Another Look at Information Costs and Home Bias:

Evidence from Earnings Opacity and Financial Analysts' Forecasts

Alain Coën*

École des Sciences de la Gestion, Université du Québec à Montréal (UQÀM), Montréal H3C 4R2
And EUREQua Université Paris I Panthéon-Sorbonne

Aurélie Desfleurs

Faculté des Sciences de l'Administration, Université Laval, Sainte-Foy G1K 7P4

Abstract:

This paper investigates the relation between the home bias in equity holdings, financial analysts' forecasts and earnings opacity. We revisit the role of information asymmetries and information cost, focusing on forecast accuracy and measures of earnings opacity. Using high quality cross-border holdings data and introducing an estimator based on sample moments of order higher than two to reduce the bias induced by measurement errors, we confirm, improve and extend previous results obtained recently by Ahearne et al. (2004). First, we show that financial analysts' forecast accuracy may contribute to explaining the lack of diversification observed in U.S. portfolios. Second, we shed light on the relationship between earnings opacity measures and the home bias in equity holdings.

Keywords: *Analysts' forecasts; accounting standards; information asymmetries; earnings opacity; international portfolio choice*

JEL classification: *G11; G15; M40; K00*

- Corresponding author: +1 514 987 3000 (5680)
e-mail address: coen.alain@uqam.ca;

Acknowledgement:
We thank I/B/E/S for providing data. We also thank Benoît Carmichael, Denis Cormier, Jean-Claude Cosset, Jean-Olivier Hairault, Michel Levasseur, Jean-François L'Her, François-Éric Racicot, and Jean-Marc Suret for very helpful comments. The usual disclaimer applies. Alain Coën is from l'École des sciences de la gestion, Université du Québec à Montréal (UQÀM), case postale 6192, succursale Centre-Ville, Montréal (Québec) Canada H3C 4R2, e-mail: coen.alain@uqam.ca. We remain responsible for errors.

Another Look at Information Costs and Home Bias:

Evidence from Earnings Opacity and Financial Analysts' Forecasts

Abstract:

This paper investigates the relation between the home bias in equity holdings, financial analysts' forecasts and earnings opacity. We revisit the role of information asymmetries and information cost, focusing on forecast accuracy and measures of earnings opacity. Using high quality cross-border holdings data and introducing an estimator based on sample moments of order higher than two to reduce the bias induced by measurement errors, we confirm, improve and extend previous results obtained recently by Ahearne et al. (2004). First, we show that financial analysts' forecast accuracy may contribute to explaining the lack of diversification observed in U.S. portfolios. Second, we shed light on the relationship between earnings opacity measures and the home bias in equity holdings.

Keywords: *Analysts' forecasts; accounting standards; information asymmetries; earnings opacity; international portfolio choice*

JEL classification: *G11; G15; M40; K00*

1. Introduction

Although a sizeable body of literature has been dedicated to the analysis of the home bias in equity, this paradoxical phenomenon remains one of the foremost puzzles in international finance (Lewis (1999), Obstfeld and Rogoff (2001), Carmichael and Coën (2003) and Karolyi and Stulz (2004)). Investors tend to neglect potential gains of international diversification and to hold domestic equities, behavior that may be described as irrational. It is well acknowledged that two main barriers have been put forth to explain the home bias: direct barriers and indirect barriers.

Direct barriers notably include inflation hedging motives, institutional barriers, taxes on international investments, transaction costs on tangible assets, human capital and non-traded assets[1]. Nonetheless, the results of these studies are very inconclusive and seem unable to explain the home bias observed in portfolio composition. Under the hypothesis of symmetric information, exchange risk, deviations from purchasing power parity and restrictions on financial markets, often used to justify the existence of the home bias, have a very weak power of explanation (Uppal (1992), Cooper and Kaplanis (1994)). To confirm this point, home bias has been declining since the late 80's, especially on developed markets marked by significant deregulations during the last two decades.

With respect to indirect barriers, we focus our investigation to find a more convincing solution to the home bias puzzle. In fact, the main explanation for the home bias is probably related to investors' perception of international investment. If investors are convinced that they have to pay more to hold a foreign asset, all else being equal, they tend to hold more domestic assets. The costs they attribute to international investment

[1] See Eldor et al. (1988), Stockman and Tesar (1995), Baxter and Jermann (1997), and Baxter et al. (1998).

are real and assumed (or difficult to observe and to quantify). Merton (1987) described this behaviour and developed a model in which agents must incur prohibitive information costs to hold unfamiliar equities, which are thus perceived as riskier. In the same perspective, Heath and Tversky (1991) affirm that "… *holding judged probability constant, people prefer to bet in a context where they feel ignorant and uninformed*". They conclude that "*the competence hypothesis might also help explain why investors are sometimes willing to forego the advantage of diversification and concentrate on a small number of companies with which they are presumably familiar.*" As Solnik (2002) contends: "*Any unknown is perceived as risky: foreign capital markets are perceived as very risky by investors who are not familiar with them*". In behavioural finance, this statement could provide a rational explanation for this apparently irrational behaviour.

A growing body of literature has confirmed the predominant role of asymmetric information and informational costs in the tendency to hold domestic equities. Asymmetric information would explain why investors choose not to diversify their portfolio at equilibrium (Gehrig (1993), Brennan and Cao (1997)). For instance, Kang and Stulz (1997) analyze stock ownership in Japanese firms by non-Japanese investors from 1975 to 1991 and show that foreign investors hold disproportionately more shares of firms in manufacturing industries, large export-oriented firms and firms characterized by good accounting performance, low unsystematic risk, ADRs and low leverage. Their results confirm the importance of information asymmetry as one of the major barriers to international investment.

Brennan and Cao (1997) develop a theoretical model stating that domestic investors are better informed about payoffs on the domestic markets than are foreign investors. Their empirical results lead to the conclusion that American investors face asymmetric information when they invest abroad.

More recently, Portes et al. (2001), using a gravity model, have shown that informational asymmetries are major determinants of international transactions in financial assets. Their results support the hypothesis that informational asymmetries underlie the strong negative relationship between asset trade and distance. Huberman (2001) argues that shareholders of a Regional Bell Operating Company (RBOC) tend to live in the area that it serves, and an RBOC customer tends to hold its shares rather than other RBOC equity. These results clarify the role of familiarity and geographic proximity. As suggested by French and Poterba (1991), and corroborated by Coval and Moskowitz (1999), people invest in the familiar while often ignoring the principles of portfolio theory[2]. Grinblatt and Keloharju (2001) document the influence of distance in portfolio choice for Finnish investors. They show that investors in various municipalities in Finland are more likely to buy, hold, and sell stocks headquartered in nearby locations. Dahlquist and Robertsson (2001) have confirmed this feature for Sweden and emphasize the role of language and cultural factors in portfolio choice. Moreover, following Obstfeld and Rogoff (2001), Carmichael and Coën (2003) have shown in a simple overlapping general equilibrium model that a small information cost may lead to a large home bias. These studies affirm the predominant role of informational asymmetry, ranging from a concept of simple information flow (e.g. telephone traffic in Portes et al. (2001)) to some idea of

[2] See also Van Nieuwerburg and Veldkamp (2005).

familiarity (Grinblatt and Keholarju (2001), Dahlquist and Robertsson (2001) and Sarkissian and Schill (2004)).

Nevertheless, the analysis of home bias has suffered from a considerable lack of data on the effective composition of investors' holdings. To compensate for this problem, the United States Treasury published a comprehensive survey of US residents' holdings of foreign equities in December 1997. The survey gathers security-level data from the major custodians and large end-investors and therefore provides higher quality holdings data. Very recently, Ahearne et al. (2004) published the main results for a sample of 48 countries, and stressed the importance of a specific type of information: "*the information content inherent in US investor protection regulations. When firms issue public debt in the United States or list equity on US exchanges, barriers to US investors are reduced.*"[3] They demonstrate that "*the larger the share of a country's firms that publicly lists securities in the United States, the larger is its relative weight in the US equity portfolio, and the less is US investors' bias against its stocks.*"[4] Indeed, cross-listing tends to reduce direct costs and some indirect barriers. It guarantees foreign firms heightened visibility (Reese and Weisbach (2002)) and grants domestic investors better protection, leading the firms to produce higher quality financial information (Karolyi (1998), Foerster and Karolyi (1999), Lang et al. (2003), Leuz et al. (2003) Doidge et al. (2004))[5].

[3] Ahearne et al. (2004), pp. 316.
[4] Ahearne et al. (2004), pp. 316.
[5] To list equity on US exchanges, a foreign firm must reconcile its accounts with US generally accepted principles (GAAP), meet the SEC'S stringent disclosure requirements, and subject itself to the associated regulatory burden.

Thus, if it is acknowledged in the literature (Karolyi (1998), Baker et al. (2002), Pagano et al. (2002)) that cross-listing reduces informational asymmetries by forcing listed firms to comply with the US GAAP, differences in accounting standards may constitute a significant obstacle for portfolio diversification. Further, earnings management must be considered in the explanation of the home bias. Very recently, some articles (Bhattacharya et al. (2003), Leuz et al. (2003) and Hope (2003)) have examined differences in earnings management around the world. As a main result, it appears that earnings management decreases with investor protection. Thus, Bhattacharya et al. (2003) analyzed financial statements from 34 countries for the 1985-1998 period and constructed three dimensions of reported accounting earnings for each country: earnings aggressiveness, loss avoidance and earnings smoothing.

This paper analyzes the impact of these three measures of opacity on the home bias. Moreover, we contemplate the adoption of International Accounting Standards. IAS use would guarantee stronger visibility and easier interpretation of financial statements. Our results tend to educe a positive relationship between opacity and the home bias in equity. Moreover, the link between IAS use and the home bias is statistically negative. These preliminary results are consistent with efforts to convince numerous countries to adopt and to comply with internationally recognized accounting standards. Our result is consistent with the recent study led by Bradshaw et al. (2004) on investment by US institutional investors on non-US firms. They show that home bias in US investment results in preference for accounting practices familiar to US investors. They find that firms with higher degrees of conformity with US GAAP have greater levels of US institutional ownership.

