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Foreign Under-Investment in US Securities and the Role of Relational Capital

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Foreign Under-Investment in US Securities and the Role of Relational Capital

Bryane Michael
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Abstract

Over 70 academic papers attempt to explain why foreigners invest in US securities. All ignore the vital role of the US broker-dealer. Macroeconomic factors like a trade balance or corporate governance may guide foreign investors toward certain markets. But US broker-dealers provide information to foreign investors and execute the actual trades. We hypothesize that particular foreign investors under-invest in US securities because of a lack of relational capital with US broker-dealers. We find that broker-dealer marketing intensity in foreign markets partly explains foreigners' decisions to invest in US securities. We also estimate "pent-up" demand for US securities in developing countries -- like China, Argentina, Turkey and Russia -- equals roughly half-a-trillion dollars. Such pent-up demand -- represented as a convergence gap with investment-to-GDP ratios in highly developed capital markets -- helps predict which markets these broker-dealers are likely to invest marketing effort in the future. As such, broker-dealers interested in assisting foreign investors find the right securities for their portfolios should not focus on big, rich economies. They should focus on economies with the largest convergence gaps. We also find that broker-dealers must take in account the effect their marketing effort has on the typical variables (like relative returns, risks, asymmetric shocks and communication with the US) when they use these screening variables in deciding where to build their relational capital (and place their sales effort) in any year.

Keywords: Foreign Investment, CAPM, home bias, broker-dealer

JEL number: F21, F36, G11

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Foreign Under-Investment in US Securities and the Role of Relational Capital

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Introduction

US securities comprise roughly 30% of the world's market capitalization. Yet these securities comprise (on average) only about 20% of foreign investors' portfolio holdings. Foreign investors could have invested in Amazon.com in 2007 (for a return of 135%) or Ford Motor Company in 2008 (for a return of over 200% due to a spectacular recovery). They could have invested in all kinds of "exotics" – like asset backed securities and collateralised debt obligations whose risk profiles certainly likely to partially co-vary negatively with any domestic assets they held in their own portfolios. Yet, they did not. At least not as much as they should have if they invested according to the classical dictates of corporate finance. Many authors point to home bias, market quality problems and transactions costs; which prevent foreign investors from holding their preferred portfolio allocation of US securities. Yet, even the casual observer visiting Buenos Aires or Moscow can not help but wonder why these foreign investors do not avoid their relatively run-down bank offices and open up an E*Trade accounts online. Why don't US broker-dealers like Merrill Lynch and AG Edwards open up offices in these cities (where stock brokers' offices are conspicuously absent)?

We hypothesise that foreigner investors increase their demand for US securities in the same way any consumer increases demand for any product – when sellers exert more marketing effort (in this case by building relational capital) with their foreign clients. Broker-dealers which invest more in servicing foreign markets (providing offices, helping investors overcome legal and tax hurdles and so forth) help to develop demand in these markets (hopefully increasing returns and decreasing risks for their clients). We find statistical evidence that broker-dealer effort in a country correlates with increased relative holdings by those countries' citizens of US securities. We also find other evidence (some quantitative and much qualitative) suggesting that the development of a type of non-observable capital – relational capital – can explain foreign investment in US securities better than many of typical variables assessed by conventional econometric studies.

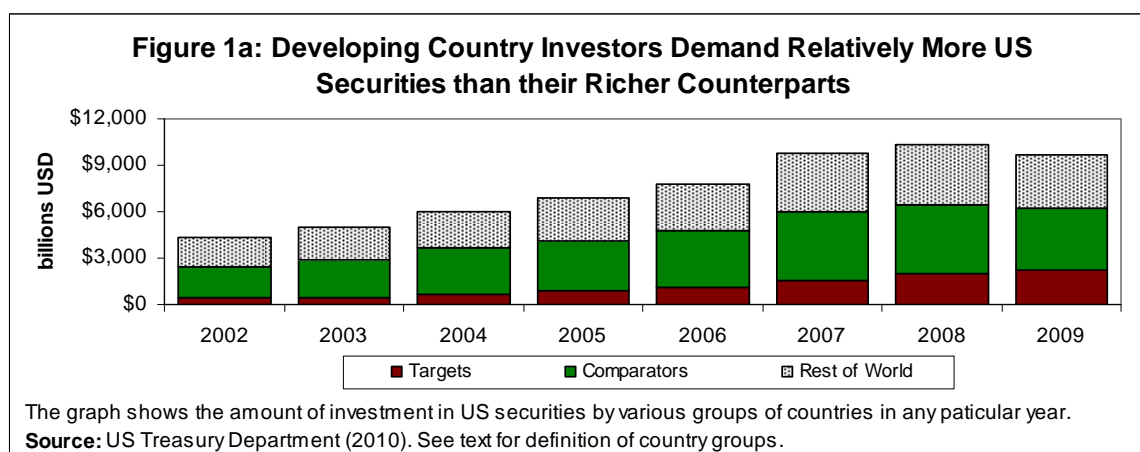
In order to tell our story about relational capital, we draw on a range of sources and techniques which would displease conventional econometricians. We avoid complicated statistical procedures which could increase the power of our regression analysis -- in order to focus on the narrative of our argument. We also focus our research on those countries of greatest interest to scholars and investors alike – those 20 countries which invest the most in US markets. We offer a selective view of the data (making simple English arguments) – providing the reader who wants a more detailed view of the subject with sufficient references to read more econometrically-minded studies.

A Review of Foreign Portfolio Investment in US Securities

General Features of Foreign Demand for US Portfolio Assets

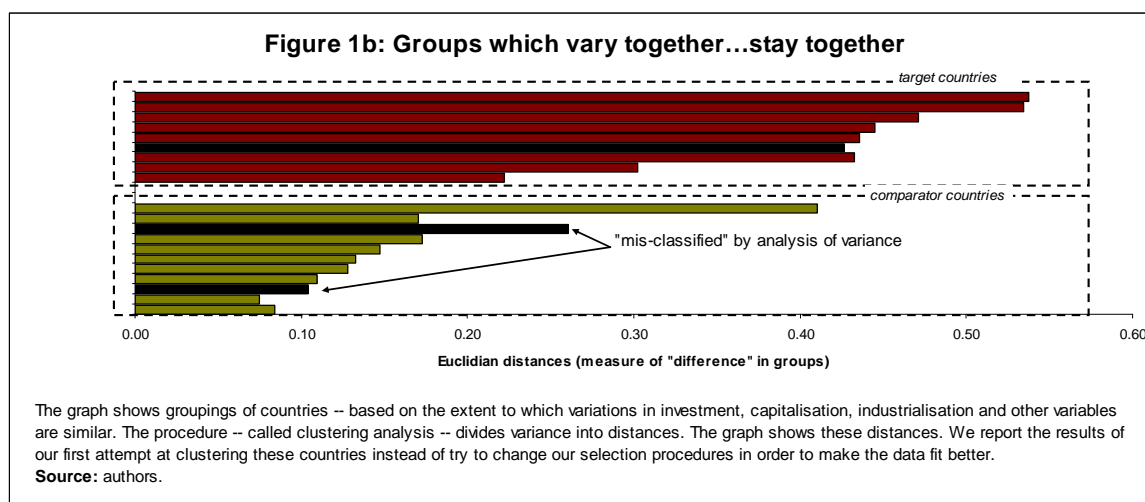
Foreign demand for US portfolio assets increased significantly over the past 5 years. According to US Treasury Department (2010) statistics, since 2005, equity investment in US securities increased slightly from about \$6.8 billion to \$9.6 billion. Foreign investment in corporate debt (both short term and long term) increased from \$1.9 billion to \$2.6 billion. As shown in Figure 1a, roughly 20 countries account for more than half of all demand for US portfolio assets. The first group –accounting for roughly 40% of foreign demand for US portfolio assets in 2009 -- consists of “comparator countries” with developed, market economies and a representing most of the historical demand for US securities abroad. These “comparator countries” – and we call them comparator countries because they serve as useful comparisons for another group of countries likely to follow in their path – consist of Australia, Belgium, France, Germany, Japan, Switzerland, the UK, Singapore, Canada and Ireland.

Another group of countries account for an increasingly large share of foreign demand for US securities. These countries – we call “target countries” because we believe these countries serve as attractive targets to potential marketers of US securities abroad – represented just under a quarter (23%) of global demand for US securities in 2009. However, demand for foreign securities by these countries has been increasing by 25% per year on average (as opposed to the 11% increase in demand from the comparator countries). To put this growth in perspective, the increased demand from these target countries -- each year -- equals the entire GDP of country the size of Finland or Colombia. These countries, representing developing (often middle-income) countries, consist of Argentina, Chile, China, Colombia, Hong Kong, Mexico, India, Russia, Turkey and Brazil.

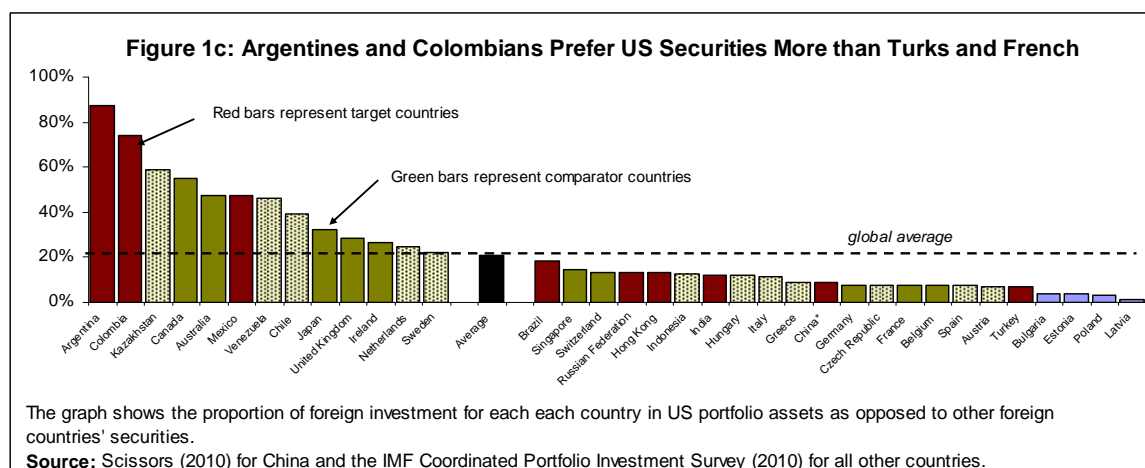


Statistics, as well as common-sense, provide a fair amount of support for the grouping of investors in these foreign countries. Figure 1b shows the results of a dispassionate attempt at grouping these countries – based on the extent to which investment from these countries (and other variables) vary together. Similarities in variance – in statistical terms – often suggest similarities in the groups responsible for such variance. As shown in Figure 1b, distances (namely the extent to which statistical variance can be grouped together), strongly points to the groupings we have defined in this paper. Comparator countries differ

significantly from target countries – and tend to change their investment behaviour similarly to each other.¹



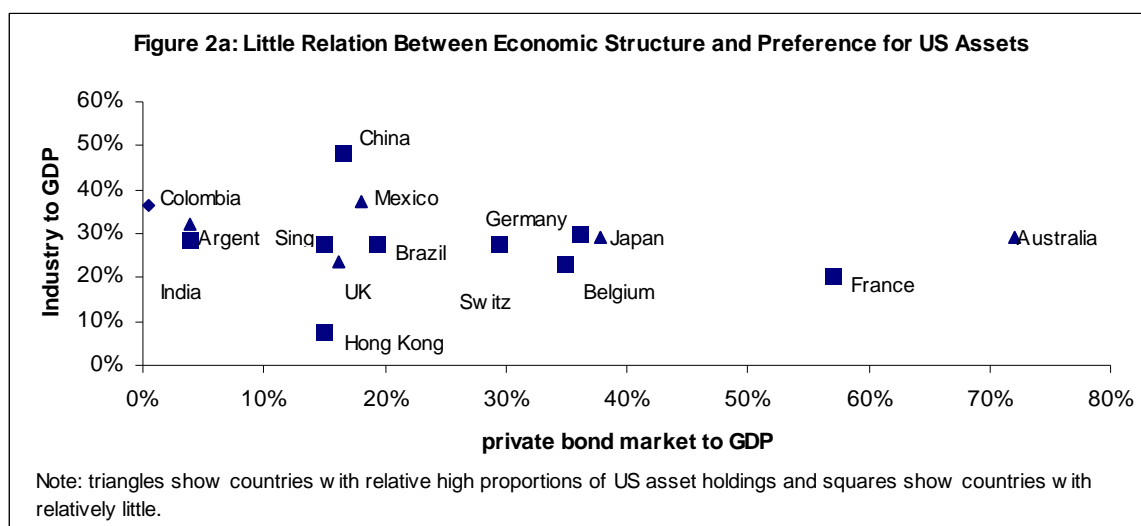
Yet, investors in different countries prefer to hold significantly different proportions of US assets in their investment portfolios. As shown in Figure 1c, Argentines and Colombians -- who work in lesser capitalised economies which are likely to attract future broker-dealer interest -- prefer to hold more than three-fourths of their foreign portfolio investments in US securities. Yet, Canadians and Australians -- working in more highly capitalised economies less likely to attract much more future broker-dealer interest -- wish to hold roughly the same proportion of US assets in their investment portfolios (well over 50%). On the other hand, Latvians, Estonians and the French typically hold less than 10% of their foreign portfolio investments in US assets. Nothing particular about these countries -- or the grouping into which they fall -- seems to predict resident investors' interest in acquiring US portfolio assets.



