for the more sophisticated investors with diversified

portfolios. Frieder and Subrahmanyan (2005) find evidences supporting that individual investors prefer to invest in stocks issued by high brand visibility firms. Similarly, Zhu (2003), using data from a large U.S. discount brokerage, highlights that individual investors are biased toward nearby company especially if these are remote and with heavily expenses in advertising. Familiarity with local companies and ready reaction to local information are found to be more plausible explanations to investors' behavior, as they are found not to change their portfolios to take advantage of potentially advantageous information before earnings announcements, but only subsequently.

In this perspective, the preference for local is not, at least totally, attributable to an informational advantage owned by local investors, and local portfolios do not automatically generate outperformance (Kang and Stulz (1997); Zhu (2003); Seasholes and Zhu (2010); Doskeland and Hvide (2011)). In this sense, Seasholes and Zhu (2010) show that purchases of local stocks significantly underperform the sales of the same stocks and conclude that individual traders do not help to incorporate informations into stock prices. On the same line, Doskeland and Hvide (2011) highlight that Norwegian investors' tendency to overweight professionally close stocks leads to statistically negative abnormal returns. In light of the poor hedging property of this investment strategy, overconfidence generated by work experience seems indeed the most plausible explanation.

Recently documented phenomena such as local social interactions (Hong, Kubik and Stein (2004); Shive (2010)) and neighborhood word-of-mouth (Hong, Kubik and Stein (2005); Brown, Ivkovic, Smith and Weisbenner (2008)) help to explain investment decisions and therefore the intensity of the preference for local (see also Ivković and Weisbenner (2007)). In this sense, Hong, Kubik and Stein (2004) show that social interactions affect stock market participation: households attending church or, more generally, interacting with neighbors are indeed more likely to invest in the market. On the same line Shive (2010)

shows that in Finland investors' trading and stock returns are affected by social influence. Hong, Kubik and Stein (2005) highlight a similar pattern also in the context of professional investors. Indeed, a mutual fund manager in US is more likely (not) to hold a securities if other managers in the same city are (not) holding the same asset. This evidence is consistent with a word-of-mouth information spread, and is different from a local preference effect, since it emerges even for non-local securities. Again, Brown, Ivkovic, Smith and Weisbenner (2008) demonstrate that a ten percent increase in the stock ownership of a given community increases the likelihood of individual participation to the market by four percent. This implies that investors are found to perceive the local market as more attractive when more of their peers participate. Applying the same reasoning with a specific focus on local stocks, Ivković and Weisbenner (2007) present evidence that when neighbors purchases of a stock from a given industry increase by ten percent, the households' purchase of securities from the same industry increases by two percent. Moreover, this effect appears consistent with a word-of-mouth communication, and is stronger both in the more social states and for local stocks.

At present, even if the debate about its causes is still an open issue, the existence of the local home bias seems indisputable (for the most updated evidences see among the others Becker, Cronqvist and Fahlenbrach (2011); Jacobs and Weber (2012); Kumar, Page and Spalt (2012)). Regardless the underlying reasons of the phenomenon, investors' local preference is found to generate a segmentation of domestic capital markets and to naturally create a clientele of investors from the same region. In this sense, Francis, Hasan and Waisman (2008) show that bondholders tend to invest in local firms and that, compared to urban firms, companies headquartered in remote rural areas present an higher cost of debt capital generated by a greater difficulty of the activities' monitoring. Guiso, Sapienza and Zingales (2004) evidence the positive effect of regional financial development on the economic success of the same geographical area within Italy. On the same line, Gao, Ng and Wang

(2011) show that firms tend to have financing policies similar to those of geographically proximate companies. Landier, Nair and Wulf (2009) show that geographically dispersed firms are less employee friendly and that companies tend to divest out of state entities before the in state ones. Loughran and Schultz ((2004), (2005)) have been the first to realize the relevance of geography in asset pricing. In his sense, in a first contribution Loughran and Schultz (2004) document that the trading in Nasdaq stocks is localized. Indeed, a firm's intraday trading is affected by the time zone of the company's headquarter, or by Jewish festivities is the company is located in areas with a high density of Jewish population. Again, being local for fewer people, rural stocks are less liquid and have less turnover than urban stocks (Loughran and Schultz (2005)). Shive (2012) presents similar evidences by showing that stocks headquartered in an outage area with 0.5 percent of US electrical customers, experience turnover drops by 3-7 percent on the first full day of the outage and a lower price volatility of 2.3 percent, suggesting that local investors contribute substantially to asset pricing and price discovery. Moreover, coherently with the existing literature (Coval and Moskowitz (1999)), the effect is stronger for smaller and less known stocks. Similarly, Jacobs and Weber (2012) further give empirical proofs that local home bias at individual level impacts on stocks' turnover. Indeed, the authors find that firms headquartered in holiday regions in Germany, especially if less visible to non-local investors, experience a negative turnover shock. Pirinsky and Wang (2006) show that companies headquartered in the same area present strong comovement in the stock returns. This evidence still holds even when a firm change location: securities returns' comovement decrease with the stocks from the old location and increase with the new location ones. Local comovement of a stock is further related to local economic and demographic characteristics, being stronger for less visible and smaller companies headquartered in regions with more individuals and less financially sophisticated investors. On the same line, Barker and Loughran (2007) find an inverse

relation between the distance among two firms and their correlation: indeed, considering a sample of S&P500 firms over the period 2000-2004, the authors find that for every 100 miles reduction in finance, the correlation coefficient between two stocks increases by 12 basis points. Korniotis and Kumar (2010) show that local stock returns vary with local business cycles. Indeed, US-state portfolios are found to earn high future returns when state-level unemployment rates are high and housing collateral ratios are low. Again, Anderson and Beracha (2008) and Kumar, Page and Spalt (2012) provide similar evidences, giving robustness to these arguments. HKS2008 have been the first to study the impact of the fragmentation of domestic capital markets generated by investors' preference for local on firm evaluation. More specifically, the authors show that the imbalance between the local demand (proxied by the households' aggregate disposable income in a given area) and the local supply for stocks (proxied by the aggregate book value of the equity of all listed firms in the same area), affects firms' market value. In fact, according to a sort of local rarity/abundance effect that HKS2008 name "only-game-in-town effect", *ceteris paribus*, non-financial companies located in areas characterized by low ratio between local supply and local demand (synthesized in a variable the authors call RATIO) show higher market-to-book ratios. Furthermore, the magnitude of this effect is found to decrease in firm visibility. Considering another point of view, Gao, Ng and Wang (2008) show that geographically dispersed companies (i.e. with subsidiaries located in different regions within the US) have a market discount around the 6.2 percent, consistent with an agency cost-based explanation. The study of the literature about local home bias, whose evolution over time is reported in Table 11, show that – although the phenomenon has been thoroughly analyzed – little evidence has been provided regarding its impact on asset-pricing equilibrium (among the others HKS2008). More surprisingly, the question of whether and, above all, to what extent,

local bias is driven by informational advantages rather than irrational behavioral factors is still unsolved.

Table 11 – Local home bias

Table 11 summarizes the most relevant papers which define and discuss the local home bias phenomenon. The table summarizes the paper's author(s) (column 2), the journal and year of publication (column 3 and 4 respectively), and reports a brief summary of the main findings (column 5), allowing a comparative view of the papers' contents. In each section papers are sorted by year of publication.

Factor driving home bias	Authors	Journal	Year	Main Findings
LOCAL HOME BIAS	Coval and Moskowitz	The Journal of Finance	1999	US investment managers exhibit a strong preference toward geographically proximate firms, especially s small, highly levered and producing non-traded goods.
	Coval and Moskowitz	Journal of Political Economy	2001	Active managers, overweighting geographically proximate firms, earn substantial abnormal returns.
	Grinblatt and Keloharju	The Journal of Finance	2001	Investors in various municipalities in Finland prefer to hold nearby stocks, issued by companies communicating in investors' native tongue, and whose CEO has the same cultural background.
	Hubermann	The Review of Financial Studies	2001	Shareholders the major providers of U.S. local telephone services tend to live in the area which they serve.
	Zhu	Working Paper	2003	Individual investors are biased towards nearby companies, especially if remote, and spending heavily on advertising. Moreover, investors do not change their portfolios to exploit informational advantages before earning announcements.
	Feng and Seasholes	The Journal of Finance	2004	Investors living near a firm' headquarters similarly react to the release of information, and this is consistent with a model of heterogeneously informed investors.
	Guiso, Sapienza and Zingales	Quarterly Journal of Economics	2004	Local financial development is an important determinant of the economic success of the same area.
	Hong, Kubik and Stein	The Journal of Finance	2004	Stock market participation of individual investors is influenced by social interactions.
	Loughran and Schultz	Journal of Financial and Quantitative Analysis	2004	Trading in Nasdaq stocks is localized, being a firm's intraday trading affected by the time zone of the company's headquarter, or by Jewish festivities is the firm is located in areas with a high density of Jewish population.
	Frieder and Subrahmanyam	Journal of Financial and Quantitative Analysis	2005	Individual investors prefer to invest in stocks with easily recognized and visible brands products.

Table 11 (continued)

Factor driving home bias	Authors	Journal	Year	Main Findings
LOCAL HOME BIAS	Hong, Kubik and Stein	The Journal of Finance	2005	Mutual fund managers spread information about stocks to one another by word of mouth: they are more likely (not) to hold a stock if other managers in the same city are (not) holding the same stock.
	Ivkovic and Weisbenner	The Journal of Finance	2005	Locally available information is value relevant: the average household generates an additional return of 3.2% from its local holdings with respect to its non-local holdings.
	Loughran and Schultz	Journal of Financial Economics	2005	Rural stocks are less liquid and have less turnover than urban stocks, being local for fewer people.
	Malloy	The Journal of Finance	2005	Local analysts make more accurate analysis and impact on stock prices more than other analysts. Moreover, local analysts recommendations are unbiased.
	Massa and Simonov	The Review of Financial Studies	2006	Investors hold geographically nearby and professionally close stocks as a rational response to information constraints as opposed to a behavioral heuristic.
	Pirinsky and Wang	The Journal of Finance	2006	Companies headquartered in the same area present strong comovements in the stock returns.
	Barker and Loughran	Journal of Behavioral Finance	2007	For every 100 miles reduction in distance, the correlation coefficient increases by 12 basis points.
	Ivkovic and Weisbenner	The Review of Financial Studies	2007	When neighbors purchases of a stock from a given industry increase by ten percent, the households' purchase of securities from the same industry increases by two percent.
	Anderson and Beracha	The Journal of Financial Research	2008	A firm's return comovement with a portfolio of stocks headquartered in other cities diminishes with the distance from the firm's own headquarters city.
	Brown, Ivkovic, Smith and Weisbenner	The Journal of Finance	2008	Individuals participation in the stock market is linked to the average stock market participation of their community and is driven by a word-of-mouth effect.
	Francis, Hasan and Waisman	Working Paper	2008	Companies headquartered in remote rural areas present a higher cost of debt capital generated by a greater difficulty of the activities' monitoring with respect to urban firms.
	Gao, Ng and Wang	Journal of Corporate Finance	2008	Geographic location of corporate activities affect firm evaluation: firms with subsidiaries in different US regions present a discount in their evaluation of about 6.2%.

Table 11 (continued)

Factor driving home bias	Authors	Journal	Year	Main Findings
LOCAL HOME BIAS	Goetzmann and Kumar	Review of Finance	2008	US individual investors, especially if young, low-income, less educated and less sophisticated, hold under-diversified portfolios.
	Hong, Kubik and Stein	Journal of Financial Economics	2008	The price of a stock is decreasing in the ratio of the aggregate book value of firms in its region to the aggregate investors' risk tolerance in its region, according to a "only-game-in-town" effect.
	Uysal, Kedia and Panchapagesan	Journal of Financial Intermediation	2008	In the context of US public firms acquisition decisions, the acquirer returns in non-local transaction (i.e. where the target and the acquirer are more distant than 100 km to each other) are less than an half than returns in local transactions.
	Bodnaruk	Review of Finance	2009	When proximity to investment opportunities changes (i.e. investors move), investors adjust their portfolio composition.
	Landier, Nair and Wulf	The Review of Financial Studies	2009	Firms are more likely to protect proximate employees in soft information industries, but employees protection holds only when firm headquarter is located in less populated countries.
	Teo	The Review of Financial Studies	2009	Hedge funds with a physical presence in their investment region outperform other hedge funds by 3.72% per year.
	Baik, Kang and Kim	Journal of Financial Economics	2010	Especially for firms with high information asymmetries, both the level and change in local institutional ownership predict future stock returns.
	Korniotis and Kumar	Working Paper	2010	US state portfolios earn high future returns when state-level unemployment rates are high and housing collateral ratios are low.
	Seasholes and Zhu	The Journal of Finance	2010	Portfolios of local holdings do not generate abnormal performance.
	Shive	Journal of Financial and Quantitative Analysis	2010	There are significant social effects on individual investors' trading.
	Becker, Cronqvist and Fahlenbrach	Journal of Financial and Quantitative Analysis	2011	Nonmanagerial individual shareholders tend to hold blocks in public firms located close to where they reside. Blocks are not randomly allocated but systematically allocated based on where the benefits to additional monitoring are more significant.
	Doskeland and Hvide	The Journal of Finance	2011	There's no evidence that professional proximity is associated with abnormally high investment returns. Overconfidence seems instead the most likely explanation for the excessive trading in professionally close stocks.

Table 11 (continued)

Factor driving home bias	Authors	Journal	Year	Main Findings
LOCAL HOME BIAS	Gao, Ng and Wang	Financial Management	2011	Corporate headquarters location affect capital structure for large US firms: companies tend to conform their financing policies to those of nearby firms.
	Jacobs and Weber	Review of Finance	2011	Stocks of German companies headquartered in holiday regions are temporarily less traded than similar stocks in non-holiday regions. This effect is more pronounced for securities less visible to non-local investors and for smaller stocks driven by retail investors.
	Kumar, Page and Spalt	Working Paper	2012	Retail investors generate excess comovements in stock returns. Excess return comovements among low priced stocks are amplified when retail traders are more correlated.
	Shive	Journal of Financial Economics	2012	Stocks headquartered in an outage area with 0.5% of US electrical customers, experience turnover drops by 3-7% on the first full day of the outage, and a lower price volatility of 2.3%.

In light of the literature on the topic, and extending the framework proposed by HKS2008 with reference to the Italian equity-market, this work's aim is to get light on the causes of local bias by examining whether the pricing of firms that are more likely to be perceived as familiar by investors and that, at the same time, are more likely to generate an information advantage which can be positively exploited by investors, is (in)dependent from local-market conditions. More specifically, I first provide evidence of the local bias in the Italian equity-market (hereafter just market) verifying that an imbalance between the regional supply and demand of ordinary shares, proxied by the RATIO variable introduced by HKS2008, creates a local rarity/abundance effect (that HKS2008 called "only game in town effect"), which translates into a premium/discount of the corporate market value. Secondly, in order to examine whether and to what extent the local bias is attributable a mere irrational behavioral factor rather than to an informational advantage owned by local investors, I estimate the additional and the overall local rarity/abundance effect for the subsamples of

firms (i) that are more likely to be known by the non-local investors, that I called "visible firms", (ii) that in the forthcoming year will experience extra-performance, that I called "profitable firms", and (iii) within the latter, those that are more likely to manipulate accounting results, and therefore to be characterized by substantial informational asymmetries, that I called (profitable and) "opaque firms". Given the existence of local bias, each estimated local rarity/abundance effect verifies whether and to what extent the preference for local stocks is in fact identifiable as a "preference" for the firm's (i) visibility, (ii) profitability, or (iii) profitability and opacity respectively. Thus, this research results' should essentially contribute to financial literature by helping to discriminate among the causes driving the phenomenon under investigation. Again, this study is expected to highlight the so far unexplored role of firms' location as a determinant of firms' market evaluation giving useful directions in terms of pricing, and helping to discriminate among the firms that may actually exploit the rarity effect and benefit from the evaluation that derives from company's territoriality. According to the research hypothesis, the geographic component of firms market price is not expected to be constant for the wholeness of Italian listed firms. Indeed, in a context of informed investors, the presence of a stock supply scarcity would appear not to be sufficient to enhance opaque firms market value if these companies are not expected to be profitable in the future. This study considers a sample made by all firms issuing ordinary shares traded at Milan Stock Exchange over the period December 31, 1999 – December 31, 2007, and headquartered within the Italian territory. The correspondent dataset consists of 2,463 firm-year observations. As already mentioned in Section 1, I run the analysis within the Italian context since its peculiar cultural, economic and institutional scene makes the country an ideal setting to study the phenomenon investigated. Indeed, on one side, the spatial distribution of listed firms in Italy, and its historical and legal context make the analysis not only interesting from an academic standpoint but also desirable since very likely

the local home bias (and its implications) may assume relevant proportions. This aspect should allow to better identify the causes of the phenomenon since the impact of local home bias on firms' market price is expected to be stronger. On the other side, Italian bank oriented economy as well as other differences among the Italian and US frameworks (La Porta, Lopez-De-Silanes, Shleifer and Vishny, 1997, 1998), where most of the studies on the topic have been conducted, allow to internationalize the results obtained taking into account, at the same time, single countries' peculiarities.

3. Data

3.1. Data sources and sample selection

The analysis requires the matching of two different sources of information: on one hand, the spatial and wealth distribution of Italian population, on the other hand, accounting, financial variables and the headquarters' location for the firms listed at the Milan Stock Exchange. Data on spatial distribution of Italian population and data about the households' wealth at regional level come from the database provided by the European Commission (EuroStat), available on the European Union's website, www.ec.europa.eu, going back to 1996. Indeed, European Commission database provides detailed regional statistics about the geographical distribution of European population and its wealth, considering age, sex, population density for different territorial levels (i.e. number of inhabitants/area), births and deaths, population structure, educational level, and life expectancy. Data about wealth at the province level come from the Rapporto Unioncamere[iv], which every year analyses local economies through researches, conferences and publications over subject of interest for the chambers of commerce. Although the analysis is run at regional level, as mentioned in Section 1, I need to gather data at province level because of the two autonomous provinces of Trento and Bolzano-Bozen which, under the European Parliament Rule No 1059/2003 are awarded with the legislative rank of region. Indeed, data about region Trentino Alto Adige have been obtained through the aggregation of the data referred to the two above mentioned provinces.[v] The analysis is limited to the time period from 1999 to 2007, since 1999 is the year of the introduction of the euro, which determined a structural break in the market valuation of Italian listed firms (see for instance Bris, Koskinen, and Nilsson (2009)), while 2007 is the most recent year in which all data on Italian population are available.

[iv] Data available at the Url www.unioncamere.it, section *Health Centre.*

[v] To know more about NUTS, see the url:
http://europa.eu/legislation_summaries/regional_policy/management/g24218_en.htm

Data at firm level come from several different sources:

- the database provided by Consob (i.e. the Italian equivalent of US SEC) available on its website, www.consob.it;
- Osiris, Bureau Van Dijk's database, which has a worldwide coverage and contains balance sheet data of listed firms, banks and insurance companies for a total of 38,000 firms in 120 different countries;
- firms' Annual Reports;
- the archives provided by Borsa Italiana S.p.A. – which is the company that manages Milan Stock Exchange – available at www.borsaitaliana.it;
- the electronic archive of "*Il Sole 24Ore*", which is the most prominent financial daily newspaper in Italy;
- Mediobanca's publication "*Indici e Dati*";
- the yearly investment guide "*Il Calepino dell'Azionista*", which provides a brief history of each Italian listed firm, and
- Datastream (Thompson Financial).

Specifically, from Consob's database I obtained the list of all firms issuing securities listed at Milan Stock Exchange over the period 1999-2007. This represented the initial sample of analysis, which accounted for a total of 2,537 firm-year observations. From Osiris and firms' Annual Reports I collected the location – i.e. Address, City, Province, and ZIP code – of the headquarter of each sampled firm. This information is particularly of interest since allows to locate the companies belonging to the final sample within the different Italian macro-areas, regions and provinces.

From the archives of Borsa Italiana S.p.A., I obtained the lists, updated at the last working day of each year over the period 1999-2007, of the securities listed at the Milan Stock Exchange but not actively traded, and of those included in the FTSE MIB Index, S&P MIB

Index and MIB30 Index. Specifically, FTSE MIB Index is currently the primary benchmark index for the Italian equity-market, and is composed by the 40 most liquid and capitalized Italian shares traded at Milan Stock Exchange. FTSE MIB Index substituted the June 1, 2009 the S&P MIB Index which was composed by the 40 most liquid and capitalized shares of Italian and foreign firms listed on the markets managed by Borsa Italiana S.p.A. The index represented about the 80 percent of the capitalization of the Italian stock exchange, and replaced the June 2, 2003 the MIB30 Index, which consisted of the 30 most liquid and capitalized Italian shares traded at Milan Stock Exchange. Operationally, the information about the firms included in the indexes above defined allowed to build the FTSE dummy variable, which will be defined and discuss later. From the initial sample, have been extracted the observations i) whose ordinary shares were actively traded at the end of each year in the period 1999-2007 and ii) headquartered in Italy. The resulting dataset, identified as the final sample, consists of 2,463 firm-year observations issuing ordinary shares (hereafter just stocks or shares) actively traded at the Milan Stock Exchange over the period 1999-2007. From *Il Sole 24Ore*'s archive I obtained data on firms' press coverage, while from Mediobanca's "*Indici e Dati*", and "*Il Calepino dell'Azionista*" I gathered data on firms' IPOs, and age respectively. Finally, from Datastream I collected all others relevant accounting and financial information.

Following HKS2008, in order to estimate the local supply of stocks in a given area, I initially considered also the financial firms included in the sample and defined as those companies whose SIC code first digit is equal to 6. Subsequently, I took away these companies from the final sample in order to study non-financial firms only. Indeed, for financial firms, it is reasonable to hypothesize that the local preference and therefore the postulated subsequent market segmentation, even when linked to the territory, is not associated to the mere headquarters' location, and ultimately to the RATIO variable that I

consider to evaluate the local market conditions in terms of demand and supply for stocks. More likely, financial firms are perceived as local by those investors geographically proximate to one of their branches rather than to their headquarters (see for instance results of Teo (2009)). In this sense, the pertinent literature well documented the limited advantages produced by the geographical diversification of loan portfolios (Acharya, Hasan, and Saunders (2006)), as well as the crucial role played by branches' localization in determining banks' profitability (Hansen and Weinberg (1979); Boufounou (1995)). To future empirical researches the task to investigate this aspect. Table 12 summarizes the data sources considered in the present analysis.

Table 12 – Databases used in the analysis

The table reports the list of the databases used in the analysis, along with their Url and a brief description of the data collected for each data source.

Data Source	Url	Data Collected
Households' level		
EuroStat	www.ec.europa.eu	Data about spatial distribution of Italian population and about households' wealth at the region level.
Rapporto Unioncamere	www.unioncamere.it	Data about households' wealth at the province level.
Firm's level		
Consob	www.consob.it	List of all firms issuing securities listed at Milan Stock Exchange over the period 1999 - 2007.
Borsa Italiana S.p.A.	www.borsaitaliana.it	List of the securities not actively traded at the end of the last working day of each year considered in the sample (1999-2007), and of those included in the FTSE MIB Index, S&P MIB Index and MIB30 Index.
Osiris	https://osiris.bvdep.com	Data about the location (Address, City, Province, ZIP code) of the headquarter of each firm included in the sample.
Il Sole 24 Ore	www.ilsole24ore.com	Data about firms' press coverage.
Mediobanca	www.mediobanca.it	Data about firms' Initial Public Offerings.
Il Calepino dell'Azionista	-	Data about firms' age.
Datastream	www.thomsonone.com	Financial and accounting information about the firms included in the sample.