If it is well known in the financial literature that information influences portfolio choice, it is important to analyze the quality of this information. To this effect, we evaluate the accuracy and quality of financial analysts' forecasts, which constitute one of the major sources of information for investors. Some people may deny the role and the real utility of financial analysts following the numerous scandals in the U.S.A and around the world, especially during the Asian crisis: financial analysts were unable to forecast the crisis and to revise their initial positions (Ang and Ma (2001), Coën and Desfleurs (2004)). Despite this justified mistrust, financial analysts tend to influence investors' behaviour through their forecasts and recommendations. The quality of the information they disclose should have an impact on portfolio choice. To date, the analysis of financial analysts' forecast accuracy and quality in a home bias perspective has been neglected by the literature. To analyze this informational feature provided by financial analysts, we study the impact of absolute forecast errors on the home bias in equity. Ceteris paribus, the larger the forecast errors, the higher the degree of home bias. Our results generally show that this relationship is far from evident. Indeed, no links have been affirmed between financial analysts' forecast errors and home bias in equity.

In fact, the real measure of home bias in equity may lie elsewhere. Empirical evidence shows that concentrated ownership is prevalent in countries with poor investor protection. If the rights of minority shareholders are poorly protected, those who control the firms can more easily use the firms' resources to pursue their own objective. As shown by La Porta et al. (1999, 2000) atomistic ownership, prevalent mostly in the U.S. and in the U.K., grants the best investor protection. In countries with poor investor protection, where firms are controlled by large shareholders, only a fraction of the shares issued can be freely traded and held by portfolio investors. The

definition of home bias put forth by Ahearne et al. (2004) tends to overestimate the degree of home bias in countries with high ownership concentration. Dahlquist et al. (2003) introduce a definition of home bias that incorporates this feature. Building on their findings, we adopt their measure and attempt to define its determinants. Our results clearly show that financial analysts' forecast errors are related to this new measure of home bias in equity. Thus, the role of financial analyst regains its importance. In addition, we show that the earnings opacity measures, especially earnings smoothing, which is very significant in the first step[6], have a minor power of explanation. These findings are quite logical, given that countries that offer poor investor protection tend to neglect the quality and the accuracy of the information disclosed. The degree of earnings opacity is therefore higher in these countries. Moreover, we show that the legal environment and measures related to the risks of expropriation, repudiation, and corruption, introduced by La Porta et al. (1998, 1999), are putatively related to the home bias.

To improve the validity of our results, we use and adapt an econometric estimator initially developed in a theoretical framework by Dagenais and Dagenais (1997) to reduce measurement errors. These errors are one of the major problems in applied financial econometrics. Errors in the variables may lead to the non-convergence of the OLS estimator, used very often in the financial literature, thus casting doubt on the results. Paradoxically, few theoretical and applied efforts have been made to reduce this considerable bias[7]. Recently, Dagenais and Dagenais (1997) argued that estimators based on moments of order higher than two "*performed better than ordinary least squares estimators in terms of root mean squared errors and also in*

[6] Using the definition of home bias proposed by Ahearne et al. (2004).

terms of size of type I errors of standard tests in many typical situations of economic analyses"[8]. The relevance of financial regression models ignoring this phenomenon is thus questionable. Consequently, we introduce and apply a new estimator based on cross-sample moments of order three and four. This new method significantly improves our results and justifies the choice of the variables analyzed and retained to explain the home bias in equity puzzle.

First, we define our conceptual framework in section 2. We present the data and explain our method for the measure of absolute financial analysts' forecast errors and a new econometric method in section 3. The analysis of results is given in section 4. Section 5 contains our conclusions.

2. Conceptual framework

2.1 Measures of direct barriers to international diversification of portfolios

According to the results of the International Capital Asset Pricing Model, economic agents looking for optimal diversification should hold a portfolio reflecting the market capitalizations of the different stock exchanges in the world[9]. This result assumes that there are no barriers or constraints to restrict access to financial equities. Many studies have modelled these barriers and analyzed their impact on optimal portfolio composition[10]. Studies of transaction costs have shown that their contribution to

[7] Hausman's (1978) instrumental variable test is often ignored in empirical econometrics.
[8] Dagenais and Dagenais (1997), pp. 193.
[9] This result is a direct consequence of the seminal work of Sharpe (1964), Lintner (1965) and Mossin on the Capital Asset Pricing Model. See Grubel (1968), Levy and Sarnat (1970), Solnik (1974), Adler and Dumas (1983) and Grauer and Hakansson (1987) for the fundamentals in international portfolio choice.
[10] See for example Black (1974), Stulz (1981), Errunza and Losq (1985, 1989) for emerging markets, Cooper and Kaplanis (1986, 1994) and Hietala (1989).

explaining the home bias in equity is very weak, mainly owing to numerous deregulation measures introduced in the 1980s. In a global world where international flows of capital are liberalized, transaction costs provide a poor solution to the puzzle.

Using partial equilibrium models, French and Poterba (1991), Cooper and Kaplanis (1986 and 1994) and Coën (2001) have shown for different samples and periods over the last two decades that the necessary theoretical transaction costs to justify the home bias in equity should be very high compared with real existing costs. Moreover, Tesar and Werner (1995), Bohn and Tesar (1996), Rowland (1999) and Warnock (2002) have demonstrated that existing transaction costs no longer constitute a barrier to international investment. Very recently, Ahearne et al. (2004), defining a new measure of home bias for an American investor on December 31, 1997, adopted in this article, demonstrated that transaction costs do not really solve the puzzle. Therefore, we will not consider these costs in our study.

Nevertheless, if transaction costs may be neglected, capital controls constitute restrictions on international investment. Very few measures of the degree of capital flows take into account liberalization. As Eichengreen (2001) affirms, most indicators of capital controls are qualitative, but provide no measure of the intensity of rules or restrictions that inhibit capital flows (Bekaert and Harvey (2000)). In the economic literature, most indicators are dummy variables based on restrictions reported in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions. Recently, Edison and Warnock (2003) developed a monthly measure of the intensity of capital controls for a large sample of countries[11]. This measure is defined as follows:

[11] Twenty-nine emerging markets are considered in their study.

$$RESTRICT = 1 - \frac{MC_{i,t}^{IFCI}}{MC_{i,t}^{IFCG}} \quad \textbf{(1)}$$

where MC is the market capitalization at time *t* of country *i*'s IFCI (International Finance Corporation Investable) or IFCG (International Finance Corporation Global) indices. IFCI is comprised of all stocks or portions of stocks in IFCG that are available to foreign investors, where availability is determined mainly by legal restrictions at the country, industry and firm levels. In our study, we use the measure of the intensity of capital controls[12] developed by Edison and Warnock for December 1997 [13].

2.2 Measures of indirect barriers to international diversification of portfolios

Here, we consider informational barriers to international diversification of portfolios. As shown by Ahearne et al. (2004), cross-listing tends to reduce informational barriers to holding of foreign assets. Their proxy for the reduction in information asymmetries, the portion of a country's market that has a public US listing, is a major determinant of a country's weight in US investors' portfolios. The authors demonstrate that "*foreign firms whose firms do not alleviate information costs by opting into the US regulatory environment are more severely underweighted in US equity portfolios.*"[14]

To extend and improve on the approach introduced by Ahearne et al. (2004), we use their variable USLISTED for the countries in our sample. We then focus on two important categories of variables: accounting variables and financial variables (specifically those related to financial analysts' activities).

[12] This database has already been used by Ahearne et al. (2004).

[13] We have also taken into account other economic variables such as growth of GDP, inflation, volatility of inflation, volatility of exchange rates, volatility of domestic financial indices, trade openness, capital intensity in the country, a GINI coefficient for industrial concentration in the country, firm size, insider trading indices, disclosure indices, legal corruption indices, cash flow risk indices,

Accounting measures:

Earnings opacity measures:

Recent studies have analyzed the impact of earnings management through the concept of opacity (Bhattacharya et al. (2003), Leuz et al. (2003), and Hope (2003)). Analyzing financial statements from 34 countries for the period 1985-1998, Bhattacharya et al. (2003) shed light on three dimensions of reported earnings: earnings aggressiveness, loss avoidance and earnings smoothing. Their results show that these three dimensions are associated with uninformative and opaque earnings. Therefore, we propose the following three definitions.

1) Earnings aggressiveness measure

Measured using accruals, earnings aggressiveness is defined as the "*tendency to delay the recognition of losses and speed the recognition of gains.*" According to Ball, Kothari and Robin (2000), the opposite of aggressiveness is accounting conservatism, i.e. the more timely incorporation of economic losses, as opposed to economic gains, into accounting earnings to reduce information asymmetry. Bhattacharya et al. show that accruals increase proportionately with earnings aggressiveness. Aggressive accounting is characterized by fewer negative accruals, which capture economic losses, and more positive accruals, which capture economic gains, thus increasing the overall level of accruals.

2) Loss avoidance measure

As documented by Burgstahler and Dichev (1997) and DeGeorge et al. (1999), many US firms engage in earnings management to avoid reporting negative earnings. Their

---

trade and monthly return indices. These variables are available upon request. Given that their

results demonstrate that some firms have incentives to report positive earnings. As Bhattacharya et al. (2003) contend, "*such loss avoidance behaviour obscures the relationship between earnings and economic performance, thus increasing earnings opacity*". The loss avoidance measure is defined as the ratio of the number of firms with small positive earnings minus the number of firms with small negative earnings divided by their sum. The higher the ratio, the higher the loss avoidance.

3) Earnings smoothing measure

As is well acknowledged in the accounting literature, if accounting earnings are artificially smooth, they fail to depict the true swings in underlying performance, thus decreasing the informativeness of reported earnings, which in turn increases earnings opacity.

Bhattacharya et al. (2003) and Leuz et al. (2003) define the earnings smoothing measure as the correlation between the change in accruals and the change in cash flows, both scaled by lagged total assets. "*The more negative this correlation, the more likely it is that earnings smoothing is obscuring the variability in underlying economic performance, and the greater is the earnings opacity*".

In this context, an increase in one of these earnings opacity measures should lead to an increase in the home bias. The higher the earnings opacity measure, the higher the home bias for an American investor. Moreover, we take into account the impact of accounting harmonization on portfolio holdings. The use of International Accounting Standards should lead to an improvement of financial disclosure for foreign investors, and thus, we hypothesize, to a decrease in the home bias.

---

explanatory power is very weak they are not presented here.

Financial measures: accuracy and quality of financial analysts' forecasts

By definition, the role of financial analysts consists in analyzing and interpreting financial statements in order to forecast earnings and returns before issuing recommendations. Their mission appears to be crucial to the disclosure of financial and accounting information to investors. Although they have often been criticized, we believe the accuracy of financial analysts' forecasts continues to influence the equity holdings of their clients. All things being equal, we anticipate that the better the quality of their disclosed information the weaker the investor aversion. If we apply this logic to the home bias puzzle, we can posit that better accuracy and better quality of analysts' earnings forecasts for firms in a given country should be associated with a smaller American home bias. The U.S. home bias should consequently be smaller for a country where financial analysts' forecasts are more accurate.