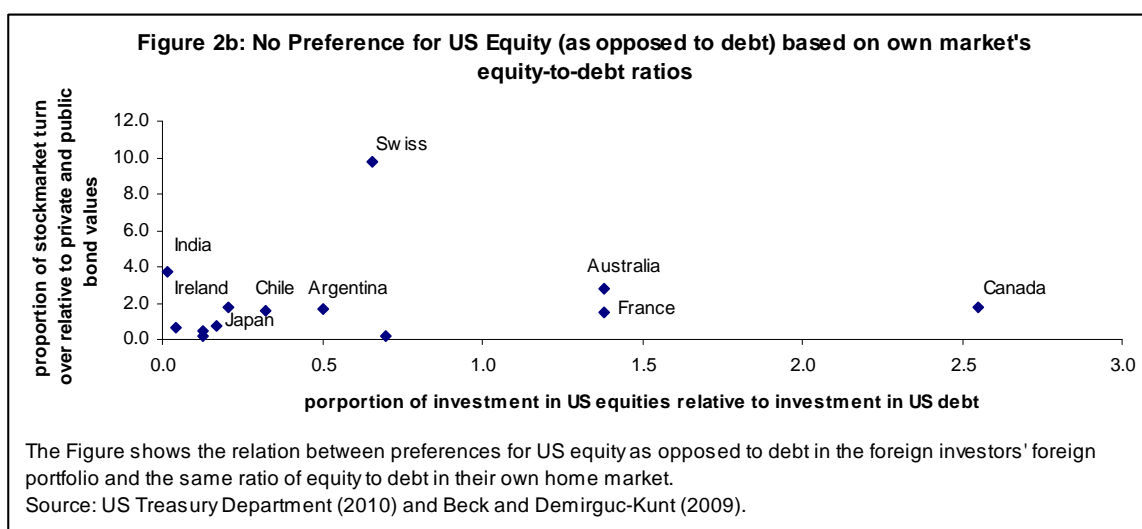
Contrary to traditional finance theory, nothing about the nature of their economic structure seems to determine foreign investors' preference (or lack of preference) for US assets. Argentina, Kazakhstan and Australia might strike the reader as like rugged places -- economically interested in farming and cattle. The Baltic states and France seem more

¹ In the empirical part of the paper, we show the results of other tests (called t-tests and analysis of variance tests) which show more specifically how comparator countries and target countries tend to vary similarly with others in their same group (and how the two groups vary differently from each other).

service, maritime-oriented economies (to provide simple, illustrative characteratures of both groups). Maybe the rugged gauchos of the Argentine pampas want access to US stocks and their unlimited upside? Or perhaps they want to avoid the vagaries of live-stocking and desire the constant stream of income from US debt instruments?² Yet, the data show no clear association between the type of risks investors of a country are likely to experience and their preference for US securities. Figure 2a shows the relationship between three variables – the extent of a country’s industrialisation, the use of debt finance in that country, and its citizens’ preference for US securities (ignoring details like whether they prefer to hold stocks, bonds, or types of investments). Some highly industrialised countries (like China, India, Brazil and Germany) hold a low proportion of US assets relative to investors in other countries. Yet Mexican, Japanese and Colombian investors also work in relatively highly industrialised economies -- and yet prefer to hold much larger shares of US assets than their Chinese or Brazilian counterparts. Moreover, looking at Figure 2b, both Australia and France have highly developed private bond markets (thus in theory should be keen on diversifying their holdings into both US equity and debt securities). Yet, Australia holds a large proportion of its portfolio in US assets whereas the French hold a relatively small share. Perhaps the Australian faces an unprofitable, very risky set of investments in other countries which the French investor did not? In other words, maybe Australians sought the US investments which a similar French investor did not need?



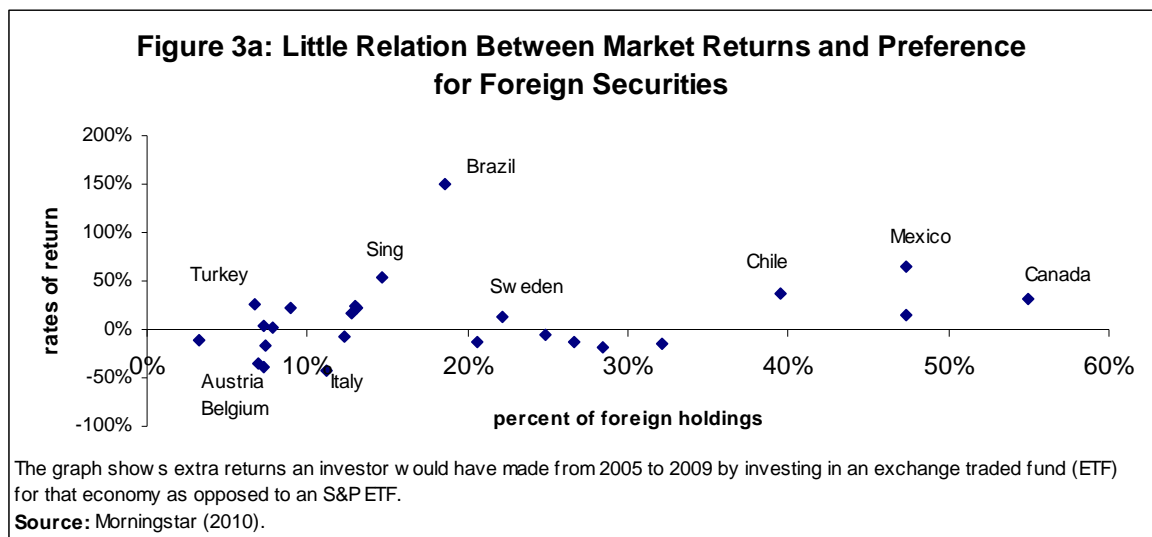
² Naturally, we do not suggest that all Argentines are cattlemen any more than all Texans are cowboys (one of the authors is a Texan). We use this simple example to illustrate deeper issues in international corporate finance.



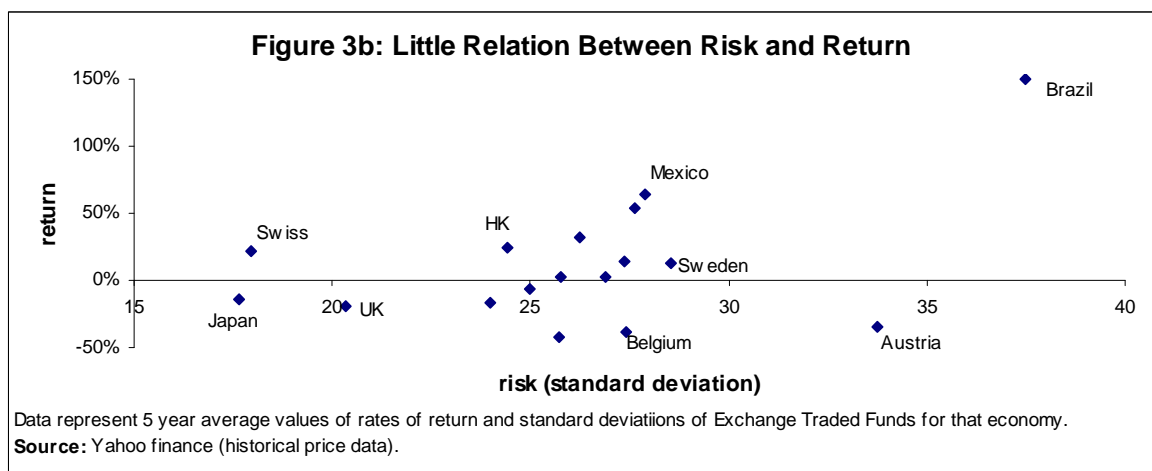
Risk and Return Do Not Explain Very Well Preferences for US Securities

Foreign investors did not purchase US equity and debt in the second half of the 2000s in search of the world's highest returns. Figure 3a shows returns foreigners could have earned in their own countries as opposed to investing in US portfolio assets – namely the average relative returns of market indices in various countries compared with the US market index from 2005 to 2009. Over the period, investors in Mexican and Singaporean market indices would have earned roughly the same rate of return (roughly 50%). Yet, Singaporeans held substantially fewer US assets as a proportion of their overall investment portfolio than Mexicans. Naturally, foreign investors could not know beforehand whether US securities would outperform investments in these other economies. They also could have “cherry-picked” assets – investing in shares like Amazon.com which significantly outperformed the S&P average.³ However, the mystery still remains as to why Mexicans would put more than 50% of their foreign portfolio investments in assets which earned 50% less than investments in their own country?

³ The data reported to the IMF do not describe the specific securities purchased by these foreigners, nor the rates of return earned by those foreigners. From statistics subsequently released after the economic crisis, we know that some foreigners held a relatively large amount of real estate and other debt-collateralised securities (which were expected to be extremely profitable around 2005 and shown to be very unprofitable around 2009).



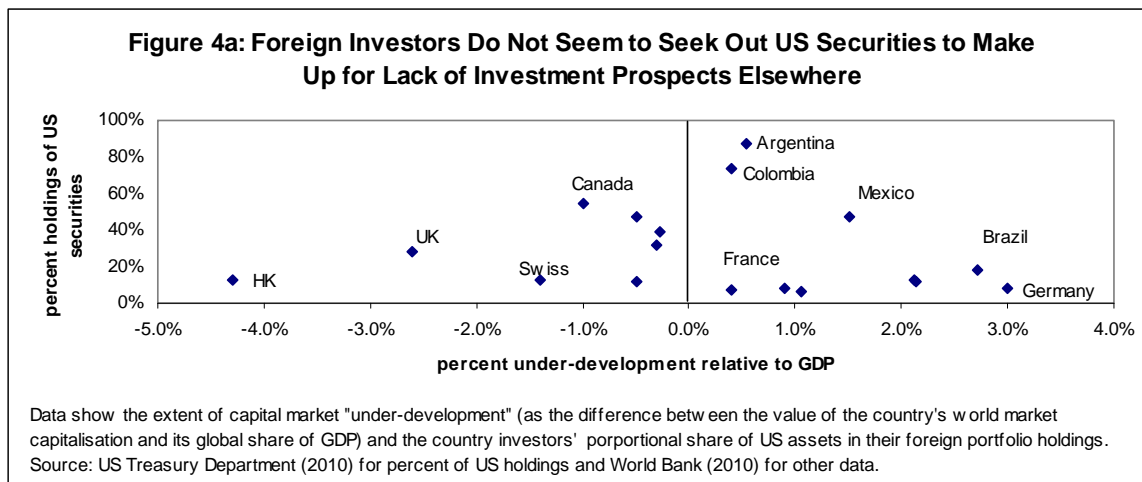
The riskiness of foreign assets also seems to provide little, if any, explanation for foreigners' preference for US assets. Figure 3b shows the market portfolio risk (as measured by standard deviations of market indices in these markets) relative to rates of return from 2005 to 2009. Rates of return did not reflect the risk investors in country exchange-traded funds (ETFs) assumed (as shown by the circular cloud-like pattern centred on a 0% rate of return). Investors could have earned 20% higher returns with Swiss portfolio assets than US assets over the same period (with only about half that amount of risk as measured by the variability of these ETF index prices). Yet, investors in Japanese assets – while losing less in Japanese stocks than in US stocks – would have assumed less risk as well. Foreign investors did not rush to US portfolio investments over the period because they thought that they would surer returns. Maybe they wanted the type of assets which they could not obtain in their own countries?



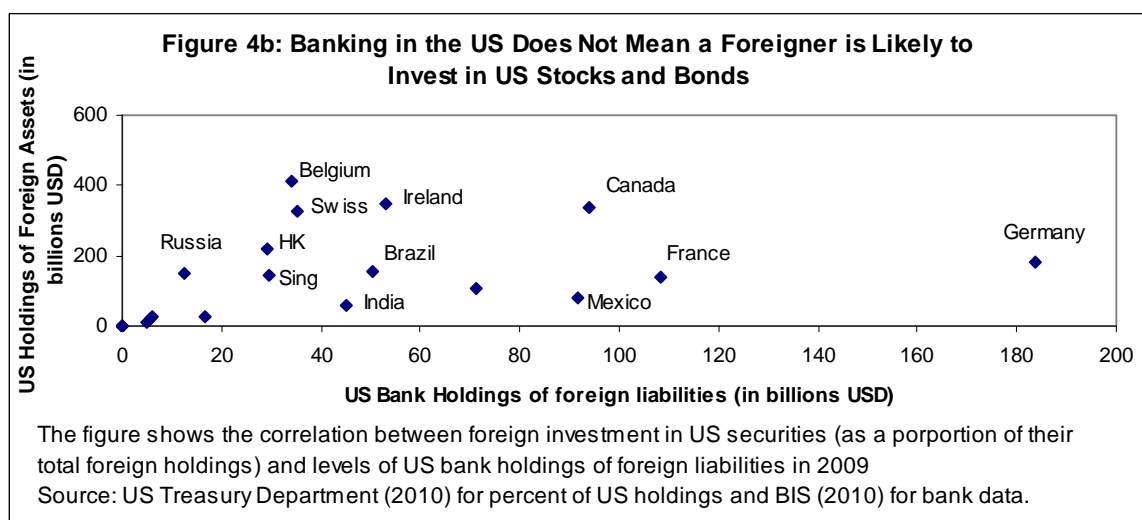
No apparent link between own financial development or inter-linkages with US economy

A plausible – though erroneous view of foreign investment in US markets – holds that Argentines and Kazakhs want to purchase the shares of Microsoft or credit default swaps unavailable in their own home economies (or in other countries like Sweden). Yet, Figure 4a appears to debunk such a view of foreign investment in US portfolio assets. As shown, countries like Brazil and Germany have much larger economies relative to the size of their own capital markets – suggesting that Brazilian or German investors would seek

additional investment opportunities for a larger pool of savings in the US. Other countries, like the UK and Hong Kong, appear to have market capitalisations in excess of the size of their economies. Over-investment in these countries would suggest that their investors may wish to seek investment opportunities in other countries (like the US). However, Brazil, Germany, the UK and Hong Kong put roughly the same level of their foreign investment in US securities.

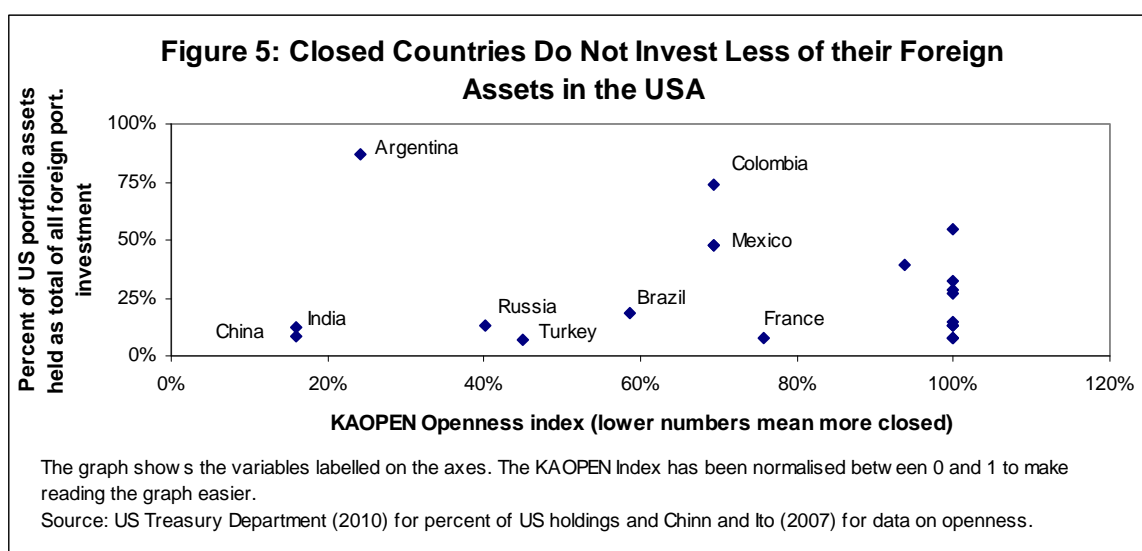


Foreign investors also do not seem to invest in US assets when US investors invest in their country's assets. Such an explanation may seem plausible -- as foreign investors obtain access to business partnerships, information and re-investable profits from their US partners. Yet, as shown in Figure 4b, the size of a foreign country's liabilities toward US banks does not correlate with their preference for investing US stocks and bonds.⁴ Russians and Germans – belonging to economies of roughly the same economic size – have roughly the same proportion of their foreign portfolio investment in US securities. However, Germans bank roughly 10 times more with US banks than Russians.