In order to define a territorial segmentation of the country, Italy has been split in sub-areas with reference to the Nomenclature for the Statistics Territorial Units (NUTS). NUTS codes identify homogeneous territorial statistical units within the European Union on the basis of the area and the resident population. More specifically, the territory of any country member (NUTS0) is divided by NUTS codes in three nested sub-levels. Geographical macro-areas are identified as NUTS1, Italian regions or the European equivalent are defined as NUTS2, and Italian provinces or the European equivalent are labeled as NUTS3.

Table 4 specifically reports Italian NUTS at NUTS2 level, i.e. Italian regions, which represent the territorial dimension of major interest of the analysis for multiple reasons. Indeed, Italian regional sub-division is the one that closely represents its historical and cultural pre-unification divisions. This implies that analysis performed regionally are more

likely to highlight the possible cultural segmentations that could eventually intensify the behavioral component of the local home bias phenomenon (Grinblatt and Keloharju (2001)). Moreover, empirically Guiso, Sapienza and Zingales (2004) evidence the positive effect of financial development at regional level on the economic success of the same geographical area within Italy. This allows to reasonably hypothesize that also a possible economic and credit-market segmentation in Italy is eventually defined regionally. Finally, the average (median) surface of Italian regions corresponds to the 4.97 (5.79) percent of the whole Italian territory, which is approximately the same critical area (cf. the 5.28 percent of the U.S. surface) that Ivkovic and Weisbenner (2005) find significant in distinguishing locally biased (and, they find, better informed) investors from the non-local (and, they find, worse informed) ones. Italian regional division may therefore be the more appropriate also to capture the local and informed investors, thus taking into account the eventual rational root of local home bias. Given the address obtained for each sampled firm through the Osiris database and the firms' Annual Reports, I have been able to identify for each company the correspondent region and geographical macro-area. Finally, through the internet application Google Maps, I collected the geographical coordinates (i.e. latitude and longitude) of each sampled firms' headquarter and of each capital city of region and province.

Table 13 – Italian NUTS

The table reports Italian NUTS from level NUTS0 to level NUTS2, which represents the territorial level of major interest in the analysis. The two autonomous provinces of Bolzano-Bozen and Trento under the European Parliament Rule No 1059/2003 are awarded with the legislative rank of region, but in the analysis are merged and considered as region Trentino Alto Adige.

NUTS0	Code	NUTS1	Code	NUTS2	Code
		North West	ITC	Piedmont	ITC1
				Aosta Valley	ITC2
				Liguria	ITC3
				Lombardy	ITC4
		North East	ITD	Bolzano/Bozen	ITD1
				Trento	ITD2
				Veneto	ITD3
				Friuli-Venezia Giulia	ITD4
				Emilia-Romagna	ITD5
Italy	IT	Centre	ITE	Tuscany	ITE1
				Umbria	ITE2
				Marche	ITE3
				Lazio	ITE4
		South	ITF	Abruzzo	ITF1
				Molise	ITF2
				Campania	ITF3
				Apulia	ITF4
				Basilicata	ITF5
				Calabria	ITF6
		Islands	ITG	Sicily	ITG1
				Sardinia	ITG2

3.2. Variables definition

As already mentioned, the present study aims to test whether in Italy actually exists the local home bias phenomenon as highlighted among the others by HKS2008, and Coval and Moskowitz ((1999), (2001)) in the US context, and to study the factors which the phenomenon depends from, trough the analysis of its impact on listed firms' market value. Indeed, following HKS2008, it is possible to state that if effectively traders tend to invest mainly in local securities, in regions with both a scarcity of supply and a high demand for local stocks, the excess of demand over the few securities locally available should push their price up. In this sense, regardless of the causes driving investors' preference for local, a higher evaluation of securities in areas characterized by an unbalance between (low) local supply and (high) local demand would confirm the existence of locally segmented markets. Furthermore, the analysis of which stocks this effect is more relevant for, by considering firms' visibility, profitability and opacity, should allow to understand and discriminate among the causes driving the phenomenon. As already mentioned, while firm's visibility is reasonably expected to capture dynamics related to the familiarity with the issuing firm, and thus the behavioral origin of investors' preference for local, firm's future profitability and firm's opacity are expected to capture dynamics related to the informational root of the local home bias.

In order to conduct this analysis and to construct a base model able to properly investigate the research question(s), it is first of all fundamental to identify variables able to:

- represent the under- or overvaluation of the stocks from time to time considered;
- express the local market conditions (i.e. the unbalance between local demand and supply of stocks) which would impact on stock prices; and
- define firms' visibility, and both firms' profitability and opacity.

In this sense, following HKS2008, in order to define a company's market appreciation and the local economic conditions, this study identifies respectively firms' Market-to-Book Ratio and RATIO, whose detailed description is provided in Section 3.2.1. and 3.2.2.

Moreover, Section 3.2.3. and Section 3.2.4. define a series of visibility and both profitability and opacity variables respectively, along with a detailed description of the other variables employed in the analysis (Section 3.2.5.), in order to help the reader to fully understand the methodological choices that will follow.

3.2.1. Market-to-Book Ratio

In line with HKS2008, as endogenous variable to proxy for the market appreciation of a particular stock, I compute the log of the firm's market-to-book ratio (Market-to-Book Ratio). Though results are not significantly affected by this choice (not reported for shortness), I take logs because of the high skewness that characterizes the raw variable.

The firms' market-to-book ratio is a variable widely accepted by financial literature in order to study the over- or underperformance of a particular security (see among the others Baker and Wurgler (2002); Adam and Goyal (2008); Liu (2009)). The numerator is the firm's equity market value, which defines the total market value of a company's outstanding shares, being calculated by multiplying the current stock price by the number of outstanding shares. In other words, market value of equity is a synonym for market capitalization, and reflects the firm's market appreciation. The denominator of the Market-to-Book Ratio variable is the firm's equity book value, which identifies the value at which a firm's stocks are carried on a balance sheet, equal to total assets minus liabilities, preferred stock, and intangible assets such as goodwill. This also represents how much the company would have left over in assets if it went out of business immediately. Indeed, it basically represents an assessment of the minimum value of a company's equity, and does not consider whether a stock is over- or

undervalued by the market. Since companies are usually expected to grow and generate more profits in the future, market capitalization is higher than book value for most companies. As book value is a more accurate measure of valuation for companies which aren't growing quickly, it is of more interest to value investors than growth investors. Indeed, by definition a firm's equity book value does not take into account the company's growth potential, which is instead incorporated in the equity market value. Therefore, the market-to-book value compares two different expressions of equity value, one related to accounting values and the other referred to its market appreciation, and defines how many times a firm's market value is greater (or lower) than the firm's book value. Thus, the variable represents a measure of the company's performance, and has the additional merit to allow comparison among firms with different dimensions because of its normalization through the denominator.

3.2.2. RATIO

In order to identify whether the local market conditions are able to affect firms' market prices (i.e. in order to check the existence of the local home bias) and to test the way in which companies' visibility, profitability and opacity impact on investors' preference for local, the main exogenous variable employed in the analysis is represented by the disproportion between the local supply and the local demand of stocks. The variable, named RATIO, is computed as the ratio of the former to the latter (see HKS2008) and is, indeed, the variable of main interest in the analysis as summarizes the market conditions in a specific region/area. Specifically, as proxy for the local supply of stocks, this work considers the aggregated equity book value (Equity Book Value) of all firms headquartered in any particular sub-area of the country. This assumption seems reasonable given that – under the hypotheses of locally segmented markets – the securities issued by local companies would represent the main component of local traders' portfolio. As proxy for the local demand of

stocks, following HKS2008, I consider the aggregate disposable income (Disposable Income) of the households living in the same sub-area, which represents both the local wealth and a proxy for households' risk tolerance. Indeed, a key variable often used to represent the possible outcome of a decision made by expected utility maximizing decision makers is wealth of consumption. In this sense it is widely accepted by financial and econometric literature the assumption that the richest, the more risk tolerant will be an household (see among the others Menezes and Hanson (1970); Bosh-Domenech and Silvestre (1999).
Following the definition adopted by EuroStat and Unioncamere, Disposable Income is computed as follow:

Disposable Income = Primary Income – Current Taxes – Social Contributions + Social Benefits + Other Net Transfers

where

Primary Income = Gross Operating Surplus + Gross Mixed Income + Income from Employment + Financials Income (Equity Income + Non-Equity Income).

In light of what stated so far, in order to check the existence of the local home bias by testing whether the local market conditions affect firms' market prices, in Section 4 will be defined a series of multivariate regressions (whose results are presented in Section 5) which consider as dependent the Market-to-Book Ratio and as main exogenous the RATIO variable. Considering the base-regression

$$Ln(market\text{-}to\text{-}book\ ratio)=\alpha + \beta_1 * RATIO + control\ variables + \varepsilon,$$

with

$$RATIO_{j,t} = \frac{\sum_i BV_{i,j,t}}{\sum_k DI_{k,j,t}}$$

and

$$market\text{-}to\text{-}book\ ratio = \frac{MV_{i,j,t}}{BV_{i,j,t}}$$

where

$BV_{i,j,t}$ is the Equity Book Value of the listed firm *i* headquartered in the region *j* in the year *t*;

$DI_{k,j,t}$ is the Disposable Income of the household *k* living in the region *j* in the year *t*; and

$MV_{i,j,t}$ is the Equity Market Value of the listed firm *i* located in the region *j* in the year *t*,

it is evident how the same value of Equity Book Value both at the numerator of the exogenous variable and at the denominator of the dependent one, could artificially affect the (negative) relation between the two variables. Thus, according to the methodology used by HKS2008, RATIO has been re-calculated by excluding from the numerator the Equity Book Value of the company from time to time considered. This arrangement is necessary in order to avoid spurious effects artificially deriving not from the consistency of the dynamics analyzed but from the contemporary presence of the considered firm's equity book value both in the denominator of the dependent variable, i.e. Market-to-Book Ratio, and in the numerator of the associated explanatory variable, i.e. RATIO. Furthermore, similarly to HKS2008, I drop Equity Income from Disposable Income. However, analysis' results seem not to be significantly affected by these adjustments.

In light of the relevance that RATIO assumes in the analysis, it is reasonable to verify what drives its variability. Assuming the localization process as exogenous, i.e. the number of listed firms headquartered in a specific geographical area, and taking logs, RATIO may be re-written as the natural logarithm of the Equity Book Value (per capita) in a considered area minus the natural logarithm of the Disposable Income (per capita) of the households living in

the same area. Using this decomposition, it is possible to check how much of RATIO's variability is coming from these two terms, and whether it depends mainly by the demand for stocks that, as defined, increases *ceteris paribus* with the growth of the area considered and/or of the population there resident, or by the supply for securities. Table 15 sheds light on this issue. More specifically, I run regressions where the natural logarithm of RATIO and both the supply per capita (Natural Logarithm of Regional Book Value Per Capita) and the demand per capita (Natural Logarithm of Regional Disposable Income Per Capita) components are regressed on the (natural logarithm of) population density on a regional basis. Specifically population density, whose data by region are reported in Table 14, is defined as the number of inhabitants residing in a given geographic area for square kilometer. The analysis of the table, and in particular of the values of the time series mean and standard deviation for every region and macro-area, allows to state that population density does not have a (strong) monotonic and increasing pattern over time but tends to remain constant over the considered period. This supports the evidence that results presented on Table 15 do not depend from the time period considered in the analysis.

Table 14 – Population density

Table 14 reports the yearly values of population density per region (i.e. inhabitants per square kilometer) calculated at region (NUTS2), macro-area (NUTS1), and country (NUTS0) levels over the period 1999-2007, as wells as both the time-series and cross-sectional means and standard deviations.

Year	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**1999-2007**	
										Time-series Mean	*S.D.*
NUTS0 - Country											
Italy	178.3	178.3	178.4	178.8	180.2	181.8	183.1	184.1	185.3	180.9	2.8
NUTS1 - Macro-Area											
Centre	189.9	190.1	190.3	190.8	192.7	195.0	196.7	199.3	202.4	194.1	4.5
Islands	134.7	134.4	134.0	133.9	134.4	135.0	135.3	135.4	135.6	134.7	0.6
North East	174.8	175.6	176.5	177.8	179.8	182.1	184.1	185.5	187.3	180.4	4.6
North West	265.0	265.2	265.5	266.5	269.0	272.6	275.6	277.3	279.3	270.7	5.7
South	193.9	193.5	193.1	193.3	194.0	195.0	195.5	195.4	195.7	194.4	1.0
Cross-Sectional Mean	191.7	191.8	191.9	192.5	194.0	195.9	197.4	198.6	200.1		
Cross-Sectional S.D.	47.2	47.3	47.5	47.8	48.4	49.5	50.4	50.9	51.5		
NUTS2 - Region											
Campania	427.0	426.5	426.0	426.6	428.8	431.2	432.3	432.4	433.3	429.3	3.0
Lombardy	392.9	394.2	395.6	397.9	402.5	408.8	413.8	417.1	420.8	404.8	10.6
Lazio	303.7	303.5	303.4	303.7	306.3	310.0	312.9	319.5	327.1	310.0	8.4
Liguria	298.9	297.2	295.5	294.7	295.5	297.4	300.4	301.9	301.1	298.1	2.6
Veneto	254.8	256.0	257.3	259.2	262.4	265.9	268.6	270.7	273.3	263.1	6.8
Apulia	210.4	209.9	209.6	209.6	210.1	211.3	212.1	212.1	212.2	210.8	1.1
Sicily	196.8	196.3	195.8	195.6	196.3	197.1	197.4	197.5	197.7	196.7	0.8
Emilia-Romagna	182.8	183.7	184.7	186.2	188.4	191.2	193.7	195.4	197.4	189.3	5.4
Piedmont	170.1	169.9	169.6	169.9	171.0	173.0	174.4	174.9	176.1	172.1	2.5
Friuli-Venezia Giulia	155.9	156.2	156.5	157.2	158.1	159.0	159.7	160.2	161.1	158.2	1.9
Tuscany	154.1	154.2	154.3	154.8	156.3	158.1	159.3	160.2	161.4	157.0	2.8
Marche	152.3	152.9	153.6	154.7	156.4	158.2	159.5	160.4	161.7	156.6	3.5
Calabria	137.9	137.2	136.5	136.1	136.2	136.3	136.0	135.6	135.8	136.4	0.7
Abruzzo	118.2	118.2	118.3	119.2	120.3	121.5	122.5	122.9	123.8	120.5	2.2
Umbria	99.3	99.7	100.0	100.6	101.9	103.4	104.6	105.5	106.5	102.4	2.7
Molise	74.0	73.7	73.4	73.3	73.5	73.6	73.5	73.3	73.3	73.5	0.2
Trentino Alto Adige	69.2	69.7	70.1	70.7	71.5	72.5	73.3	74.0	74.9	71.7	2.0
Sardinia	68.8	68.5	68.3	68.4	68.7	68.9	69.2	69.4	69.6	68.9	0.5
Basilicata	62.0	61.8	61.6	61.4	61.4	61.4	61.3	61.0	60.8	61.4	0.4
Aosta Valley	36.7	36.8	36.9	37.1	37.5	37.8	38.1	38.4	38.7	37.6	0.7
Cross-Sectional Mean	178.3	178.3	178.4	178.8	180.2	181.8	183.1	184.1	185.3		
Cross-Sectional S.D.	109.3	109.3	109.3	109.6	110.5	111.7	112.7	113.5	114.4		

Table 15 – The variable RATIO and population density

The dependent variables are: (1) the natural logarithm of RATIO, the ratio of total book equity to total disposable income in a given Italian region; (2) the natural logarithm of total Book Equity per capita in a given Italian region; and (3) the natural logarithm of Disposable Income per capita in a given Italian region. The independent variable is the natural logarithm of the regional population density. The natural logarithm of Regional Book Value Per Capita and of Regional Disposable Income Per Capita are obtained by applying the natural logarithm respectively to the numerator (Aggregate BV (/000,000 €)) and to the denominator (Aggregate Disposable Income (/000,000 €)) of the RATIO variable previously divided by the resident population in the considered region (source: ISTAT). Density is the number of inhabitants in a given geographical area for one square kilometer (source: ISTAT). Data refer to the period 1999-2007.
Statistical significance at the 10%, 5% and 1% level indicated by *, **, *** respectively. White standard errors reported in parenthesis.

Natural Logarithm	**RATIO**	**Regional Book Value Per Capita**	**Regional Disposable Income Per Capita**
	(1)	(2)	(3)
Ln(Population's Density)	0.165***	0.004***	0.000
	(7.65)	(7.13)	(0.65)
Constant	-0.678***	-0.017***	0.014***
	(-6.90)	(-6.54)	(6.71)
Observations	180	180	180
Adj. R-squared	0.237	0.223	-0.003

Model 1 of Table 15 shows that the natural logarithm of RATIO is positively and significantly determined (t-stat = 7.65) by the natural logarithm of population density. This result is consistent with the fact that for the six regions with the highest frequency of listed companies (i.e. Lombardy, Piedmont, Lazio, Emilia-Romagna, Veneto and Tuscany) over the period 1999-2007, there is an average of 248 inhabitants per square kilometer, roughly three times more than that of the corresponding six less populated regions (77 inhabitants per square kilometer). The most densely populated areas are therefore characterized by greater excess of securities' supply. However, this evidence does not clarify the direction of such causation. Results of models 2 and 3 shed light on this issue. While RATIO's supply component continues to be positively and significantly influenced by the population density (t-stat = 7.13), RATIO's demand component appears to be not significantly determined by the same exogenous variable. Therefore, it seems possible to argue that for an increase of population density, RATIO tends to became bigger mainly not as a mere consequence of geographical characteristics dynamics. In fact, as population density goes up, book value per

capita also rise, generating the increase of the RATIO variable. Thus, firms appear to be affected by a sort of agglomeration effect for which they opt to locate their headquarters not in the "richest" but in the most densely populated areas. In this sense, it is well known that a firms' cluster is driven by higher facilities such as high quality infrastructure, increased breadth of labor market, and interchange with the credit system (see among the others Porter, 1998), which more likely are present in the areas more densely populated.

3.2.3. Visibility variables

At present, the reason for which investors tend to invest in local companies is not yet univocally detected and accepted by financial literature (see the review of literature – Section 2.2.). Indeed, while many academics argue that the outperformance of locally biased portfolios would highlight that the preference for local stocks is to be attributed to the informational advantage that traders have on territorial securities (Coval and Moskowitz (2001); Feng and Seasholes (2004); Ivkovic and Weisbenner (2005) among the first), many others claim that a mere feeling of familiarity toward local stocks is the driver of portfolio's choices (among the others Huberman (2001); Grinblatt and Keloharju (2001)). In this sense, the analysis of which companies the local home bias is more relevant for, by testing its effect on firms' market prices conditionally to firms' visibility, profitability and opacity, should help to discriminate among the causes driving the phenomenon.

Theoretically, well-known firms are expected to show a lower local home bias effect when compared to the rest of the sample, given that their characteristic of visibility outside the local markets should make them lose their territorial feature. Indeed, as long as the local home bias relies on the simple familiarity with the issuing firm, while companies just locally perceived as familiar would be, *ceteris paribus*, more intensively picked by local investors, the nationally-known ones would not experience the same phenomenon. In order to provide a

more intuitive example, let's consider the case of FIAT S.p.A., whose headquarter is in Turin, Piedmont. As the company is worldwide and nationally known, it is not reasonable to expect that its stocks are traded only by investors living close to its headquarter. Therefore, given the high and widespread demand for FIAT's securities, local investors should not be able to generate a price pressure on the stocks, pushing their market price up. In other words, this means that the equity-market segmentation induced by investors' preference for local is expected to be less (more) pronounced for widely (locally) known and visible firms. Until visibility is not correlated with firms' opacity, the local preference for non-visible firms, being widespread irrespectively of firms' characteristics, can be interpreted as preference for familiar companies, thus representing the non-informative component of the local home bias phenomenon.

Consistently with the pertinent literature, which highlights that visibility is induced among investors through several dimensions, I identify visible firms using different definitions, and specifically:

- FTSE_D, a dummy variable which takes value one if the firm is included in the Italian equity market's primary index (S&P MIB Index, MIB30 Index), and zero otherwise (Source: BorsaItaliana S.p.A.). In this sense, Chen, Noronha, and Singal (2004), in contrast with extant explanations, document an asymmetric price response to changes to the S&P 500 index, i.e. a permanent increase in the price of firms added to the S&P 500 Index but no permanent decline for deleted firms, which is at least partly explained by the asymmetric changes in the investors' awareness and by the consequent effect on investor behavior. Although the analyzed sample does not cover the period after which FTSE MIB index replaced the S&P MIB index, I conventionally name FTSE_D the dummy variable indicating the inclusion of the firm on the primary equity-market index. Indeed, FTSE MIB index is currently the primary

benchmark index for the Italian equity-market and is composed by the 40 most traded and capitalized stocks. FTSE MIB substituted in June 1, 2009 the S&P MIB index which, in turn, replaced in June 2, 2003, the MIB30 index.;

- No of Employees_D, a dummy which takes value one if the firm's number of employees is greater than the yearly cross-sectional median, and zero otherwise. This is consistent with Døskeland & Hvide (2011), who find that, allegedly because of overconfidence, individual investors disproportionately trade in professionally close stocks even obtaining in many cases statistically negative extra performances;
- Press Coverage_D, a dummy which equals one if the firm's yearly number of articles citations in the most prominent Italian financial newspaper (cf. Il Sole 24 Ore) is greater than the yearly cross-sectional median, and zero otherwise (Source: Il Sole 24 Ore) (see Tetlock (2007));
- Press Coverage Lag_D, which takes value one if the firm's yearly number of articles in the previous year is greater than the correspondent yearly cross-sectional median, and zero otherwise (Source: Il Sole 24 Ore) (see Tetlock (2007));
- Press Coverage Star_D, which equals one if the firm's yearly number of articles both in the previous and in the current year is greater than the correspondent yearly cross-sectional median, and zero otherwise (Source: Il Sole 24 Ore) (see Tetlock (2007)). In this case, the consistency of these proxies (i.e. Press Coverage_D, Press Coverage Lag_D and Press Coverage Star_D) is supported by findings of Barber and Odean (2008), who show among others things, that individual investors are not-outperforming stocks' net buyers but tend to purchase those stocks more frequently reported in the news;
- IPO_D, a dummy which takes value one if a firm listed in the stock market within the two previous year, and zero otherwise (Source: Mediobanca's "Indici e Dati"). This is

consistent with Demers and Lewellen (2003), who provide evidences supporting the role exerted by advertising and marketing benefits in the company's product markets as a valid IPO motivation.

Although well recognized by financial literature, even intuitively all the above mentioned variables may be defined as visibility variables. For instance, an increase either of the company's number of employees, or of the number (current and/or in the previous year) of articles concerning the firm, make the company itself as better known among the general public of investors, enlarging its social base. Similarly, an initial public offering is a not frequent event in the Italian equity market and attributes therefore extra-visibility to the issuing firm.