3. Data and method

3.1 Definitions and measures of home bias.

As Ahearne et al. (2004) argue, one of the major hindrances to empirical analysis of the home bias has been the lack of data on the origin of foreign equities held by investors. To define the weight of foreign holdings, studies have had to use aggregated OECD data (Cooper and Kaplanis (1994), Coën (2001)).

Previously, some studies used accumulated capital flows and valuation adjustments (Tesar and Werner (1995, 1998), Rowland (1999), Portes et al. (2001)). In a recent article, Warnock and Cleaver (2003) have shown that capital flow data are ill suited to estimate bilateral holdings. This type of data, designed for balance of payments

[14] Ahearne et al. (2004), pp. 313.

purposes, induce a bias and produce distorted holdings estimates. Note that the foreign country identified in flow data is that of transactor or intermediary, not the issuer of the security. In many cases the intermediary and the issuer differ; financial centers in the United Kingdom are a good example. According to Warnock and Cleaver (2003), inaccuracies in bilateral holdings estimated from flow data are quite large; "…*starting with known 1994 amounts, the mean absolute error in the end-1997 holdings estimates is 38 percent*".

Very recently, Ahearne et al. (2004) published a study revealing the real holdings of a representative US investor at the end of 1997. This is the first study to provide accurate measures of US holdings of foreign equities.

[Please insert Table 1]

Therefore, we have decided to use this database, also available on the website of the U.S. Treasury Department and Federal Reserve Board. The degree of bias of U.S. investors across the wide range of countries in the sample is expressed by the variable BIAS. BIAS is defined as the U.S. holdings in a country normalized by the country's market capitalization and then divided by the share of overall U.S. holdings in the worldwide market capitalization (a constant).

$$Home\ Bias = BIAS = 1 - \frac{Share\ of\ Foreign\ Equities\ in\ U.S.\ Portfolio}{Share\ of\ Foreign\ Equities\ in\ World\ Portfolio} \qquad \textbf{(2)}$$

Table 1 clearly illustrates that the real holdings of foreign equities are significantly smaller than forecast by the International Capital Asset Pricing Model and by financial theory advocating international diversification. Accordingly financial theory

(Levy and Sarnat (1970), Solnik (1974), Adler and Dumas (1983)) states that investors should hold the world market portfolio of risky assets to maximize risk-adjusted returns.

In the first step, we analyze this definition of home bias as put forth by Ahearne et al. (2004), along with their measure of home bias at the end of December 1997.

In the second step, we take into account the impact of corporate governance on portfolio holdings. Recently Dahlquist et al. (2003) empirically determined that differences in corporate governance environments across countries could help explain why investors exhibited a home bias in their portfolios. It is well acknowledged in the financial literature that most firms in countries with poor investor protection are controlled by large shareholders. In this context, only a fraction of the shares issued by firms in these countries can be freely traded and held by portfolio investors. Investors cannot hold the world market portfolio as long as most firms outside the U.S. are controlled by large shareholders. The shares in which U.S. investors can freely invest are the shares they own that are not closely held. To evince the close relationship between corporate governance and the portfolios held by investors, Dahlquist et al. (2003) have introduced a new measure of home bias. They constructed an estimate of the world portfolio of shares available to investors that are not controlling shareholders; the so-called world float portfolio.

Table 2 reveals that the world float portfolio differs considerably from the world market portfolio. The authors subsequently introduced a new measure of home bias; the bias relative to the world float portfolio, HBIAS.

[Please insert Table 2]

Using a measure of tradable shares only, the new definition of home bias in equity is defined as one minus the ratio of the proportion of available foreign equities in the U.S. and world float portfolios.

Therefore, the new measure of home bias when only a fraction of the shares issued by firms in the countries of our sample can be freely traded and held by portfolio investors is expressed by the following equation:

$$Home\ Bias = HBIAS = 1 - \frac{Share\ of\ \ Available\ Foreign\ Equities\ in\ U.S.\ Portfolio}{Share\ of\ \ Available\ Foreign\ Equities\ in\ World\ \ Portfolio} \quad \textbf{(3)}$$

This measure is constructed from the data provided by Ahearne et al. (2004) at the end of December 1997, and then adjusted to take into account the previously mentioned stylized fact of international corporate governance (See Table 2).

3.2 Accounting variables

We use the three measures of earnings opacity defined by Bhattacharya et al. (2003): earnings aggressiveness, loss avoidance and earnings smoothing. The data are derived from their study of 34 countries from 1985 to 1998.

Moreover, we take into account the impact of accounting and financial disclosure. The level of disclosure[15] comes from Saudagaran and Diga (1997), Table 2, page 46. Their original source is the Center for International Financial Analysis and Research (CIFAR 1995). We also consider the number of auditors per 100,000 population from

Saudagaran and Diga (1997)[16], Table 6, page 51. We analyze the role of international accounting standards using data from Choi et al. (1999), exhibit 8.6, page 264, which they obtained from the International Accounting Standards Committee (IASC insight dated October 1997). IAS use is represented as a dummy variable: 0 - completely independent standard setting, no use of IAS except possibly as a comparison with IAS; 1 - separate accounting standards that are used on and similar to IAS in most cases and IAS are used as national standards with some modifications for local conditions (standards not covered by IAS are added).

3.3 Legal and cultural variables

The legal variables are those defined by La Porta et al. (1998, and 1999), which constitute references in the literature: rule of law, corruption, risk of expropriation, risk of contract repudiation and efficiency of judicial system.

As Stulz and Williamson (2003) recently concluded, there is a close relationship between cultural features and accounting and financial practices. Here, we shed light on two cultural dimensions that potentially influence the home bias in equity: language, as suggested by Dahlquist and Robertsson (2001) and Grinblatt and Keloharju (2001), and religion. For our sample of 50 countries, we have divided each dimension into three variables. For the linguistic dimension we have considered the binary variables English language, Spanish language and other language. For the religious dimension, we have taken the binary variables Protestantism, Catholicism and other religion.

---

[15] This measure is often used in the financial accounting literature (see for example Leuz et al. (2003), Hope (2003) or Bhattacharya et al. (2003) among others). The higher the number, the greater the disclosure.

[16] The original source is the International Federation of Accountants (IFAC) secretariat, 8/13/1996. This measure is the most updated, available and convenient measure at that date for our study. We may mention that it is often used in the accounting literature (see Bhattacharya et al. (2003) for example).

3.4 Financial variables

Measures of quality and accuracy of financial analysts' forecasts

To measure the quality of financial analysts' forecasts on financial markets, we study one property of these forecasts. The magnitude of absolute forecast errors is used to analyze the accuracy of analysts. For each firm in our sample of 45 countries[17], we measure the spread between the reported earnings and the forecast earnings.

Data

We use consensus annual earnings forecast data provided by The International Institutional Brokers Estimate System (I/B/E/S) summary database for forty-five countries: the complete list of countries in Table 1, except for Egypt, Jordan, Luxembourg, Morocco and Zimbabwe. For each firm, we use the last forecast of annual earnings made prior to the fiscal year end. The available mean forecast at fiscal year end is the consensus forecast, and is considered in the sample only if at least three analysts have made a forecast. Our conclusions are the same whether we use the median consensus forecast instead of the average forecast or whether we use the last mean forecasts prior to the earnings release date instead of those available at the end of fiscal year.

Data have been adjusted to eliminate biased and extreme data. Extreme values on forecast errors may be caused by data errors or by transitory idiosyncratic factors (e.g. takeovers, mergers and acquisitions, major restructuring). Data are considered

[17] We use the countries listed in tables 1 and 2 except Egypt, Jordan, Luxembourg, Morocco and Zimbabwe.

extreme if they are off by 100%. This truncations rule developed by Brown *et al*. (1987a) is justified by our use of OLS.

After eliminating extreme data, our sample includes 45031 observations[18] from 1994 to 1996. Only 11954 forecasts are made by at least three analysts and are thus considered. We compute a mean of the absolute forecast error for each firm of our sample for the period[19] of 1994 to 1996. The number of firms followed by analysts varies during the decade and between countries, from year to year.

Our aim is to analyze the level of financial analysts' accuracy and its impact on the home bias on December 31, 1997 for an American investor.

Test of financial analysts' accuracy

To measure the accuracy of financial analysts, we study the absolute mean of forecast errors defined as the difference between the actual earnings and the mean forecast earnings, divided by the reported earnings[20]:

$$\left|FERE\right| = \left|\frac{e_{j,t}}{RE_{j,t}}\right| = \left|\frac{F_{j,t} - RE_{j,t}}{RE_{j,t}}\right| \qquad \textbf{(4)}$$

$FERE_t$ = forecast error for firm j divided by earnings per share for fiscal year t,

$e_{j,t}$ = forecast error for firm j earnings per share for fiscal year t,

$F_{j,t}$ = consensus forecast (*Forecast EPS*) for firm j and fiscal year t,

$RE_{j,t}$ = reported earnings per share (*Reported EPS*) for firm j and fiscal year t.

[18] Mean forecasts made at the end of the fiscal year.

[19] Descriptive statistics of the aggregated absolute forecast errors for each year and each country are available upon request. The three year period has been chosen to represent the mean of absolute forecast errors. This period is coherent with the period chosen by financial analysts and portfolio managers to lead a financial analysis.

[20] Forecast errors are deflated by earnings rather than stock price, which would cause forecast properties to be influenced by market conditions. Nevertheless, to improve our study, we have also deflated by prices, using prices available on I/B/E/S database. Our results lead to the same conclusions. Results are available upon request.

Fiscal year t is for 1994, 1995 and 1996. We then compute an arithmetic mean of absolute forecast errors, *ABSFERE*, and analyze the impact of this source of information on portfolio holdings of an American investor at the end of December 1997[21].

To complete our analysis, we study the dispersion of absolute forecast errors for all countries of our sample for the period of 1994 to 1996. Therefore, we introduce the variable DISPER.