⁴ We look at levels of bank liabilities rather than relative shares of banking in the US (as opposed to other countries) because there should be a size effect involved. Namely, countries which place more funds in the US (in absolute terms) should be expected to either invest more or less in US portfolio assets (depending on if US banks provide these investors with the banking services or rates of return they seek). We assume that larger economies have more investors, with more money and thus more potentially profitable relationships to forge with US-based investment and banking professionals.

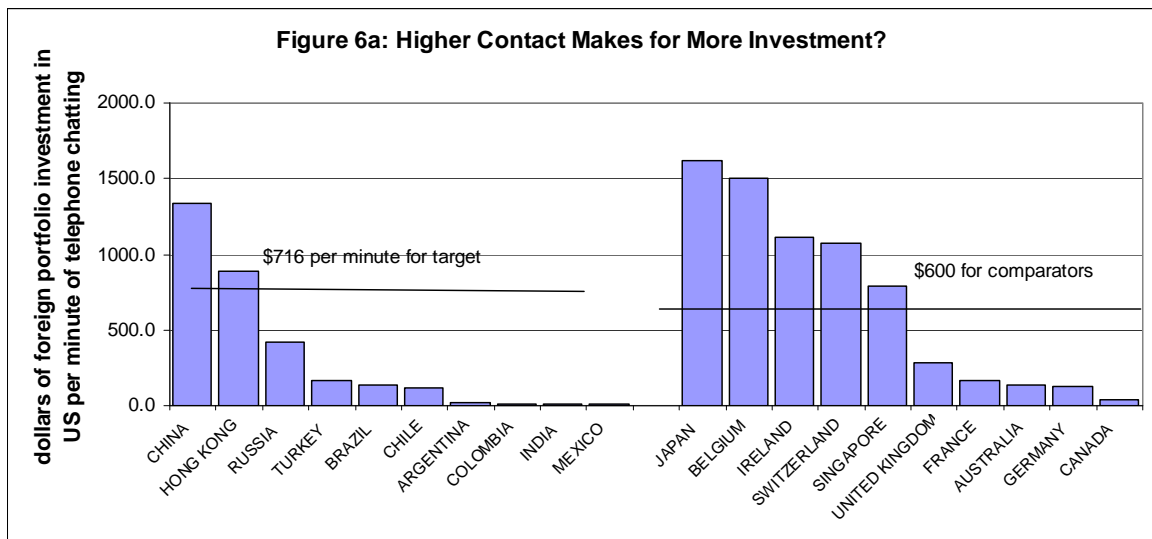
More closed economies do not shy away from holding large portions of their foreign portfolio investment in US markets. Figure 5 shows the relation between the percent of investment in US securities preferred by foreign investors and a measure of the ease by which these investors can engage in foreign securities transactions. Two of the most restrictive economies – India and China – have citizens which hold relatively low shares of US securities in their international portfolios. However, Argentina and Colombia have relatively restrictive foreign investment regulatory regimes – and still have investors who hold substantial parts of their portfolio as US securities.⁵



Calling for Higher Returns: Information and Home Bias

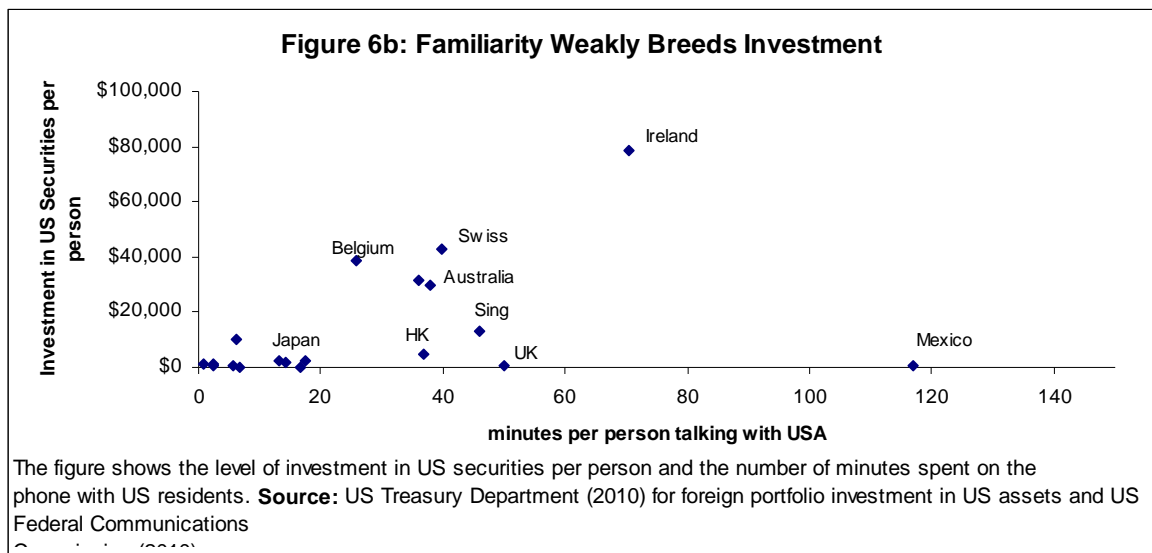
While investor contact with US markets must have some kind of impact on foreign investment in US securities, the effect of such contact remains extremely unclear. Figure 6a shows the “value” of such contact as the amount of foreign investment in US securities for each minute of telephone conversations between foreigners from that country and US residents in 2008. For example, one minute of telephone conversations “yielded” roughly \$1,000 in US securities investments from Hong Kong residents and residents in Ireland and Switzerland. On average, countries in which US broker-dealers might find attractive investors -- the target markets -- yielded roughly \$710 on average of portfolio investment as opposed to the \$600 per minute for telephone conversations between US residents and foreign residents in these countries.

⁵ Such openness also depends on the extent to which US law allows foreigners to invest in US securities. See Appendix II for a review of some of the provisions in US law governing foreign portfolio investment. We found, in our own assessment of securities law in Argentina and Colombia, these countries’ laws relatively open toward investment by their own national to US portfolio assets. The KAOPEN index, then picks up other aspects of openness not directly relevant to our study. See Appendix III for our analysis of foreign securities law in the countries we study.



Two possible interpretations of these data exist. First, the higher investment flows (per minute of calling) coming from target markets may reflect decreasing returns to (calling) scale. Because target markets have not yet invested all they would like into US portfolio investments, they tend to “make every minute count.” Second, citizens in the comparator countries may be more loquacious than residents in target countries like Brazil, Russia and Mexico. If residents in these countries are more talkative, then the higher absolute values of investment in US securities coming from these countries reflect in the statistics as relatively low investment per-minute of telephone time.

Both views of the correlation between communication and investment in US securities appear broadly correct. Figure 6b shows the correlation between investment per person and the number of minutes residents in our selected foreign countries spend talking with US residents. When shown on a per-person (rather than per minute) basis, the effect of relational capital becomes clearer. Countries like Ireland and Switzerland invest – on a per person basis – the most in US markets. They are also the most talkative (understandable for the Irish who have a reputation of being garrulous though less so for the Swiss). On the other hand, Mexicans tend to talk frequently with the US, though invest little in US portfolio assets (explained by large amount of economically-driven Mexican immigration to the US). The pattern breaks down for countries like India and Turkey – both with relatively low levels of investment per person in US portfolio investments and few minutes per person talking with US residents.

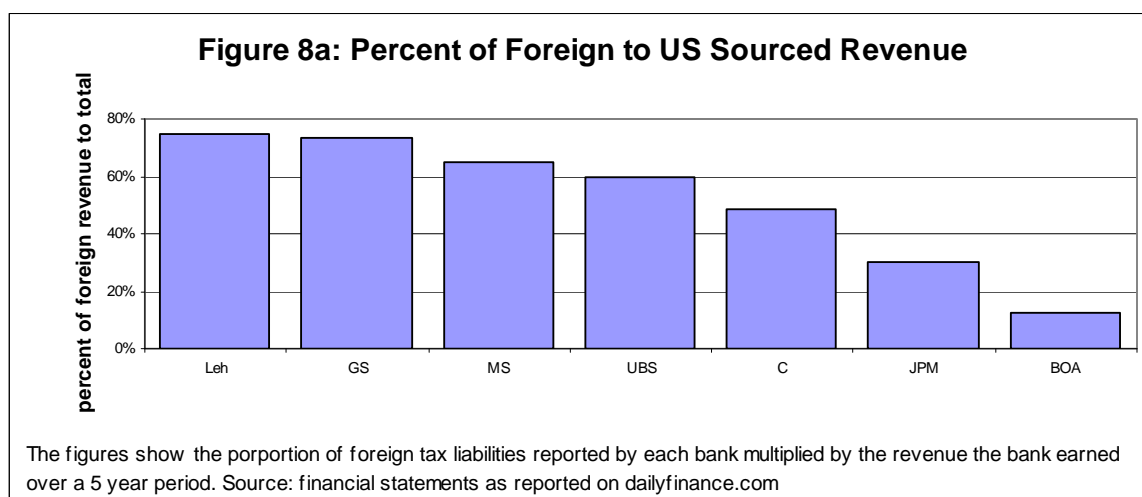


None of these explanations – based on traditional economic theory – focus on the actual way that foreigners purchase US portfolio assets. An investor in Buenos Aires does not consult trade balances, model share price forecasts himself, nor assess whether asymmetric shocks to Argentina’s industrial sector will have the usual Stolper–Samuelson effects on the amount he can charge for selling tomatoes. These individuals usually seek advice – from the financial press and local or international financial advisers (more often than not on the advice or recommendation from family and friends). An economic theory of foreign demand for US assets requires a buyer and a seller (something lacking in the literature as will see in the next section).

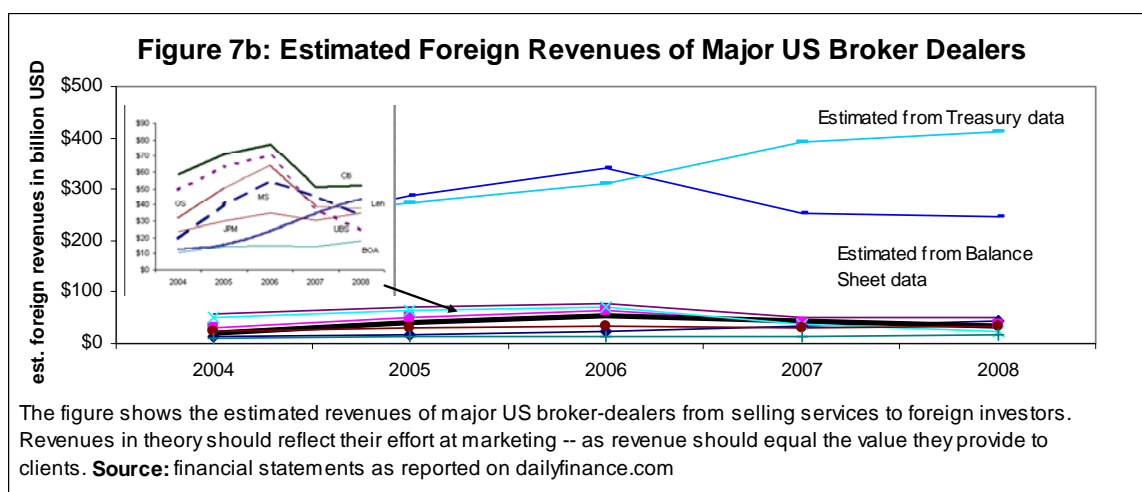
Opening the Black box of the Investment Process: Looking at the Role of US Broker-Dealers Marketing to Foreign Customers

Investors in some countries could be under-investing in US securities because US broker-dealers under-invest in providing them with investment services. In perfect markets, foreign investors could scan the *Wall Street Journal* and various trade publications for perfect deals on US investments. In practice, however, the large broker-dealers need to spend billions of dollars each year presenting such opportunities to domestic – and foreign – clients. As shown in Figure 7a, providing foreign clients with such services already represents a multi-billion dollar industry. For broker-dealers like Lehman Brothers, Goldman Sachs, Morgan Stanley, and UBS, providing services to foreign clients brought the majority of their revenues (or at least their tax obligations as reported online).⁶

⁶ Broker-dealers do not report their revenues on a per-country basis. As such, a sure-fire test of broker-dealer effort as an explanation for foreign demand for US portfolio assets will need to rely on future researchers conducting surveys in these foreign markets. Such a research project might make a worthy masters thesis for prospective finance students.

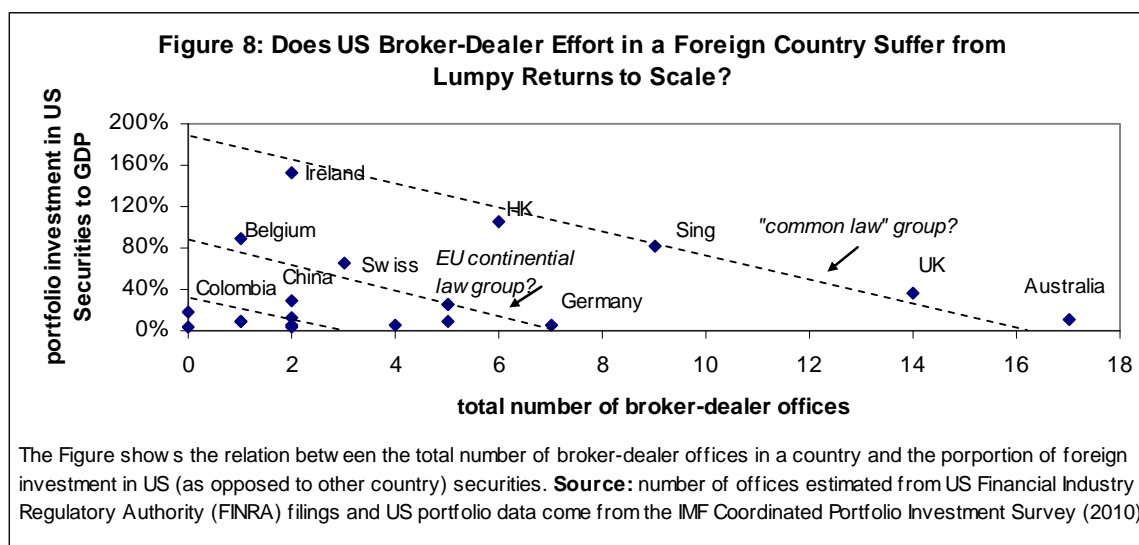


Until the financial crisis, increases in declared broker-dealer revenues kept step with estimated revenues (using estimates taken from Treasury data). From 2004 to 2006, broker-dealer revenues for the largest US securities dealers likely increased from about \$200 billion to about \$300 billion. After the financial crisis, broker-dealer revenues from developing country markets become much more difficult to estimate – due to steep drops in revenue tied with the collapse of US markets. While revenues went down since 2007, foreign portfolio investment continued to increase throughout the crisis. Assuming that these foreign investors purchased securities through commission-charging intermediaries, then US broker-dealers likely saw increasing revenues from foreign clients during the crisis. Assuming they earned the same rates of revenue for the value of securities sold after the crisis as before the crisis, then revenues from foreign investors likely increased to about \$400 billion by the end of 2008. Despite the high uncertainty tied to these revenue figures (due to the very rough methods of estimation we have used), one conclusion remains. **US broker-dealers have likely continued to increase their marketing effort in foreign markets throughout the 2000s.**



A complicated relationship between broker-dealer intensity in a country (as proxied by the number of offices located in that country) and foreign investment in US securities from that country appears in the data. Figure 8 shows the relationship between the number of offices the three major broker-dealers have in the 20 countries we analysed -- and their level of investment in US securities (relative to the country's GDP). At first glance, no pattern appears in these data – as data on the graph look scattered randomly. In order to

impose some order on the data (which might serve as a useful hypothesis for future data work), we draw negatively sloped “isoquants” on the data – corresponding to roughly three groups of data in the scatterplot.