3.2.4. Profitability and opacity variables

Considering the role played by informational asymmetries in determining investors' portfolio decision, if an informational advantage generated by proximity actually drives investors' choices, the preference for local will be detected not irrespectively of firm characteristics, but only toward those stocks issued by companies that in the future will perform goodly, i.e. future profitable firms. Indeed, assuming that a local information advantage effect is in place, a local inadequate supply for stocks would not be able to enhance a firm's value if there is a poor prospect of future profitability. Thus, the detection of local home bias mainly in future profitable firms would suggest that local information is exploitable as being potentially profitable. Moreover, the firms less likely to disclose information to the public (i.e. "opaque" firms) should be the ones toward with informed traders could better and more profitably exploit the informational advantage. In fact, stocks issued by (even profitable but) non-opaque firms characterized by a complete information

disclosure to the general public of investor should be purchased indiscriminately in the whole country, and they would not experience the local home bias effect.

In order to distinguish profitable firms from the non profitable ones, as a measure of a firm's performance I use Jensen's alpha (Jensen (1968)) measured from an augmented model. Indeed, Jensen's alpha is a measure of the marginal return associated to a firm/portfolio that is not explained by existing risk factors. Thus, future profitable firms are defined as those with a positive alpha in the following year ($Alpha_{t+1}$ Good_D).

The yearly 1-factor Jensen's alpha is computed as the $\alpha_{i,w,t}$ of the following model (augmented market model):

$$R_{i,w,t} = \alpha_{i,w,t} + \beta_1 * R_{m,w,t} + \beta_2 * R_{m,w-1,t} + \varepsilon_{i,w,t}$$

where:

$R_{i,w,t}$ is the stock return of the firm *i* at week *w* in year *t*;

$R_{m,w,t}$ is the market index return at week *w* in year *t*;

$R_{m,w-1,t}$ is the market index return at week *w-1* in year *t*; and

$\varepsilon_{i,w,t}$ is the error term for $R_{i,w,t}$.

For each firm *i* in a given year *t*, the model is estimated upon a minimum of 25 weekly observations (Source: Datastream - datatype: RI). From the yearly 1-factor Jensen's alpha is derived a dummy variable $Alpha_{t+1}$ Good_D, which equals to one if $\alpha_{i,w,t}$ in the forthcoming year is bigger than zero, and zero otherwise. The dummy variable this way considered allows to distinguish non-profitable companies from the profitable ones, that in the forthcoming year will have a return higher than expected considering existing risk factors.

Relying on the evidences provided by the extant literature on the topic, several variables of opacity are used in the study to define firms that conveniently manipulate the information disclosure to the market. In detail, I consider:

- Return Skewness_D, a dummy variable which equals one if the yearly skewness of weekly stock returns' distribution (estimated upon a minimum of 25 weekly observations) is lower than the yearly cross-sectional median (signaling left tail asymmetry returns), and zero otherwise. In this sense, Chen, Hong and Stein (2001) find among others things that negative skewness is greater in stocks that have experienced an increase in trading volume (relative to trend over the prior six months), which in turn strongly supports the presence on the market of differently informed investors (Hong and Stein (2003)). Even if it's well-known that the trading volume directly proxies for the intensity of disagreement among investors (see for instance also Harris and Raviv (1993); Kandel and Pearson (1995); and Odean (1998b) for others models implementing this feature), it is worthy of note to briefly make it clear how investors' disagreement determines negative skewness in stock returns distribution. When differences of opinion (and hence trading volume) are large, the more investors are bearish, the more in advance they will be forced to a so-called corner solution, in which they sell all of their shares and just sit out of the market with their information incompletely revealed in prices. In subsequent rounds of trade, while previously more-bullish investors may change their mind and promptly leave the declining market, the originally more-bearish group of investors may become the marginal ''support buyers'' jumping in the market, thus fully revealing the (piece of) information they own. Thus, accumulated hidden information tends to come out during market declines, which is another way of saying that returns are negatively skewed;
- Return Kurtosis_D, a dummy variable which takes value one if the yearly kurtosis of weekly stock returns' distribution (estimated upon a minimum of 25 weekly observations) is greater than the yearly cross-sectional median, signaling high

frequency of extremely high/low returns compared to the bell-curve, and zero otherwise. In this sense, Jin and Myers (2006), investigate firm's opacity as a determinant of synchronicity of stock price movements. Upon a dataset made up by weekly stock returns for a cross section of 40 countries over the period 1990-2001, the authors document strong significant relations between R^2, which is the measure used to proxy for the stock market synchronicity (see also Roll, 1988; and Morck, Yeung and Yu (2000)), and several measures of information opaqueness among whom the kurtosis or residual returns;

- Return Star_D, which takes value one in the presence of both negative skewness and positive kurtosis, i.e. if the stock return skewness and kurtosis are below and above the yearly cross-sectional median respectively, and zero otherwise. The variable is computed as the product of Return Skewness_D and Return Kurtosis_D.

These proxies follow Jin and Myers (2006) who discuss the link between firm information released and its stock market returns properties. In this sense, beyond the "saintly" managers who report everything promptly and credibly, and for which opaqueness should be considered zero and returns are not affected, there are managers that hide news until the gap between fair value and stock market price touches a critical value. At this point, the authors go on and note:

> "*The news would be released all at once, like a "pressure vessel letting off steam".[..] we would see long tails in the distribution of stock returns. (We will control for kurtosis in our tests.)*" (Jin and Myers (2006), page 260).

The third and the fourth moments of each firm are computed using raw weekly returns instead of daily returns in order to avoid a kurtosis inflation bias for lightly traded stocks. For robustness purposes, I also use the third and the fourth moments of the residuals of an

augmented market model risk-adjusted specification. However, results are not significantly affected by this choice.

With regard to the opacity measured from an accounting viewpoint, following the pertinent financial literature, I consider:

- Abs DiscAccruals_D, a dummy variable which takes value one if the absolute value of the firm's abnormal accruals (Abs DiscAccruals) is greater than the yearly cross-sectional median, and zero otherwise (see Hutton, Marcus and Tehranian (2009));
- Ms3 DiscAccruals_D, a dummy which takes value one if the prior three years sum of the firm's absolute abnormal accruals (Ms3DiscAccruals) is greater than the yearly cross-sectional median and zero otherwise (see Hutton, Marcus and Tehranian (2009)).

In detail, abnormal accruals (Abnormal Accruals), which are the yearly value of absolute abnormal accruals, for firm *i* in year *t* ($AA_{i,t}$) are given by:

$$AA_{i,t} = \frac{ACC_{i,t}}{A_{i,t}} - NA_{i,t}$$

where:

$ACC_{i,t}$ is the accruals for firm *i* in year *t*. $ACC_{i,t}$ is given by:

Net Income Before Extraordinary Items/Preferred Dividends (WC01551) - Net Cash Flow From Operating Activities (WC01551);

$A_{i,t}$ is the Firm Size for firm *i* in year *t*, and

$NA_{i,t}$ is the firm-specific normal accruals for firm *i* in year *t*. $NA_{i,t}$ is obtained by the following:

$$NA_{i,t} = ACC_{i,t}/A_{i,t-1} - [a_0 + b_1*(\Delta REV_{i,t}/A_{i,t-1} - \Delta REC_{i,t}/A_{i,t-1}) + b_2*(PPE_{i,t}/A_{i,t-1})],$$

where:

$\Delta REV_{i,t}$ is the change in Sales for firm *i* in year *t*,

$A_{i,t-1}$ is the Firm Size for firm *i* in year *t-1*,

$\Delta REC_{i,t}$ is the Change in Net Receivables (WC02051) for firm *i* in year *t*,

$PPE_{i,t}$ is the Gross Property, Plant and Equipment for firm *i* in year *t*. $PPE_{i,t}$ is given by:

Net Property, Plant and Equipment (WC02501) – Depreciation, Depletion, and Amortization (WC01151)

a_0, b_1, and b_2 are the estimates of α_0, β_1, and β_2 from the following cross-sectional regression for each of the industry-year combinations:

$$ACC_{i,t}/A_{i,t-1}=\alpha_0 + \beta_1*(\Delta REV_{i,t}/ A_{i,t-1}) + \beta_2(PPE_{i,t}/ A_{i,t-1}) +\varepsilon_{i,t}$$

where:

$\varepsilon_{i,t}$ is the error term for $ACC_{i,t}$. The model is estimated within each industry upon a minimum of 30 firm-year observations (Source: Worldscope - datatype above reported);

Following their definition, both Abs DiscAccruals_D and Ms3DiscAccruals_D indicate the presence of earnings managements in the firm, thus representing a proxy for opacity measures at accounting level.

3.2.5. Control variables

Beyond the variables above described, I added to the analysis a series of control variables, which are necessary in order to confer robustness to the analysis and to exclude that the results about the phenomenon under observation might be driven by other element not considered in the study. Indeed, the omission of relevant variables results in biased coefficient estimates for the remaining explanatory variables: the model would be, in fact, misspecified. As control variables, the study considers:

- ROE, a measure of equity's profitability, computed as the ratio of firm's net profit income to the Equity Book Value (Source: Datastream – datatype: DWRE) (see among the others Campbell and Thompson (2008));

- R&D_D, a dummy variable which equal to one if the firm does not report research and development expense, and zero otherwise (see Chan, Lakonishok, and Sougiannis (2001)) (Source: Worldscope – datatype: WC01201);
- R&D to Sales, which measures firm's future growth opportunities, and is computed as the ratio of firm's research and developments expense to the value of sales (Xing (2008));
- Firm Size, defined as the (log of the) value of firm total asset (Source: Worldscope – datatype: WC02999) (see among the others Fama and French ((1992), (1993));
- Firm Age, defined as the number of years since firm's foundation (Source: "Il Calepino dell'Azionista") (Keloharju and Kulp (1996)). In the analysis the variable is employed as the log of the sum between the constant one and Firm Age;
- Press Coverage, defined as the yearly number of newspaper's articles concerning the firm in the year from time to time considered (Source: Il Sole 24 Ore)(see Dyck and Zingales (2004)).The variable is employed in the analysis as the log of the sum between the constant one and Press Coverage;

For Press Coverage, Firm Age, and Firm Size, I take logs because of the high skewness of their distributions. According to financial literature, ROE, R&D to Sales and Press Coverage are expected to positively impact on firms' Market-to-Book Ratio (see among others Campbell and Thompson (2008); Xing (2008), Dyck and Zingales (2004) respectively), while Firm Size and Firm Age are expected to negatively impact on the variable (see among the others Banz (1981); Evans (1987); Fama and French (1993); and Keloharju and Kulp (1996)).

All the above mentioned variables of visibility, profitability, opacity, such as the Market-to-Book Ratio, the RATIO and the control variables employed in the analysis are summarized in Table 16, along with a brief description of their meaning and derivation.

Table 16 - Variables definition

The table defines the variables – alphabetically listed – used in the study. The sample has been obtained from Consob's database. Data on firm location are taken from Osiris (Bureau Van Dijk's database) and Annual Reports (provided by Borsa Italiana S.p.A.). Italian territory's sub-areas have been indentified according to NUTS codes, with the exception of the region Trentino Alto Adige, here composed by the aggregation of the two autonomous provinces of Trento and Bolzano-Bozen. Datastream and Worldscope data are defined by the corresponding datatype.

Variable	Description
Abnormal Accruals	The yearly value of absolute abnormal accruals. Absolute abnormal accruals for firm *i* in year t ($AA_{i,t}$) are given by: $$AA_{i,t} = \frac{ACC_{i,t}}{A_{i,t}} - NA_{i,t}$$ where: $ACC_{i,t}$ is the accruals for firm *i* in year *t*. $ACC_{i,t}$ is given by: Net Income Before Extraordinary Items/Preferred Dividends (WC01551) - Net Cash Flow From Operating Activities (WC01551) $A_{i,t}$ is the *Firm Size* for firm *i* in year *t*, and $NA_{i,t}$ is the firm-specific normal accruals for firm *i* in year *t*. $NA_{i,t}$ is obtained by the following: $NA_{i,t} = ACC_{i,t}/A_{i,t-1} – [a_0 + b_1*(\Delta REV_{i,t}/A_{i,t-1} - \Delta REC_{i,t}/A_{i,t-1}) + b_2*(PPE_{i,t}/A_{i,t-1})]$ where: $\Delta REV_{i,t}$ is the change in *Sales* for firm *i* in year *t*, $A_{i,t-1}$ is the *Firm Size* for firm *i* in year *t-1*. $\Delta REC_{i,t}$ is the Change in Net Receivables (WC02051) for firm *i* in year *t*. $PPE_{i,t}$ is the Gross Property, Plant and Equipment for firm *i* in year *t*. $PPE_{i,t}$ is given by: Net Property, Plant and Equipment (WC02501) – Depreciation, Depletion, and Amortization (WC01151) a_0, b_1, and b_2 are the estimates of α_0, β_1, and β_2 from the following cross-sectional regression for each of the industry-year combinations: $$ACC_{i,t}/A_{i,t-1}=\alpha_0 + \beta_1*(\Delta REV_{i,t}/ A_{i,t-1}) + \beta_2(PPE_{i,t}/ A_{i,t-1}) +\varepsilon_{i,t}$$ where: $\varepsilon_{i,t}$ is the error term for $ACC_{i,t}$. The model is estimated within each industry upon a minimum of 30 firm-year observations. Source: Worldscope (datatype above reported).
Abs DiscAccruals	The absolute value of *Abnormal Accruals*
Abs DiscAccruals_D	Equal to one if *Abs DiscAccruals* is greater than the yearly cross-sectional median and zero otherwise.
Alpha	The yearly 1-factor Jensen's alpha. It is computed as the $\alpha_{i,w,t}$ of the following model (augmented market model): $$R_{i,w,t} = \alpha_{i,w,t} + \beta_1*R_{m,w,t} + \beta_2*R_{m,w-1,t} + \varepsilon_{i,w,t}$$ where: $R_{i,w,t}$ is the stock return of the firm *i* at week *w* in year *t*, $R_{m,w,t}$ is the market index return at week *w* in year *t*, and $\varepsilon_{i,w,t}$ is the error term for $R_{i,w,t}$. For each firm *i* in a given year *t*, the model is estimated upon a minimum of 25 weekly observations. Source: Datastream (datatype: RI)
$Alpha_{t+1}$ Good_D	Equal to one if *Alpha* in the forthcoming year is bigger than zero, and zero otherwise.

Table 16 (continued)

Disposable Income	The household' disposable income. It is computed as follow: Disposable Income = Primary Income- Current Taxes - Social Contributions + Social Benefits + Other Net Transfers where: Primary Income = Gross Operating Surplus + Gross Mixed Income + Income from Employment + Financials Income (Equity Income + Non-Equity Income). Source: Eurostat.
Equity Book Value	Book value of common equity. Source: Worldscope (datatype: WC03501)
Equity Market Value	Market value of common equity. Source: Worldscope (datatype: WC08001).
Firm Age	The number of years of firm's life since foundation. Source: "*Il Calepino dell'Azionista*".
Firm Size	Total asset. Source: Worldscope (datatype: WC02999).
FTSE_D	Equal to one if the firm is included in the Italian equity market's primary index (S&P MIB Index, MIB30 Index), and zero otherwise. Source: Borsa Italiana S.p.A.
IPO_D	Equal to one if the firm did listed in the stock market within the past two years, and zero otherwise. Source: Mediobanca's "*Indici e Dati*"
Market-to-Book Ratio	The ratio of *Equity Market Value* to *Equity Book Value*.
Ms3 DiscAccruals	The prior three years moving sum of *Abnormal Accruals*
Ms3 DiscAccruals_D	Equal to one if *Ms3 DiscAccruals* is greater than the yearly cross-sectional median, and zero otherwise.
No of Employees	The number of both full and part time employees of the company. It excludes: Seasonal employees; Emergency employees. Source: Datastream (datatype: DWEN).
No of Employees_D	Equal to one if *No of Employees* is greater than the yearly cross-sectional median, and zero otherwise.
Press Coverage	The yearly number of articles concerning the considered firm. Source: Il Sole 24 Ore.
Press Coverage_D	Equal to one if *Press Coverage* is greater than the yearly cross-sectional median, and zero otherwise.
Press Coverage Lag	The number of articles concerning the considered firm in the previous year. Source: Il Sole 24 Ore.
Press Coverage Lag_D	Equal to one if *Press Coverage Lag* is greater than the correspondent yearly cross-sectional median, and zero otherwise.
Press Coverage Star_D	The product of *Press Coverage_D* and *Press Coverage Lag_D*.
RATIO	The ratio of the aggregate *Equity Book Value* of the firms headquartered in a given geographical area to the aggregate *Disposable Income* (less Equity Income) of the households living in the same geographical area. Formally, considering at year *t* an economy where *I* listed firms and *K* households are located in the region *j*, the RATIO for region *j* can be computed as: $RATIO_{j,t} = \frac{\sum_i BV_{i,j,t}}{\sum_k DI_{k,j,t}}$ where: $BV_{i,j,t}$ is the *Equity Book Value* of the listed firm *i* headquartered in the region *j* in the year *t*, and $DI_{k,j}$ is the *Disposable Income* of the household *k* living in the region *j* in the year *t*.
R&D	Research and development expense. Source: Worldscope (datatype: WC01201)
R&D_D	Equal to one if the firm does not report *R&D*, and zero otherwise
R&D to Sales	The ratio of *R&D* to *Sales*.
Return Skewness	The yearly skewness of weekly stock returns' distribution. The statistic has been estimated upon a minimum of 25 weekly observations. Source: Datastream

Table 16 (continued)

Return Skewness_D	Equal to one if *Return Skewness* is less than the yearly cross-sectional median, and zero otherwise.
Return Kurtosis	The yearly kurtosis of weekly stock returns' distribution. The statistic has been estimated upon a minimum of 25 weekly observations. Source: Datastream
Return Kurtosis_D	Equal to one if *Return Kurtosis* is greater the yearly cross-sectional median, and zero otherwise. Source: Datastream.
Return Star_D	The product of *Return Skewness_D* and *Return Kurtosis_D*.
ROE	The ratio of firm's net profit income to the *Equity Book Value*. Source: Datastream (datatype: DWRE)
Sales	Net sales or revenues. Source: Worldscope (datatype: WC01001)

4. Methods

4.1. Multivariate regressions

The evidence that firms' market price is affected by the local market conditions of the area in which the company is headquartered would confirm the existence of the local home bias. Indeed, following HKS2008, it is possible to state that if actually traders invest mainly on nearby companies, in regions with a scarcity of stocks supply the excess of local demand over the few securities locally available should push their price up. Therefore, a higher evaluation of securities in areas characterized by the unbalance between (low) local supply and (high) local demand would confirm the existence of locally segmented markets. As already stated, once highlighted the existence of the local home bias, this research main goal is to analyze the causes driving the phenomenon under observation by analyzing which firms this effect is more relevant for.

In order to conduct this study it is first of all fundamental to build a Base Model able to relate the under- or overvaluation of the stocks from time to time considered with the local market conditions (i.e. the unbalance between local demand and supply of stocks) which would impact on stock prices. Given that, as stated in Section 3, the variable able to express the under- or overvaluation of securities has been identified in the (natural logarithm) of the Market-to-Book Ratio, and the unbalance between local demand and supply of stocks is proxied by HKS2008 RATIO, the primary specification that I test is the following

$$Ln(Market\text{-}to\text{-}Book\ Ratio)_{i,t} = \alpha + \beta_1 * RATIO_{i,t} + control\ variables_{i,t} + \varepsilon_{i,t}$$

where the control variables are represented by ROE, R&D_D, R&D to Sales, (the natural logarithm of) Firm Size, (the natural logarithm of the sum between the constant one and) Firm Age, and (the natural logarithm of the sum between the constant one and) Press

Coverage. Though not reported for sake of simplicity, regression also includes a set of four-digit SIC industry dummies (Fertuck (1975)), a set of dummies for exchange segment listing (Kadlec and McConnell (1994)), and a set of year dummies. This study's Base Model differs from the model presented by HKS2008 (see Model 10 of Table 6), that did not present (the natural logarithm of the sum between the constant one and) Press Coverage and (the natural logarithm of the sum between the constant one and) Firm Age as control variables. I introduced anyway these two variables in light of Dyck and Zingales (2004) (for Press Coverage), and in light of Banz (1981), Evans (1987), Fama and French (1993), and Keloharju and Kulp (1996) (with regard to Firm Age). Supporting this methodological approach, results presented in Section 5 show that in the model with the additional control variables both estimates are more significant and the adjusted R-squared is higher (in this sense, adjusted R-squared equals to 0.447 and to 0.358 in the Base Model and in the HKS2008 model respectively).

In order to study the factors which the local home bias depends from, and to discriminate and assess the cross-sectional local rarity/abundance effect among firms, I introduce in the Base Model a set of interaction terms with the main exogenous RATIO, which are calculated as RATIO*dummy variable, where RATIO is the RATIO variable as described in Section 3.2.2, and dummy variable assumes value one for the firms with the characteristics proxied by the dummy from time to time considered, and zero otherwise. Thus, the second specification that I test is the following

$$Ln(Market\text{-}to\text{-}Book\ Ratio)_{i,t} = \alpha + \beta_1 * RATIO_{i,t} + \beta_2 * RATIO_{i,t} * dummy\ variable_{i,t} + control\ variables_{i,t} + \varepsilon_{i,t}$$

In such a framework, while the coefficient of the interaction term (β_2) estimates the additional rarity/abundance effect of the RATIO on the Market-to-Book Ratio due to the firm's characteristic proxied by the dummy variable, the coefficient of the RATIO (β_1) estimates the average rarity/abundance effect for the entire sample once eliminated the effect proxied by the dummy. It follows that the overall rarity/abundance effect attributable to the firm's characteristics identified by the dichotomous variable is given by the sum of the two coefficients β_1 and β_2. To provide a more explicit example of the meaning of these coefficients, let us consider the impact on the local home bias effect of firms' visibility (assuming that visibility is proxied by the Press Coverage_D variable as defined in Section 3.2.3.), through the regression:

$$Ln(Market\text{-}to\text{-}Book\ Ratio)_{i,t} = \alpha + \beta_1 * RATIO_{i,t} + \beta_2 * RATIO_{i,t} * Press\ Coverage\_D_{i,t} + control\ variables_{i,t} + \varepsilon_{i,t}$$

In this case, the coefficient (β_2) of the variable RATIO*Press Coverage_D estimates the additional rarity/abundance effect for firms for which the yearly number of articles concerning the company is higher than the yearly cross-sectional median, i.e. visible firms. Again, the coefficient of RATIO (β_1) estimates the average rarity/abundance effect for the entire sample but firms whose dummy Press Coverage_D equals one: it follows that the overall rarity/abundance effect attributable to firm's visibility is given by the sum of the two coefficients β_1 and β_2.