3.5 Econometric method

It is well known in the economic literature that errors in the explanatory variables tend to lead to inconsistent ordinary least squares (OLS) estimators in linear regression models. As Dagenais and Dagenais (1997) assert, these errors lead to more perverse effects related to the confidence intervals of the regression parameters and an increase in the size of the type I errors. Many studies (Fuller (1987), Bowden (1984) and Aigner et al. (1984) for example) have proposed the use of instrumental variables[22] to obtain consistent estimators, when information on the variances of these errors is not available. Despite these suggestions, instrumental variables techniques are often neglected and no special effort is made to test for the presence of errors in variables[23]. As Pal (1980) noted, it is not always easy to verify that the available instrumental variables satisfy the required conditions to justify their use. Although the main problem faced by researchers is probably that eligible instruments are not easily accessible, Klepper and Leamer (1984) contend that researchers may consider the cost

[21] The aggregation of individual firm forecast errors at the country level is equally-weighted. Market-value weighted aggregation has been done and gives the same conclusions: results are available upon request.
[22] Alternative approaches to the errors in variables problem include those of: Frisch (1934), Klepper and Leamer (1984), Hausman and Watson (1985), and Leamer (1987).
[23] Using for example Hausman's (1978) instrumental variable test.

of collecting the additional data too large relative to the benefit derived from the possibility of producing more accurate estimators.

Following Durbin (1954) and Pal (1980), Dagenais and Dagenais (1997) have introduced new unbiased higher moment estimators exhibiting "*considerably smaller standard errors*". Hypothesis H0 states that there are no measurement errors in the variables, which implies that the estimators introduced by Durbin (1954) and Pal (1980) are unbiased. However, as Kendall and Stuart (1963) and Malinvaud (1978) demonstrate, these higher moments estimators have higher standard errors than the corresponding least squares estimators, and may be described as more erratic. Taking into account this feature, Dagenais and Dagenais (1997) have developed a new instrumental variable estimator, β_H, which is a linear matrix combination of the generalized version of β_d, Durbin's estimator, and β_p, Pal's estimator. To build on their main results, we propose and apply a higher moment estimator to our financial series related to home bias.

First, we briefly review the main problems caused by errors in variables. This problem results from the difference between the observed variable and the true unobservable variable. Although almost all economic variables are measured with this error, as acknowledged in the econometric literature, the statistical consequences of errors in explanatory variables are significant. The explanatory variables that are measured with errors are correlated with the error terms. The OLS estimators will consequently be biased and inconsistent.

To implement $\beta_{H,}$ Marcel Dagenais' estimator, we consider the following regression model[24]:

$$Y = \alpha_0 i_N + \widetilde{X}\beta_0 + u \qquad \textbf{(5)}$$

where $\widetilde{X}$ is a $N \times K$ matrix that contains the true stochastic exogenous variables measured without error. We assume that $\lim_{N\to\infty} \frac{\widetilde{X}'\widetilde{X}}{N} = Q$ where Q is a finite nonsingular matrix. The vector u, $N \times 1$, is a vector of residual errors with $E(u) = 0,\ E(uu') = \sigma_u^2 I_N$. Y is a $N \times 1$ vector of observations of the dependent variable. β is a $K \times 1$ vector to estimate, α is the constant and i, $N \times 1$, is a unit vector.

Generally, $\widetilde{X}$ is unobservable and the matrix X is observed instead, where:

$$X = \widetilde{X} + v \qquad \textbf{(6)}$$

where v is a $N \times K$ matrix of normally distributed errors in the variables. v is assumed to be uncorrelated with u and $cov(v_{ij}, v_{i+k,j'}) = 0, i = 1,...,N,\ j, j' = 1,...,K, k \neq 0$. Note that by definition: $v = E(v) + v - E(v)$, then $\mathrm{E}(v) = \kappa$; $\omega = v - \mathrm{E}(v)$ and $v = \kappa + \omega$

It follows that regression (1) can be written as the following equation:

$$\begin{aligned} Y &= \alpha_0 + X\beta_0 + u - v\beta_0 \\ &= \alpha_0 + X\beta_0 + u - \kappa\beta_0 - \omega\beta_0 \\ &= \alpha_0 - \kappa\beta_0 + X\beta_0 + u - \omega\beta_0 \end{aligned} \qquad \textbf{(7)}$$

In practice, the equation estimated by ordinary least squares is:

$$Y = \alpha i_N + X\beta + \varepsilon \qquad \textbf{(8)}$$

with $\varepsilon = u - v\beta$

[24] Here, we consider only errors in independent variables. It is widely recognized in the econometric literature (See Davidson and MacKinnon (2004) for example) that no bias occurs when only the dependent variable is plagued with measurement errors.

Equations (7) and (8) evince two main points. First, when errors in variables exist, the constant terms in OLS regression will be biased.[25] Second, it is clear that the estimator of β is also biased since the residual of equation (8) is correlated with the regressors.

If we apply OLS to equation (8) we obtain:

$$\hat{\beta} = \beta + (X'X)^{-1} X'\varepsilon \qquad \textbf{(9)}$$

This estimator is not convergent:

$$p\lim(\hat{\beta}) = \beta\left[1 - \frac{\sigma_v^2}{\sigma_{\tilde{x}}^2}\right] = \beta(1-\lambda) \text{ with } \lambda = \frac{\sigma_v^2}{\sigma_{\tilde{x}}^2} \leq 1 \qquad \textbf{(10)}$$

We can conclude that the OLS estimator in the presence of errors in variables is asymptotically biased and is non-convergent. It clearly appears that errors in variables tend to underestimate[26] $\hat{\beta}$.

Even though this problem is well known in econometrics, no attempt is generally made to correct or even verify its existence. Dagenais and Dagenais (1997) propose the solution of introducing a new higher moment estimator, β_H, which is a linear matrix combination of the generalized version Durbin's estimator (1954), and Pal's estimator (1980).

MacKinnon (1992) asserts[27] that Dagenais and Dagenais estimator can easily be estimated with artificial regressions. The contribution of this procedure is twofold. First, we can test the null hypothesis (H_0) that there are no errors in the variables by applying a Durbin-Wu-Hausman type test. Second, if errors in variables are detected, the estimator is automatically corrected to take this bias into account. As mentioned earlier, Dagenais

[25] This point may be very important in the financial literature where the constant term defines abnormal return. We will analyze the consequences of this finding later in the paper.
[26] The level of underestimation is conditioned by λ. The closer λ is to 1, the greater the problem of errors in variables.
[27] See also Davidson and MacKinnon (1993).

and Dagenais (1997) demonstrated that this higher moment (HM) estimator, β_H, performed better than ordinary least squares estimators. Moreover, if there is no error in variables then β_H and β_{OLS} are identical. This procedure used by Dagenais and Dagenais (1997) may be described as follows: The first step consists in constructing an estimate of the true regressors, using K artificial regressions, with X as a dependent variable and higher moments of X as independent variables. X may be described by the following equation:

$$X = (i, z_1, z_2)\Gamma + w \quad \textbf{(11)}$$

where:

$$z_1 = x * x, \quad z_2 = x * x * x - 3x\left[E(x'x/N) * I_K\right] \quad \textbf{(12)}$$

x_{ij} are the elements of the matrix x and $x = AX$ where $A = I_N - ii'/N$. The matrix x stands for the matrix X calculated in mean deviation.

Γ is a $N \times K$ matrix containing estimators and w is a $N \times K$ matrix containing error terms with $E(w) = 0$. We apply OLS on $X = (i, z_1, z_2)\Gamma + w$ to obtain $\hat{\Gamma}$, then we compute $\hat{X} = (i, z_1, z_2)\hat{\Gamma}$. We introduce the matrix $\hat{x}$ standing for the matrix $\hat{X}$ calculated in mean deviation and used as a matrix of instruments. We use the same formula for y, where $y = AY$. In this case Dagenais and Dagenais' estimator, β_H, can be written as follows:

$$\beta_H = (\hat{x}'\hat{x})^{-1}\hat{x}'y \quad \textbf{(13)}$$

with $x = (z_1, z_2)\hat{\Gamma} + \hat{w}$ and $\hat{x}'\hat{w} = 0$.

The estimator, β_H , based on cross-sample moments of order three and four,[28] captures specification errors. Therefore the bias should asymptotically disappear while it is inherent to the OLS estimator.

The main element in this approach is ŵ, which represents the difference between the observed X and the estimated X, $\hat{X}$.

The second step consists of adding the K estimates of errors in variables in regression (8):

$$Y = \alpha_H i_N + X\beta_H + \hat{w}\beta_{\hat{w}} + e \qquad \textbf{(14)}$$

where $\hat{w} = X - \hat{X}$ **(15)**

with $\hat{X} = (i, z_1, z_2)\hat{\Gamma}$ and $X = (i, z_1, z_2)\hat{\Gamma} + \hat{w}$ under H_0.

Under hypothesis H_0, that there are no errors in the variables, we have $X = \widetilde{X}$; $\alpha_H = \alpha$; e = u; $\beta_{\hat{w}} = 0$; and $\beta_H = \beta$ with OLS.

Furthermore, to test hypothesis H0 we regress the dependent variable Y on X and $\hat{w}$. We cannot reject H0 if all coefficients related to $\hat{w}$ are equal to zero; $\beta_{\hat{w}} = 0$. We consequently use the t-test to detect the presence of errors in the variables. We perform separate errors in variables (EV) tests for each of the X variables, that is separate tests for each of the elements of the vector of artificial parameters. As Dagenais and Dagenais (1997) report, the usual F-test is also convenient and will be used.[29]

To summarize the procedure, we apply the following decision rule. First we test for the presence of errors in variables using artificial regression techniques as suggested by Davidson and MacKinnon (1993). Second, if H0 cannot be rejected, we must use

[28] See Dagenais and Dagenais (1997).

the OLS estimator, otherwise we use the higher moment estimator β_H developed by Dagenais and Dagenais (1997).

4. Analysis

4.1 Determinants of home bias in equity

The first step entails analysis of the determinants of home bias in equity, using the definition of home bias provided by Ahearne et al. (2004) (BIAS), presented in previous sections. In the second step, we focus on the analysis of the factors that can explain the puzzle. According to the definition by Dahlquist et al. (2003) (HBIAS): home bias must be considered when only a fraction of shares are available to foreign investors. We regress the variable BIAS—the degree of US investors' home bias against each country on December 31, 1997—on a vector of explanatory variables that includes direct and indirect barriers to international investment, discussed in the previous sections, as well as control variables such as trade links and historical risk-adjusted returns.

As shown by Kang and Stulz (1997) and corroborated by Portes et al. (2001) and very recently by Ahearne et al. (2004), firms that have high ratios of US to total sales may be more likely to list in the United States. U.S. investors may naturally have more information on these firms and hence be more likely to hold their stocks. Evidence supporting this link may be found in Pagano et al. (2002), Sarkissian and Schill (2004), and Doidge et al. (2004). Therefore, like Ahearne et al. (2004), we control for this familiarity effect by including a measure of trade[30].