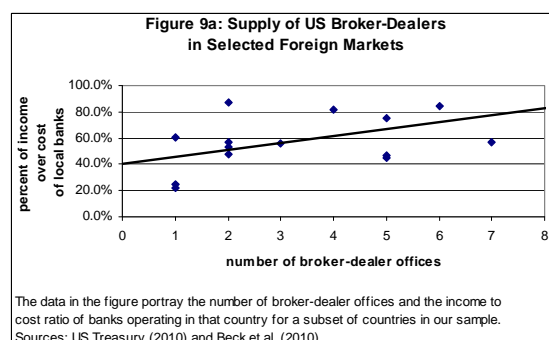
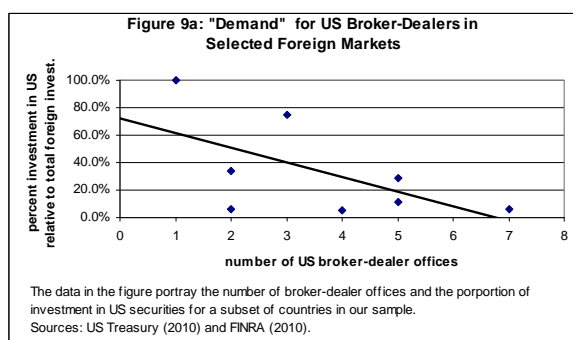
US broker-dealer effort may – if the constant sloped lines we drew on the graph have any validity – exhibit lumpy returns to scale. A first group of countries – the rather rich countries with common law systems of Ireland, Hong Kong, Singapore, UK and Australia – may exhibit one profile of returns. Increasing the number of offices for these countries leads to large – and quickly diminishing – returns for US broker-dealers. A second group of countries – located in the EU with civil law systems – exhibit much lower levels of investment in US securities for the same level of effort by US broker-dealers. Increasing the number of offices for this group leads the same relative reduction in foreign investment in US securities (as shown by the negatively sloped line having the same slope as the previously drawn line). Finally, a third group of countries – having “developing country” law systems (in flux, though based on the civil law system) – exhibit the same negative returns to broker-dealer effort (albeit from a much lower base). While the human tendency to see patterns where they may not exist often misleads scholars, such a tendency also helps to form useful hypotheses which require more rigorous testing.

How much more money can broker-dealers earn?

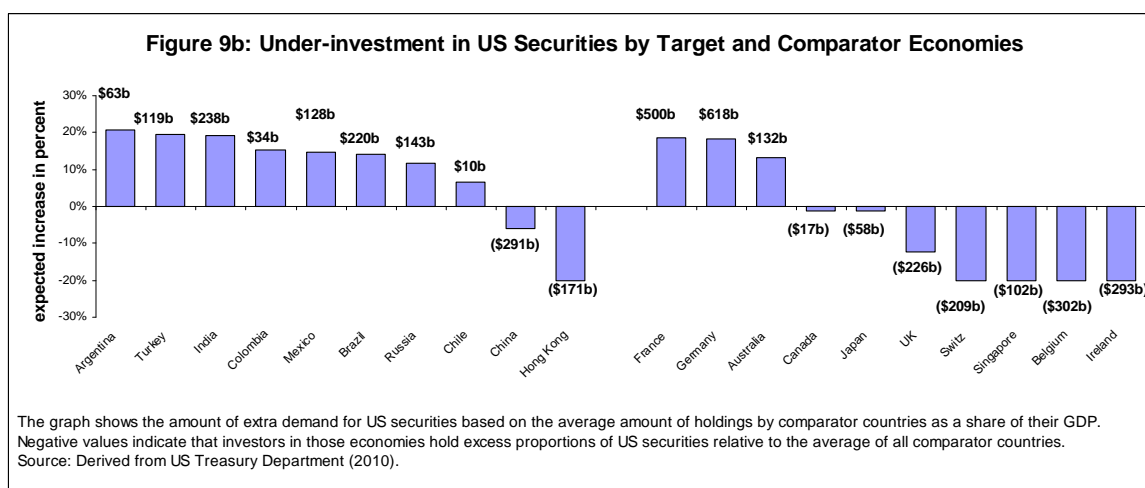
Supply and demand factors naturally determine the number of US broker-dealer offices in a country (as a very rough proxy for US brokers’ marketing effort in these target countries). Figure 9a shows the factors determining the equilibrium amount of US broker-dealer intensity in foreign markets. On the demand side, demand for US securities determines the number of offices (as shown for a sub-set of countries). The figure on the left shows that the number of broker-dealer offices in a country decreases across countries as investors dedicate a larger share of their foreign investment to US securities. Such a trend poses a mystery – as the more foreign investors spend on US securities, the fewer offices broker-dealers have open in that country.⁷ On the supply side, US broker-dealers

⁷ Increasing returns to scale or servicing of large institutional investors could explain such a pattern in the data. As the data appear relatively spread out, the line of best fit we have drawn could also paint a spurious picture of the relationship between broker-dealer representation in a country and the proportion of US securities its residents invest in. Naturally, the left graph in Figure 9a would portray demand for US broker-

position themselves where they are likely to earn higher commissions. To the extent that financial services earn higher premiums in a particular market, US broker-dealer effort is likely to increase in that market.



How much more revenues can US broker-dealers expect to earn in these foreign markets? In other words, what is the “pent-up” demand for US securities abroad? If the 10 countries belonging to the target countries group held the same proportion of US securities-to-GDP as in the comparator countries, the pent-up demand for US securities by target countries would be roughly half-a-trillion dollars (\$496 billion).⁸ Figure 9b shows a typical measure of under-exploitation of a market – as the demand for US securities if target countries demanded the same proportion of US securities in their portfolio as investors do in the comparator countries. As shown, the largest pent-up demand for US securities – using this primitive measure – exists in India at \$238 billion and Brazil at \$220 billion. As previously discussed, relative under-investment from Brazil may reflect the high returns which Brazilian investors could earn in their own stock market during the second half of the 2000s.



dealer offices if the cost of investing in US securities decreased as the proportion of portfolio investment increased.

⁸ The half-a-trillion dollar estimate includes the total excess demand for US portfolio assets in target countries – netting out the excess supply in China and Hong Kong. If foreign investors unwind their excess positions in US securities by themselves (without much broker-dealer intervention), then the demand for broker-dealer marketing comes to around \$1 billion (\$960 billion).

US broker dealers clearly have incentives to build relational capital with clients in these foreign markets if these estimates truly reflect (at least to some extent) still existing “pent-up” demand for US securities in these markets. Foreign investors clearly do not only look at the relative risks and returns of the US market when making investment decisions. As we shall see in the next section, foreign investors invest in US securities if they have invested in them before. They invest in US securities if they have other business dealings with US partners (as reflected in foreign direct investment and banking relationships). Such dealings and relationships clearly influence the way that foreign investors perceive – and invest – in US equity and debt markets.

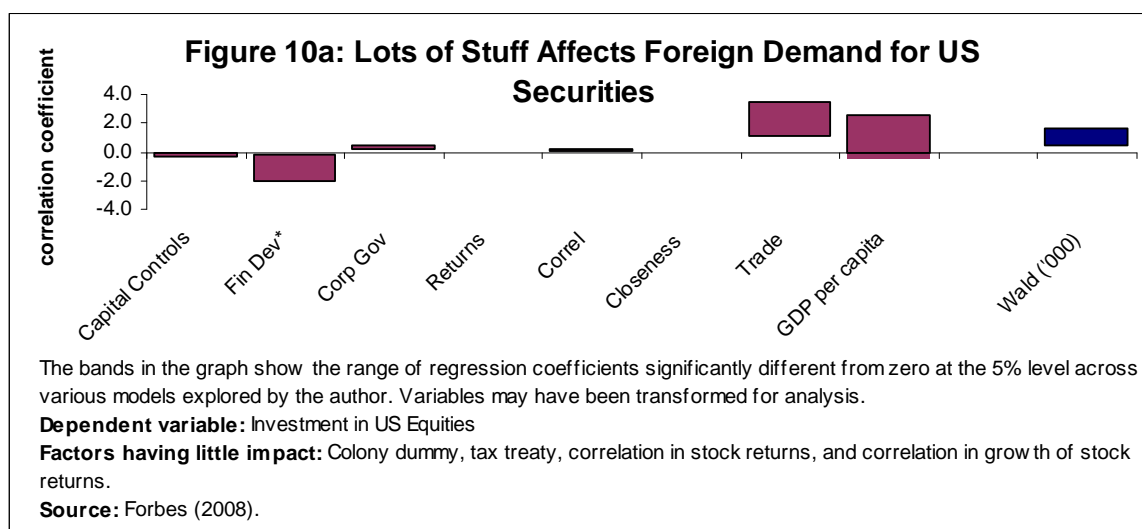
Literature Review

Most studies looking at foreign investment in US securities suggest that economic relationships forged between foreign investors and US institutions play a role in explaining foreign investment in US securities. All the scholars conducting econometric studies of such foreign investment find a weaker link between such investment risk, return, trade, and other variables than theory would predict. A new wave of scholars have focused on relational-capital type variables – such as whether foreign markets share a common language, membership in common trade and currency union, and the extent of communication between the US and other countries – to help explain and predict foreign demand for US investments. Most authors find inertia in such investment – investors heavily invested in US markets tend to prefer continued investment in the US; while foreigners concentrating on other markets tend to direct more of their investment toward those markets (and away from the US). Yet, even these studies have relatively low explanatory power. A transactional theory – focusing on the way US securities are actually demanded, bought and sold – still remains lacking in the literature.

The Basics: Risk, Return, Investment Opportunities Abroad and Trade Finance

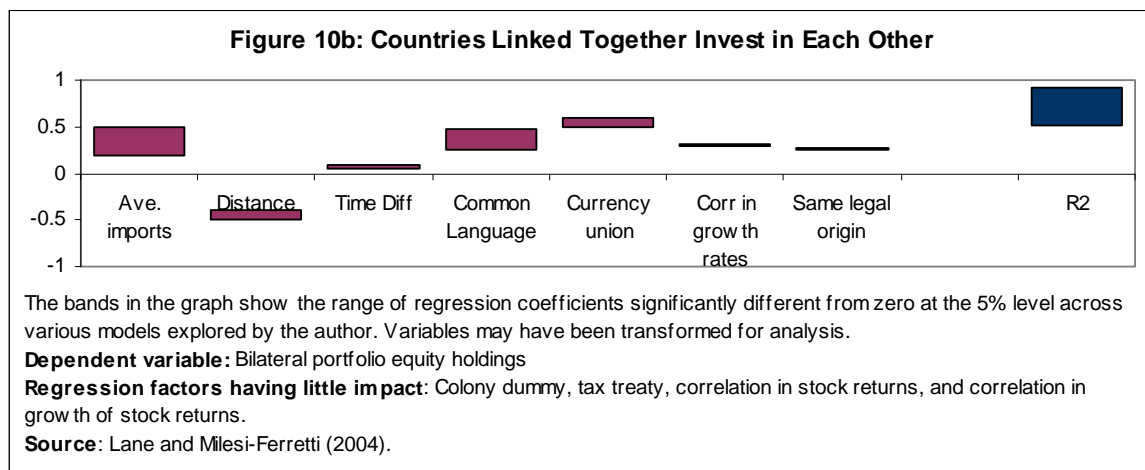
Why do foreigners invest so much in the US (particularly when US securities pay so little)? Forbes (2008) tests variables related to home bias, portfolio diversification, and macroeconomic factors in order to explain levels and changes in foreign demand for US portfolio assets. She finds a substantial home bias in foreign investment by comparing – as most authors – the level of foreign holdings of US securities with global averages. She also finds, surprisingly, that “foreigners do not invest more in either U.S. equity or debt markets if returns in their own markets are less correlated with the United States, providing little support for a diversification motive for foreign investment” (3). Foreigners – it seems – do not use US investment to hedge against risks in their own markets.

Looking at the macroeconomic factors which may influence (and thus explain) foreign portfolio investment in US assets, Forbes finds a number of statistical significant factors which correlate with foreign investment in US securities. Figure 10a shows the range of regression coefficients across various models she tests. Of the variables shown, she most greatly stresses the role that financial (under)development – and trade -- play in determining foreign investment in US markets. In her story of such investment, foreigners seek investments in US markets which they can not get at home. They also help to finance recurring US trade deficits.

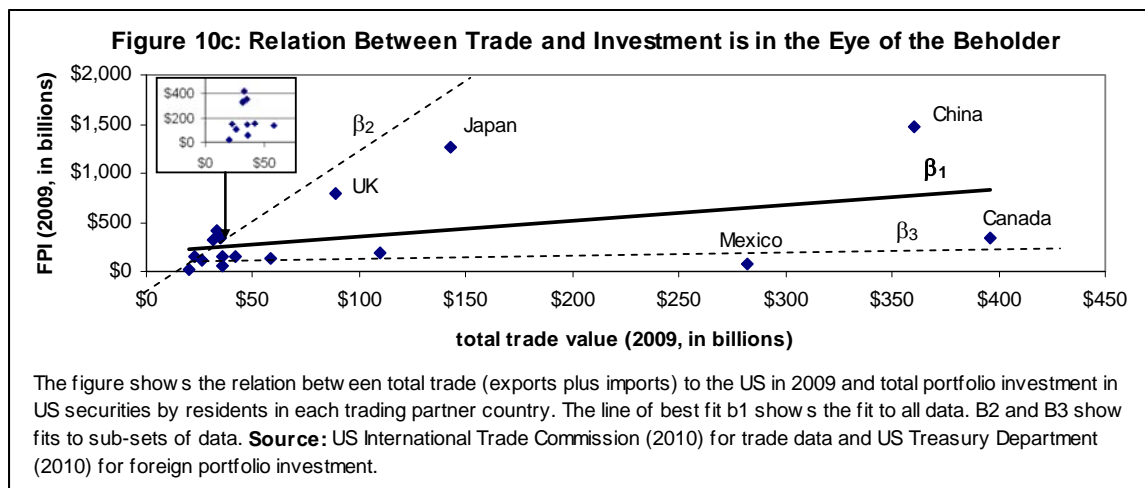


The Forbes study – as a representative of many studies of its kind -- has a number of drawbacks which detract from our understanding the foreign investors' motivations to place money in the US. First, like all the other studies of foreign portfolio investment, she uses regression analysis to compare and contrast various empirical hypotheses in the literature without a solid model of "micro-economic underpinning." Second, the study does not provide particular insight into specific countries. By looking at the entire Treasury dataset, she introduces added variation – and uses complex statistical procedures in an attempt to control such variation – into the analysis. The investment decisions of Congo, Ecuador, and the Kyrgyz Republic can tell us relatively little about the broader trends influencing foreign portfolio investment in the US. Third, her study – like most studies in this area (including ours to a lesser extent) – rely on global averages as the benchmark level of foreign investment. For example, looking at the amount of foreigners' holdings of German debt, she concludes that "foreigners hold an average of 4.2% of their debt portfolios in Germany, as compared to a market portfolio weight of 5.9%, so they have 71.7% of the "optimal" global portfolio of German debt. Foreigners hold an average of 21.7% of the optimal equity and 37.9% of the optimal debt portfolio for the major financial markets, as compared to an average of 13.5% and 24.9%, respectively, for the United States" (10). We all use global averages to represent ideal national averages. However, maybe the right average should be the average for the OECD, or Western Europe. Clearly, similar economies should be grouped together.