Similarly, in order to estimate the additional and overall local rarity/abundance effect attributable to firm's opacity given the firm's profitability, i.e. for both profitable and opaque firms, I introduced in the Base Model more than one interaction term. In this sense, I test a third specification equal to

$$Ln(Market\text{-}to\text{-}Book\ Ratio)_{i,t} = \alpha + \beta_1 * RATIO_{i,t} + \beta_2 * RATIO_{i,t} * profitability\ dummy_{i,t} + \beta_3 * RATIO_{i,t} * profitability\ dummy_{i,t} * opacity\ dummy_{i,t} + control\ variables_{i,t} + \varepsilon_{i,t}$$

where RATIO*profitability dummy represents the interaction term associated to profitable firms, and RATIO*profitability dummy*opacity dummy is a second interaction term accounting for the effect of RATIO on the market-to-book value of both profitable and opaque firms. As already mentioned, RATIO is the RATIO variable as described in Section 3.2.2., while profitability dummy and opacity dummy, assume value one for profitable and opaque firms respectively, and zero otherwise (see Section 3.2.4.). In this case, the coefficient of the RATIO (β_1) estimates the average rarity/abundance effect for non-profitable and non-opaque firms, the coefficient of the first interaction term (β_2) estimates the additional effect of the RATIO on the Market-to-Book Ratio attributable to profitable but non-opaque firms, and the coefficient of the second interaction term (β_3) assess the further additional effect attributable to both profitable and opaque firms. Finally, following this line of reasoning, the overall rarity/abundance effect of the RATIO on the Market-to-Book Ratio for each class of firms is given by the sum of β_1, β_2, and/or β_3 suitably selected. Therefore, the overall effect attributable to profitable and non opaque companies will be defined as the sum of β_1 and β_2, while the total effect referred to both profitable and opaque firms is computed as the sum of β_1, β_2, and β_3.

For control purposes, along with each interaction term, I introduced in the Base Model, when not collinear with the other exogenous already included (e.g. in Model 4, but not in Model 5 of Table 21), the corresponding interacting dummy. The introduction of the dummy variables themselves allows to exclude that the effect highlighted from time to time by the interaction terms is driven by the interacting dummy itself (whose effect is represented by the corresponding estimator), being actually the additional rarity/abundance effect

generated by the local market conditions (i.e. RATIO variable) for firms for which the dummy is equal to one. In this sense, exception is represented by the interacting dummies Press Coverage_D, Press Coverage Lag_D, and Press Coverage Star_D. Indeed, as (the natural logarithm of the sum between the constant one and) Press Coverage is by construction already included in all regressions (see Dyck and Zingales (2004)), the further introduction in the model of a dummy (i.e. either Press Coverage_D or Press Coverage Lag_D or Press Coverage Star_D) derived by the control variable would generate multicollinearity the among the two factors. For this reason, as (the natural logarithm of the sum between the constant one and) Press Coverage presents an higher explanatory power, already taking in the informations of the dummy variable itself, this latter variable has not been introduced in the model.

Multivariate analysis is carried on at regional level (NUTS2), once I have observed the descriptive statistics reported and discussed later on in the following section. However, for descriptive purposes, I include in the summary statistics also the RATIO calculated at macro-area (NUTS1) and country (NUTS0) level. Beyond the statistics, the regional level (NUTS2) has two main advantages if compared to the NUTS3 (provinces) and NUTS1 (macro-areas). First, the average (median) surface of the Italian regions corresponds to the 4.97 (5.79) percent of the whole Italian territory, which is approximately the same critical area (cf. the 5.28 percent of the U.S. surface) that Ivkovic and Weisbenner (2005) find effective in distinguishing local (and they find better informed) investors from the non-local (and they find worse informed) ones. Second, the regional sub-division of the Italian territory is the one that closely represents its historical and cultural pre-unification division. Therefore, according to Grinblatt and Keloharju (2001) and Morse and Shive (2011)'s arguments, it's the more likely to capture an eventual persistent cultural equity-market segmentation which should exacerbate behavioral dynamics underlying the local home bias phenomenon. Finally, Guiso, Sapienza, and Zingales (2004) with specific reference to the Italian context, give

proofs of the positive effects of the regional financial development on the economic success of the same geographical area. Hence, *a priori*, the regional sub-division of the Italian territory allows to indirectly control also for the eventual credit market segmentation. Taken together, these evidences suggest that the regional sub-division is likely to be the more effective in capturing the eventual equity-market segmentations caused by information advantages and/or perceived familiarity. Finally, in light of Petersen's (2009) argument, I cluster standard errors at regional level.

In light both of the variables used (see Section 3.) and of the methodology followed in the study, Table 17 reports summary statistics on firms, stock returns, and abnormal accruals characteristics (Panel A), as well as the correlation matrix of the variables involved in the multivariate analysis (Panel B). In detail, Panel B groups the different sets of variables (i.e. visibility dummies, profitability dummy, opacity dummies and control variables as well as RATIO and Market-to-Book Ratio) and highlights the high correlation among the dummies belonging to the same group. In this sense, the inclusion in the multivariate regressions of highly correlated variables would cause multicollinearity in the model, and would generate several problems which can be summarized as:

- large standard errors of the affected coefficients. In this case the test of the hypothesis that the coefficient is equal to zero leads to reject the null hypothesis, thus leading to the conclusion that there is no relationship between dependent and independent variable even when actually a relationship exists;
- estimates are not able to distinguish the specific effects of the correlated regressors.

This evidence basically highlights the impossibility to build a regression model able to contain simultaneously all the visibility (or opacity) specifications involved in the analysis, as well as the difficulty to simultaneously consider the effect of RATIO on Market-to-Book Ratio for both visible and profitable and opaque companies by choosing only one variable

representative for the characteristic of interest. These observations increase the interest in the methodology of the principal component analysis (thereafter also PCA), whose procedure is reported in the following section.

Table 17 – Summary statistics and correlation matrix

Panel A reports summary statistics on firm, stock returns and abnormal accruals characteristics, while Panel B reports the correlation matrix of the variables involved in multivariate analysis. The sample consists of 2,463 observations on firms issuing ordinary shares at Milan Stock Exchange from 1999 to 2007and headquartered within the Italian territory. Observations on financial firms, whose one-digit SIC Codes of 6, are here excluded from the sample. Market-to-Book Ratio is the ratio of Equity Market Value to Equity Book Value. RATIO is the ratio of the aggregate Equity Book Value of firms headquartered in a given Italian region to the aggregate Disposable Income (less Equity Income) of the households living in the same region. Press Coverage is the yearly number of newspaper articles concerning the correspondent firm. Firm Age is the number of years since the firm's foundation. R&D to Sales is the ratio of R&D to Sales. ROE is the ratio of net profit income to the Equity Book Value. Firm Size is the value of total asset. FTSE_D equals one if the firm is included in the Italian equity-market primary index, and zero otherwise. No of Employee is the number of both full and part time employees of the company. IPO_D equals one if the firm did the IPO within the past two years, and zero otherwise. Alpha is the 1-factor Jensen's alpha. Return Skewness is the yearly skewness of the distribution of the weekly stock returns. Return Kurtosis is the yearly kurtosis of the distribution of the weekly stock returns. Abs DiscAccruals is the absolute value of Abnormal Accruals. Ms3 DiscAccruals is the prior three years' sum of Abnormal Accruals. No of Employees_D equals one if No of Employees is greater than the yearly cross-sectional median, and zero otherwise. Press Coverage_D equals one if Press Coverage is greater than the yearly cross-sectional median, and zero otherwise. Press Coverage Lag_D equals one if Press Coverage Lag is greater than the correspondent yearly cross-sectional median, and zero otherwise. Press Coverage Star_D is equal to Press Coverage_D*Press Coverage Lag_D. $Alpha_{t+1}$ Good_D equals one if Alpha in the following year is greater than zero, and zero otherwise. Return Skewness_D equals one if Return Skewness is less than the yearly cross-sectional median, and zero otherwise. Return Kurtosis_D equals one if Return Kurtosis is greater than the yearly cross-sectional median, and zero otherwise. Return Star_D is equal to Return Skewness_D*Return Kurtosis_D. Abs DiscAccruals_D equals one if Abs DiscAccruals is greater than the yearly cross-sectional median, and zero otherwise. Ms3 DiscAccruals_D equals one if Ms3 DiscAccruals is greater than the yearly cross-sectional median, and zero otherwise. ***, **, and *, indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

Panel A – Summary statistics

	Mean	**Median**	**25th Percentile**	**75th Percentile**
Firm characteristic				
Market-to-Book Ratio	2.36	1.73	1.14	2.66
RATIO	0.19	0.04	0.00	0.26
Press Coverage	28.81	13.00	7.00	23.00
Firm Age (Years)	39.00	24.00	12.00	56.00
R&D to Sales	3.10%	1.65%	0.34%	4.55%
ROE	4.01%	6.68%	0.09%	13.47%
Firm Size (Millions of Euro)	3,129	363	137	1,410
FTSE_D	0.10	0.00	0.00	0.00
No of Employees	6,157	1,142	353	3,271
IPO_D	0.16	0.00	0.00	0.00
Stock Return characteristic				
Alpha	0.12%	0.06%	-0.30%	0.47%
Return Skewness	0.543	0.399	-0.044	0.992
Return Kurtosis	5.710	4.438	3.382	6.470
Abnormal Accruals characteristic				
Abs DiscAccruals	0.075	0.044	0.021	0.085
Ms3 DiscAccruals	0.209	0.150	0.094	0.254

Table 17 (continued)

Panel B – Correlation Matrix: Spearman's Rank Correlation Coefficient

	Log(Market-to-Book Ratio)	RATIO	FTSE_D	No of Employees_D	Press Coverage_D	Press Coverage Lag_D	Press Coverage Star_D	IPO_D	$Alpha_{t+1}$ Good_D	Return Skewness_D	Return Kurtosis_D	Return Star_D	Abs DiscAccruals_D	Ms3 DiscAccruals_D	Log(Press Coverage)	Log(Firm Age)	R&D to Sales	ROE	Log(Firm Size)
Dependent Variable																			
Log(Market-to-Book Ratio)	1																		
Independent Variables																			
RATIO	-0.0089	1																	
Visibility Dummies																			
FTSE_D	0.2129***	0.1966***	1																
No of Employees_D	0.0552**	-0.0106	0.3152***	1															
Press Coverage_D	0.2602***	0.0459*	0.3334***	0.4221***	1														
Press Coverage Lag_D	0.2242***	0.0367	0.3136***	0.4222***	0.6033***	1													
Press Coverage Star_D	0.2501***	0.0616**	0.3857***	0.4585***	0.8355***	0.7985***	1												
IPO_D	0.1794***	-0.0390	-0.0723***	-0.1282***	0.1070***	-0.0579**	-0.0391	1											
Profitability Dummy																			
$Alpha_{t+1}$ Good_D	-0.1197***	-0.0177	-0.0088	0.0085	-0.0271	-0.0232	-0.0208	-0.0252	1										
Opacity Dummies																			
Return Skewness_D	-0.0242	0.0473*	0.1696***	0.2247***	0.1393***	0.1340***	0.1434***	-0.0460*	0.0151	1									
Return Kurtosis_D	-0.0372	-0.0298	-0.1270***	-0.1786***	-0.1172***	-0.1213***	-0.1416***	0.0403	-0.0012	-0.3198***	1								
Return Star_D	-0.0735***	-0.0039	0.0109	0.0923***	0.0346	0.0346	0.0189	-0.0120	0.0180	0.4705***	0.4292***	1							
Abs DiscAccruals_D	-0.0345	-0.0062	-0.0490*	0.0302	-0.0284	-0.0118	-0.0431	0.0369	-0.0005	0.0322	-0.0504**	0.0131	1						
Ms3 DiscAccruals_D	-0.0576*	0.0075	-0.0093	0.0653***	0.0043	0.0227	0.0036	0.0139	0.0116	0.0480*	-0.0533**	0.0046	0.6696***	1					
Control Variables																			
Log(Press Coverage)	0.3025***	0.0668***	0.4565***	0.4859***	0.8658***	0.6600***	0.7919***	0.0797***	-0.0212	0.1564***	-0.1334***	0.0410	-0.0063	0.0093	1				
Log(Firm Age)	-0.2440***	0.1056***	0.0381	0.1585***	-0.1564***	-0.1024***	-0.0931***	-0.3046***	0.0655***	0.0671***	-0.0269	0.0498**	0.0766***	0.0737***	-0.1602***	1			
R&D to Sales	-0.0014	0.0117	0.2178***	0.1341***	0.0678***	0.0856***	0.0785***	-0.0300	0.0258	0.0868***	-0.0514**	0.0440*	-0.0124	-0.0067	0.1147***	0.1068***	1		
ROE	0.3098***	0.0439*	0.2043***	0.2171***	0.1539***	0.1185***	0.1660***	0.0217	0.1181***	0.1602***	-0.1928***	-0.0069	0.0041	-0.0036	0.1713***	0.0562**	0.0564**	1	
Log(Firm Size)	0.0278	0.1058***	0.4856***	0.7489***	0.5407***	0.5194***	0.5900***	-0.1173***	0.0328	0.2675***	-0.2444***	0.0630**	-0.0043	0.0182	0.6418***	0.1498***	0.1483***	0.2829***	1

4.2. PCA – Principal Component Analysis

In order to provide comprehensive evidence of the role exerted by firm's visibility, profitability and opacity in determining the investors' preference for local, and therefore to simultaneously capture the rational and the behavioral root of local bias, I merged the analysis before described by applying the principal component analysis (PCA) to visibility (PCA_Visibility) and opacity (PCA_Opacity) variables. In this sense, PCA is an ideal tool since allows to reduce the number of visibility and opacity proxies implicitly preserving the information content in each set of variables, and allows to remove the possible correlation among them (see Table 17, Panel B). In this sense, PCA is often used to convert a set of correlated variables (where a few sources of information in data are common to many variables) into a set of uncorrelated ones (named principal components), allowing to extract the most important sources of variation in a multivariate system, and reducing the dimension of the system itself. Indeed, the number of original variables is more than or at least equal to the number of principal components emerging from the PCA, which are defined in a way that the first principal component has the highest possible variance (i.e. accounts for the greatest possible variability of the data), while the second and the following principal component explain the greatest amount of the remaining variation under the constraint to be uncorrelated (i.e. orthogonal) with the previous ones. This approach increases the computational efficiency resulting from the lack of correlation among the principal components, and reduces the dimension of the system by taking only the principal components with the greatest explanatory power.

Computationally, PCA is a mathematical rather than statistical technique, as its application is deterministic and it is possible to find only one solution for each set of variables. Indeed, in a system with *p* variables and *n* statistical units, PCA equation corresponds to:

$$C = XA' = \begin{cases} c_1 = a_{11}x_1 + a_{12}x_2 + \cdots + a_{1p}x_p \\ \cdots \\ c_p = a_{p1}x_1 + a_{p2}x_2 + \cdots + a_{pp}x_p \end{cases}$$

where *C* is a is a *nxp* matrix of principal components scores, with a column for each principal component (i.e. *p* columns) and one row for each statistical unit (i.e. *n* rows), *X* is the *nxp* data matrix and *A* is the *pxp* matrix of component loadings. As mentioned above, PCA needs that the component scores are uncorrelated across components, thus implying

$Corr(C) = I$, which equals to $Corr(c_i c_j) = 0, \forall i \neq j$, and $Corr(c_i c_j) = 1 \forall i = j$

PCA goal is to compute *A.* Following Krzanowski (2000), for each component holds the following relationship

$$Var(c_j) = a_j' Var(X) a_j = a_j' \sum a_j = \lambda_j$$

that explains the relationship between data variability and the variability of the components. Thus, the objective of the procedure is to find the a_j vectors that maximize the right side of the last equation under the constraints on *C* and *A*, by starting from the component with the largest variance (i.e. the first principal component) and concluding with the one whose variability is lower (i.e. the last principal component). Vectors a_j are the eigenvectors of the covariance matrix, while λ_j are the corresponding eigenvalues. Both eigenvalues and eigenvectors can be defined algebraically and are unique. The sum of the eigenvalues equals to the total variance of the original set of variables. According to this procedure, the overall variability of the *p* principal components is equal to the total variability of the original variables. Thus, PCAs start by identifying *p* principal components which are a linear combination of the original *p* variables, and that are uncorrelated (i.e. orthogonal) among each other. In a second step, the procedure allows to identify a sub-set of principal component. At this regard, the issue is to choose principal components without losing too many information as compared to the original variability. In this sense, eigenvalues can be used as a criterion to define the number of principal components to use in the analysis. However, literature so far identified rules of thumb rather than objective techniques (see Kaiser (1960); Jolliffe (1972)); a common approach (Kaiser's rule on eigenvalues, Kaiser (1960)) for instance is to retain only those

components with an eigenvalue larger than the average, i.e. larger than one. This is also the approach used in this study.

In the present work, multivariate analysis shows that all the proxies for visibility and opacity involved in the study and singularly considered effectively have an impact on the phenomenon under observation (i.e. the pattern exists for all the proxies of visibility/opacity). PCA overcomes the difficulty to choose only one variable for both visibility and opacity to simultaneously capture the informational and the irrational root of local home bias. Indeed, in line with what argued so far, it synthesizes the single dummies proxy for firm visibility (opacity) in a unique principal component accounting for the greatest possible variability of the data. To provide a more intuitive and explanatory example, let's consider the high correlation existing among the dummies proxy for firms' visibility (see Table 17 – Panel B). Their correlation implies, in row words, that they tend to go in the same direction: for instance, a firm included in the primary Italian equity-market index (whose FTSE_D equals one) will hardly have a low level of press coverage (thus having, for instance, also Press Coverage_D equal to one). Starting from these evidences, PCA captures the few sources of information that are common to the many variables by synthesizing all the dummies proxy for visibility in a unique variable, that may be considered as an optimal proxy for visibility.

Using PCAs, I isolated three significant principal components: PC1_Visibility which increases with the degree of firm's visibility, PC1_Opacity which increases with the degree of firm's opacity measured on the basis of the accounting variables, and PC2_Opacity which increases with the degree of firm's opacity measured on the basis of market variables. Table 18 provides results from the principal component analysis on the original variables used to proxy firm's visibility (Table 18 - Panel A - PCA Visibility) and firm's opacity (Table 18 - Panel B - PCA Opacity). Entries of Table 18 in both Panel A and Panel B are the value of eigenvectors from the regression of each visibility (opacity) variable on each principal component (PC). In addition, for each principal component, the correspondent eigenvalue and the percentage of the total variation

implicit in each set of variables explained are reported (see next-to-last and last row of each table respectively). In PCA – Visibility (Table 18 - Panel A), IPO_D has been dropped since, once introduced, make it harder the identification of PC1_Visibility: the eigenvectors' pattern of PC1_visibility was non-monotonic, as might be expected given the negative and significant correlation of IPO_D with FTSE_D and Press Coverage Lag (see Table 17 – Panel B). No of Employees, Press Coverage and Press Coverage Lag are taken with logs; results of PCA-Visibility still hold with the row version of these variables. In light of Kaiser's rule on eigenvalues (see Kaiser, 1960), the first principal component (PC1_Visibility) is the only significant (correspondent eigenvalue greater than one, and equal to 2.8998). Indeed, PC1_Visibility alone accounts for about the 72.50 percent of the overall variation implicit in the visibility variables (equal to the ratio of the eigenvalue corresponding to PC1_Visibility component to the sum of the eigenvalues referred to each principal component). PC1_Visibility shows positive eigenvectors, therefore it directly proxies for the firm's visibility. As can be observed from Table 18 - Panel B, for PCA – Opacity, both the first (PC1_Opacity) and the second (PC2_Opacity) principal component are significant (correspondent eigenvalue greater than one and equal to 1.7669 and 1.6632 respectively). In detail, PC1_Opacity accounts for about the 44.17 percent and PC2_Opacity for the 41.58 percent of the overall variation implicit in the opacity's variables. Since PC1_Opacity shows highest eigenvectors for Abs DiscAccruals and Ms3 DiscAccruals, it directly proxies for the firm's opacity measured by accounting information. Similarly, since PC2_Opacity shows highest eigenvectors for Return Skewness and Return Kurtosis, it directly proxies for the firm's opacity measured by market returns information, and against accounting opacity.

Table 18 – Firm's Visibility and Firm's Opacity: Principal Components Analysis (PCA)

Table 18 provides results from the principal component analysis (PCA) of the original variables used to proxy firm's visibility (Panel A - PCA Visibility) and firm's opacity (Panel B - PCA Opacity).

Panel A – PCA Visibility

Variable	PC1_Visibility	PC2_Visibility	PC3_Visibility	PC4_Visibility
FTSE_D	**0.4298**	0.7504	-0.5022	.
Log(No of Employees)	**0.4524**	0.3023	0.8390	.
Log(Press Coverage)	**0.5525**	-0.4157	-0.1482	.
Log(Press Coverage Lag)	**0.5525**	-0.4157	-0.1482	.
Eigenvalue	**2.8998**	0.6008	0.4994	0.0000
Percentage of total variance explained	72.50%	15.02%	12.49%	0.00%

Panel B – PCA Opacity

Variable	PC1_Opacity	PC2_Opacity	PC3_Opacity	PC4_Opacity
Return Skewness	-0.0250	**0.7068**	0.7055	-0.0466
Return Kurtosis	0.0051	**0.7073**	-0.7046	0.0576
Abs DiscAccruals	**0.7069**	0.0155	-0.0371	-0.7062
Ms3 DiscAccruals	**0.7069**	0.0045	0.0671	0.7041
Eigenvalue	**1.7669**	**1.6632**	0.3368	0.2331
Percentage of total variance explained	44.17%	41.58%	8.42%	5.83%

After the application of the Principal Component Analysis, I defined the following dummy variables: Visible_D (Non-Visible_D) which takes on the value one if PC1_Visibility is greater (smaller) than the yearly cross-sectional median, and zero otherwise; Opaque Acc_D which takes value one if PC1_Opacity is greater than the yearly cross-sectional median, and zero otherwise, and Opaque Mrk_D, which takes on the value one if PC2_Opacity is greater than the yearly cross-sectional median, and zero otherwise. I then substituted in the Base Model the variable RATIO with two interaction terms calculated as RATIO*Visible_D and RATIO*Non-Visible_D (Modified Base Model). This allows to explicitly distinguish the effect of the RATIO on the Market-to-Book Ratio (β_1) for visible and non-visible firms respectively. I decided here to separate the two subsamples just for sake of simplicity. Finally, I progressively included in the Modified Base Model two interaction terms, i.e. RATIO*Visible_D*$Alpha_{t+1}$ Good_D; RATIO*Non-Visible_D*$Alpha_{t+1}$

Good_D, where $Alpha_{t+1}$ Good_D equals to one if Alpha in the forthcoming year is bigger than zero, and zero otherwise These additional interaction terms are designed to capture the incremental effect of the RATIO on the Market-to-Book Ratio (β_2) due to firm's profitability for visible and non-visible firms respectively. Following the same logic, with respect to this latter model I added two further interaction terms (i.e. RATIO*Visible_D*$Alpha_{t+1}$ Good_D*Opaque_D; RATIO*Non-Visible_D*$Alpha_{t+1}$ Good_D*Opaque_D) designed to capture the additive effect of the RATIO on the Market-to-Book Ratio due to firm's opacity given its firm's profitability (β_3), for visible and non-visible firms respectively. In this case, Opaque_D represents Opaque Acc_D or Opaque Mrk_D alternatively. Once again, in line with the methodology of the study, the overall rarity/abundance effect of the RATIO on the Market-to-Book Ratio for each class of firms is given by sum of β_1, β_2, and/or β_3 suitably selected.