[29] See also Dagenais (1994).
[30] Trade data are from IMF *Direction of Trade Statistics Yearbook*, 1999.

We also consider the role of historical risk-adjusted returns. According to financial theory, if portfolio decisions are based partly on past returns, then US investors might tend to underweight countries whose stock markets have performed poorly. We use a measure based on the monthly return to capture this type of momentum[31].

As mentioned in the section devoted to econometric method, we analyze the presence of measurement errors in our regression, using the new higher moment estimator introduced by Dagenais and Dagenais (1997).

The results of multivariate regressions are reported below in tables 3A and 3B. Table 3A reports the main results with OLS regressions. In Table 3B we show the results with the new higher moment instrument variable (IV) estimator developed by Dagenais and Dagenais.[32]

[Please insert Table 3A]

As proved by Ahearne et al. (2004), the variable USLISTED appears statistically significant in all regressions. The strong negative link between USLISTED and BIAS shows that countries with the highest portion of a country's market publicly listed on US stock exchanges suffer less from the American home bias. The variable, RESTRICT, used by Ahearne et al. (2004), is very weakly significant, although it confirms a positive relationship with BIAS. Home bias in equity increases as capital controls intensify. This measure developed by Edison and Warnock (2003) seems to have a relatively weak power of explanation at the end of December 1997.

[Please insert Table 3B]

[31] This is the mean return over the standard deviation of returns, where returns are changes in the country's MSCI Price Index calculated over the period of 15 quarters preceding 1997Q4. Data were obtained from www.mscidata.com.

[32] Table 3A and Table 3B present the main significant results of our numerous regressions. All results, using the different variables and combinations mentioned in the previous sections are available from the author upon request.

We subsequently focus on the results obtained using higher moment estimator, β_H. As the results presented in Table 3B reveal, there are no errors in variables in the regression run. The estimates included in the vector of artificial parameters related to $\hat{w}$ (obtained with artificial regression technique) are not equal to zero, but are not statistically significant at 10%. This important observation leads us to use OLS estimators rather than higher moment (HM) estimators. We cannot reject the null hypothesis (H0): there are no errors in the variables in the regressions. This result tends to confirm our analysis and conclusions with OLS estimators (Table 3A).

It is striking to note that the variable IAS underlines a strongly negative link with BIAS. As we suggested earlier, countries adopting and using International Accounting Standards (IAS) increase their visibility for US investors. This very interesting result tends to confirm that accounting harmonization may lead to a decrease in the home bias and significantly improve capital flows around the world, thus confirming our hypotheses.

Nonetheless, we are forced to conclude that the two measures related to the accuracy and the quality of financial analysts' forecasts are not at all significant. The variable ABSFERE, absolute forecast errors from 1994 to 1996, and the variable DISPER, the dispersion of errors, seem unable to explain the phenomenon of home bias. While we anticipated a significantly positive relationship with home bias, our results tend to demonstrate that it is not significant. Moreover, the variable representing the absolute financial analysts' forecast error defined by equation (4) tends to reveal the presence of errors in variables in regression (4). In regression (4) in Table 3B, we observed that the artificial parameter related to ABSFERE is not statistically significant at 10%. For this special case, we can reject the null hypothesis (H0): there are no errors in the

variable ABSFERE in regression (4). This point confirms that the variable ABSFERE is unable to explain the home bias in equity puzzle when the dependent variable, BIAS, is defined by equation (2). Should we then conclude that information disclosed by financial analysts has no impact on portfolio holdings? It is certainly premature to put forth definitive conclusions, but this observation casts doubt on financial analysts' role.

Nevertheless, we observe interesting and encouraging results for the measures of earnings opacity introduced by Bhattacharya et al. (2003). If the measures representing earnings aggressiveness and loss avoidance are not statistically significant, the sign of their coefficients tends to show that earnings opacity could constitute a hindrance to international diversification. This trend is confirmed by the variable that represents the analysis of earnings smoothing. This variable is invariably statistically significant at 5% and sometimes at 1%. Accordingly, investors are very affected by earnings smoothing and tend to invest in countries where these practices are widespread.

In contrast, cultural factors, more specifically those related to language, are not statistically significant.[33] Therefore, we cannot prove that U.S. investors tend to invest in English-speaking countries, as Dahlquist and Robertsson (2001) and Grinblatt and Keholarju (2001) conclude for Scandinavian investors.

4.2 Determinants of home bias when only a portion of shares is available

As Dahlquist et al. (2003) demonstrate, the structure of shareholders' holdings in some emerging markets is often very concentrated. In such contexts, foreign shareholders are generally unable to hold all issued shares. Only a relatively small

[33] These results, not reported in Tables 3A and 3B, are available upon request.

fraction of ordinary shares can actually be traded by foreign investors. This stylized fact must be taken into account. Consequently, we use the new measure of the home bias defined by Dahlquist et al. (2003), HBIAS.

As in the previous case, we regress this variable on a vector of explanatory variables. Note that this new measure of home bias is very different from the previous one. A sharp contrast was observed in markets where corporate governance barriers to international diversification remain. Emerging markets are a noteworthy case.

[Please insert Table 4A]

Results confirm our previous conclusions. The variable USLISTED is consistently very significant. The variable IAS is very significant as well, encouraging efforts to improve accounting harmonization. The variable RESTRICT still seems to have a relatively weak power of explanation. As reported in Table 4B, it tends to induce measurement errors for regression (2). For this variable we can reject the null hypothesis (H0) that there are no errors in the variables at 5%.

Further, the various measures of opacity are not yet significant for this new definition of home bias. This finding may appear disappointing at first glance, but it must be put into perspective. It is well known in the financial literature that high ownership concentration may be related to earnings management, leading to an increase in opacity. The new definition of home bias considerably modifies the relationship between home bias and earnings opacity discussed in the previous section. If we consider that there is a positive relationship between ownership concentration and earnings opacity measures, the relationship between the definition of home bias, when only a fraction of issued shares can be traded by US investors, and earnings opacity is

absolutely not affirmed. In fact, we may suggest that the hindrance generated by earnings opacity disappears in the new measure of home bias. It would be worth analyzing this phenomenon in future research.

The most significant relationship is between HBIAS and ABSFERE. This variable is significant at 5% and sometimes at 1%. While we could anticipate a positive relationship between HBIAS and ABSFERE, the US home bias now appears weaker for countries with high ownership concentration. Often, the new measure of home bias accounts for less than 50% of the classic measure of home bias. This decline in home bias is greater because the countries under study are emerging.

Studies of the performance of financial analysts have shown that forecast errors made on emerging markets were often important (Coën and Desfleurs (2004) for Asian emerging markets). With this feature in mind, we can reasonably anticipate a negative relationship between the degree of home bias and the accuracy of financial analysts' forecasts. As Table 4A illustrates, our results strongly support this hypothesis. Moreover, countries with high ownership concentration also tend to restrict information disclosure. Thus, US investors are indeed exhibiting rational behaviour, in that they prefer to invest in countries with the greatest availability of information, and the weakest absolute forecast errors. The results reported in Table 4B to detect eventual errors in variables cannot reject or invalidate these observations. The variable ABSFERE apparently does not induce any measurement errors in regressions explaining the home bias when only a fraction of issued shares are available for foreign investors.[34] In addition, the variable DISPER is not statistically significant.

[Please insert Table 4B here]

[34] In addition, the variable DISPER is not statistically significant.

The legal measures defined by La Porta et al. (1998) (that were not significant in Ahearne et al. (2004)) are now statistically significant. The risks of expropriation and of repudiation are statistically significant at 5%. Yet the variables associated with rule of law and corruption are not statistically significant. Nevertheless, we cannot draw definitive conclusions based on these findings. Consistent with the results obtained for higher moment (HM) estimators, the variable related to the level of corruption, CORRUPT, induces errors in variables. If we focus on the variable reporting the measure of repudiation, REPUD, we observe in equation (9) of Table 4B, that the variables USLISTED, IAS, and ABSFERE are now sources of measurement errors. This result casts doubt on the role of the variable REPUD in explaining the home bias in equity puzzle. Nonetheless, we can reasonably acknowledge the role of the risk of expropriation, EXPRO, in equations (8), reported in Tables 4A and 4B.

5. Conclusions

This article sheds new light on the home bias in equity puzzle on December 31, 1997 and applies a new econometric method to take errors in variables into account. We have considered two measures of home bias; the measure defined by Ahearne et al. (2004) and the measure introduced by Dahlquist et al. (2003). The first measure is consistent with the definition of home bias acknowledged in the financial literature, whereas the second measure captures the relationship between corporate governance and home bias. In countries with poor investor protection, only a fraction of the shares issued can be traded by foreign investors. This stylized fact tends to reduce the real home bias in equity.

We have presented some solutions to the puzzle related to asymmetric information. First, we confirmed and generalized by means of a new econometric method the very recent results published by Ahearne et al. (2004) for the two measures of home bias. Our results have indeed confirmed that the portion of a country's market that has a public US listing is a major determinant of a country's weight in US investors' portfolios.

We have analyzed accounting variables in detail. Our results allow us to draw conclusions that would be worth investigating in future research. IAS use tends to significantly improve financial disclosure, thus furthering the numerous efforts over two decades to achieve better harmonization. U.S. investors show a weaker home bias for countries using IAS. Further, we have analyzed the relationship between home bias and earnings management: "*earnings aggressiveness*," "*loss avoidance"* and "*earnings smoothings.*" We have shown that there is a significant link between earnings smoothing and home bias. Earnings opacity should contribute to solving the home bias in equity puzzle.

To improve our results and to avoid measurement errors and errors in explanatory variables, we have also applied a new econometric method developed by Dagenais and Dagenais (1997). Measurement errors are indeed one of the major problems in applied financial econometrics. Errors in variables may lead to the non-convergence of the OLS estimator, very often used in the financial literature, thus casting doubt on the results. We have compared the performance of the OLS estimator and higher moment (HM) instrument variable estimators. The results induced by higher cross-sample moments confirm our hypotheses and show that errors in variables are not statistically significant and may be neglected in this study. For the regressions

reported, we cannot reject the null hypothesis (H0) that there are no errors in the variables. This important result tends to confirm the conclusions drawn with OLS estimators.