Perhaps foreigners which trade extensively with the US are the ones buying US stocks and bonds? Lane and Miles-Ferretti (2004) look exactly into that issue – exploring the extent to which bilateral trading patterns between countries (like the US and its main partners such as China or the EU) affect foreigners' preferences for US securities. They find that trade (and the trade-related linkages which accompany such trade) matters – significantly – in explaining why Argentines invest in US stocks and bonds, while the French do not. As shown in Figure 10b, they find that average imports significantly correlate with portfolio investment. They also find that variables which matter for such trade (like geographical distance between countries, differences in time zones and other factors) play a significant role.



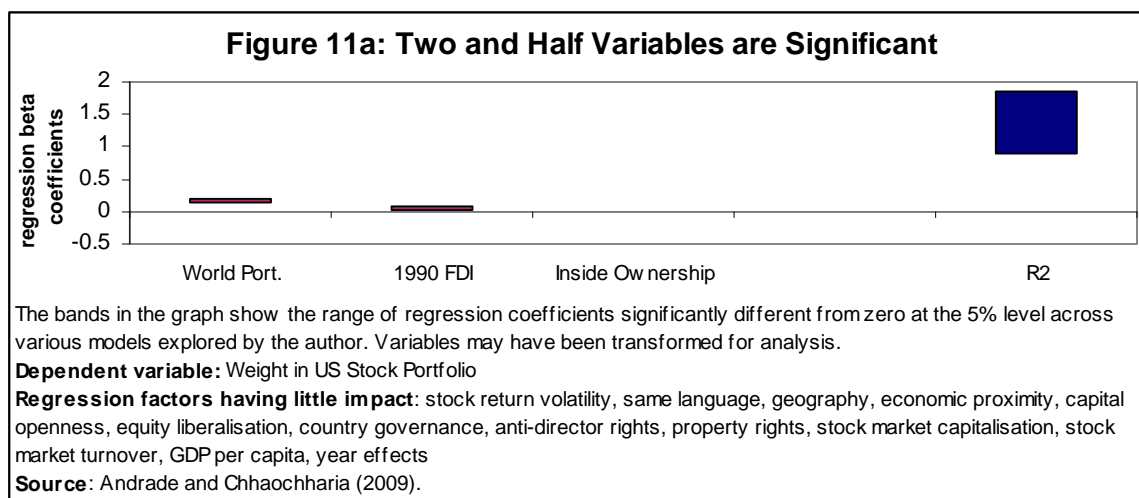
Yet, their regression analysis leaves the reader looking for an actual explanation for such foreign investment in US markets. To take our previous example, the flight distance between the US and Argentina is about 8770 kilometres (roughly the same distance as a flight to France). Even the correlation between trade with the US and foreign portfolio investment heavily depends on which countries are included. Figure 10c shows the relationship between foreign portfolio investment and total trade values with many of the foreign countries we look at in our own grouping of foreign countries. The correlation β_1 shows a moderate relation between trade values and foreigners' investment in US securities. However, looking only at the NAFTA sub-set of countries, the relationship becomes much weaker (as shown by the line of best fit β_2). Conversely, for the US broker-dealer interested in using trade patterns in order to predict demand for US securities, if he or she excludes the NAFTA zone, trade becomes too strong a predictor of various countries' demand for US securities. Other variables must serve as useful predictors of foreign demand for US portfolio assets.



Learning by Doing: The Role of US Listing and Direct Investment

Perhaps the transactions involved in international trade encourage human contacts and relationships which facilitate portfolio investment? If portfolio investment relies on such relational capital, then foreign direct investment should also strongly correlate with foreign investment in US stocks and bonds. Andrade and Chhaochharia (2009) – among several other authors – look at the relationship between foreign direct investment and

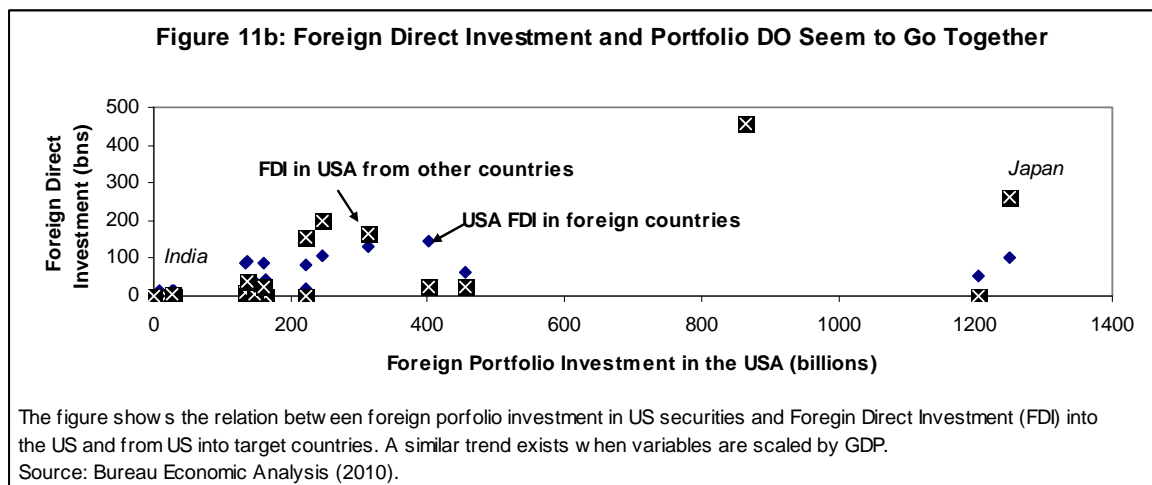
foreign portfolio investment. As shown in Figure 11a, for the roughly 13 variables they analyse, they find that foreign direct investment and divergences from their average investment position in a global investment portfolio explain much of foreign portfolio investment in the US.⁹ These authors directly attribute increased portfolio investment to more information gained during the FDI exercise.



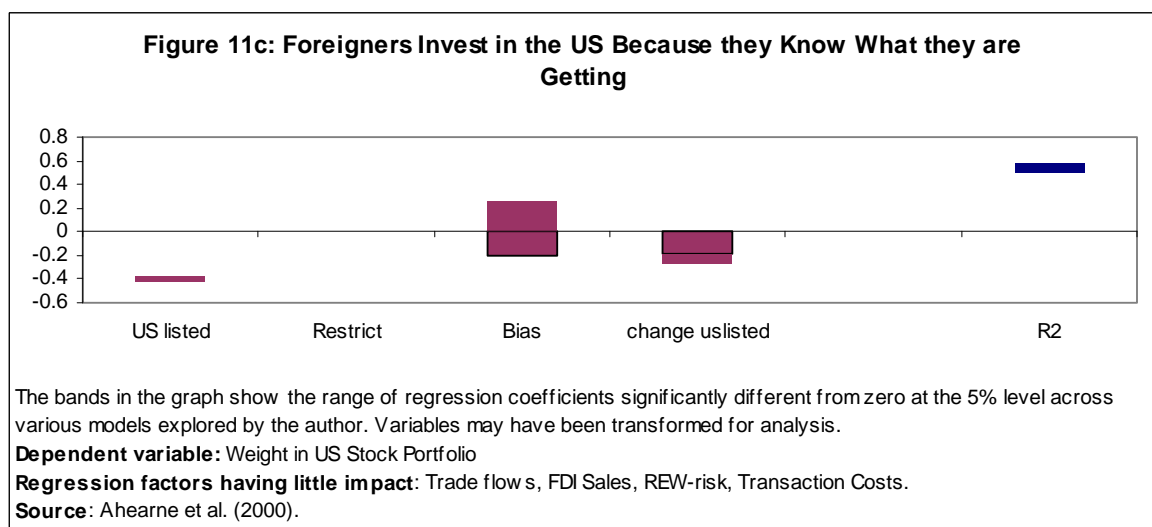
A cursory look at the data also seem to support this conclusion. Figure 11b shows the simple correlation between FDI and foreign portfolio investment in the US for the much smaller sub-sample of countries we analyse in our own study. More foreign direct investment in the US (and foreign direct investment by US citizens) correlates with more foreign portfolio investment in US securities. Some underlying factor clearly drives both types of investment between the US and other countries in bilateral investment relations. The underlying returns to capital can not be part of the story because stock market returns (as previously shown) do not explain portfolio investment in the late 2000s (though like usual in economics, other data suggests that returns to capital does play a role – at least in Germany – in determining FDI and foreign portfolio investment).¹⁰

⁹ As shown in the Figure, inside ownership also correlations strongly with foreign portfolio investment. However, the regression coefficient (while statistically significant) is so close to zero, that we assign little practical relevance in this variable.

¹⁰ De Santis and Ehling (2007) find that Tobin's q correlates with FDI and foreign portfolio investment. They argue that international investors "follow" companies' FDI decisions – using these decisions as signals (and possibly even more information rich sources of investment advice) in order to decide where to put their money. The authors do not say it explicitly, but clearly firms would not invest abroad unless they expected higher returns on their capital in those investments than at home.



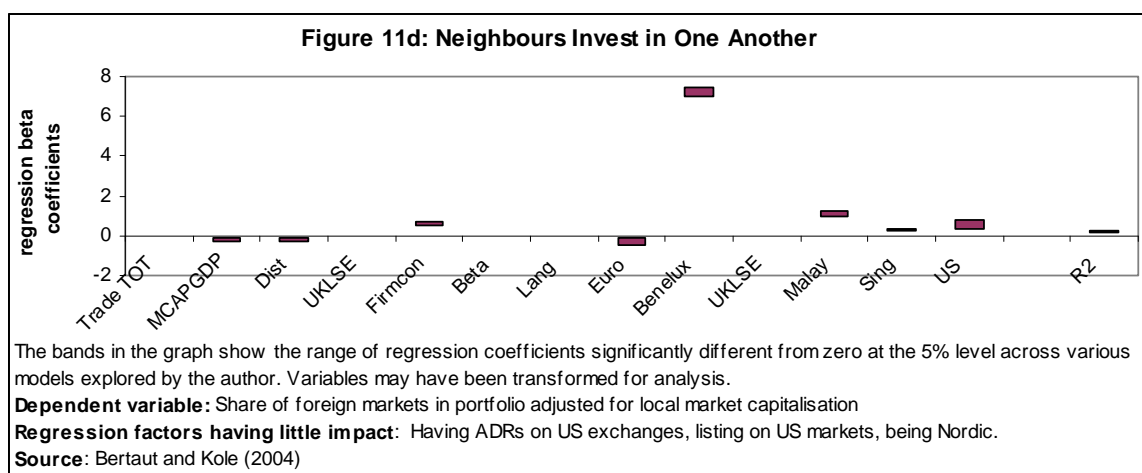
Maybe foreign investors value the information about high-quality investment opportunities obtained from these trade and direct investment relationships? If markets (or some information intermediary) could provide information about the quality of such investment opportunities, then such relational capital – as we have been discussing it – would not be important. Figure 11c – showing the results of regressions run by Ahearne et al. (2000) -- seems to support such a conclusion...militating against the role that relational capital plays in determining foreign portfolio investment decisions. They find that US investors prefer to hold more shares in a foreign country when more of these foreign country's shares are listed on US stock markets. By extension (if foreign investors act just like US ones), foreign investors should prefer US shares to the extent they obtain more information about the quality of the investment they are buying and feel more confident about financial statements which conform with GAAP standards and receive regular SEC scrutiny. Relational contracting – and thus relational capital – gives better information about investment opportunities... nothing more, nothing less. The lack of statistical significance of both FDI and transactions costs (in their study) seem to militate for such a conclusion.



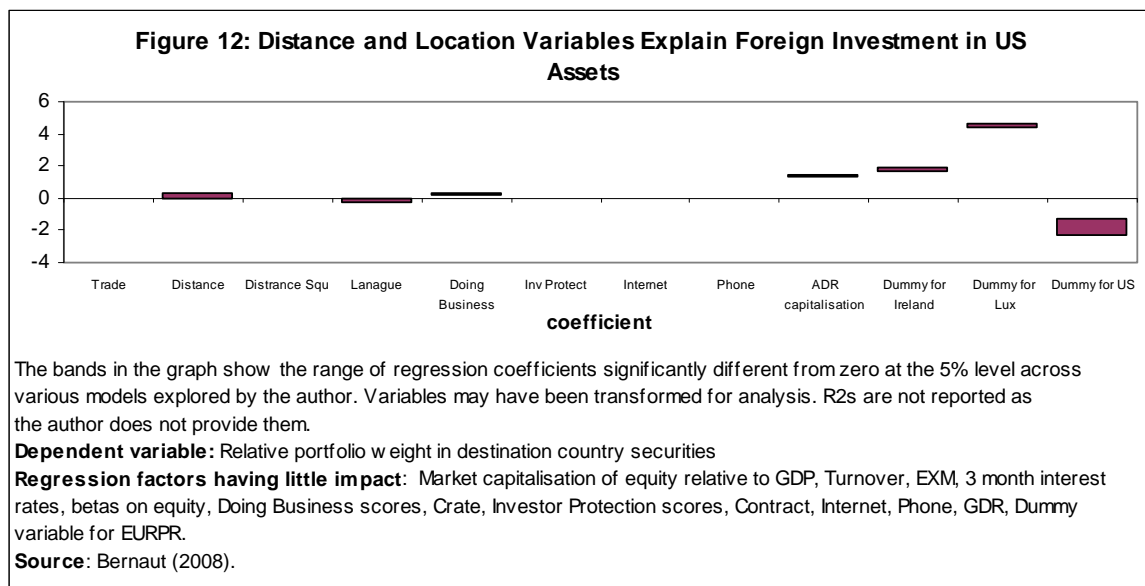
Like the Forbes study (and in our study as well albeit to a lesser extent), the Ahearne *et al.* study makes conclusions about individual investor preferences based on market level investor preferences. As usual in econometric studies, we conclude that each individual investor must be an information-led investor because a statistically significant share of investors in their country prefers US listed shares. Yet, we can not conclude that a Warren

Buffet or high street investor in Chicago prefers to invest in Argentina because Argentina has a larger number of companies listed on US stock exchanges. By a similar logic, we can not deduce that a specific French or Chilean investor specifically chooses to invest in US stocks and bonds because of the extra safety they feel from GAAP reporting and SEC oversight. As the financial crisis shows, when investments turn bad, investors turn to the person who sold them the investment – and not the SEC or the analyst’s who construct the *Euromoney* country risk indicators.