The inclusion in the same regression of both the dummy corresponding to the variable PC1_Visibility and the dummy corresponding to the variable PC1_Opacity (or PC2_Opacity) allows to exclude that the effect previously highlighted for instance for non-visible firms (i.e. the non-informative component of local home bias) is in part due to the opacity characteristic that non-visible firms may have. Indeed, firms not included in the FTSE MIB Index very likely are also more opaque than those included in the index; therefore, the effect which in the multivariate regressions separately accounting for firm visibility and opacity may seems to be driven by company's non-visibility, might be actually generated by the firm's opacity. In this sense, the inclusion of both the visibility and opacity variables derived by the PCA allows to control for the possible correlation that might exist among firm's visibility, profitability and opacity, and – conferring robustness to the previous analysis' findings – further confirms the research hypotheses. Moreover, the contemporaneous presence of both visibility and opacity proxies in the same model allows to compare the effects of the interactions among these dummy variables to estimate the relative importance of the single effects (i.e. of firm's visibility, profitability, and opacity). Indeed, the

overall effect of local home bias due to firm's (non-)visibility, profitability and opacity will be defined as sum of β_1, β_2, and β_3, while the effect related solely to firm non-visibility is determined by the coefficient β_1 referred to the interacting term RATIO*Non-Visible_D. In this sense, I am able to decompose the aggregate results obtained through this last regression, thus splitting the local bias effect in its rational and irrational component. Table 19 reports more detailed definitions of the PCA variables included in the study.

Table 19 – PCA variables definition

Table 19 defines the PCA variables used in the study, alphabetically listed.

Variable	Description
Non-Visible_D	Equal to one if *PC1_Visibility* is less than the yearly cross-sectional median, and zero otherwise
Opaque Acc_D	Equal to one if *PC1_Opacity* is greater than the yearly cross-sectional median, and zero otherwise
Opaque Mrk_D	Equal to one if *PC2_Opacity* is greater than the yearly cross-sectional median, and zero otherwise
PC1_Opacity	The first principal component from PCA of *Return Skewness*, *Return Kurtosis*, *Abs DiscAccruals*, *Ms3 DiscAccruals*
PC1_Visibility	The first principal component from PCA of *FTSE_D*, Log(*No of Employees*), Log(*Press Coverage*), and Log(*Press Coverage Lag*)
PC2_Opacity	The second principal component from PCA of *Return Skewness*, *Return Kurtosis*, *Abs DiscAccruals*, *Ms3 DiscAccruals*
Visible_D	Equal to one if *PC1_Visibility* is greater than the yearly cross-sectional median, and zero otherwise

5. Results

5.1. Descriptive statistics: The geographical distribution of Italian listed firms and RATIO

The underlying intuition of the paper can be drawn from Table 20 and Figure 2, which respectively report and depict data on the demand and supply of stocks in the Italian equity-market. In detail, Table 20 provides summary statistics about the geographical characteristics of the Italian equity-market over the period 1999-2007. Panel A reports summary statistics on the yearly regional distribution of Italian listed firms (N by Region), the local supply for stocks (Equity Book Value by Region), the local demand for stocks (Disposable Income by Region), and the ratio between the last two variables (RATIO). Panel B displays the value over time of RATIO at country level (NUTS0), macro-area level (NUTS1), and regional level (NUTS2) along with both the cross-sectional and the time-series means and standard deviations, while Panel C reports the geographic distribution of visible, profitable and opaque firms for the same NUTS levels. Moreover, Figure 2 reports the value of the endogenous variable RATIO at regional level, and gives an overview of the geographical distribution of the non-financial firms included in the sample, by distinguishing among visible (I quadrant), profitable (II quadrant), and both opaque and profitable firms (III quadrant).

Table 20 – The regional demand and supply for stocks and RATIO

Panel A reports summary statistics on the regional distribution of Italian listed firms and Disposable Income. Panel B reports the yearly values of RATIO calculated at region (NUTS2), macro-area (NUTS1), and country (NUTS0) levels over the period 1999-2007, as wells as the time-series and cross-sectional means and standard deviations. Panel C report the headquarter location of Italian listed firms according to their visibility, profitability and opacity at region (NUTS2), macro-area (NUTS1), and country level (NUTS0). The sample consists of 2,463 observations on firms issuing ordinary shares traded at MSE over the period 1999-2007 and headquartered within the Italian territory. Financial firms are defined as those companies whose SIC code first digit equals 6. Visible firms are defined on the subsample of non-financial firms. Profitable and opaque firms are defined on the subsample non-financial firms accounting for at least 25 weekly return observations. CV stands for Coefficient of Variation. N by Region is the number of listed firms located in each Italian region. Equity Book Value by Region is the sum of Equity Book Value of the firms located in each Italian region. Disposable Income by Region is the sum of Disposable Income (less Equity Income) of the households resident in each Italian region. RATIO is the ratio of Equity Book Value by Region to Disposable Income by Region. FTSE_D equals one if the firm is included in the Italian equity-market's primary index, and zero otherwise. No of Employees_D equals one if No of Employees is greater than the yearly cross-sectional median, and zero otherwise. Press Coverage_D equals one if Press Coverage is greater than the yearly cross-sectional median, and zero otherwise. Press Coverage Lag_D equals one if Press Coverage Lag is greater than the correspondent yearly cross-sectional median, and zero otherwise. Press Coverage Star_D is equal to Press Coverage_D*Press Coverage Lag_D. IPO_D equals one if the firm did the IPO within the past two years, and zero otherwise. Visible_D equals one if PC1_Visibility is greater than the yearly cross-sectional median, and zero otherwise. $Alpha_{t+1}$Good_D equals one if Alpha in the following year is greater than zero, and zero otherwise. Return Skewness_D equals one if Return Skewness is less than the yearly cross-sectional median, and zero otherwise. Return Kurtosis_D equals one if Return Kurtosis is greater than the yearly cross-sectional median, and zero otherwise. Return Star_D is equal to Return Skewness_D*Return Kurtosis_D. Opaque Acc_D equals one if PC1_Opacity is greater than the yearly cross-sectional median, and zero otherwise. Abs DiscAccruals_D equals one if Abs DiscAccruals is greater than the yearly cross-sectional median, and zero otherwise. Ms3 DiscAccruals_D equals one if Ms3 DiscAccruals is greater than the yearly cross-sectional median, and zero otherwise. Opaque Mrk_D equals one if PC2_Opacity is greater than the yearly cross-sectional median, and zero otherwise. Italian territory's sub-areas have been indentified according to NUTS codes. Exception is represented by the region Trentino Alto Adige whose data are obtained by aggregating the data on the two autonomous provinces of Trento and Bolzano-Bozen. NUTS stands for Nomenclature for the Statistics Territorial Units.

Panel A: Italian listed Firm and Income Regional Distribution

Year	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**1999-2007**
N of listed firms	255	285	284	284	261	258	265	277	294	2463
N by Region										
Mean	12.75	14.25	14.20	14.20	13.05	12.90	13.25	13.85	14.70	13.68
Median	3.00	3.00	2.00	1.50	1.50	1.50	1.50	2.00	2.00	1.83
25th Percentile	0.75	0.75	0.75	0.00	0.75	0.75	0.00	0.00	0.00	0.50
75th Percentile	12.75	16.25	16.25	18.00	16.75	16.50	16.75	16.50	18.00	16.53
CV	1.94	1.95	1.95	1.95	1.97	1.92	1.93	1.90	1.97	1.94
Equity Book Value by Region (/000,000€)										
Mean	12,062	13,350	13,545	12,926	13,287	13,789	17,549	18,069	20,692	15,030
Median	306	499	674	431	296	237	275	900	962	604
25th Percentile	67	56	64	0	20	17	0	0	0	74
75th Percentile	7,865	9,746	10,299	8,911	10,488	11,372	14,852	15,859	16,495	11,573
CV	2.01	1.95	2.00	1.98	2.04	2.02	1.93	1.89	2.00	1.93
Disposable Income by Region (/000,000€)										
Mean	38,754	40,691	42,724	45,023	46,350	47,885	49,226	50,714	52,672	46,004
Median	22,541	23,458	24,809	26,487	26,991	27,604	28,583	29,262	30,391	26,681
25th Percentile	15,327	16,382	16,785	17,507	17,680	18,216	18,656	19,352	20,207	17,779
75th Percentile	57,430	60,144	63,221	67,425	68,757	70,490	72,327	74,254	76,794	67,863
CV	0.91	0.91	0.92	0.91	0.91	0.92	0.92	0.92	0.92	0.92

Table 20 (continued)

RATIO										
Mean	0.18	0.20	0.18	0.17	0.16	0.17	0.22	0.23	0.22	0.19
Median	0.03	0.04	0.04	0.04	0.03	0.03	0.02	0.04	0.05	0.04
25th Percentile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
75th Percentile	0.19	0.22	0.23	0.20	0.24	0.25	0.28	0.28	0.22	0.26
CV	1.73	1.58	1.52	1.52	1.50	1.50	1.61	1.60	1.69	1.49

Panel B: Summary statistics for RATIO, 1999-2007

Year	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**1999-2007**	
										Time-series	*Mean*	*S.D.*
NUTS0 - Country												
Italy	0.311	0.328	0.317	0.287	0.287	0.288	0.357	0.356	0.393		0.325	0.037
NUTS1 - Macro-Area												
Centre	0.424	0.462	0.471	0.449	0.445	0.461	0.522	0.513	0.724		0.497	0.091
Islands	0.004	0.034	0.018	0.010	0.007	0.006	0.004	0.018	0.019		0.013	0.010
North East	0.127	0.143	0.145	0.133	0.136	0.140	0.185	0.189	0.222		0.158	0.033
North West	0.619	0.636	0.597	0.530	0.528	0.513	0.661	0.659	0.610		0.595	0.057
South	0.012	0.001	0.002	0.002	0.002	0.002	0.003	0.003	0.003		0.003	0.003
Cross-Sectional Mean	0.237	0.255	0.246	0.225	0.224	0.224	0.275	0.277	0.316			
Cross-Sectional S.D.	0.273	0.280	0.272	0.249	0.248	0.247	0.302	0.297	0.335			
NUTS2 - Region												
Abruzzo	0.000	0.000	0.000	0.000	0.002	0.001	0.000	0.000	0.000		0.000	0.001
Aosta Valley	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
Apulia	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.005	0.005		0.002	0.003
Basilicata	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
Calabria	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.000	0.000
Campania	0.027	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002		0.005	0.008
Emilia-Romagna	0.126	0.140	0.142	0.094	0.102	0.098	0.179	0.198	0.215		0.144	0.045
Friuli-Venezia Giulia	0.436	0.521	0.525	0.402	0.425	0.458	0.533	0.584	0.584		0.496	0.068
Lazio	0.812	0.856	0.874	0.861	0.815	0.834	0.948	0.918	1.360		0.920	0.171
Liguria	0.387	0.409	0.421	0.494	0.518	0.539	1.259	1.343	0.105		0.608	0.413
Lombardy	0.431	0.500	0.578	0.515	0.572	0.552	0.664	0.645	0.569		0.559	0.071
Marche	0.023	0.040	0.050	0.049	0.037	0.040	0.041	0.062	0.063		0.045	0.012
Molise	0.037	0.035	0.032	0.061	0.042	0.039	0.030	0.025	0.036		0.037	0.010
Piedmont	1.147	1.049	0.722	0.594	0.449	0.430	0.457	0.466	0.903		0.691	0.279
Sardinia	0.008	0.121	0.058	0.030	0.020	0.014	0.014	0.066	0.068		0.044	0.037
Sicily	0.003	0.003	0.004	0.002	0.002	0.003	0.000	0.000	0.000		0.002	0.002
Trentino Alto Adige	0.006	0.005	0.005	0.000	0.000	0.000	0.000	0.000	0.000		0.002	0.003
Tuscany	0.116	0.162	0.160	0.132	0.180	0.194	0.216	0.220	0.225		0.178	0.039
Umbria	0.008	0.007	0.008	0.008	0.008	0.008	0.011	0.011	0.011		0.009	0.002
Veneto	0.073	0.077	0.080	0.129	0.123	0.128	0.140	0.120	0.182		0.117	0.035
Cross-Sectional Mean	0.182	0.196	0.183	0.169	0.165	0.167	0.225	0.233	0.216			
Cross-Sectional S.D.	0.314	0.309	0.277	0.256	0.247	0.251	0.363	0.373	0.366			

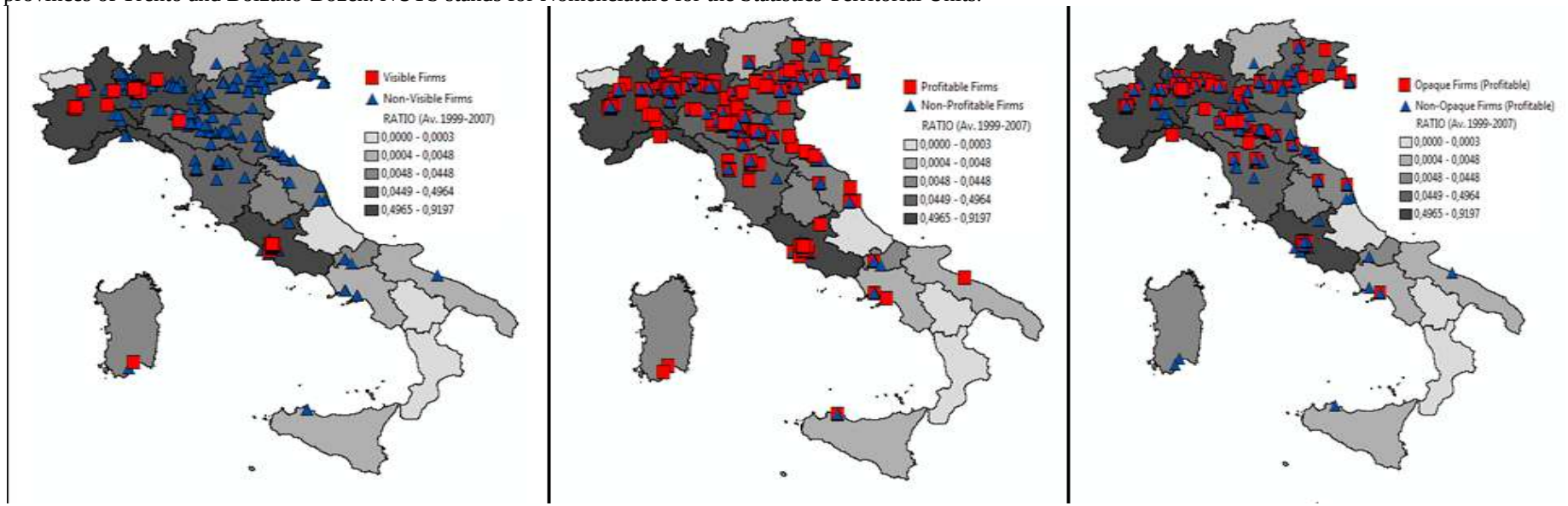
Table 20 (continued)

Panel C: Visible, Profitable and Opaque Firms by Region, 1999-2007

Year 1999-2007	Listed Firms		Visible Firms							Profitable Firms	Opaque Firms						
	All	Non-Financial	FTSE_D	No of Employees_D	Press Coverage_D	Press_Coverage Lag_D	Press Coverage Star_D	IPO_D	Visible_D	$Alpha_{t+1}$Good_D	Return Skewness_D	Return Kurtosis_D	Return Star_D	Opaque Acc_D Abs DiscAccruals_D	Ms3 DiscAccruals_D		Opaque Mrk_D
NUTS0 - Country																	
Italy	2463	1809	168	913	861	866	676	310	1003	912	782	915	276	1242	972	1150	1006
NUTS1 - Macro-Area																	
Centre	494	373	55	186	201	204	170	54	220	191	162	181	53	224	185	217	201
Islands	20	17	1	9	13	10	9	6	13	7	4	7	1	10	9	12	13
North East	510	431	2	230	191	188	141	103	245	225	189	215	76	329	239	278	245
North West	1400	954	110	472	447	453	349	147	512	475	415	489	141	652	518	621	523
South	39	34	0	16	9	11	7	0	13	14	12	23	5	27	21	22	24
NUTS2 - Region																	
Abruzzo	2	2	0	0	0	0	0	0	0	1	0	2	0	2	0	0	2
Aosta Valley	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apulia	5	2	0	1	0	1	0	0	0	2	0	2	0	1	1	1	2
Basilicata	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Calabria	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Campania	22	20	0	6	2	3	0	0	5	9	10	11	4	15	16	16	11
Emilia-Romagna	281	241	2	112	96	90	69	67	117	123	101	118	39	178	145	164	127
Friuli-Venezia Giulia	54	43	0	18	16	15	10	8	25	26	21	22	7	40	22	24	35
Lazio	300	243	55	143	148	147	131	29	166	131	114	109	33	136	126	150	116
Liguria	63	34	0	4	9	8	7	2	10	22	12	19	4	31	26	27	22
Lombardy	1033	692	78	355	331	340	262	110	373	337	294	374	108	466	358	438	372
Marche	44	32	0	25	20	18	17	6	22	16	15	16	9	20	12	14	14
Molise	10	10	0	9	7	7	7	0	8	2	2	8	1	9	4	5	9
Piedmont	304	228	32	113	107	105	80	35	129	116	109	96	29	155	134	156	129
Sardinia	11	11	1	9	11	9	9	4	11	5	3	2	0	4	8	10	7
Sicily	9	6	0	0	2	1	0	2	2	2	1	5	1	6	1	2	6
Trentino Alto Adige	3	3	0	3	0	0	0	0	0	1	1	1	0	2	3	3	0
Tuscany	141	98	0	18	33	39	22	19	32	44	33	56	11	68	47	53	71
Umbria	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Veneto	172	144	0	97	79	83	62	28	103	75	66	74	30	109	69	87	83

Figure 2 – Geographic distribution of visible, profitable and opaque (and profitable) firms

Figure 2 reports the headquarters' location of Visible vs. Non-Visible Firms (I Quadrant), Profitable vs. Non-Profitable Firms (II Quadrant), and Profitable and Opaque vs. Profitable and Non-Opaque Firms (II Quadrant). Each Italian region has been more intensely stained according to the quintiles of the average value of the RATIO over the period 1999 – 2007.The sample consists of 1,668 observations on non-financial firms issuing ordinary shares at Milan Stock Exchange and headquartered within the Italian territory over the period 1999-2007. Visible (Non-Visible) firms have been defined according to FTSE_D. Profitable (Non-Profitable) firms have been defined according to $Alpha_{t+1}$ Good_D. Opaque (Non-Opaque) firms have been defined according to Return Star_D. RATIO is the ratio of the aggregate Equity Book Value of firms headquartered in a given Italian region to the aggregate Disposable Income (less Equity Income) of the households living in the same region. FTSE_D equals one if the firm is included in the Italian equity-market primary index and zero otherwise. $Alpha_{t+1}$ Good_D equals one if Alpha in the following year is greater than zero and zero otherwise. Return Star_D is equal to Return Skewness_D*Return Kurtosis_D. Return Skewness_D equals one if Return Skewness is less than the yearly cross-sectional median and zero otherwise. Return Kurtosis_D equals one if Return Kurtosis is greater than the yearly cross-sectional median and zero otherwise. Italian territory's sub-areas have been indentified according to NUTS codes. Exception is represented by the region Trentino Alto Adige whose data are obtained by aggregating the data on the two autonomous provinces of Trento and Bolzano-Bozen. NUTS stands for Nomenclature for the Statistics Territorial Units.



As Table 20 - Panel A highlights, Italian listed firms are highly clustered in a few regions. Indeed, both the yearly and the average distribution over time of the regional number of listed firms is extremely positively skewed: compared to an average value of almost 14 (13.68, standard deviation equal to 0.71) firms by region over the period 1999-2007, the median is less than 2 (1.83, standard deviation equal to 0.61). This result suggests that the frequency distribution of the variable is highly positively skewed, and signals the extreme geographical concentration of Italian firms in a few regions. Moreover, this evidence is irrespective of the time period considered. A similar pattern emerges also by looking at the aggregate equity book value by region, that I consider as proxy for the local supply for stocks. Although both average and median tend to grow as time goes by, the average value remains over time significantly higher than the median, suggesting the cluster of the supply for stocks in a few areas of the country. On the other side, the regional disposable income by region, that proxies for the regional demand for stocks, presents average values (1999-2007 period equal 46,004 millions of Euro) consistently similar to the median values (1999-2007 period equal 26,681 millions of Euro) signaling a higher dispersion of the variable throughout the country. To statistically compare and corroborate these conclusions, I compute and report in the last row of each variable the coefficient of variation CV, defined as the ratio of standard deviation to the mean of the distribution. CV is a useful statistic to measure the dispersion of data points when data with means that dramatically diverge among each other are compared. Throughout the period, the measure remains similar with reference to both the number of firms and the equity book value by region (on average 1.94 and 1.93, respectively), while it is less than half when referred to the disposable income (on average 0.92). In short, these evidences imply a significant right tail in the distribution of the variable RATIO, whose CV ranks, as expected, between those of its components (on average 1.49). As long as households' disposable income and firms' equity book value are unbiased proxies

for the demand and supply for stocks respectively, this evidence itself is sufficient to corroborate the existence of a significant geographical unbalance between the former and the latter in the Italian equity-market. This inequality represents the necessary pre-condition for a profitable application of the framework proposed by HKS2008, and the structural reason that makes Italy and ideal scene to test the local home bias and its asset-pricing implications.

The detailed pattern of the RATIO variable, which expresses the above mentioned unbalance, is reported in Table 20 – Panel B for different NUTS levels (i.e. NUTS0 – country level, NUTS1 – macro-area level, and NUTS2 – region level), and with reference to each year of the sample period. Moreover, the variable is graphically reported at NUTS2 level in Figure 2, where different regions are painted with a color darkening as RATIO increases. At NUTS1 level, the variable presents higher values in the North West (average RATIO equal to 0.595) and in the Centre (average RATIO equal to 0.497) of the country, where the inequality between demand and supply for stocks is lower with respect to the other areas such as the South (average RATIO equal to 0.003) and the Islands (average RATIO equal to 0.013), where the imbalance become manifest. These figures can be compared to the value of 0.325 that represents the country average (NUTS0). At NUTS2 level, Lazio presents the highest values of the variable, averaging 0.920 over the sample period. All the regions belonging to the North West, such as Piedmont (0.691), Liguria (0.608), and Lombardy (0.559) contribute to the highest results previously reported. At the other extreme, excluding regions without listed firms for which RATIO obviously equals zero, Abruzzo (South) has the lowest average value (0.0003). Apulia (South), Sicily (Islands) and Trentino-Alto Adige (North East) follow, with an average RATIO equal to 0.002. Consistently with the data above reported and with the analysis of Section 3.2.2., as it was expected given the much more uniform territorial distribution of the disposable income, the pattern of the RATIO at macro-area level is stable over the sample period and almost entirely driven by the supply of stocks. Exception in this

sense is constituted by the increasing gap over time between the Centre (average RATIO equal to 0.497) and North East (0.158). In this case, indeed, it is worthy of note the relevant role played on the supply-side by the region Lazio (0.920), as a consequence of the inclusion of Rome, Italian capital city. On the demand side, instead, it's determinant the extremely high wealth that characterizes the North East which is, in fact, the richest Italian area (e.g. North East is the first macro-area in terms of disposable income per capita with 19,017 euro on yearly average over the sample period; North West come second with on average 18,940 Euros per year). Finally, as in HKS2008, the variability of the RATIO increases as the analysis deepens (i.e. moving from NUTS1 to NUTS2). For robustness purposes I checked positively that this is not due to anomalies, as the presence of few large firms or an abnormal M&A's activity, as shown in HKS2008.