Furthermore, we have evinced a link between the quality of financial analysts' forecasts and the home bias in equity. To measure the accuracy of financial analysts, we have computed the absolute mean of forecast errors. This relationship is striking and statistically very significant when we consider the new measure of home bias developed by Dahlquist et al. (2003), i.e. when only a fraction of shares issued is tradable for foreign investors. Moreover, we have reported that measures related to the risks of repudiation and expropriation seem significant with this new definition.

These encouraging results should be further explored in a microeconomic perspective. This approach could expand on the conclusions obtained here in a macroeconomic perspective. We leave this investigation for future research.

Table 1

US portfolio holdings and international stock market measures, 31st December 1997.

Country	Weight for all Investors (%)	World Market Portfolio Weight (%)	Bias Relative to Market
Argentina	0.098	0.26	0.6231
Australia	0.237	1.297	0.8173
Austria	0.028	0.157	0.8217
Belgium	0.046	0.601	0.9235
Brazil	0.239	1.12	0.7866
Canada	0.539	2.49	0.7835
Chile	0.035	0.316	0.8892
China	0.017	0.905	0.9812
Czech Republic	0.006	0.056	0.8929
Denmark	0.068	0.411	0.8345
Egypt	0.006	0.091	0.9341
Finland	0.113	0.322	0.6491
France	0.647	2.958	0.7813
Germany	0.495	3.619	0.8632
Greece	0.012	0.15	0.9200
Hong Kong	0.214	1.813	0.8820
Hungary	0.027	0.066	0.5909
India	0.047	0.563	0.9165
Indonesia	0.019	0.128	0.8516
Ireland	0.107	0.217	0.5069
Israel	0.054	0.199	0.7286
Italy	0.316	1.512	0.7910
Japan	1.038	9.722	0.8932
Jordan	0	0.024	1.0000
Korea	0.034	0.184	0.8152
Luxembourg	0.041	0.149	0.7248
Malaysia	0.036	0.411	0.9124
Mexico	0.266	0.687	0.6128
Morocco	0.002	0.053	0.9623
Netherlands	0.814	2.056	0.6041
New Zealand	0.04	0.134	0.7015
Norway	0.072	0.292	0.7534
Pakistan	0.009	0.048	0.8125
Peru	0.018	0.077	0.7662
Phillippines	0.022	0.138	0.8406
Poland	0.012	0.053	0.7736
Portugal	0.053	0.171	0.6901
Singapore	0.078	0.466	0.8326
Slovakia	0	0.008	1.0000
South Africa	0.076	1.018	0.9253
Spain	0.192	1.274	0.8493
Sri Lanka	0.001	0.009	0.8889
Sweden	0.295	1.196	0.7533
Switzerland	0.471	2.523	0.8133
Taiwan	0.038	1.262	0.9699
Thailand	0.016	0.103	0.8447
Turkey	0.046	0.268	0.8284
United Kingdom	1.656	8.755	0.8109
Venezuela	0.015	0.064	0.7656
Zimbabwe	0.001	0.009	0.8889

Data are from Treasury Department and Federal Reserve Board, 2003. United States Holdings of Foreign Long-Term Securities as of December 31, 1997. BIAS, bias relative to market is computed following Ahearne et al. (2004).

Table 2
US portfolio holdings and international stock market measures, 31st December 1997 when not all shares are available for purchase by portfolio investors.

Country	Weight for Portfolio Investors (%)	World Portfolio Weight (%)	Bias Relative to Float
Argentina	0.127	0.157	0.1911
Australia	0.307	1.245	0.7534
Austria	0.036	0.09	0.6000
Belgium	0.06	0.406	0.8522
Brazil	0.31	0.47	0.3404
Canada	0.699	1.627	0.5704
Chile	0.045	0.142	0.6831
China	0.022	0.361	0.9391
Czech Republic	0.008	0.016	0.5000
Denmark	0.088	0.393	0.7761
Egypt	0.008	0.069	0.8841
Finland	0.147	0.314	0.5318
France	0.839	2.343	0.6419
Germany	0.642	2.555	0.7487
Greece	0.016	0.047	0.6596
Hong Kong	0.278	1.326	0.7903
Hungary	0.035	0.042	0.1667
India	0.061	0.429	0.8578
Indonesia	0.025	0.051	0.5098
Ireland	0.139	0.24	0.4208
Israel	0.07	0.106	0.3396
Italy	0.41	1.206	0.6600
Japan	1.347	7.651	0.8239
Jordan	0	0.011	1.0000
Korea	0.0444	0.143	0.6895
Luxembourg	0.053	0.063	0.1587
Malaysia	0.047	0.251	0.8127
Mexico	0.345	0.648	0.4676
Morocco	0.003	0.035	0.9143
Netherlands	1.056	1.74	0.3931
New Zealand	0.052	0.039	-0.3333
Norway	0.093	0.22	0.5773
Pakistan	0.012	0.014	0.1429
Peru	0.023	0.031	0.2581
Phillippines	0.029	0.086	0.6628
Poland	0.016	0.024	0.3333
Portugal	0.069	0.142	0.5141
Singapore	0.101	0.256	0.6055
Slovakia	0	0.005	1.0000
South Africa	0.099	0.612	0.8382
Spain	0.249	0.942	0.7357
Sri Lanka	0.001	0.009	0.8889
Sweden	0.383	1.207	0.6827
Switzerland	0.611	2.394	0.7448
Taiwan	0.049	1.253	0.9609
Thailand	0.021	0.056	0.6250
Turkey	0.06	0.1	0.4000
United Kingdom	2.148	10.072	0.7867
Venezuela	0.019	0.031	0.3871
Zimbabwe	0.001	0.007	0.8571

Data are from Treasury Department and Federal Reserve Board, 2003. United States Holdings of Foreign Long-Term Securities as of December 31, 1997. HBIAS, bias relative to float is computed following Dahlquist et al. (2003).

Table 3/A

The determinants of home bias in U.S. holdings of equities.

12/31/97	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
USLISTED	-0.35296***	-0.33281***	-0.38062***	-0.38369***	-0.34850***	-0.30037***	-0.33133***	-0.34646***	-0.32633***
	(0.05875)	(0.05884)	(0.05887)	(0.06017)	(0.06679)	(0.06712)	(0.05681)	(0.05417)	(0.05584)
RESTRICT	0.06816	0.09644							0.08279
	(0.04845)	(0.06789)							(0.06467)
IAS		-0.07210***	-0.06088**	-0.06007**				-0.04957**	-0.05891**
		(0.02448)	(0.02348)	(0.02361)				(0.02317)	(0.02405)
DISPER			-0.49024						
			(0.35104)						
ABSFERE				-0.25691					
				(0.19647)					
EAROPAC					-0.16622				
					(0.45055)				
LOSSAV						0.09102			
						(0.06408)			
SMOOTH							-0.11140**	-0.08979**	-0.08449**
							(0.04202)	(0.04098)	(0.04075)
N	48	33	33	33	33	33	33	33	33
ADJ. R2	0.5455	0.5732	0.5723	0.5690	0.4614	0.4931	0.5617	0.6084	0.6168

Dependent variable is BIAS. Constants are included but not reported. White (1980) standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels respectively.

Table 4/A

The determinants of home bias in U.S. holdings of equities when not all shares are available for purchase by portfolio investors.

12/31/97	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
USLISTED	-0.39426** (0.18521)	-0.17956 (0.13996)	-0.33772** (0.13525)	-0.38639*** (0.12804)	-0.38956*** (0.12804)	-0.44108*** (0.13079)	-0.41602*** (0.12781)	-0.46651*** (0.12649)	-0.45236*** (0.11971)
RESTRICT	0.25069 (0.15276)	0.27769* (0.16150)							
IAS		-0.15389** (0.05823)	-0.12053** (0.05395)	-0.11470** (0.05073)	-0.09892* (0.05178)	-0.09117* (0.05168)	-0.10502** (0.04997)	-0.08457* (0.04947)	-0.07776 (0.04797)
DISPER			-1.83632** (0.80651)						
ABSFERE				-1.32010*** (0.42214)	-1.10975** (0.45025)	-1.19094*** (0.41980)	-1.09119** (0.43859)	-1.00277** (0.42078)	-1.04087** (0.39636)
REPUD									0.05048** (0.01869)
EXPRO								0.05147** (0.02310)	
RULELAW						0.02097 (0.01330)			
ENFORCE					0.01601 (0.01274)				
CORRUPT							0.01985 (0.01291)		
N	47	33	33	33	33	33	33	33	33
ADJ. R2	0.194	0.1919	0.2446	0.3341	0.3472	0.3666	0.3640	0.4142	0.4529

Dependent variable is HBIAS. Constants are included but not reported. White (1980) standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels respectively.

Table 3/B: The determinants of home bias in U.S. holdings of equities using higher moment estimators

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
USLISTED	-0.461223***	-0.072633**	-0.064633**	-0.055361**	-0.507191***	-0.3471941***	-0.393367***	-0.057292*	-0.058459**
	(0.138312)	(0.026293)	(0.028925)	(0.023644)	(0.123001)	(0.100769)	(0.129259)	(0.028265)	(0.026697)
ŵ	0.182878	-3.29E+12	-5.75E+12	-2.75E+13	0.273080	0.098767	0.132698	-8.65E+12	-2.01E+11
	(0.194962)	(8.22E+13)	(3.13E+13)	(2.81E+13)	(0.179995)	(0.150317)	(0.180021)	(2.36E+13)	(1.71E+12)
RESTRICT	0.002203	-0.366728***							0.062125
	(0.095499)	(0.109760)							(0.071539)
ŵ	0.109964	0.103048							0.159858
	(0.252569)	(0.154587)							(0.465949)
IAS		0.082942	-0.437061***	-0.488270***				-0.376607***	-0.110250
		(0.076530)	(0.128429)	(0.089729)				(0.074718)	(0.242543)
ŵ		0.045882	0.112208	0.135319				0.111564	-0.039837
		(0.477555)	(0.166031)	(0.135319)				(0.122879)	(0.518769)
DISPER			-0.849824						
			(1.135078)						
ŵ			0.349001						
			(1.216910)						
ABSFERE				-0.873470**					
				(0.383366)					
ŵ				0.831441*					
				(0.453698)					
EAROPAC					-0.742160				
					(0.633350)				
ŵ					0.821379				
					(1.058199)				
LOSSAV						0.056351			
						(0.088184)			
ŵ						0.078024			
						(0.135784)			
SMOOTH							-0.107478**	0.168794	-0.380575
							(0.043153)	(0.700743)	(0.073865)
ŵ							-0.275123	-0.246374	0.158893
							(0.407490)	(0.827482)	(0.124999)
N	48	33	33	33	33	33	33	33	33
Adj. R2	0.533895	0.536226	0.535959	0.576143	0.467620	0.468166	0.552908	0.582708	0.582039

Dependent variable is HBIAS. Constants are included but not reported. Standard errors are in parentheses. ***, **, and * indicate significance at the 1, 5, and 10% levels respectively. We run the regression (equation 14) to analyse eventual errors in variables, using higher moment (HM) instrumental variable estimators.