Most authors writing about foreign in US securities find that relationships matter. Bertaut and Kole (2004), specifically addressing (in part) the question whether such information leads foreign investors to choose US assets conclude that, “U.S. investors are more likely to hold foreign equity that is cross-listed on a U.S. exchange or offered as an ADR, as such offering not only lowers information and transactions costs but also signals adherence to U.S. accounting standards. However, our study indicates that such features of the U.S. market do not give U.S. equities any particular edge in foreign portfolios” (23, underlining ours). Instead they found that “country and regional fixed effects” greatly determine such investment. In other words, French prefer to invest in Germany, Asians prefer to invest in Asian markets, and so forth. They specifically downplay any role that listing on US markets (or ADR sales) have on foreign investment in the US. Something other than the information transferred in these relationships matters.

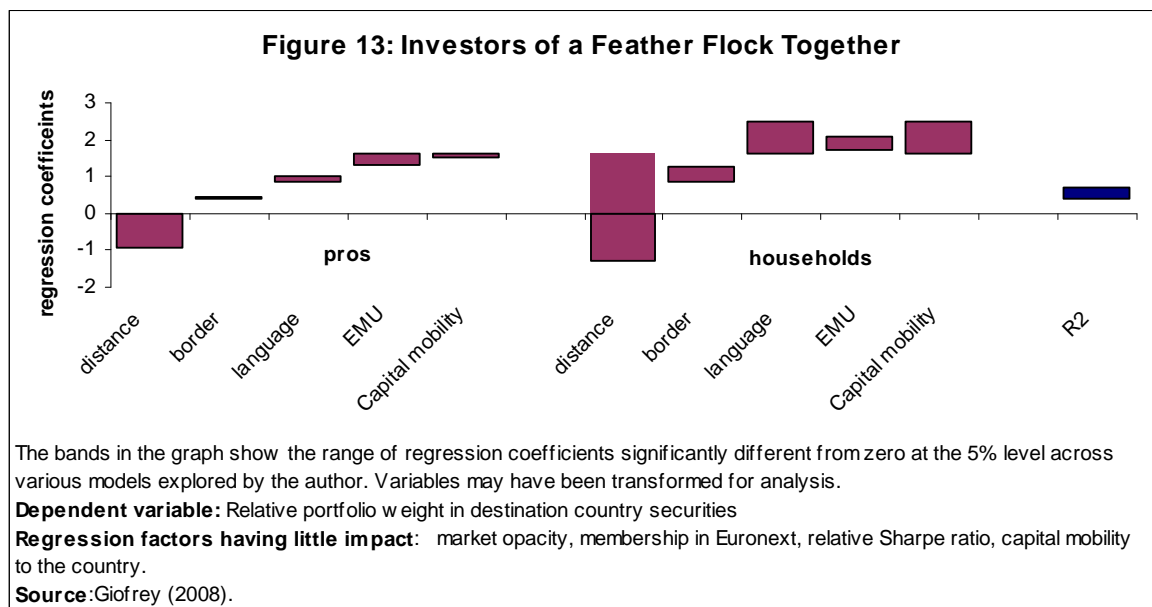


A number of papers have looked at the effect that simple communication has on foreign portfolio investment in US assets. In one of the most comprehensive of these studies, Bertaut (2008) analyses 15 variables – including factors like country risk, contact and other variables. She starts from the opposite position of Forbes – asking why foreigners invest so much in US assets. She finds – as shown in Figure 12 – that foreign investors choose specific countries (for reasons which we do not understand and so call them “country fixed factors”). Investors in countries which telephoned and visited US internet sites also placed significantly more money in US stocks and bonds than other investors. Such a statistical correlation leads Bertaut to conclude that communication comprises an important factor in explaining foreign demand for US portfolio assets.



The most convincing study showing the possible effect of relational capital comes from a little commented comparative study between foreign portfolio investment made by professional financial institutional investors as opposed to households. In the study Giofrey (2008) asks whether households – which have less access to the presumably vast information held by professional investors – would rely more on their own personalised knowledge of these foreign markets. Is an Austrian businessman working with Siemens in German and taking frequent trips to Berlin more likely to invest in the German rather than Chinese or Russian markets? Does speaking German provide that investor with a particular incentive to choose Germany over Argentina?

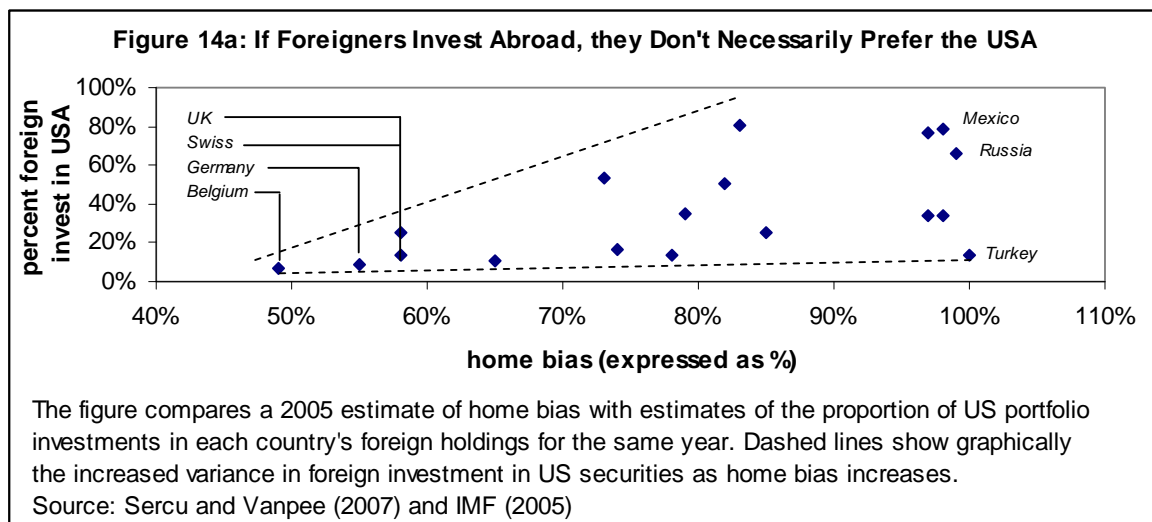
Giofrey's data – as summarised in Figure 13 – point to two conclusions. First, the usual associational variables (of geographical and cultural proximity and membership in the same economic clubs) strongly influences foreign investment. Second, household investors looking for stocks and bonds abroad rely on their personal experience and knowledge of these markets more than the "professional" (financial institution) investors. The effect, while extremely slight in the study and based on "very macro" macroeconomic data, merit further investigation.



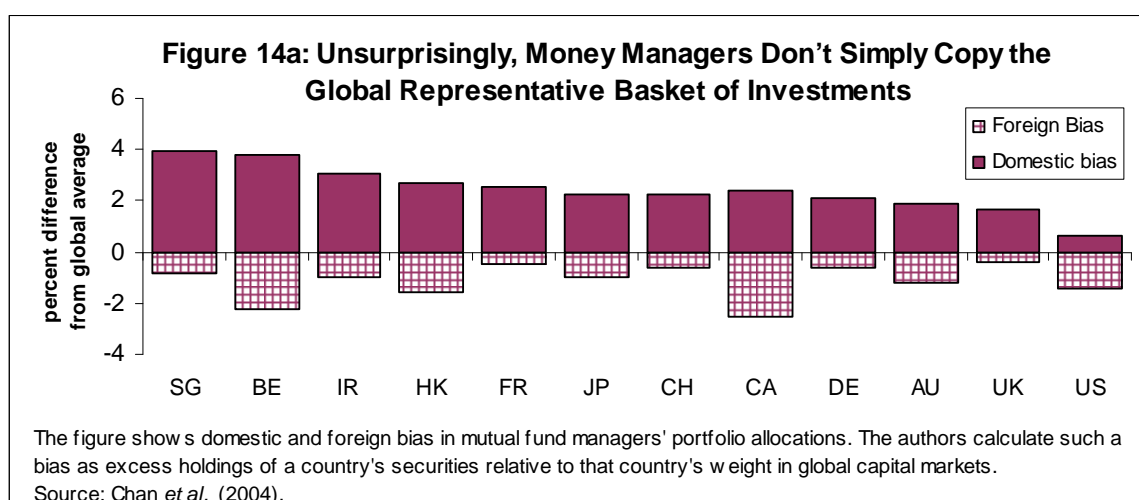
Sticking with what they know: foreign investors invest where they invested before

Writers looking at foreigner preferences for US portfolio assets have focused heavily on the role of home versus foreign bias as a possible explanation for patterns in the Treasury data. Most commentators have been happy to prove the existence of such a phenomenon – and tackle the question of whether investors exhibit a home or foreign bias (Ke *et al*, 2006). The question of home bias holds particular interest for US broker-dealers marketing US securities abroad. Foreign countries with a home bias should purchase fewer US stocks and bonds...or purchase more if such a home bias results from some market distortion which prevents these foreign investors from holding their preferred portfolio.

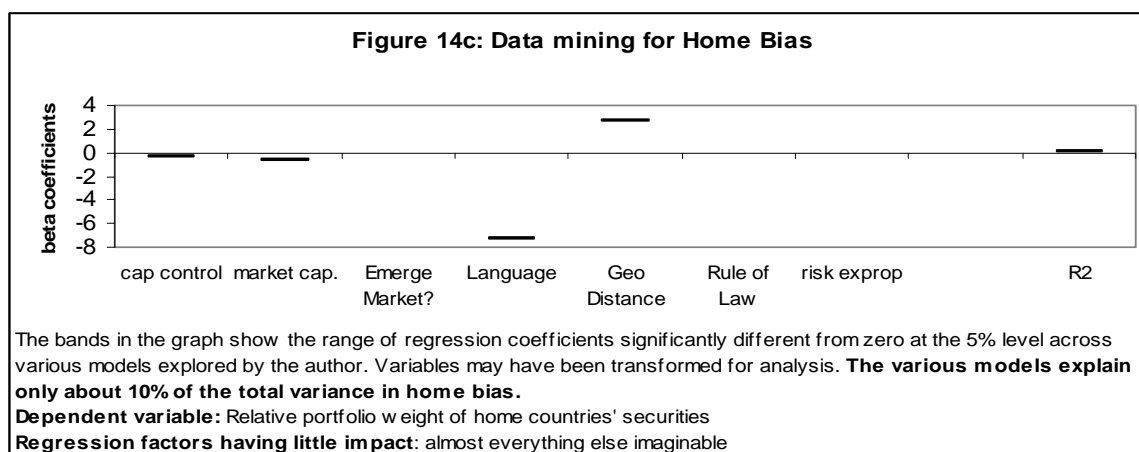
Unfortunately, as shown in Figure 14a, the data provide no particular clues for US broker-dealers seeking new foreign beach-heads. Investors in Belgium, Germany, Switzerland, and the UK -- exhibiting a low home bias (if a description of trends in international data can be considered to be an actual preference of investors at an individual level) -- spend a lower proportion of their foreign investable funds in the US. However, beyond that, other conclusions can not be reached.

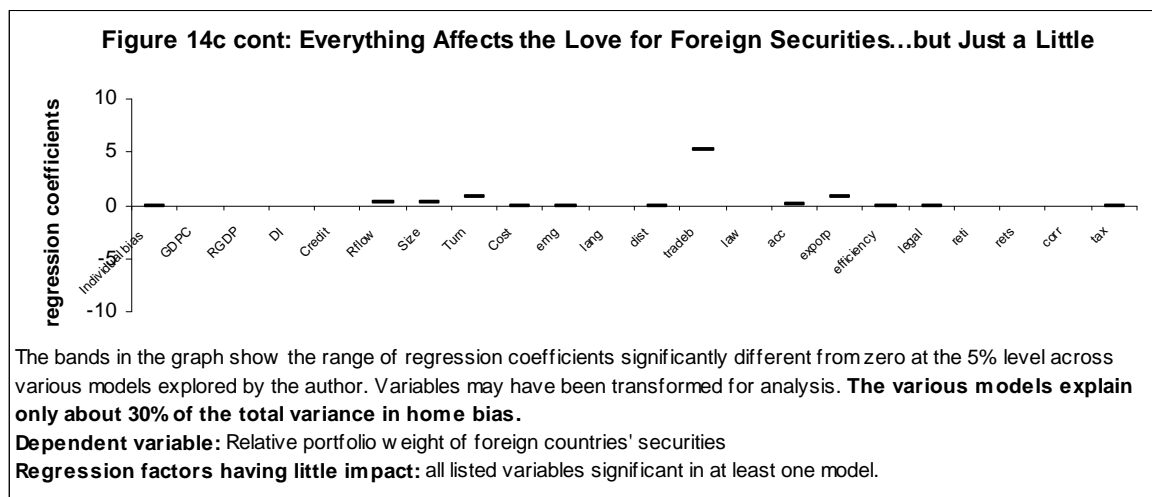


Foreign investors exhibit both a home and foreign bias. Chan *et al.* (2004) provide one of the most compelling (though now dated) studies of home bias in the literature. They study the investment decisions of mutual fund managers – focusing on microeconomic decision-making (instead of finding patterns in macroeconomic data). Like the other scholars writing about home bias, they assume that portfolio managers would want to allocate their funds in a country in the same proportion in which that country's market capitalisation reflects its weight in world capital markets. For example, if UK shares represent 8% of world equities markets, then portfolio managers world-wide would want 8% of their portfolio to have UK shares. Anything else represents home bias. Similarly, foreign bias occurs if a Singaporean fund manager holds 10% of his portfolio in UK shares (crudely paraphrasing their index). Figure 14b show the results of their study. Unsurprisingly, mutual fund managers do not simply stuff the same proportions of securities into their portfolios as they exist in global markets. Singaporeans prefer a bit more their own securities whereas Canadians prefer foreign securities a bit more.