The significant imbalance between the demand and supply of stocks within the Italian context, as shown by the values of the RATIO variable, appears lower in the northern areas of the country and higher in the South and in the Islands. This result is further confirmed by the analysis of column 1 and 2 of Table 20 – Panel C, which provides the detailed distribution of Italian listed companies by considering total sample and non-financial firms for different NUTS levels (i.e. NUTS0 – country level, NUTS1 – macro-area level, and NUTS2 – region level). In detail, more than 75 percent of the whole sample (77.5 percent, corresponding to 1910 firm-year observations), and the 76.6 percent of non-financial firms (corresponding to 1385 firm-year observations) is headquartered in the north of the country. Specifically, the 56.84 percent of total and the 52.74 percent of non-financial firms are in the North Western macro-area, while the 20.71 and the 23.83 percent respectively is in the North East. The southern and central Italy, excluding Lazio and including Islands, count solely for the 10.27 percent of listed firms (10.01 percent of non-financials). The strong difference in terms of presence of firms' headquarters among the north and the south of the country further

highlights the existence of a strong imbalance in the geographical distribution of listed firms within the Italian stock market, and confers robustness to previous evidences. At NUTS2 level, the region most populated by listed firms is Lombardy (North West), which accounts for 1033 observations over the sample period, 692 of which are non-financials, corresponding to the 38.25 percent of the peers' sample. Piedmont (North West) and Lazio (Centre) rank second with the 12.34 percent (the 12.60 percent of non-financials' subsample) and the 12.18 percent (13.43 percent) of listed firms over the sample period respectively. On the opposite, Aosta Valley (North West), Basilicata (South) and Calabria (South) register zero observations. The presence of a significant cluster in Lazio, and therefore in the Centre (the 20.06 and the 20.62 percent of listed and non-financial firms respectively), appears mere consequence of the presence in this region of the Italian capital, Rome. Indeed, as far as the province is concerned, Rome ranks second, accounting for more than the 12 (12.10) percent of sampled firms, and over the 13 (13.32) percent of the non-financial ones. In this sense, the maximum is reached by the province of Milan (Lombardy) in which is headquartered the 31.87 and the 28.63 percent of listed and non-financial companies respectively.

The analysis of the distribution of listed firms helps to define the magnitude and the location of the imbalance between the demand and supply for stocks within Italian borders, and allows to prefigure the possible presence of local home bias effects on companies' market price, but does not help to clarify the eventual origin of this effect. According to the hypothesis of the study, in this sense Figure 2 graphically represents visible, profitable and both opaque and profitable companies over the Italian territory, while Table 20 – Panel C provides a numerical representation of firms' distribution on the basis of their visibility, profitability, and opacity for the different NUTS levels investigated. On one side, in order to classify firms with regard to their visibility, I considered the total sample made of the 1809 observations related to non-financial companies headquartered within Italian borders, and

actively traded at the Milan Stock Exchange over the period 1999-2007. On the other side, when considering profitability and opacity, in light of the variables definition reported in Section 3, the non-financial sample has been restricted to those companies accounting for at least 25 observations of weekly returns, therefore computing a total of 1714 firm-year observations. Specifically, on one side in Figure 2 visible (non-visible) firms have been defined according to the FTSE_D variable, profitable (non-profitable) companies are those whose $Alpha_{t+1}$ Good_D equals to one (zero), while the opaque (non-opaque) ones are those for which the variable Return Star_D (i.e. Return Skewness_D*Return Kurtosis_D) is equal to one (zero). On the other side, Table 20 – Panel C reports the detail of the geographic location of visible, profitable, and opaque companies by considering all the variables used in the study as proxies for the above mentioned firms' characteristics. In this sense are considered FTSE_D, No of Employees_D, Press Coverage_D, Press Coverage Lag_D, Press Coverage Star_D, and IPO_D for visibility (column 3 to 8), $Alpha_{t+1}$ Good_D for profitability (column 10), and Return Skewness_D, Return Kurtosis_D, Return Star_D, Abs DiscAccruals_D and Ms3 DiscAccruals_D for opacity (column 11 to 13, and column 15 to 16). Moreover, Panel C distinguishes companies also by taking into account the final output of the PCAs for every category, thus considering variables that summarize firms' visibility (Visible_D, column 9), and both accounting (Opaque Acc_D, column 14) and market (Opaque Mrk_D, column 17) opacity.

In light of previous evidences, the distribution of visible companies appears similar to that of the whole sample of listed firms. Indeed, according to the Visible_D variable, highly visible companies are mainly clustered in the northern areas of the country, where more than 75 percent (75.47) of them is headquartered (corresponding to 757 firm-year observations over a total of 1003 visible firms). Consistently with the pattern of the total sample, the 51.04 percent is in the North West, while the 24.43 is located in the North East. In the central and

southern areas of Italy, including islands, is headquartered solely the 24.53 percent of visible firms corresponding to 246 observations. In this sense, more than the 60 percent (61.76) of non-financial companies headquartered in the South is non-visible, thus defining the area as the relatively more densely populated by non-widely known firms. In line with this evidence, Abruzzo and Apulia register the 100 percent of non-visible observations, which represent the 75 and the 66.67 percent of the firms headquartered in Campania and Sicily respectively. Moreover, excluding the north of the country, the only region that attracts a relevant number of visible companies is Lazio, which alone counts for more the 15 percent (16.55) of the subsample of firms whose Visible_D equals one, with 166 observations. As far as the region is concerned, it is worthy of note the fact that Lombardy alone accounts for the 37.19 percent of the subsample of visible companies, a value more than double with respect to that of the other more populated regions. Visible firms appear therefore clustered mainly in a few areas, and in particular around Lazio and Lombardy, where the principal financial centers of the country (i.e. Rome and Milan respectively) are headquartered. On the contrary, non-visible firms, albeit concentrated in the South, appear widespread all over the country with no specific criteria, both in the most and less developed economic and financial centers of Italy.

Considering firms' performance, more than the 50 percent (53.21) of the total sample of non-financial firms with at least 25 observations of weekly returns is identified as profitable (corresponding to 912 observations). These companies appear clustered as well as the visible ones, being geographically concentrated in the north of the country (where the 76.75 percent is headquartered), and specifically in Lombardy (36.95 percent), Emilia-Romagna (13.49 percent), and Piedmont (12.72 percent), and in Lazio, where is located almost the 15 percent (14.36) of companies whose $Alpha_{t+1}$ Good_D equals to one. Excluding the latter region, less than 9 percent (8.88) of profitable firms is located in the southern and central Italy, including Islands.

Going further, and considering opacity from the accounting standpoint (see Table 20 – Panel C, Opaque Acc_D), it is possible to state that opaque firms follow a pattern similar to the profitable and visible ones, being located mainly in the northern areas of Italy (where the 75.28 percent is headquartered), and particularly in Lombardy (37.52 percent), Emilia-Romagna (14.33 percent), and Piedmont (12.48 percent). With the 18.03 percent of opaque companies (corresponding to 224 observations) Centre, where Lazio alone accounts for more than 10 percent (10.95) of observations, ranks second. As the so fare highlighted firms' concentration in northern Italy and Lazio for visible, profitable and opaque companies might be driven by the relevant number of listed companies in these areas, I considered the percentage of visible, profitable and opaque firms over the total number of non-financial companies in each region. In this perspective, only with reference to opaque companies, results change. Indeed, Abruzzo, Molise and Sicily (South), as well as Friuli-Venezia Giulia (North East), and Liguria (North West) present a percentage of opaque companies higher than 90 percent. Campania (South), Emilia-Romagna and Veneto (North East) follow, with a percentage around 75 percent. Results don't differ when opacity is considered according to market variables (i.e. Opaque Mrk_D, not reported for shortness) or conditionally to firms' profitability (see Figure 2, not reported for shortness).

Taken together, overall these findings suggest that Italy appears characterized by significant clusters in the supply for stocks together with a more widespread demand for securities. This generates a significant imbalance within the equity market and creates an ideal setting to test the local home bias. Moreover, the north of the country tend to be characterized by an higher presence of visible and profitable firms with respect to the south, while opaque firms appear more widespread throughout the country. This leads to expect that the local home bias, whether existing, is more likely driven in the North by an informational

advantage owned by local traders toward profitable companies, and in the South by investors' irrational behavior toward the non-visible ones.

5.2. The Italian equity-market segmentation due to local home bias

Previous evidences reported in Section 5.1. suggest the presence of relevant local unbalances between the demand and the supply for securities within the Italian equity market. In this section, I test whether the regional segmented equity-market conditions, as proxied by the RATIO variable, are actually able to affect corporate market evaluation. In Table 21, I first report the results of multivariate analysis by using the HKS2008's specification (which refers to Model 10 of Table 6 in HKS2008) applied to the Italian context (Model 1). In this sense, the difference between the model used in HKS2008 and Model 1 of Table 21 is the use in this latter specification of (the log of) Total Assets instead of (the log of) Sales, as proxy for firm's size. Given the dataset this study is based on, I made this choice in order to save observations. However, results don't change when the log of Sales is adopted. In light of Dyck and Zingales (2004), and Keloharju and Kulp (1996), in Model 2 I propose an additional augmented version by introducing as control variables both the natural logarithm of the sum between the constant one and the yearly number of articles concerning the firm from time to time considered (i.e. Log(1+Press Coverage)), and the natural logarithm of the sum between the constant one and the number of years of firm's life since foundation (i.e. Log(1+Firm Age)). This specification will represent the base model (Base Model) for comparison purposes. As can be seen from both Model 1 and Model 2, the effect of RATIO on the Market-to-Book Ratio is negative and statistically significant. Indeed, in Model 1 RATIO's coefficient equals to -0.197 and is significant at 5 percent level (t-stat: -2.31), while in Model 2, the coefficient equals to -0.114, being statistically significant at 10 percent level (t-stat: -1.91).

Table 21 – The regional rarity/abundance effect and the effect of firm's visibility

The dependent variable is the log of Market-to-Book Ratio. RATIO is the ratio of the aggregate Equity Book Value of firms headquartered in a given Italian region to the aggregate Disposable Income (less Equity Income) of the households living in the same region. Press Coverage is the yearly number of newspaper articles concerning the correspondent firm. Firm Age is the number of years since the firm's foundation. R&D to Sales is the ratio of R&D to Sales. ROE is the ratio of net profit income to the Equity Book Value. Firm Size is the value of total asset. FTSE_D equals one if the firm is included in the Italian equity-market's primary index and zero otherwise. No of Employees_D equals one if No of Employees is greater than the yearly cross-sectional median and zero otherwise. Press Coverage_D equals one if Press Coverage is greater than the yearly cross-sectional median and zero otherwise. Press Coverage Lag_D equals one if Press Coverage Lag is greater than the correspondent yearly cross-sectional median and zero otherwise. Press Coverage Star_D is equal to Press Coverage_D*Press Coverage Lag_D. IPO_D equals one if the firm did the IPO within the past two years and zero otherwise. Also included in the regressions (but not shown) are a dummy variable which equals to one if the firm does not report R&D (R&D_D), a set of four-digit SIC industry dummies, dummies for segment listing, and year dummies. *t*-statistics based on clustered standard errors by region are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% level, respectively.

		Dependent Variable: Log(Market-to-Book Ratio)							
		HKS2008	**Base Model**	**FTSE**	**Employees**	**Press Coverage**			**IPO**
Independent Variables		**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Constant		0.102	1.053***	1.334***	1.365***	1.163***	1.181***	1.249***	0.960***
		(0.34)	(4.32)	(5.95)	(4.49)	(4.61)	(4.71)	(4.99)	(3.93)
RATIO	β_1	-0.197**	-0.114*	-0.170**	-0.223***	-0.197***	-0.181**	-0.201***	-0.154***
		(-2.31)	(-1.91)	(-2.75)	(-4.20)	(-2.97)	(-2.89)	(-3.27)	(-3.00)
RATIO*FTSE_D	β_2			0.369***					
				(3.25)					
RATIO*No of Employees_D	β_2				0.243**				
					(2.25)				
RATIO*Press Coverage_D	β_2					0.188**			
						(2.43)			
RATIO*Press Coverage Lag_D	β_2						0.155***		
							(3.69)		
RATIO*Press Coverage Star_D	β_2							0.248***	
								(4.51)	
RATIO*IPO_D	β_2								0.223***
									(3.70)
Log(1+Press Coverage)			0.263***	0.242***	0.255***	0.233***	0.248***	0.232***	0.258***
			(10.31)	(11.18)	(11.67)	(10.60)	(10.53)	(10.25)	(10.21)
Log(1+Firm Age)			-0.115***	-0.117***	-0.117***	-0.112**	-0.116***	-0.117***	-0.100**
			(-3.02)	(-3.47)	(-3.25)	(-2.88)	(-3.13)	(-3.24)	(-2.48)
R&D to Sales		0.713	1.076	1.415**	1.002	0.945	0.958	0.912	1.060
		(0.84)	(1.35)	(2.17)	(1.10)	(1.06)	(1.18)	(1.08)	(1.32)
ROE		0.457***	0.426***	0.406***	0.430***	0.421***	0.427***	0.422***	0.411***
		(3.94)	(4.39)	(4.11)	(4.35)	(4.26)	(4.34)	(4.28)	(4.20)
Log(Firm Size)		0.031	-0.063**	-0.084***	-0.086***	-0.066**	-0.070**	-0.071**	-0.059**
		(1.33)	(-2.58)	(-3.45)	(-2.98)	(-2.65)	(-2.85)	(-2.91)	(-2.47)
Number of Observations		1666	1652	1652	1652	1652	1652	1652	1652
R^2 - Adjusted		0.358	0.447	0.458	0.452	0.450	0.449	0.452	0.450
Effect of RATIO on MB Ratio	$\beta_1 + \beta_2$			0.199	0.020	-0.009	-0.026	0.047	0.069
for Visible Firms (F-test)				(2.66)	(0.04)	(0.01)	(0.16)	(0.41)	(0.48)

As far as concerns the remaining control variables, as predicted I find a positive and statistically significant ROE coefficient in both Model 1 and Model 2 (t-stat equal to 3.94 and 4.39 respectively) , while the coefficient of Log(Firm Size) is significant (and negative) only in Model 2. On the other hand, R&D to Sales tends to be not significant in both specifications, and this is not unexpected considering the higher opaqueness of the accounting reporting in Italy compared to that of the US standard (see for instance, Mengoli, Pazzaglia, and Sapienza, 2011). The fit of the specifications, as measured by the adjusted R-squared is quite good, being at least equals to 35 (35.8) percent (Model 1). However, the improvement of this statistic indicator when moving from Model 1 to Model 2 (adjusted R-squared=44.7 percent) leads to consider the latter as the benchmark model for Italy.

From these preliminary results, similarly to what HKS2008 documented with reference to the American equity-market, the local home bias effect appears to be in place also within the Italian context. Specifically, an increase of the unbalance between the local supply and the local demand for stocks of one percent translates into a not trivial reduction of the Market-to-Book Ratio of about 0.197 and 0.114 depending on the control variables used. As expected, given the features of the Italian equity-market, the magnitude of the local rarity/abundance effect is about 44 (44.08) percent stronger than that documented by HKS2008 with reference to the American stock market (see HKS2008, Model 10 of Table 6). In light of the so far mentioned results, borrowing HKS2008 line of reasoning and using HKS2008's model (Model 1) for sake of comparison, a firm headquartered in a less developed Italian region (e.g. Abruzzo, RATIO=0) when compared to another located in a more economically advanced one (e.g. Lombardy, RATIO=0.559, thus implying a different RATIO of about 0.56, the same used by HKS2008) would face, *ceteris paribus*, an implied appreciation by investors of about 11.66 percent in terms of Market-to-Book Ratio. Estimates are as follow: 0.197 x 0.56 = 0.11, where 0.56 represents the difference of the RATIO

variable between the two regions, and 0.197 is the absolute value of coefficient of the RATIO variable. Consequently, the geographical component of the firm's market-to-book value would be $e^{(0.11)} - 1 = 0.1166$. When compared to the HKS2008 estimation of 8.09 percent, the measure in the Italian context is about 44 percent higher (0.1166/0.0809=1.44). Controlling for firm's press coverage and firm's age (Model 2), the magnitude of this effect decreases (to 6.59 percent) as does its statistical significance (p-value<0.10). Since press covered firms as well as older firms are more likely to be well-known by common (non local) investors, this evidence corroborates the idea that firm's visibility affects investor's preference for local.

Overall these evidences strongly support the consistency of the local home bias in Italy. Investors' tendency to prefer the geographically closest stocks seems indeed to be able to generate an equity-market (regional) segmentation which significantly affects firm's market value. This effect is appreciably stronger than that recorded in the US. In the light of the evidences so far highlighted and on the basis of the hypothesis of the research, in the following sections I study the roots of the regional rarity/abundance effect above documented, by testing whether it is attributable to the firm's (non-) visibility (cf. Model 3 – 8, Table 21) (Section 5.3.) and\or to firm's future profitability (cf. Model 3, Table 22) (Section 5.4.). As already mentioned, while the first element is expected to capture the behavioral root of local bias, the second one should catch the rational one (i.e. the presence of an informational advantage owned by local investors). In this sense, the latter effect should be more pronounced in relation to those future-profitable companies that manipulate earnings to mask their true performance, and for which informational asymmetries among local and non-local investors are likely to be larger, thus increasing with the degree of firm's opacity (cf. Model 4 -– Model 8, Table 22).

5.3. The role of firm's visibility

Table 21 (Model 3 – Model 8) reports the results obtained once the interaction terms between the variable RATIO and the different dummies used as proxy for firm's visibility are introduced in the Base Model (Model 2). The expectation is that well-known firms show a lower local home bias effect when compared to the rest of the sample since they are not purchased solely by local investors: the high and widespread demand for the securities issued by visible firms should lead local traders not to be able to generate a price pressure on stocks, pushing their market price up. In econometric terms, as this work's hypothesis implies a negative RATIO coefficient (β_1), this would translate into a positive coefficient of the interaction term (β_2) as discussed in the methodology section, meaning that the equity-market segmentation induced by investors' preference for local is less (more) pronounced for widely (local) known firms. Moreover, when removed from the smoothed effect enhanced by visible firms, β_1 should become even more negative. As already stated, several specifications of visibility dummy are considered, and in particular:

- FTSE_D, which takes value one if the firm is included in the Italian equity market's primary index (S&P MIB Index, MIB30 Index), and zero otherwise (Model 3);
- No of Employees_D, which equals one if the firm's number of employees is greater than the yearly cross-sectional median, and zero otherwise (Model 4);
- Press Coverage_D, which equals one if the firm's press coverage is greater than the yearly cross-sectional median, and zero otherwise (Model 5);
- Press Coverage Lag_D, which takes value one if the firm's press coverage in the previous year is greater than the yearly cross-sectional median, and zero otherwise (Model 6);

- Press Coverage Star_D, which equals one if the firm's press coverage both in the previous and in the current year is greater than the correspondent yearly cross-sectional median, and zero otherwise (Model 7);
- IPO_D, which takes value one if the firm listed in the stock market within the two previous years, and zero otherwise (Model 8).

Irrespective of the proxy used, in all models (Model 3 to 8) the interaction terms (β_2) are, as expected, positive and highly significant, thus suggesting an attenuating effect on the local home bias generated by visible firms. Indeed, the coefficient of the interaction term (β_2) varies from the minimum of 0.155, significant at one percent level in Model 6, to the maximum of 0.369, significant at one percent level in Model 3. This implies that the negative effect of the RATIO on the Market-to-Book Ratio is at least in part offset for the more visible companies. In fact, once their influence is removed, the RATIO coefficients (β_1) for the remaining sample increase both in magnitude and in statistical significance whether compared to the benchmark model (i.e. Model 2, where benchmark β_1 is recorded equal to -0.114 and statistical at ten percent level). As expected, the coefficients shrink, at least at the value of -0.154 (significant at one percent level) as recorded for Model 8, which identifies as visible firms those that made an initial public offering within the last two years. In light of these results, for instance being part of the primary Italian equity-market index, or being much cited by financial newspapers, would significantly reduce the local home bias phenomena. More specifically, as shown in the last row of Table 21 for Model 4 – Model 8, the overall effect of RATIO on the Market-to-Book Ratio for visible firms ($\beta_1+\beta_2$) dissolves in all specifications and is never significant (F-test): while non-visible firms are characterized by an actual local rarity/abundance effect, for the visible ones the same effect does not seem to exist since theirs Market-to-Book Ratio is independent from the local market conditions.

Therefore, the local inequality between demand and supply for stocks appear to influence non-visible firms only.

In this sense, a sensitivity analysis carried out using the results of Model 3 and again comparing two firms headquartered in different regions with a divergent RATIO of 0.56, shows that for both companies the market-to-book value would, *ceteris paribus*, be the same whether the firms were included in the stock market index (see dummy FTSE_D), as $\beta_1+\beta_2$ is not statistically significant, but different of about 10 percent whether they were not ($e^{(0.56x0.17)}$-1≈0.10). Again, considering the other proxies for visibility, the difference between the market-to-book value of the two above mentioned companies would differ, *ceteris paribus*, of about

- 13.30 percent ($e^{(0.56x0.223)}$-1≈0.13) for firms with a number of employees lower than the yearly cross-sectional median (Model 4);
- 11.66, 10.67, and 11.91 percent ($e^{(0.56x0.197)}$-1≈0.12; $e^{(0.56x0.181)}$-1≈0.11; and ($e^{(0.56x0.201)}$-1≈0.12) for firms reviewed in a number of newspaper's articles lower than the yearly cross-sectional median during the current, the previous, and both last two years respectively (Model 5, Model 6 and Model 7 respectively); and
- 9.01 percent ($e^{(0.56x0.154)}$-1≈0.09) for firms which did not go public in the last 24 months (Model 8).

Finally, once introduced the interaction terms, the pattern observed for the other explanatory variables is, as expected, in line with previous evidences (see Model 2). Indeed, the coefficients of both (the log of the sum between the constant one and) Press Coverage and ROE are always positive and significant at 1 percent level, those of both (the log of the sum between the constant one and) Firm Age and (the log of) Firm Size are negative and significant at least at five percent level, while R&D to Sales is in most models not significant. Exception in this case is constituted by Model 3, in which the R&D to Sales variable

becomes, as expected, significantly positively correlated with the Market-to-Book Ratio (coefficient equal to 1.415, significant at five percent level).

In line with this study hypothesis, overall these results provide evidence of the positive role exerted by the firm's visibility in affecting investors' choices. While more visible firms are traded regardless theirs location, the non-visible ones tend to be traded mainly locally. Indeed, investors are found to be willing to pay more only for local non-visible firms, signaling that the local home bias effect is not indistinctly widespread.