Table 4/B: The determinants of home bias when some shares are not available for investors using higher moment estimators

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
USLISTED	-0.645627	-0.296429	-0.543261**	-0.483877**	-0.403987**	-0.215796	-0.421986**	-0.658567***	-1.197257***
	(0.430578)	(0.205313)	(0.243937)	(0.184074)	(0.174171)	(0.246301)	(0.198176)	(0.184921)	(0.259620)
ŵ	0.647850	0.318260	0.471439	0.381176	0.274772	0.051809	0.440046	0.409274	0.909467**
	(0.606934)	(0.300012)	(0.337133)	(0.281886)	(0.274774)	0.327123	(0.287040)	(0.300635)	(0.338855)
RESTRICT	0.134689	0.292331*							
	(0.297298)	(0.159122)							
ŵ	-0.244551	-2.469721**							
	(0.786270)	(1.008475)							
IAS		-0.163836**	-0.096715	-0.121935**	-0.092213*	-0.114669**	-0.089797	-0.077804	0.026995
		(0.069474)	(0.056884)	(0.049965)	(0.053657)	(0.052189)	(0.052929)	(0.050528)	(0.056004)
ŵ		-3.13E+12	5.23E+13	-2.95E+13	4.32E+12	1.01E+14	-3.78E+12	3.90E+13	2.67E+14***
		4.78E+13	(3.67E+13)	(2.40E+13)	(5.23E+13)	(5.31E+13)	(1.00E+13)	(8.48E+13)	(8.97E+13)
DISPER			-3.499679						
			(2.265476)						
ŵ			1.072107						
			(2.472493)						
ABSFERE				-1.030906	-0.173955	-0.756246	-0.086996	-1.895136**	-2.910458***
				(0.894086)	(0.813828)	(0.773460)	(0.756689)	(0.800668)	(0.787765)
ŵ				-0.263078	-1.546709	-0.458794	-1.418112	1.079807	2.047498**
				(1.031697)	0.998353	(0.914841)	(0.914142)	(0.955748)	(0.911403)
REPUD									0.004791
									(0.024522)
ŵ									0.030947
									(0.047186)
EXPRO								0.057021**	
								(0.027103)	
ŵ								-0.083080	
								(0.072362)	
RULELAW						0.023488			
						(0.015529)			
ŵ						-0.029303			
						(0.033028)			
ENFORCE					0.033518*				
					(0.016645)				
ŵ					-0.043313				
					(0.034874)				
CORRUPT							(0.048938)***		
							(0.017125)		
/ ŵ							-0.068** (0.027)		
N	47	33	33	33	33	33	33	33	33
Adj. R2	0.193970	0.308826	0.270268	0.362816	0.390698	0.420335	0.486150	0.409491	0.551737

References

Adler, M., Dumas, B., 1983. International portfolio choice and corporation finance: a synthesis. The Journal of Finance 38, 925-983.

Ang, J.S., Ma , Y., 2001. The behavior of financial analysts during the Asian financial crisis in Indonesia, Korea, Malaysia, and Thailand. Pacific-Basin Finance Journal 9, pp. 233-263.

Ahearne, A.G., Griever, W.L., Warnock, F.E., 2004. Information costs and home bias: an analysis of U.S. holdings of foreign equities. Journal of International Economics 62, 313-336.

Aigner, D. J., Hsiao, C., Kapteyn, A., T. Wansbeek, T., 1984. Latent variable models in econometrics: In Griliches, Z., Intriligator, M.D., eds., Handbook of Econometrics, 2, North-Holland, Amsterdam, 1321-1393.

Baker, K. H., Nosfinger, J.R., Weaver, D.G., 2002. International cross-listing and visibility. Journal of Financial and Quantitative Analysis 37 (3), 495-521.

Ball, R., Kothari, S.P., Robin, A., 2000. The effect of international institutional factors on properties of accounting earnings. Journal of Accounting and Economics 29, 1-51.

Baxter, M., Jermann, U.J., 1997. The international diversification puzzle is worse than you think. American Economic Review, 170-181.

Baxter, M., Jermann, U.J., King, R.G., 1998. Nontraded goods, nontraded factors, and international non-diversification . Journal of International Economic*s* 44, 211-229.

Bekaert, G., Harvey, C.V., 2000. Foreign speculators and emerging equity markets. Journal of Finance 55 (2), 565-613.

Bhattacharya, U., Daouk, H., Welker, M., 2003. The world price of earnings opacity. Accounting Review 78 (3), 641-678.

Black, F., 1974. International capital market equilibrium with investment barriers. Journal of Financial Economics, 337-352.

Bohn, H., Tesar, L.L., 1996. U.S. equity investment in foreign markets: portfolio rebalancing or return chasing? American Economic Review, 77-81.

Bowden, R. J., 1984. Instrumental variables, Cambridge University Press, Cambridge.

Bradshaw, M.T., Bushee, B.J., Miller, G.S., 2004. Accounting choice, home bias, and US investment in non-US firms. Journal of Accounting Research, 42, 795-841.

Brennan, M.J., Cao, H. H.**,** 1997. International portfolio investment flows. Journal of Finance 52 (5), 1851-1880.

Brown, L.D., G. Richardson and S. Schwager (1987), An information interpretation of financial analyst superiority in forecasting earnings, Journal of Accounting Research, 25, pp. 49-67.

Burgstahler, D., Dichev, I., 1997. Earnings management to avoid earnings decreases and losses. Journal of Accounting and Economics 24, 99-129.

Carmichael, B., Coën, A., 2003. International portfolio choice in an overlapping generations model with transaction costs. Economics Letters 80, 269-275.

Center for International Financial Analysis & Research (CIFAR). 1995. International Accounting and Auditing Trends, 4th Edition. Edited by V.B. Bavishi. Princeton, N.J.: CIFAR.

Choi, F., Frost, C., Meek, G.K., 1999. International Accounting. 3rd Edition, Prentice Hall, NJ.

Coën, A., 2001. Home bias and international capital asset pricing model with human capital. Journal of Multinational Financial Management 11 (4/5), 497-513.

Coën, A., Desfleurs, A., 2004. The evolution of financial analysts' forecasts on Asian emerging markets. Journal of Multinational Financial Management 14 *(4/5)*.

Cooper, I., Kaplanis, E., 1986. Costs to crossborder investment and international equity market equilibrium. In J. Edwards, J. Franks, C. Mayers and S. Schaefer (eds.), Recent Developments in Corporate Finance. Cambridge University Press, Cambridge.

Cooper, I., Kaplanis, E., 1994. Home bias in equity portfolios, inflation hedging, and international capital market equilibrium. Review of Financial Studies 7, 45-60.

Coval, J.D, Moskowitz, T.J., 1999. Home bias at home: Local equity preference in domestic portfolios. Journal of Finance 54 (6), 2045-2073.

Dagenais M.G., 1994. Parameter estimation in regression models with errors in the variables and autocorrelated disturbances. Journal of Econometrics 64, 145-163.

Dagenais M.G., Dagenais, D. L., 1997. Higher moment estimators for linear regression models with errors in the variables. Journal of Econometrics 76, 193-221.

Dahlquist, M., Pinkowitz, L., Stulz, R.M., Williamson, R., 2003. Corporate governance and the home bias. Journal of Financial and Quantitative Analysis.

Dahlquist, M., Robertsson, G., 2001. Direct foreign ownership, institutional investors, and firm characteristics. Journal of Financial Economics 59, 413-440.

Davidson, R., MacKinnon, J., 1993. Estimation and Inference in Econometrics. Oxford University Press, New York.

Davidson, R., MacKinnon, J.G., 2004. Econometric theory and methods, Oxford University Press, New York.

DeGeorge, F., Patel, J., Zeckhauser, R., 1999. Earnings manipulation to exceed threshold. Journal of Business 72, 1-33.

Doidge, C., Karolyi, G.A., Stulz, R.M., 2004. Why are foreign firms listed in the U.S. worth more? Journal of Financial Economics 71 (2), 205-238.

Durbin, J., 1954. Errors in Variables, International Statistical Review, 22, 23-32.

Edison, H.J., Warnock, F.E., 2003. A simple measure of the intensity of capital controls. Journal of Empirical Finance 10 (1-2), 81-103.

Eichengreen, B., 2001. Capital account liberalizations: what do cross-country studies tell us? World Bank Economic Review 15 (3)., 341-365.

Eldor, R., Pines, D., Schwartz, A., 1988. Home asset preference and productivity shocks. Journal of International Economics 25, 165-176.

Errunza, V., Losq, E., 1985. International asset pricing under mild segmentation: theory and test . The Journal of Finance 40, 105-124.

Errunza, V., Losq, E.,1989. Capital flow controls, international asset pricing, and investor's welfare: a multi-country framework. Journal of Finance 44, 4, 1025-1037.

Foerster, S. R., Karolyi, G. A., 1999. The effects of market segmentation and investor recognition on asset prices: Evidence from foreign stocks listing in the U.S. Journal of Finance 54, 981-1013.

French, K., Porterba, J., 1991. Investor diversification and international equity markets. American Economic Review 81, 222-226.

Fuller, W.A., 1987. Measurement Error Models, Wiley, New York, NY.

Gehrig, T., 1993. An information based explanation of the domestic bias in international equity investment. Scandinavian Journal of Economics 95, 97-109.

Grauer, R.R., Hakansson, N.H.,1987. Gains from international diversification: 1968-1985 returns on portfolios of stocks and bonds. Journal of Finance 42, 721-741.

Grinblatt, M., Keloharju, M., 2001. How distance, language, and culture influence stockholdings and trades. Journal of Finance 56 (3), 1053-1074.

Grubel, H.G., 1968. Internationally diversified portfolios. American Economic Review 58, 1299-1314.

Hausman, J.D., 1978. Specification tests in econometrics. Econometrica 46, 1251-1271.

Heath, C., Tversky, A., 1991. Preference and belief: ambiguity and competence in choice under uncertainty. Journal of Risk and Uncertainty 4, 5-28.