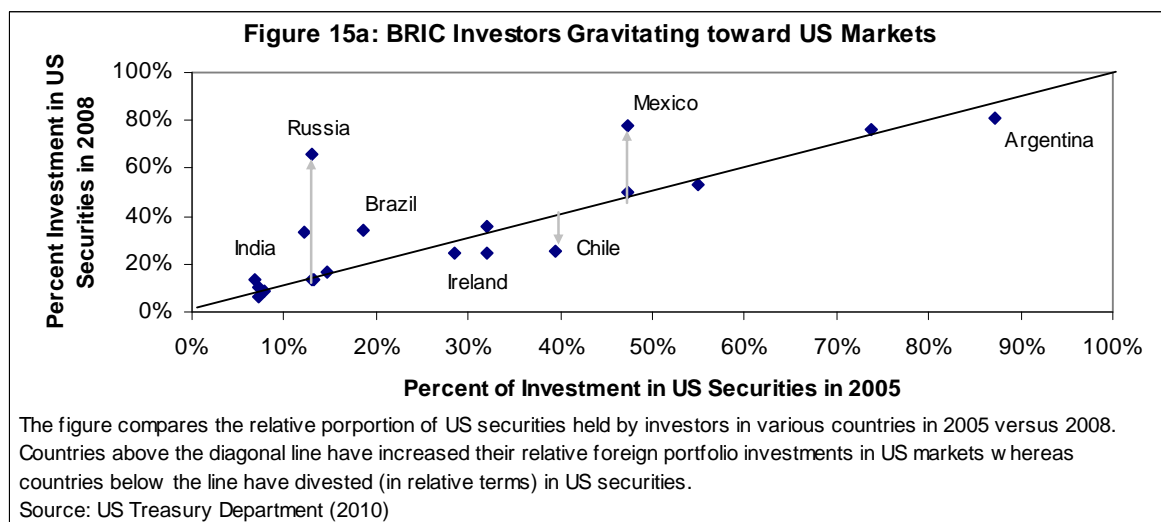


Nothing seems to explain (from a statistical point of view) home and foreign bias in mutual fund manager's portfolio decisions. Of the 22 variables Chan and his co-authors analyse (as shown in Figures 14c), only 4 have a statistically significant relationship in explaining home bias; while almost all of them are significant in explaining foreign bias. Yet, the explanatory power of Chan *et al.*'s models – like most models in this area – are relatively low (with their models explaining about 10% of home bias about 30% of foreign bias).

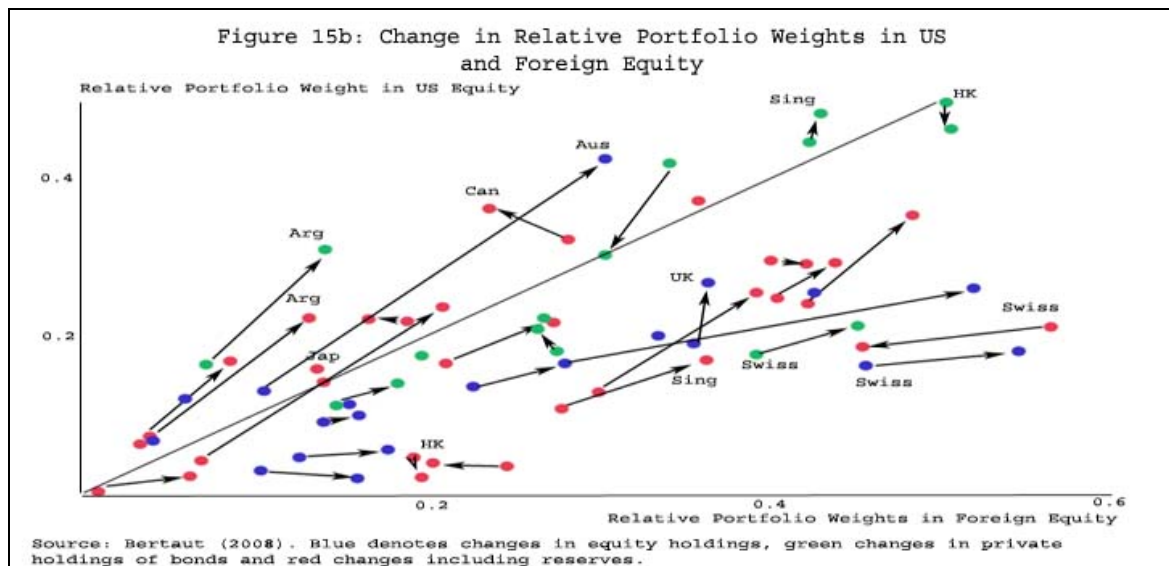




Investors in foreign securities seem to prefer to continue investing in markets they already invest in. Figure 15a shows the change in relative proportions of US securities held by investors in the major markets we look at in our own study. As shown, countries like Russia, Mexico and Brazil seem to be increasing their holdings of US securities – while countries like Chile and Ireland appear to be divesting (in relative terms) from US portfolio assets. Figure 15b supports the conclusion that investors in particular countries tend to gravitate toward or away from US securities. Bertaut (2008) tracks changes in foreign investment --- using the same US Treasury data all of us rely upon -- in various types of US securities. The graph looks suspiciously like the unstable equilibrium graphs every graduate macroeconomics student sees in their first year textbooks.¹¹ The dots on the graph do not seem to be converging on any stable proportion of investment in US securities. Instead, some countries like Canada, Argentina, China seem to be gravitating toward increasing proportions of US portfolio investment; while countries like Singapore, Switzerland, Hong Kong seem to be gravitating away.



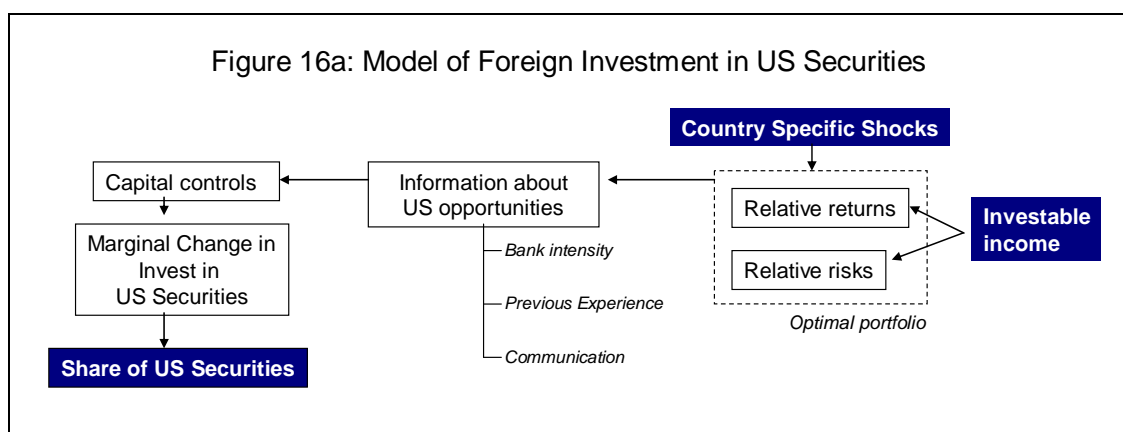
¹¹ Lin and Swanson (2008) find evidence of herding in foreign portfolio investment in US securities.



Few explanations -- other than relational capital -- seem to provide us with much insight into the reasons why some countries draw ever-closer to the USA (from a portfolio investment point of view) while others draw further away. Relative returns, risk, trade, and other macroeconomic factors seem to explain little. Membership in similar economic unions and physical distance (a proxy for the number of times investors in one country are likely to work and travel in the target country) seem like the best explanatory variables. Yet, even these variables seem unsatisfactory. They ignore the actual process by which foreigners invest in US securities. These foreigners obtain information from intermediaries and conduct actual purchases from brokers registered on US exchanges. The more (and better) interaction foreign investors have with US registered broker-dealers, the more likely they should ne invest in US markets.

Model and Empirical Procedures

A foreign investor -- sitting in his or her office in Buenos Aires, Moscow, or Beijing -- considers a number of factors when deciding whether to buy US Treasuries or shares in Apple Inc. Figure 16a roughly shows the investor's decision tree -- serving as a good micro-level model of the foreign investor's decision to buy or sell US securities. The investor starts by looking in his or her wallet -- increasing or decreasing overall investment depending on the extra savings he or she has that month or year. The investor naturally opens a website and compares the historic risks and returns offered in US markets relative to other markets. Consistent with modern portfolio theory, the investor will adjust his or her portfolio to asymmetric shocks -- depending on whether he or she loses his job, whether her company signs a big contract or whether a real estate crisis affects the US.

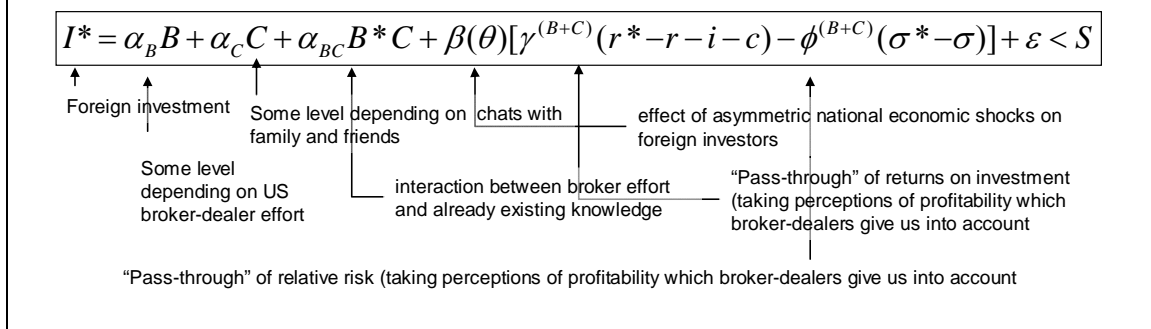


Information about investment opportunities in the US will play a deciding role in changing foreign investors' preference for US securities. These investors will obtain such information through their previous experience (as shown by Figures 15) above. The foreign investor will also talk with colleagues in the US (as Figure 12 showed the importance of communication in deciding foreign portfolio investment). The foreign investor will also consult a broker-dealer (presumably to obtain advice and if deciding to invest, to execute the transaction). Bureaucratic regulations and restrictions will naturally influence the choice of investment – as foreign exchange restrictions, prohibitions on the ownership of foreign securities, and registration requirements – will all influence both the investor and the person selling US securities. These investors will decide on incremental changes in their portfolio – leading to changing proportions in their portfolio of US to non-US portfolio assets.

The amount of US dollars the foreign investor decides to spend on US stocks and bonds depends on a slightly complicated combination of these factors (see Appendix I for the complete, mathematical model). Figure 16b shows – the mathematical terms – the way that we might expect *a priori* these variables to influence the foreign investor. Foreign investors will invest some amount of US dollars in US securities, depending on the effort that broker-dealers make in marketing assets to these investors.¹² The yield for every dollar spent in foreign offices of these broker-dealers on the extra investment reported by the US Treasury equals α_B . These foreign investors also make some amount of investment in US securities for every \$100 they spend calling colleagues and friends in the US (call this α_C). Finally, foreign investors – like all investors – are likely to invest in shares or bonds which they already heard about from US-based friends and colleagues. For example, if an investor from Istanbul has heard about new iPads from Apple from his colleagues in the US, he or she is more likely to be influenced by professional advice to buy Apple shares. Such influence represents the interaction between influence colleagues and friends exert by telephone and the effect that broker-dealer advice might have on the foreign investor.

¹² Naturally, the expected future US dollar exchange rate with the investor's home currency would affect his or her demand for US portfolio assets. In order to keep the model as simple as possible, we assume that expected relative returns between the US and the investor's home market already take such expected changes in exchange rates into account.

Figure 16b: The Model of Foreign Investment in US Securities in Action

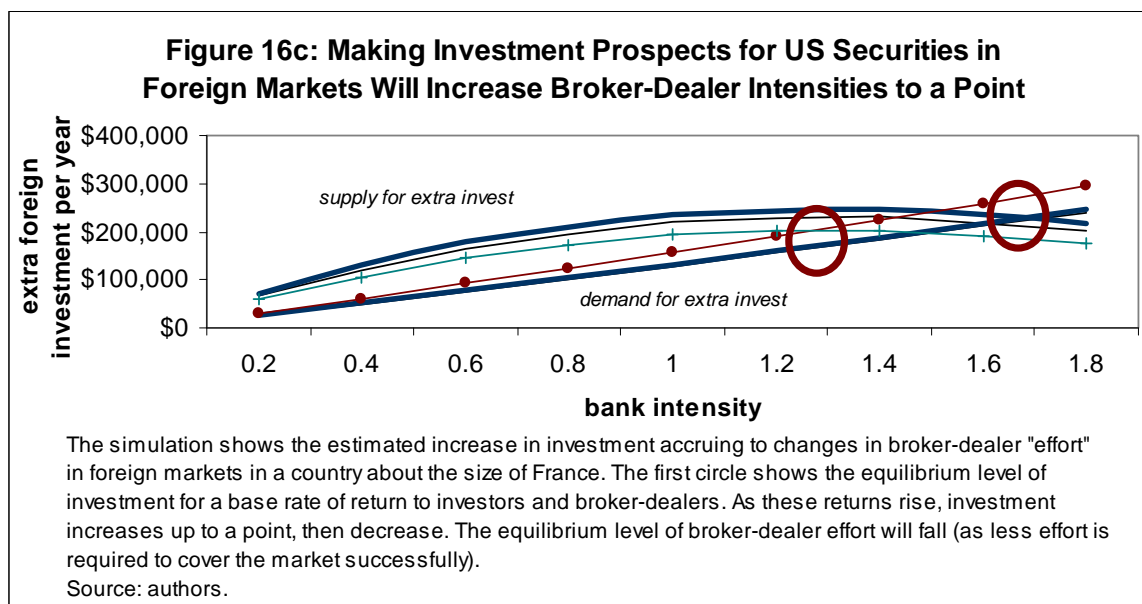


Foreign investors will change their preference for US portfolio assets in relation to their own income (and shocks to that income). For example, the investor working in the motor industry in Santiago may be affected by a downturn in the demand for cars due to competition from Brazil – affecting his or her optimal portfolio. Perhaps he or she would wish to hedge against such risks by investing in US motor shares. Think of these shocks as spins of a wheel – where the wheel can return a value between -100% and 100%. The variable θ represents the outcome of such spins (as making the economic model more complicated does not help us understand foreign demand for US assets). The coefficient β represents the dollar amount by which these wheel spins translate into buy or sell orders to US affiliated broker-dealers. Changes in relative returns and risks “pass through” these shocks. For example, if the Santiago investor’s income changes, this will affect the way that changes in relative returns will affect how many US shares or bonds he or she buys. Similarly, if the price of haircuts rises in Santiago and not in Chicago, such a change will affect the investor’s willingness to assume higher risks for shares in the US.