5.4. The role of firm's profitability

Model 3 of Table 22 reports the results of the multivariate analysis once the influence of firm's performance on the local home bias effect is taken into account. To this purpose, in the Base Model is introduced the interaction term between the variable RATIO and the dummy which identifies those firms with (Jensen's) Alpha above the median (RATIO*$Alpha_{t+1}$Good_D), which are the ones that best perform in the following year. In line with the hypothesis of the study, the expectation is that this interaction term attracts a negative and statistically significant coefficient, thus implying that the equity-market segmentation induced by investors' preference for local is more (less) pronounced for over(under)-performing firms.

On one hand, as expected, the coefficient of the interaction term is negative and significant, signaling the presence of the local home bias effect for those firms that best perform in the following year (β_2 = -0.120, significant at five percent level). On the other hand, the equity-market segmentation induced by the investors' preference for local vanishes for the remaining (worst performing) companies (β_1 = -0.061, p-value greater than ten percent). In figures, the overall effect of the local inequality between demand and supply for stocks on Market-to-Book Ratio becomes negative and significant for the future profitable

firms (bottom of Table 22; $\beta_1 + \beta_2 = -0.181$, significant at five percent level). For the other exogenous variables, signs are all as predicted and the pattern is similar to the previously documented one (Model 2).

Thus, when comparing two future profitable companies assuming that are headquartered in different regions with a divergent RATIO of 0.56, this effect translates into a divergence of the market-to-book value of 10.67 percent ($e^{(0.56x0.181)}-1\approx0.11$). Overall these results support the role exerted by the firm's profitability in affecting investors' choices. While non-profitable firms are traded regardless their location, the profitable ones tend to be traded locally, according to the local home bias phenomenon. Furthermore, since under the null that all investors have the same information profitable firms should be traded uniformly over the whole national territory, this evidence is consistent with the presence of an actual informational advantage owned by local investors. More simply, neighboring investors appear to be more skilled in selecting the most profitable firms. These evidences are also strongly consistent with that strand of literature showing that the closer are the players (analysts and banks) to the issuing firms, the better is their forecasting ability on firm's profitability (see among the others Malloy (2005), Bae, Stulz and Tan (2008), Degryse and Ongena (2005), and Agarwal and Hauswald (2010)).

5.5. The role of firm's opacity

Model 4 to 8 of Table 22 reports the results of the multivariate analysis once is taken into account the influence of firm's opacity conditionally to firm profitability on the local home bias effect. In this sense, I introduced in Model 3 of Table 22 a set of further interaction terms generically computed as RATIO*$Alpha_{t+1}$ Good_D*opacity dummy. By construction, as already mentioned in the methodological section, in this case the coefficient (β_2) of the interaction term RATIO*$Alpha_{t+1}$ Good_D estimates the effect of RATIO on the Market-to-

Book Ratio attributable to profitable but non-opaque firms, while the coefficient (β_3) of RATIO*Alpha$_{t+1}$ Good_D*opacity dummy estimates the additional rarity/abundance effect attributable to both profitable and opaque companies. Again, the coefficient (β_1) of the RATIO variable considers the effect of the average rarity/abundance effect for non-profitable and non-opaque firms. In light of the hypothesis of the study, the expectation is that β_3 will attract a negative coefficient, meaning that the equity-market segmentation induced by investors' preference for local is more (less) pronounced for profitable (as previously documented) and opaque (non-opaque) firms. This because local investors should prefer good local firms when they are opaque and therefore not well-identifiable by other (non-local) investors, rather than the well performing but non-opaque ones, that traders can detect regardless their location. Several specifications of opacity dummy are considered, and in particular:

- Return Skewness_D, which equals one if the yearly skewness of weekly stock returns' distribution (estimated upon a minimum of 25 weekly observations) is lower than the yearly cross-sectional median (signaling left tail asymmetry returns), and zero otherwise (Model 4);
- Return Kurtosis_D, which takes value one if the yearly kurtosis of weekly stock returns' distribution (estimated upon a minimum of 25 weekly observations) is greater than the yearly cross-sectional median (signaling high frequency of extremely high/low returns compared to the bell-curve), and zero otherwise (Model 5);
- Return Star_D, which equals one in presence of both negative skewness and positive kurtosis, i.e. if the stock return skewness and kurtosis are below and above the yearly cross-sectional median respectively, and zero otherwise (Model 6);

- Abs DiscAccruals_D, which takes value one if the absolute value of the firm's abnormal accruals is greater than the yearly cross-sectional median, and zero otherwise (Model 7)
- Ms3DiscAccruals_D, which equals one if the prior three years moving sum of the firm's absolute abnormal accruals is greater than the yearly cross-sectional median, and zero otherwise (Model 8).

As already mentioned in Section 3, the first three variables are able to capture the market opacity, while the last two variables consider the accounting opacity.

Table 22 – The regional rarity/abundance effect and the effect of firm's profitability and opacity

The dependent variable is the log of Market-to-Book Ratio. RATIO is the ratio of the aggregate Equity Book Value of firms headquartered in a given Italian region to the aggregate Disposable Income (less Equity Income) of the households living in the same region. Press Coverage is the yearly number of newspaper articles concerning the firm. Firm Age is the number of years since the firm's foundation. R&D to Sales is the ratio of R&D to Sales. ROE is the ratio of net profit income to the Equity Book Value. Firm Size is the value of total asset.α_{t+1}Good_D equals one if α in the following year is greater than zero and zero otherwise. Return Skewness_D equals one if Return Skewness is less than the yearly cross-sectional median and zero otherwise. Return Kurtosis_D equals one if Return Kurtosis is greater than the yearly cross-sectional median and zero otherwise. Return Star_D is equal to Return Skewness_D*Return Kurtosis_D. Abs DiscAccruals_D equals one if Abs DiscAccruals is greater than the yearly cross-sectional median and zero otherwise. Ms3DiscAccruals_D equals one if Ms3 DiscAccruals is greater than the yearly cross-sectional median and zero otherwise. Also included in the regressions (but not shown) are a dummy variable which equals to one if the firm does not report R&D (R&D_D), a set of four-digit SIC industry dummies, dummies for segment listing, and year dummies. t-statistics based on clustered standard errors by region are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

		Dependent Variable: Log(Market-to-Book Ratio)							
		HKS2008	**Base Model**	**Future Performance**	**Opacity**$_{\text{\| High Future Performance}}$				
Independent Variables		**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Constant		0.102	1.053***	1.022***	0.991***	1.040***	1.015***	1.018***	1.018***
		(0.34)	(4.32)	(4.96)	(4.57)	(4.95)	(4.75)	(5.01)	(4.99)
RATIO	β_1	-0.197**	-0.114*	-0.061	-0.065	-0.061	-0.062	-0.062	-0.062
		(-2.31)	(-1.91)	(-1.19)	(-1.28)	(-1.18)	(-1.19)	(-1.22)	(-1.22)
RATIO*Alpha$_{t+1}$Good_D	β_2			-0.120**	-0.058*	-0.086*	-0.085**	-0.053**	-0.062**
				(-2.84)	(-1.99)	(-1.85)	(-2.83)	(-2.21)	(-2.54)
RATIO*Alpha$_{t+1}$Good_D*Return Skewness_D	β_3				-0.133*				
					(-1.80)				
RATIO*Alpha$_{t+1}$Good_D*Return Kurtosis_D	β_3					-0.066*			
						(-1.92)			
RATIO*Alpha$_{t+1}$Good_D*Return Star_D	β_3						-0.224**		
							(-2.66)		
RATIO*Alpha$_{t+1}$Good_D*Abs DiscAccruals_D	β_3							-0.119**	
								(-2.44)	
RATIO*Alpha$_{t+1}$Good_D*Ms3 DiscAccruals_D	β_3								-0.088**
									(-2.23)
Log(1+Press Coverage)			0.263***	0.261***	0.261***	0.260***	0.261***	0.262***	0.260***
			(10.31)	(9.09)	(9.24)	(9.16)	(9.11)	(9.28)	(9.13)
Log(1+Firm Age)			-0.115***	-0.114**	-0.115**	-0.113**	-0.113**	-0.113**	-0.113**
			(-3.02)	(-2.80)	(-2.82)	(-2.75)	(-2.82)	(-2.76)	(-2.77)
R&D to Sales		0.713	1.076	0.871	0.858	0.894	0.877	0.905	0.887
		(0.84)	(1.35)	(0.95)	(1.04)	(0.98)	(1.03)	(0.98)	(0.98)
ROE		0.457***	0.426***	0.391***	0.394***	0.388***	0.391***	0.387***	0.389***
		(3.94)	(4.39)	(4.10)	(4.13)	(4.04)	(4.18)	(4.05)	(4.06)
Log(Firm Size)		0.031	-0.063**	-0.060**	-0.058**	-0.062**	-0.060**	-0.061**	-0.060**
		(1.33)	(-2.58)	(-2.78)	(-2.51)	(-2.80)	(-2.76)	(-2.87)	(-2.82)
Number of Observations		1666	1652	1576	1576	1576	1576	1576	1576
R^2 - Adjusted		0.358	0.447	0.451	0.452	0.451	0.453	0.452	0.452
F-test: Effect of RATIO on MB Ratio for Profitable (and Non-Opaque) Firms	$\beta_1 + \beta_2$			-0.181**	-0.123*	-0.147*	-0.147**	-0.115*	-0.124*
				(5.96)	(3.19)	(3.82)	(4.78)	(3.88)	(4.23)
F-test: Effect of RATIO on MB Ratio for Profitable and Opaque Firms	$\beta_1 + \beta_2 + \beta_3$				-0.256**	-0.213**	-0.371**	-0.234**	-0.212**
					(6.87)	(7.95)	(8.26)	(6.63)	(6.37)

In this framework, I find that the local home bias phenomenon is significantly exacerbated for opaque firms. Indeed, with respect to Model 3 of Table 22, for all the adopted specifications the coefficient of the RATIO variable remains negative but not-significant while the one of the first interaction term (RATIO*Alpha$_{t+1}$Good_D) is negative and significant. However, the magnitude of β_2 substantially decreased (β_2 varies from the minimum of -0.086 in Model 5 to the maximum of -0.053 in Model 7 and is always significant at least at ten percent level), implying that the negative effect of the RATIO on the Market-to-Book Ratio is in part offset for profitable and non-opaque firms. In this sense, opaque firms appear able to capture the additional statistically significant effect enhanced by the local inequality in the market for stocks. Indeed, the coefficients of the interaction terms accounting for opacity are, as expected, always negative and significant (β_3 varies from the minimum of -0.224 in Model 6 to the maximum of -0.066 in Model 5, and is always significant at least at ten percent level) implying that the negative effect of the RATIO on the Market-to-Book Ratio is more pronounced for both profitable and opaque firms. In this context, previous results about the impact of firms' profitability on local home bias persist, but appear more relevant for those companies characterized by higher information asymmetries. Once more, for the other exogenous, signs are as predicted and the patterns are similar to those previously discussed (Model 2).

Running the usual sensitivity analysis and referring to e.g. Model 6, on one hand I record an effect of local market inequality on the Market-to-Book Ratio for profitable and non-opaque firms which is always significant but less strong than that previously estimated (see Model 3). Indeed, $\beta_1 + \beta_2$ equals -0.147 significant at five percent level, which translates – *ceteris paribus* – into a divergence of the market-to-book value of 8.6 percent ($e^{(0.56x0.147)}$-1≈0.086) when comparing the two usual firms headquartered in different developed areas of the country (with a difference in RATIO of 0.56), whether profitable and whose variable

Return Star_D equal to zero. The effect is similar when comparing profitable and non-opaque companies headquartered in regions whose RATIO differs of 0.56 whose returns' skewness is above the yearly cross-sectional median (i.e. Return Skewness_D equal to zero; Model 4 – $e^{(0.56x0.123)}$-1≈0.071), whose returns' kurtosis is lower than the yearly cross-sectional median (i.e. Return Kurtosis_D equal to zero; Model 5 – $e^{(0.56x0.147)}$-1≈0.086), whose absolute value of abnormal accruals is lower than the yearly cross-sectional median (i.e. Abs DiscAccruals_D equal to zero; Model 7 – $e^{(0.56x0.115)}$-1≈0.067), and whose the prior three years moving sum of the abnormal accruals is lower than the yearly cross-sectional median (i.e. Ms3 DiscAccruals_D; Model 8 – $e^{(0.56x0.124)}$-1≈0.072).

On the other hand, this reduction reflects the highest effect of the imbalance between local demand and supply for stocks on both opaque and profitable firms. Indeed, when comparing companies headquartered in regions whose RATIO differs of 0.56, profitable and with returns' skewness and kurtosis respectively lower and above than the yearly cross-sectional median (i.e. Return Star_D equal to one, see Model 6), the impact of local market conditions on Market-to-Book Ratio is associated to a coefficient ($\beta_1 + \beta_2 + \beta_3$) equal to -0.371 which translates, *ceteris paribus,* into a 23 percent divergence in the market-to-book value ($e^{(0.56x0.371)}$-1≈0.23). According to this perspective, firms that present left (negative skewness) fat (positive kurtosis) tail returns are likely to be more prone to show the local home bias phenomena. Similarly, the implied difference in the firm's stock price for the above mentioned companies whose RATIO diverges of 0.56 is, *ceteris paribus,* estimated equal to

- 15.41 percent (i.e. $e^{(0.56x0.256)}$-1≈0.15) for profitable firms with a returns' skewness lower than the yearly cross-sectional median (Model 4),
- 12.67 percent (i.e. $e^{(0.56x0.213)}$-1≈0.12) for profitable firms with returns' kurtosis above the yearly cross-sectional median (Model 5),

- 14 percent (i.e. $e^{(0.56x0.234)}$-1≈0.14) for profitable firms with the absolute value of abnormal accruals above the yearly cross-sectional median (Model 7), and
- 12.61 percent (i.e. $e^{(0.56x0.212)}$-1≈0.12) for profitable firms with the prior three years moving sum of abnormal accruals above the yearly cross-sectional median (Model 8).

Overall these findings provide evidence of the role exerted by firm's opacity in determining investor choices. Indeed, the effect of local market conditions on market-to-book value is more than double (8.6 percent vs. 23 percent) for (profitable) opaque firms than for the (profitable) non-opaque ones. According to these results, I record that investors are willing to exploit local information advantage mainly when information asymmetry is actually in place, giving a hint of rationality to the local home bias, as based on a (successful) attempt to take advantage from local information not widespread in the market. Looking at the single characteristics proxied for firms' opacity, results on stock skewness are conflicting with contributes of Mitton and Vorkink (2007) and Goetzmann and Kumar (2008) who show that more under- diversified portfolios tend to overweight specific stocks and industries with higher skewness. In this sense, the local preference for opaque securities characterized by low skewness may be explained only with local traders knowledge of the stocks' future good performance. Again, given the well-known investors' aversion for kurtosis (see among the others Dittmar (2002)), the evidence that stocks with high kurtosis are significantly more intensively locally traded suggests that, similarly to skewness, local investors may consciously choose these stocks only when aware of their future profitability, thus more likely exploiting only the chance of extreme positive returns. The pattern observed for profitable stock with low skewness and high kurtosis strongly supports this arguments. Furthermore, evidences that local equity-market conditions are found to increasingly affect corporate market value also with the firm's tendency to make earnings management, suggest that informed investors are characterized by a rather high level of sophistication.

5.6. PCA - The local bias as irrational behavior vs. informational advantage

To provide a comprehensive framework capable to simultaneously capture the rational and/or behavioral nature of the local home bias, I report in Table 23 results controlled for multicollinearity problems that might come out using simultaneously the proxies for visibility, profitability and opacity. With this intent in mind, I use a two-step procedure that starts running PCAs which are able to reduce useless information at the same time keeping into account the useful one. As already mentioned in the methodological section (see Section 4.2.), on the basis of PCAs' factor scores, I construct dummy variables which are able to distinguish visible (Visible_D) from non-visible (Non-Visible_D), and opaque from non-opaque firms considering both accounting and market opacity (Opaque Acc_D and Opaque Mrt_D respectively), depending on whether the factors loading are above or below the median values. Subsequently, in the second step I compare the effects of the interactions among these dummy variables to estimate the relative importance of the single effects (i.e. of firm's visibility, profitability, and opacity).

More specifically, in Model 3 of Table 23 I substitute the variable RATIO with two distinct interaction terms calculated as RATIO*Visible_D and RATIO*Non-Visible_D. This is done to explicitly distinguish the effect of the RATIO on the Market-to-Book Ratio for visible and non-visible firms respectively, and to allow a simpler interpretation of the following models. With respect to Model 3, in Model 4 I introduce two further interaction terms (i.e. RATIO*Visible_D*$Alpha_{t+1}$ Good_D; RATIO*Non-Visible_D*$Alpha_{t+1}$ Good_D) designed to capture the additive effect of the RATIO on the Market-to-Book Ratio due to firm's profitability for visible and non-visible firms respectively. Following the same logic, with respect to Model 4, in Model 5 and Model 6 I include two additional interaction terms (i.e. RATIO*Visible_D*$Alpha_{t+1}$ Good_D*Opaque_D; RATIO*Non-Visible_D*$Alpha_{t+1}$ Good_D*Opaque_D) designed to capture the additive effect of the RATIO on the Market-to-

Book Ratio due to a firm's opacity given its profitability for visible and non visible firms respectively. In this sense, Model 5 considers accounting opacity (Opaque Acc_D), while Model 6 takes into account firms' market opacity (Opaque Mrk_D).

Table 23 – The regional rarity/abundance effect and the effect of firm's visibility, profitability and opacity

The dependent variable is the log of Market-to-Book Ratio. RATIO is the ratio of the aggregate Equity Book Value of firms headquartered in a given Italian region to the aggregate Disposable Income (less Equity Income) of the households living in the same region. Press Coverage is the yearly number of newspaper articles concerning the firm. Firm Age is the number of years since the firm's foundation. R&D to Sales is the ratio of R&D to Sales. ROE is the ratio of net profit income to the Equity Book Value. Firm Size is the value of total asset. Visible (Non-Visible) equals one if PC1_Visibility is greater (less) than the yearly cross-sectional median and zero otherwise. Alpha$_{t+1}$Good_D equals one if Alpha in the following year is greater than zero and zero otherwise. Opaque Acc_D equals one if PC1_Opacity is greater than the yearly cross-sectional median and zero otherwise. Opaque Mrk_D equals one if PC2_Opacity is greater than the yearly cross-sectional median and zero otherwise. Also included in the regressions (but not shown) are a dummy variable which equals to one if the firm does not report R&D (R&D_D), a set of four-digit SIC industry dummies, dummies for segment listing, and year dummies. t-statistics based on clustered standard errors by region are reported in parentheses. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels, respectively.

		Dependent Variable: Log(Market-to-Book Ratio)					
Independent Variables		**HKS2008** **(1)**	**Base Model** **(2)**	**Visibility** **(3)**	**Visibility & Future Performance** **(4)**	**Visibility & Future Performance & Opacity** **(5)**	**(6)**
Constant		0.102	1.053***	1.331***	1.298***	1.283***	1.304***
		(0.34)	(4.32)	(5.71)	(6.43)	(6.33)	(6.24)
RATIO		-0.197**	-0.114*				
		(-2.31)	(-1.91)				
RATIO*Visible_D	β_1			0.029	0.060	0.058	0.060
				(0.41)	(0.88)	(0.84)	(0.84)
RATIO*Visible_D*Alpha$_{t+1}$Good_D	β_2				-0.087**	-0.115**	0.071
					(-2.22)	(-2.17)	(0.78)
RATIO*Visible_D*Alpha$_{t+1}$Good_D*Opaque Acc_D	β_3					0.056	
						(0.80)	
RATIO*Visible_D*Alpha$_{t+1}$Good_D*Opaque Mrk_D	β_3						-0.234***
							(-2.58)
RATIO*Non-Visible_D	β_1			-0.270***	-0.183**	-0.183**	-0.185**
				(-4.63)	(-2.79)	(-2.81)	(-2.36)
RATIO*Non-Visible_D*Alpha$_{t+1}$Good_D	β_2				-0.128*	-0.138**	-0.083
					(-2.04)	(-2.38)	(-1.04)
RATIO*Non-Visible_D*Alpha$_{t+1}$Good_D*Opaque Acc_D	β_3					0.028	
						(0.25)	
RATIO*Non-Visible_D*Alpha$_{t+1}$Good_D*Opaque Mrk_D	β_3						-0.169**
							(-1.97)
Log(1+Press Coverage)			0.263***	0.232***	0.235***	0.235***	0.233***
			(10.31)	(10.17)	(8.68)	(8.71)	(8.59)
Log(1+Firm Age)			-0.115***	-0.110**	-0.111**	-0.110**	-0.113***
			(-3.02)	(-2.83)	(-2.71)	(-2.70)	(-6.72)
R&D to Sales		0.713	1.076	0.891	0.745	0.718	0.820
		(0.84)	(1.35)	(1.01)	(0.76)	(0.71)	(1.12)
ROE		0.457***	0.426***	0.420***	0.392***	0.389***	0.406***
		(3.94)	(4.39)	(4.25)	(3.99)	(3.96)	(3.84)
Log(Firm Size)		0.031	-0.063**	-0.078***	-0.076***	-0.075***	-0.076***
		(1.33)	(-2.58)	(-3.32)	(-3.51)	(-3.57)	(-4.34)
Number of Observations		1666	1652	1652	1576	1576	1576
R^2 - Adjusted		0.358	0.447	0.455	0.457	0.456	0.459
			Model (5)			**Model (6)**	
			Visible	**Non-Visible**		**Visible**	**Non-Visible**
Effect of RATIO on MB Ratio for Non-Profitable and Non-Opaque Firms (F-test)	β_1		0.058	-0.183**		0.060	-0.185**
			(0.84)	(-2.81)		(0.84)	(-2.36)
Effect of RATIO on MB Ratio for Profitable and Non-Opaque Firms (F-test)	$\beta_1 + \beta_2$		-0.057	-0.321**		0.131	-0.268***
			(0.42)	(13.24)		(1.78)	(11.50)
Effect of RATIO on MB Ratio for Profitable and Opaque Firms (F-test)	$\beta_1 + \beta_2 + \beta_3$		-0.001	-0.293**		-0.103	-0.437***
			(0.00)	(9.38)		(1.94)	(29.13)

Model 3 of Table 23 shows that, while the variable RATIO does not significantly affect the Market-to-Book Ratio when visible firms are taken into consideration (β_1 equals to 0.029 and is statistically non-significant), it becomes negative and highly significant for non-visible firms (β_1 is equal to -0.270, significant at one percent level). This evidence corroborates previous results about the importance of firm's visibility in affecting investor behavior. Indeed, also considering the new proxy for visibility as emerges from PCA, visible firms tend to be traded regardless their location, while the non-visible ones appear more intensively locally traded, according to the local home bias phenomenon and to the existence of a behavioral and irrational root of this latter.