Hietala, P.T., 1989. Asset pricing in partially segmented markets: evidence from the Finnish market. Journal of Finance 41, 897-914.

Hope, O., 2003. Disclosure practices, enforcement of accounting standards, and analysts' forecasts: an international study. Journal of Accounting Research 41, 235-272.

Huberman, G., 2001. Familiarity breeds investment. Review of Financial Studies 14 (3), 659-680.
International Accounting Standards Committee. 1997. Insight (October 1997).

Kang, J.K., Stulz, R.M.,1997. Why is there a home bias. Journal of Financial Economics 46 (1), 3-28.

Karolyi, G.A., 1998. Why do companies list shares abroad? A survey of the evidence and its managerial implications. Financial Markets, Institutions, and Instruments 7, 1-60.

Karolyi, G.A., Stulz, R.M., 2004. Are financial assets priced locally or globally? In: Handbook of the Economics of Finance, Constantinides, G., Harris, M., Stulz, R.M. (Eds). Amsterdam, The Netherlands: North-Holland.

Kendall, M. G., Stuart, A., 1963. The Advanced Theory of Statistics, Three-volume edition, volume 1, Hafner Publishing Company, New York, N.Y..

Klepper, S., Leamer, E.E. 1984. Consistent sets of estimates for regressions with errors in all variables, Econometrica 52, 163-184.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., 1999. Corporate ownership around the world. Journal of Finance 54, 471-517.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 1998. Law and finance. Journal of Political Economy 106, 1113-1155.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., Vishny, R., 2000. Investor protection and corporate governance. Journal of Financial Economics 58, 3-27.

Lang, M., Lins, K., Miller, D., 2003. ADRs, analysts, and accuracy: Does cross listing in the U.S. improve and firm's information environment and increase market value. Journal of Accounting Research 78 (3).

Leuz, C., Nanda, D., Wysocki, P.D., 2003. Earnings management and investor protection: an international comparison. Journal of Financial Economics 69, 505-527.

Levy, H, Sarnat., M., 1970. International diversification of investment portfolios. American Economic Review 60, 668-675.

Lewis, K.K., 1999. Trying to explain home bias in equities and consumption. Journal of Economic Literature 37, 571-608.

Lintner, J., 1965. Valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. Review of Economics and Statistics, 13-37.

MacKinnon, J., 1992. Model specification tests and artificial regressions. Journal of Economic Literature, 102-146.

Malinvaud, E., 1978. Méthodes Statistiques de l'Économétrie, 3rd ed., Dunod, Paris.

Merton, R.C., 1987. A simple model of capital market equilibrium with incomplete information. The Journal of Finance 42, 483-510.

Mossin, J., 1966. Equilibrium in a capital asset market. Econometrica 34, 768-783.

Obstfeld, M., Rogoff, K., 2001. The six major puzzles in international macroeconomics: Is there a common cause. NBER Macroeconomics Annual 2000 (15). National Bureau of Economic Research and the Massachusetts Institute of Technology.

Pagano, M., Roell, A., Zechner, J., 2002. The geography of equity listing: Why do European companies list abroad? Journal of Finance 57 (6), 2651-2694.

Pal, M., 1980. Consistent moment estimators of regression coefficients in the presence of errors in variables. Journal of Econometrics 14, 349-364.

Portes, R., Rey, H., Oh, Y., 2001. Information and capital flows: The determinants of transactions in financial assets. European Economic Review 45, 783-796.

Reese, W., Weisbach, M., 2002. Protection of minority shareholder interests, cross-listings in the United States, and subsequent equity offerings. Journal of Financial Economics 66, 65-104.

Rowland, P. F., 1999. Transaction costs and international portfolio diversification. Journal of International Economics 49, 145-170.

Sarkissian, S., Schill, M. J., 2004. The overseas listing decision: new evidence of proximity preference. Review of Financial Studies 17, 769-809.

Saudagaran, S., Diga, J., 1997. Financial reporting in emerging capital markets: characteristics and policy issues. Accounting Horizons 11, 41-64.

Sharpe, W.F., 1964. Capital asset prices: a theory of market equilibrium under conditions of risk. Journal of Finance 19, 429-442.

Solnik, B. H., 1974. An equilibrium model of the international capital market. Journal of Economic Theory 8, 500-524.

Solnik, B. H., 1974. Why not diversify internationally rather than domestically? Financial Analyst Journal 30, 91-135.

Solnik, B. H., 2002. *International Investments,* Addison Wesley, Reading.

Stockman, A., Tesar, L., 1995. Tastes and technology in a two-country model of the business cycle: explaining international comovements. American Economic Review 85 (1), 168-185.

Stulz, R.M., 1981. On the effects of barriers to international investment. Journal of Finance 36, 923-934.

Stulz, R.M., Williamson, R., 2003. Culture, openness and finance. Journal of Financial Economics 70 (3), 313-349.

Tesar, L., Werner, I., 1995. Home bias and high turnover. Journal of International Money and Finance 14 (4), 46.

Theil, H., Goldbeger, A.S.,1961. On pure and mixed statistical estimation in economics, International Economic Review, 65-78.

Treasury Department and Federal Reserve Board, 2003. United States Holdings of Foreign Long-Term Securities as of December 31, 1997 and December 31, 1999.

Uppal, R., 1992. The economic determinants of the home country bias in investors' portfolios. Working paper prepared for the conference on *"International Capital Markets in a World of Accounting Differences"*, New York University, Salomon Center.

Van Nieuwerburg, S., Veldkamp, L., 2005. Information immobility and the home bias puzzle. Working paper, Stern School of Business, New York University.

Warnock, F. E., 2002. Home bias and high turnover reconsidered. Journal of International Money and Finance 21, 795-805.

Warnock, F.E., Cleaver, C., 2003. Financial centers and the geography of capital flows. International Finance 6 (1).

White, H., 1980. A heteroskedasticity-consistent covariance matrix estimator and direct test for heteroskedasticity. Econometrica 48, 817-838.

APPENDIX I

Table A.1: Summary statistics.

Variable	Nb	Mean	Standard Error	Minimum	Maximum
USLISTED	48	0.211	0.210	0	0.807
RESTRICT	48	0.149	0.255	0	0.898
DISPER	45	0.216	0.037	0.136	0.283
ABSFERE	45	0.213	0.059	0.094	0.356
EAROPAC	33	-0.021	0.031	-0.066	0.127
LOSSAV	33	0.431	0.221	-0.046	0.735
SMOOTH	33	-0.816	0.285	-0.937	0.744
IAS_USE	33	0.484	0.507	0	1.000
ENFORCE	39	7.769	2.211	2.500	10.000
RULELAW	39	7.422	2.383	2.500	10.000
CORRUPT	39	7.346	2.262	2.150	10.000
EXPRO	39	8.403	1.460	5.220	9.980
REPUD	39	7.992	1.642	4.680	9.980

Notes. All summary statistics used in this study are available upon request from the authors. USLISTED refers to share of country's stock market that is listed on US exchanges from Ahearne et al. (2004). RESTRICT is the Edison and Warnock (2003) measure of foreign ownership restrictions. DISPER is standard error of financial analysts' forecasts for year 1994, 1995, and 1996. ABSFERE is the arithmetic mean of absolute forecast errors for 1994, 1995, and 1996. Variables, EAROPAC, LOSSAV, and SMOOTH are measures from Bhattacharya et al. (2003), standing for earnings aggressiveness, loss avoidance, and earnings smoothing respectively. IAS use data are from Choi et al. (1999), exhibit 8.6, page 264. ENFORCE, RULELAW, CORRUPT, EXPRO and REPUD are measures of risk from La Porta et al. (1998 and 1999), standing for enforcement, rule of law, corruption, expropriation and repudiation, respectively.

Table A.2 : Summary statistics : Correlations

Correlations , Prob > |r| under H0: Rho=0													
	US-LISTED	RESTRICT	DISPERS	ABSFERE	EAROPAC	LOSSAVO	SMOOTH	IAS	ENFORCE	RULELAW	CORRUPT	EXPRO	REPUD
USLISTED	1.000												
RESTRICT	-0.462 (0.001)	1.000											
DISPER	0.095 (0.538)	-0.130 (0.398)	1.000										
ABSFERE	-0.077 (0.619)	-0.060 (0.695)	0.798 (<.0001)	1.000									
EAROPAC	0.027 (0.881)	0.003 (0.985)	0.115 (0.521)	0.245 (0.168)	1.000								
LOSSAVO	-0.307 (0.081)	0.046 (0.795)	0.033 (0.853)	0.115 (0.522)	0.147 (0.413)	1.000							
SMOOTHIN	0.558 (0.001)	-0.117 (0.516)	0.295 (0.0952)	0.229 (0.198)	0.106 (0.554)	-0.430 (0.012)	1.000						
IAS_USE	-0.032 (0.855)	0.066 (0.714)	0.067 (0.707)	0.099 (0.580)	0.098 (0.585)	-0.134 (0.455)	0.237 (0.182)	1.000					
ENFORCE	-0.282 (0.085)	0.102 (0.538)	-0.321 (0.046)	-0.447 (0.004)	-0.364 (0.037)	-0.256 (0.148)	-0.176 (0.326)	-0.263 (0.139)	1.000				
RULELAW	-0.247 (0.133)	-0.012 (0.941)	-0.218 (0.181)	-0.317 (0.049)	-0.486 (0.004)	-0.252 (0.155)	-0.206 (0.249)	-0.314 (0.074)	0.716 (<.0001)	1.000			
CORRUPT	-0.339 (0.037)	0.156 (0.348)	-0.237 (0.146)	-0.446 (0.004)	-0.401 (0.020)	-0.325 (0.064)	-0.228 (0.200)	-0.165 (0.357)	0.832 (<.0001)	0.839 (<.0001)	1.000		
EXPRO	-0.272 (0.097)	-0.007 (0.965)	-0.288 (0.074)	-0.445 (0.004)	-0.490 (0.004)	-0.091 (0.614)	-0.220 (0.217)	-0.298 (0.091)	0.716 (<.0001)	0.901 (<.0001)	0.803 (<.0001)	1.000	
REPUD	-0.353 (0.029)	0.101 (0.543)	-0.228 (0.162)	-0.382 (0.016)	-0.535 (0.001)	-0.1378 (0.444)	-0.252 (0.155)	-0.310 (0.078)	0.699 (<.0001)	0.904 (<.0001)	0.825 (<.0001)	0.963 (<.0001)	1.000