Once introduced the interaction term for firm's profitability (Model 4), previous results still hold. Indeed, on one side the effect of the RATIO on the Market-to-Book Ratio remains not significant for both visible and non-profitable firms (β_1 equals to 0.060, and is significant at one percent level), and visible and profitable firms ($\beta_1 + \beta_2$ equals to -0.027, and is not significant; not reported for shortness). On the other side, local market conditions on average always impact on the market evaluation of non-visible companies, being the RATIO negative and significant for both non-visible and non-profitable firms (β_1 is equal to -0.183, significant at five percent level), and non-visible and profitable firms ($\beta_1 + \beta_2$ is equal to -0.311, significant at one percent level; not reported for shortness). However, for both visible and non-visible firms the additional effect of RATIO on the Market-to-Book Ratio due to firm's profitability is negative and significant (β_2 for visible companies equals to 0.087, significant at five percent level, while β_2 for to the non-visible ones is equal to -0.128, significant at ten percent level). This evidence suggests that profitable firms, regardless their visibility, tend to be more intensively traded locally according to the local home bias phenomenon and, above all, to the existence of an informational advantage owned by local investors.

These results are confirmed also once the interaction term for firm's opacity is introduced (see Model 5 and Model 6). Indeed, on one hand both in Model 5 and Model 6, the effect of the RATIO on firms' Market-to-Book Ratio remains not significant for visible, non-profitable, and non-opaque firms (β_1 equals to 0.058 and to 0.060, and is never significant in Model 5 and Model 6 respectively), for visible, profitable, and non-opaque firms ($\beta_1 + \beta_2$ is equal to -0.057 and to 0.131, in Model 5 and Model 6 respectively, and is never significant; see next-to-last row of Table 23), and for visible, profitable and opaque firms ($\beta_1 + \beta_2 + \beta_3$ equals to -0.001 and to -0.103, in Model 5 and 6 respectively, and is never significant; see last row of Table 23). On the other hand, it's negative and significant for non-visible, non-profitable, and non-opaque firms (β_1 is equal to -0.183 and to -0.185, significant at five percent level in Model 5 and Model 6 respectively), for non-visible, profitable, and non-opaque firms ($\beta_1 + \beta_2$ equals to -0.321 and to -0.268, significant at five percent and one percent level in Model 5 and Model 6 respectively; see next-to-last row of Table 25), and for non-visible, profitable and opaque firms ($\beta_1 + \beta_2 + \beta_3$ is equal to -0.293 and to -0.437, significant at five percent and one percent level in Model 5 and Model 6 respectively; see last row of Table 25).

On the basis of these results, considering the usual difference of 56 basis points of the RATIO variable for distinct regions, the implied difference in the firm's stock price for company headquartered in these areas, *ceteris paribus*, would be estimated equal to

- 10.92 percent (i.e. $e^{(0.56x0.185)}-1\approx0.11$) for non-visible, non-profitable and non-opaque firms;
- 16.19 percent (i.e. $e^{(0.56x0.268)}-1\approx0.16$) for non-visible, but profitable and non-opaque firms; and
- 27.73 percent (i.e. $e^{(0.56x0.437)}-1\approx0.28$)for non-visible, but profitable and opaque firms,

when market opacity is considered, and to

- 10.79 percent (i.e. $e^{(0.56x0.183)}$-1≈0.11) for non-visible, non-profitable and non-opaque firms;
- 19.69 percent (i.e. $e^{(0.56x0.321)}$-1≈0.20) for non-visible, but profitable and non-opaque firms; and
- 17.83 percent (i.e. $e^{(0.56x0.293)}$-1≈0.18) for non-visible, but profitable and opaque firms,

when opacity is defined from the accounting standpoint.

On one side, according to these results, once opacity is introduced in the model, the overall market evaluation of visible firms, regardless their profitability and opacity, appears never to be affected by local market conditions, while the one of non-visible companies always is. On the other side, in light of the overall effects above reported, the additional rarity/abundance effect due to opacity emerges only with reference to opaqueness measured in market terms rather than accounting terms. Indeed, Model 6 shows that the coefficients are negative and statistically significant both for visible and non-visible firms when opacity is defined on the basis of the market variables (β_3 equals to -0.234, significant at one percent level and to -0.169, significant at five percent level for visible and non-visible firms respectively), while they are found not-significant in Model 5, when opacity is defined on the basis of accounting variables (β_3 equals to 0.056, and to 0.028, and is never significant both for visible and non-visible firms respectively). This pattern could be reasonably attributed to the greater effectiveness in capturing the degree of opacity from marginal investors of the market variables with respect to the accounting variables. This hypothesis seems consistent considering that, once the interaction term for firm's opacity is introduced, the additional effect of profitable firms becomes insignificant for non-opaque firms in Model 6 (β_2 equals to 0.071, and to -0.083, for visible and non-visible firms, respectively, and is never significant), while it is even more significantly negative for non-opaque but profitable firms in Model 5 (β_2 is equal to -0.115, and to -0.138, significant at five percent level for both

visible and non-visible firms respectively). Moreover, the adjusted R-squared increases moving from Model 4 to Model 6, but it decreases moving from Model 4 to Model 5. These evidences indicate that profitable and opaque firms, regardless their visibility, tend to be more intensively traded locally according to the local home bias phenomenon and, above all, to the existence of an informational advantage owned by local investors.

Once more, as far as concern the other exogenous variables, signs are all as predicted and the pattern is similar to the previously documented one (Model 2). More specifically, on one side the coefficients of (the natural logarithm of the sum between the constant one and) Press Coverage and ROE are always positive and statistically significant at one percent level, thus positively affecting (the natural logarithm of) the Market-to-Book Ratio. Again, as expected both (the natural logarithm of the sum between the constant one and) Firm Age and (the natural logarithm of) Firm Size negatively and significantly affect (the natural logarithm of) the Market-to-Book Ratio. On the other hand, R&D to Sales tends to be not significant in all specifications and this is not unexpected considering the higher opaqueness of the accounting reporting in Italy compared, for instance, to the US one (see at this regard, Mengoli, Pazzaglia, and Sapienza, 2011).

Overall, these evidences support the existence of both a rational and irrational root of the local bias. Indeed, consistently with the latter, I find that less visible firms are locally more intensively traded even after controlling for the presence of an eventual investors' informational advantage. At the same time, consistently with the rational or informational root of the local bias, I find a tendency to prefer local non-visible firms if they are profitable and opaque, at least if the latter is measured on the basis of market variables. Moreover, consistently with the presence of an informational advantage due to proximity, I find also that more visible firms, for which the information asymmetries are likely to be lower, tend to be locally traded more intensively if profitable. Since the local rarity/abundance effect for non-

visible, non-profitable and non-opaque firms is likely to be linked to the simple irrational factor of familiarity with the issuing firm, and since an informational advantage implying an increase in a firms' valuation is likely to exist and to be exploited just with reference to profitable and opaque companies, I am able to decompose the aggregate results so far obtained, thus splitting the local bias effect in its rational and irrational component. In this sense, considering the impact of local home bias on firms' market price when a variation of the RATIO is considered as equal to 0.56, I can roughly but reasonably argue that the overall local home bias effect which incorporate both the informational and behavioral aspect equals to 27.73 percent (i.e. the market price component attributable to non-visible, but profitable and opaque firms, when market opacity is considered). Similarly, the local home bias effect which considers solely the irrational root of the phenomenon not accounting for the rational one is equal to 10.92 percent (i.e. the market price component attributable to non-visible, non-profitable and non-opaque firms, when market opacity is considered). In light of these results, it is possible to state that investors' preference for local is determined for about 60 (60.63 = (27.73 – 10.92)/27.73) percent by an informational advantage and for the remaining 40 (39.37) percent by the simple factor of familiarity with the issuing firms.

6. Conclusions

Investors' preference toward geographically proximate assets has been widely documented by financial literature. The phenomenon emerges not only in cross-country studies (home bias), where domestic stocks are preferred to the foreign ones (French and Poterba (1991); Cooper and Kaplanis (1994); Tesar and Werner (1995)), but also within the borders of single countries (local home bias), where securities are preferred as a consequence of an investor's geographical closeness to the firm's headquarters (Coval and Moskowitz (1999)). Such behavior is at least curios after considering the overall higher risk of the non-well diversified portfolio implied by the overweighting of domestic or local stocks (Grubel (1968); Levy and Sarnat (1970); Solnik (1974); Eldor, Pines, and Schwartz (1988); DeSantis and Gerard (1997); Lau, Ng, Zhang (2010)). At present, even if financial literature seems far from agree about its causes, the existence of the local home bias seems indisputable (see among the first Coval and Moskowitz (1999)). However, little empirical evidences have been provided regarding its implications on asset pricing equilibrium. In this context, previous studies showed that this preference generates locally segmented markets (Loughran and Schultz (2004), (2005); Pirinsky and Wang (2006)), and impacts on firms' market prices (HKS2008). In this sense, in areas characterized by reduced supply of securities (i.e. in areas where are headquartered a few listed firms with respect to the demand for stocks), the local unsatisfied demand for nearby assets would be concentrated over the few stocks locally available, pushing their price up (HKS2008). In particular HKS2008 in US, and Baschieri, Carosi and Mengoli (2010) in Italy find a direct proportionality between the level of "rarity" of a firm and its market evaluation: *ceteris paribus*, non-financial firms defined as Rare because located in geographical areas characterized by low ratio between local supply and local demand for securities are found to show higher Market-to-Book Ratios. These findings bring out the importance of spatial proximity as a peculiar element in investment decisions:

investors would prefer to pay a premium to invest in local securities in order to reduce the actual or merely perceived information asymmetries or, more simply, to include in portfolio stocks perceived as familiar. This premium is expected to be as big (small) as higher is the rarity (abundance) effect for local firms, and would be generated by the concentration of the demand of local investors over the few local stocks available, confirming the existence of locally segmented markets.

The existence of a significant and non-homogeneous local imbalance between potential demand for securities, fairly widespread on the national territory, and potential supply of stocks, mainly concentrated in a few districts, together with the cultural and institutional environment, makes Italy an ideal setting for analysis to investigate phenomena linked to locality in general, and in particular to the local home bias. This Ph.D. thesis draws on recent approaches to test the local home bias (see HKS2008), and presents evidence of the effect of geographical equity-market segmentation on firms' value in the Italian context, with a specific focus on the causes of phenomenon. In fact, considering the RATIO variable introduced by HKS2008 (i.e. the ratio of the local supply of stocks – computed as the regional aggregated equity book value of all listed firms headquartered in a given area – to the local demand for securities – calculated as the aggregated disposable income of the households living in the same area), I firstly test the existence of a geographical market fragmentation in the stock market triggered by investors' preference to invest locally through the analysis on whether local market conditions are able to affect firms' market value. Secondly, once investigated the existence of local home bias, I get light its causes by examining whether an irrational feeling of familiarity with the issuing firm (behavioral root) rather than the successful attempt by local investors to exploit an informational advantage not widely available to the public (informational or rational cause) drive the preference for local.

I run this analysis using a panel of 2,463 firm-year (end) observations over the period 1999-2007 - where each observation is a firm headquartered within Italian borders and listed on the Milan Stock Exchange. According to HKS2008 and to the well documented investors' preference towards local assets, after controlling for firm's size, future growth opportunity and profitability, I find that isolated firms benefit from the effect of a regional stock supply scarcity which translates into higher market value. As expected, given the characteristic of the Italian equity-market, the magnitude of this effect is about 45 (44.08) percent stronger than documented by HKS2008 with reference to the US stock market, suggesting that country features may play a crucial role in the local home bias phenomenon. In this sense, if hypothetically a firm moves from a region to another facing a decrease in the RATIO equal to 56 basis points, holding else equal, the implied increase in the firm's stock price would be about 11.66 percent. Once controlled also for firm's press coverage and age, the magnitude of this effect decreases up to 6.59 percent. The same reasoning might be done to confront the market evaluation of comparables companies headquartered in areas of the country which present different local market conditions (RATIO).

It is likely that the reasons for this magnitude with respect to HKS2008 results' in the US could be found in the lower enforcement of the insider trading rule (Bhattacharya and Daouk (2002)), the lower corporate information disclosure (Mengoli, Pazzaglia and Sapienza (2011)) and the greater degree of cultural regional segmentation (see at this regard for instance Grinblatt and Keloharju (2001)), factors that apply specifically to Italy. In this sense, on one side the low effectiveness of Italian insider trading law (Bhattacharya and Daouk (2002)) makes highly realistic the eventual illegal exploitation of an information advantage that might be acquired locally, "feeding" the informed component of local bias (see among others Meulbroek (1992)). On the other side, the political history of Italy, which for centuries before its unification hosted numerous and hostile kingdoms, makes extremely likely the

persistence of a cultural geographic segmentation that could eventually enhance the local home bias effect by exacerbating its behavioral component.

Once tested the existence of the local home bias in the Italian context, this research goes further by studying the nature of this effect. At this regard, although the wide number of studies which claim informational asymmetries as the cause of the phenomenon mainly by documenting the outperformance of locally biased portfolios (Shukla and Van Inwegen (1995); Coval and Moskowitz (2001); Hau (2001); Zhu (2003); Feng and Seasholes (2005); Ivkovic and Weisbenner (2005); Massa and Simonov (2006); Bodnaruk (2009); Teo (2009)), a different strand of literature states that a mere and irrational feeling of "familiarity" may be the driver of investors' choices toward local assets (Grinblatt and Keloharju (2001); Huberman (2001); Doskeland and Hvide (2011)). As results of the researches on the causes of the preference for local are far to be conclusive, this study contributes to the existing literature being able to discriminate between the possible drivers of the phenomenon by analyzing which firms this effect is more relevant for. To this end, I investigate the effect exerted on corporate market value by local equity market conditions for the subsamples of firms that are more likely to be known by investors, that are called "visible firms", that in the forthcoming year will experience extra-performance, that I called "profitable firms", and that, within these latter, are more likely to manipulate accounting results, and are therefore characterized by substantial information asymmetries, that I called (profitable and) "opaque firms". Following this study's hypothesis, an information-driven explanation would require not all firms to be exposed to the local home bias, but mainly those where a valuable informational advantage between local and non-local investors exists and can be exploited (i.e. opaque companies). In addition, when using this approach to distinguish between alternatives, an additional key role should be held by profitability. Detecting the local home bias mainly in future profitable firms would suggest that local information is exploitable as

being potentially profitable. In fact, also assuming that a local information advantage effect is in place, a local inadequate supply for stocks would not be able to enhance a firm's value if there is a poor prospect of future profitability. The same finding should not be enhanced by a mere behavioral explanation, such as a feeling of familiarity with the local firm, as this should be widespread independently of a firm's characteristics. In this sense, as long as the local home bias relies on the simple familiarity with the issuing firm, while firms just locally perceived somehow familiar would be, *ceteris paribus*, more intensively picked by local investors, the nationally-known ones would not experience the same phenomenon.

Within this framework, I find that the local home bias effect is not indiscriminately widespread among firms, being significantly stronger for less visible, more profitable and more opaque firms, in line with the hypotheses of this study. Indeed, I find that the local rarity/abundance effect is on average about the 70 percent stronger for less visible firms while not significant for the more visible ones (i.e. for the companies that are more likely known in all the country's territory and not just locally), that it's more than the 60 percent stronger for profitable firms and not significant for the non-profitable ones, and that it's on average more than twice stronger for profitable and opaque firms while only about the 15 percent stronger for the profitable but non-opaque ones.

Finally, once merged the analysis of visibility, profitability and opacity - consistently with previous findings - I find that the local rarity/abundance effect is inversely driven by firm's visibility and that it increases with firm's profitability and opacity. More specifically, I find that for the usual negative variation of the RATIO equal to 56 basis points, holding else equal, the implied increase in the firm's stock price is estimated equal to 10.92 percent for non-visible, non-profitable and non-opaque firms, to 16.19 percent for non-visible, but profitable and non-opaque firms, and to 27.73 percent for non-visible, but profitable and opaque firms. At the same time, although the same effects are found to be not significantly

different from zero with respect to visible firms, I find that the additional effect of the RATIO on the Market-to-Book Ratio moving from visible, non-profitable and non-opaque firms to the visible, profitable and opaque ones is negative and significant. Since an information advantage implying an increase both in trading and price is likely to exist and to be exploited with reference to profitable and opaque firms, I roughly but reasonably argue that the preference for local is determined for about the 60 (60.63 = (27.73 – 10.92)/27.73) percent by an informational advantage and for the remaining 40 (39.37) percent by the simple factor of familiarity with the issuing firms.

This research's findings add to the existing literature in several ways. First of all, from an academic standpoint, the first basic results on the effect exerted by local equity-market conditions on corporate market value extend out of sample HKS2008 results, thus providing further robustness to their findings. Moreover, in light of the peculiarities of the research context, the greater magnitude of the RATIO's effect documented with respect to the American equity-market is consistent with previous findings suggesting that the local home bias phenomenon is significantly influenced by cultural (cf. Grinblatt and Keloharju (2001), and Morse and Shive (2011)) as well as institutional factors (cf. Bhattacharya & Daouk (2002)). In this sense, the relation among insider trading law and investors' preference for local has not been addressed yet by financial literature, but represents a promising field of investigation.

Analyzing the single causes driving the phenomenon, this study's findings on dynamics related to firm's future profitability are new in literature. Notably, I find that firms that will outperform in the following year are more intensively traded within the region they are headquartered in than elsewhere. More simply, neighboring investors appear to be more skilled in selecting the most profitable firms. Overall these evidences, besides supporting the existence of an informational advantage held by local investors, are also strongly consistent

with that strand of literature showing that the closer are the players (analysts and banks) to the issuing firms, the better is their forecasting ability on firm's profitability (see among the others Malloy (2005), Bae, Stulz and Tan (2008), Degryse and Ongena (2005), and Agarwal and Hauswald (2010)).

Again, besides findings related to the role exerted by firm's profitability, also those referred to the influence of opacity on investors' choices are new in financial literature. At this regard, I find that the effect of local equity-markets conditions on corporate market value is leveraged by firm's opacity. These evidences are consistent and complement results of Bae, Stulz and Tan (2008) and Kumar (2009). In detail, Bae, Stulz, and Tan (2008) find that local analysts' informational advantage is closely tied to the quality of information disclosure, while Kumar (2009) shows that investors exhibit a positive bias-uncertainty relation, i.e. investors exhibit stronger bias when stocks are more difficult to evaluate, and that informed trading intensity is higher among stocks where individual investors exhibit stronger behavioral biases. The recently demonstrated significance of local social interactions (cf. Hong, Kubik, and Stein (2004)) and neighborhood word-of-mouth (cf. Hong, Kubik, and Stein (2005)) on investment decisions appears highly consistent with these arguments. Going further, also findings related to the single opacity measures considered in the study contribute to the existing literature. Specifically, results on stock skewness are conflicting with contributes of Mitton and Vorkink (2007) and Goetzmann and Kumar (2008) who show that more under- diversified portfolios tend to overweight specific stocks and industries with higher skewness. In this sense, the local preference for opaque securities characterized by low skewness may be explained only with local traders knowledge of the stocks' future good performance. Nevertheless, I complement this evidence showing that stocks with high kurtosis are significantly more intensively locally traded. Given the well-known investors' aversion for kurtosis (see among the others Dittmar (2002)), this evidence suggests that,

similarly to skewness, local investors may consciously choose high-kurtosis stocks only when aware of their future profitability, thus more likely exploiting only the chance of extreme positive returns. The pattern observed for profitable stock with low skewness and high kurtosis strongly supports this arguments. Furthermore, evidences that local equity-market conditions are found to increasingly affect the corporate market value also with the firm's tendency to make earnings management, suggest that informed investors are characterized by a rather high level of sophistication.

Finally, results on visibility are strongly consistent with a behavioral origin of the phenomenon, and in particular with previous evidences showing that the local home bias is stronger toward stocks issued by companies visible to investors (Huberman (2001)), and weaker with reference to the more nationally known firms and for the more sophisticated investors (Grinblatt and Keloharju (2001)).

In general terms, the simultaneous evidence of the double nature, rational and behavioral, of the local home bias is new in financial literature. What's more, it helps to settle the so-called home bias puzzle by providing a link between so far conflicting evidences. Thus, while some investors tend to trade local stocks because somehow familiar, many other select nearby securities because better informed. In light of these results, solely in context with the predominance of informed traders with respect to the biased ones, locally biased portfolios will generate extra-performances (see among the others Ivkovic and Weisbenner (2005)). In this sense indeed, local information works to be exploitable as really profitable and not indiscriminately public, assuming the nature of a sort of "insider information". Conversely, in the opposite situation, the same result is likely to not hold anymore (see among the others Seasholes and Zhu (2010)). In this line, this research results show that the general tendency to trade in local stocks, as well the probability to get outperformance from this strategy, strongly increases with the uncertainty. This results support findings of Kumar

(2009), which pointed out that "*uncertainty at both stock and market levels amplifies individual investors' behavioral biases and that relatively better informed investors attempt to exploit those biases*". In this framework, the proportion (of the trading activity) of the actually better informed investors on (the one of) those driven by a feeling of familiarity toward local firms becomes essential in determining and interpreting evidences on local home bias (as well as others portfolios distortions).

To future researches the task to understand which factors are able to move the balance between the rational and the behavioral component of local bias. Beyond the central role that with respect to the former is surely played by the enforcement of the insider trading law and the practices of corporate information disclosure, I believe that the degree of cultural integration is a key-factor. People tend to share beliefs and perceptions or, in other words, to interact with similar (Hong, Kubik, and Stein (2004); Ivkovic and Weisbenner (2007); Brown, Ivkovic, Smith, and Weisbenner (2008)). The greater is the cultural segmentation, the greater is likely to be the equity-market segmentation and the persistence of a bias, and ultimately the profitable exploitation of such market disturbances. In this perspective the fact that the local rarity/abundance effect observed in Italy, the "country of a hundred common", is on average the 50 percent stronger than in the US (almost 2.5 times if restricted to non-visible, profitable and opaque firms) could be explained.

From a practical point of view, this work's results suggest several policy implications for both companies and institutions called upon to promote the economic and financial development of our country. Regarding the former, an untapped potential would emerge for those firms headquartered in those areas usually considered depressed but characterized by high level of private savings. These firms could exploit the contextual effect to be rare goods together with the preference and willingness of a large audience of local investors: both factors could profitably converge in order to obtain new equity at a lower cost. In other

words, in case of IPO or SEO, these firms could exploit an exogenous feature that originates from their territoriality and which could significantly lower their cost of capital. Moreover, the local context could for instance represent a sort of poison pill against hostile takeovers because of the overestimation of these securities due to their territorial feature. From these considerations a second implication follows directly whose recipient are policy makers: since the companies headquartered in depressed areas of the country would gain from market segmentation, the disclosure of such evidence could feed various mechanisms addressed to their listing.

Moreover, this research results not only give useful directions in terms of pricing, highlighting the so far unexplored role of firms' location as a determinant of firms' market evaluation and the presence of a geographic component in firms' market price, but also help to discriminate among the companies that may actually exploit the rarity effect and benefit from the evaluation that derives from their territoriality. In this sense, in context with the predominance of informed traders with respect to the biased ones, the presence of a stock supply scarcity would not be sufficient to enhance opaque firms' market evaluation if these companies are not expected to be profitable in the future. In fact, as already stated, firms' could not exploit the territoriality effect just because they are located in areas of the county not populated by other companies, but necessarily need to be characterized by specific features that may help them to catch the informed (i.e. profitability and opacity features) or behavioral (i.e. non-visibility or, better, local-visibility feature) component of local home bias. To conclude, in general and academic terms, the results of this study bring out the importance in finance of companies' territoriality, an aspect only recently investigated and appreciated in the international economic-financial literature which nonetheless appears to be determinant not only for researchers but also for practitioners and financial market in general.

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