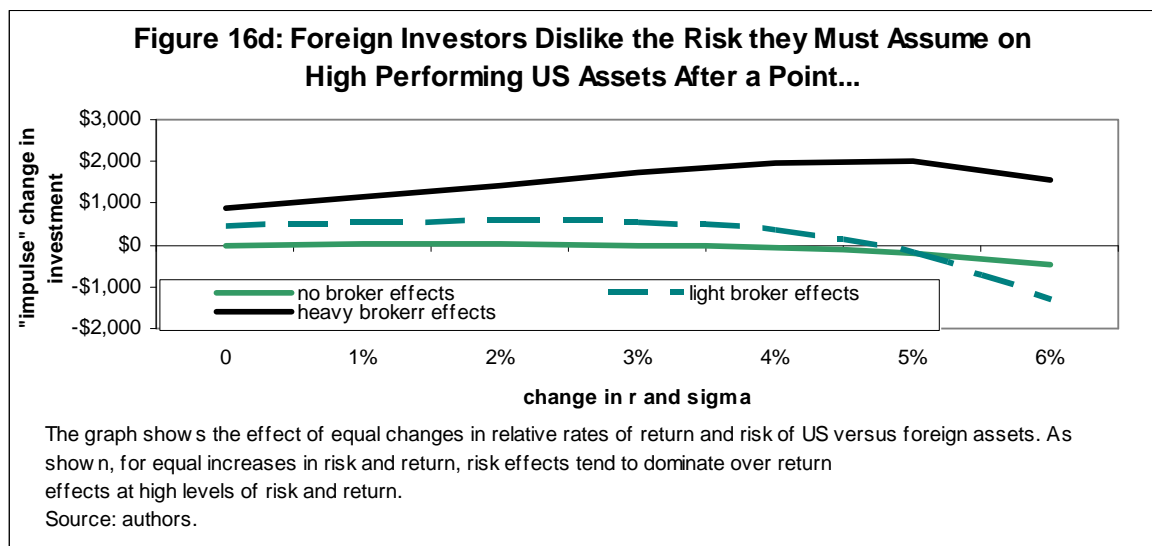
Other parts of the model deal with the way that relational capital interacts with relative risks and returns of US portfolio assets. Relative returns “pass through” to changes in foreigners’ investment in US assets – and γ describes the number of dollars an investor will invest in US securities when their relative returns change. As previously shown, broker-dealer effort and communication change the way that investors respond to these different rates of return. The geometric effect on γ means that the more effort broker-dealers make, the more already existing influence translates into more investment. When a broker-dealer contacts a foreign client 2 times, the investor might be a bit hesitant. As they develop a trading history – in other words, develop relational capital – the more the changes in relative returns they see in the *Economist* will translate into buy and sell orders. Similarly, changes in relative risks translate into changes in investment through some coefficient ϕ -- with geometric effects on advice and information coming from broker-dealer and communication.

The model – for reasonable assumptions about each variable – makes interesting predictions about the effect that US broker-dealer effort has on foreign investment in US securities. As shown in Figure 16c, the additive effect of broker-dealer effort should increase the equilibrium flow of foreign investment in US securities by an extra \$200 billion. To keep the simulation simple, we show the effects of a low γ (a low pass-through effect that changes in relative returns have on foreign investment), for high γ and a high ϕ (US assets are much more risky than foreign ones) – keeping all the other variables constant. In order for the simulation to make sense, we had to make assumptions about broker-dealers’ incentives to invest extra resources in these markets. We do not model

broker-dealers' revenue (as a reaction curve) formally in this paper because we assume that broker-dealers will respond to all extra demand at some price in order to clear the market. A 20% increase in broker-dealer effort then corresponds with three possible increases in foreign investment – depending on foreign investors' response to broker-dealer marketing effort. For low responses to differences in relative rates of return, investment increases by \$200 billion. For responses to differences in relative risk, investment changes by \$75 billion. For relatively high responsiveness to broker-dealer effort, investment increases by about \$220 billion.



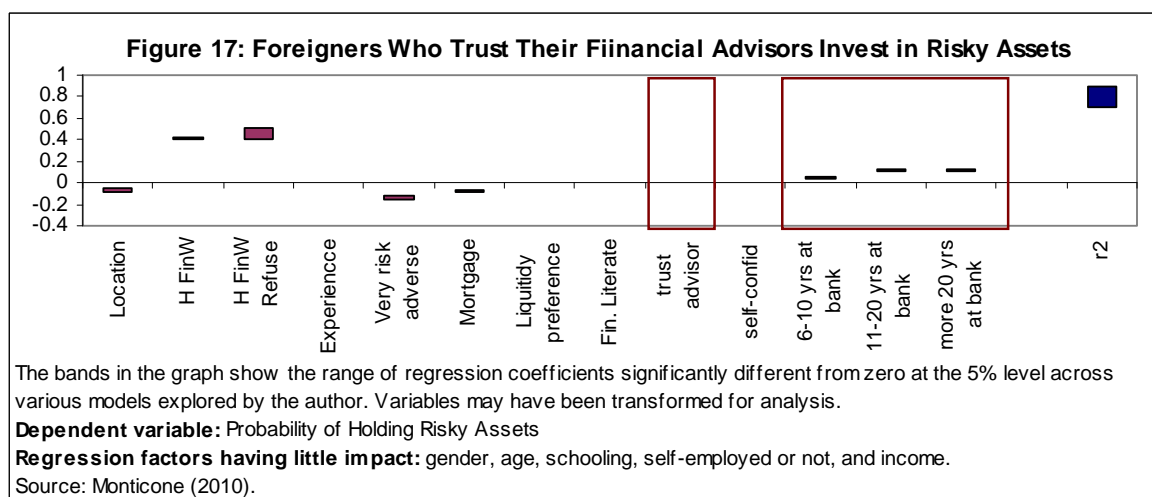
The model also helps us to understand the role of more conventional variables on the foreign investors' investment decision. In our model, foreigners' risk aversion tends to dominate their desire for more profits after a certain level of risk and return. Figure 16c shows the effects about which we hypothesize – with varying levels of broker-dealer effort in these foreign markets. For markets where foreign investors purchase their own US securities (through the internet, local brokers who simply take orders and so forth), increases in relative returns have negligible effects on US portfolio investment. Foreign investors tend to avoid US shares – and at high levels of risk and return -- tend to fear US shares more than covet them. For intermediate levels of broker-dealer effort, foreign investors invest more – but withdraw funds as risks and returns increase (as they are better informed about the risks involved and seek higher risk-adjusted returns elsewhere). For relatively heavy broker-dealer effort, investment stays up – even for relatively high relative risks and returns in US markets. Foreign investors feel confident that they can navigate through the joys and sorrows of US markets with expert advice.



The model – as illustrated by the two examples shown in Figures 16c and 16d – allow us to propose several hypotheses.

Hypothesis 1: US Broker-Dealer effort and Telephone Communication Has an Effect on Foreigners' Investment in US Securities

The effect of financial advisors' relational capital with clients has been relatively well documented – though only for particular banks and at particular times. In a pioneering study in this area, Monticone (2010) looks at the effect that financial advice – and trust in financial advisors – has on purchases by foreign (non-US) investors. As shown in Figure 17, he finds that trust in the financial advisor has a statistically significant – though small compared with other variables – effect on foreigners' propensity to hold foreign assets. More tellingly, years of experience dealing with a financial institution – in this case Unicredit – significantly affects the probability of an investor holding foreign assets. These results suggest that some factor – which we call relational capital – plays a role in investment decisions.



US broker-dealer marketing efforts in foreign countries should have four effects on the level of foreign investment in US portfolio assets. First, such broker-dealer marketing (or even representation in a foreign market) should lead to a certain amount of foreign investment (the α_B in our model). Most US broker-dealers have offices in the markets we study – and if the rough estimates we calculated above are correct -- derive much of their revenue from abroad. **If our hypothesis is correct, any regression on investment and broker-dealer intensity should not have a statistically significant intercept and should have a significant regression coefficient.**

Second, marketing effort by broker-dealers may interact with already existing communication under-taken by foreign investors with friends, family and colleagues located in (or working closely with) the US. Previous studies – such as Portes and Rey (2005) – already have found significant effects of communication and bank offices on cross-border investment flows. **If our hypothesis is correct, our regression analysis should find an interaction between broker-dealer representation in a country and the level of communication with the US as affecting foreign investment in US markets.**

Broker-dealer effort is likely to influence the effect that relative rates of return have on foreign investment in US portfolio assets (the γ in our model) in two ways. First, broker-dealers find “deals” for investors which they can not find for themselves. As such, broker-dealer effort helps to increase the actual (r^*-r) of the foreign investor above the market average (Bae *et al.*, 2004).¹³ Second, communication with broker-dealers likely “colours” foreign investors’ perceptions of US investments. For example, Guercio and Tkac (2001) find that *Morningstar* ratings affect investment in particular mutual funds. Investors are not rational machines – they need to be exposed to investment ideas, reflect on them with competent counsel, and often weigh pros and cons. While popular media reports focus on investment advisors “talking up” shares, a much larger and more important function derives from their role in working with clients to help them assess risks and potential returns. **If our hypothesis is correct, our regression analysis should find an interaction between relative rates of return and broker-dealer intensities in determining foreign investment.**

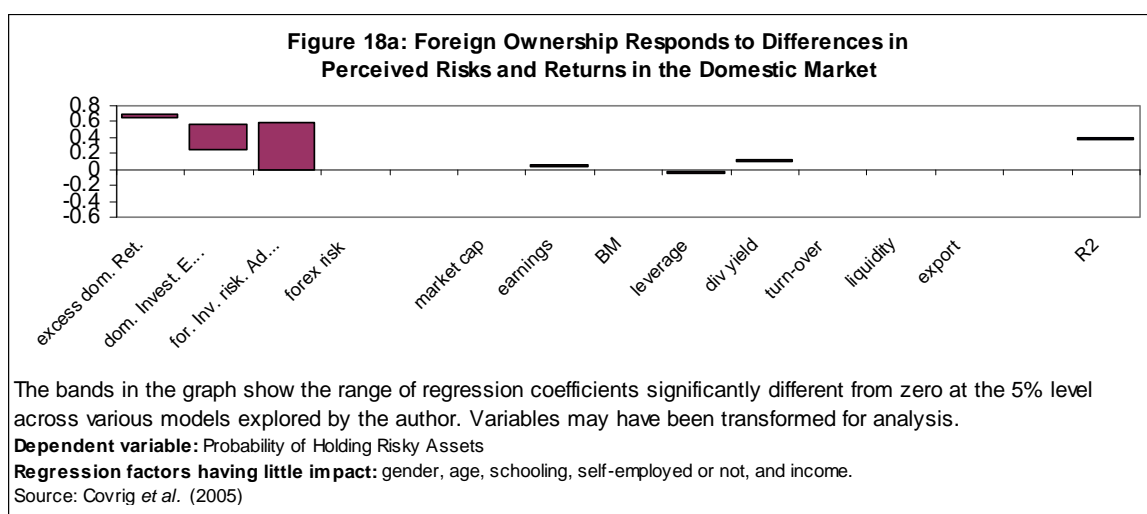
Broker-dealer activity also likely affects foreign investors’ perceptions of the riskiness of US portfolio assets in three ways. First, assets proposed by broker-dealers may be less risky than assets which the foreigner could find him or herself. Second, the assets proposed by the broker-dealer may match the foreigners’ portfolios better – decreasing the real risk due to covariance between portfolio assets. Broker-dealers have complex models which they sell in order to help investors (both domestic and foreign) reduce such risk. Finally, broker-dealers may reduce (or increase) perceptions of the risk of US shares. In a fascinating – and little cited study -- Weber *et al.*’s (2005) conduct an experiment related to perceptions of risk. In their study, they show experimental subjects information about risks related to domestic and foreign stocks – presented in different graphical formats.¹⁴ They find that the method of presenting the same information affects the subject’s perception of the underlying security’s risk. **If our hypothesis is correct, our regression analysis should find positive regression coefficients for the interaction between broker-dealer intensity and relative risk between US and foreign markets.**

¹³ Barber *et al.* (2004) conduct interesting research in this area – showing that returns of investment houses at times exceeds independent investment advisory services. Such a finding shows that broker-dealers can – in some situations – help foreign clients earn higher rates of return than they can earn by following the advice in online and mail-order investment newsletters and research services.

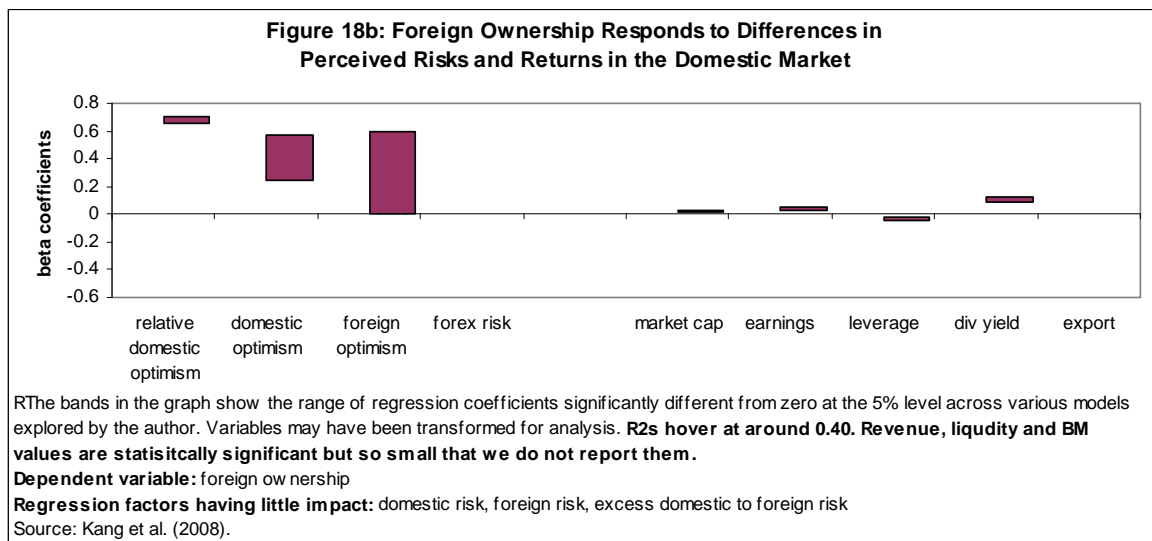
¹⁴ As usual, they define risk as the variance of past prices.

Hypothesis 2: No matter what the pundits say, risk and return still matter

Risk and return still matter, though not in the way conceived by modern portfolio theory. Perceptions of future expected risk and return drive foreign investment -- much more than extrapolating past risks and returns. A number of recent papers focus on different mental models which foreign investors use to evaluate US securities. In Covrig *et al.* (2005), they ask whether foreign and domestic fund managers have the same preferences for equities. They find, as shown in Figure 18b, that fund managers esteem different aspects of an equity's return (or potential return) when placing money in stocks and bonds. The reputation of a company abroad has a statistically significant effect on investment as does the number of analysts covering a company. Such effects strongly interact with the usual risk and return factors -- shown in their regression analysis by dividend yield, return on equity, and risk (as variance in prices).



The amount of “optimism” a foreign investor brings into his trades also affects perceptions about returns and risks. Kang *et al.* (2008) – in a highly unusual and (unfortunately we must admit) confusing paper – attempt to assess the extent to which foreign and domestic investors bring their own mind-sets into their equity trades. Looking at foreign ownership of shares on the Korean stock exchange, they assess the extent to which differing perceptions of returns and risks influence foreign portfolio investment in Korea. Figure 18b shows that, in their regression analysis (if we have interpreted their results correctly), foreigners applying a “domestic view” of Koreans risks and returns – and assuming that the Korean markets will exhibit the returns and risks of the local market -- will invest quite differently than investors which apply an international view. Interacting with these effects, they find the usual risk and return variables – earnings, dividend yields and equity price variability – all significant.

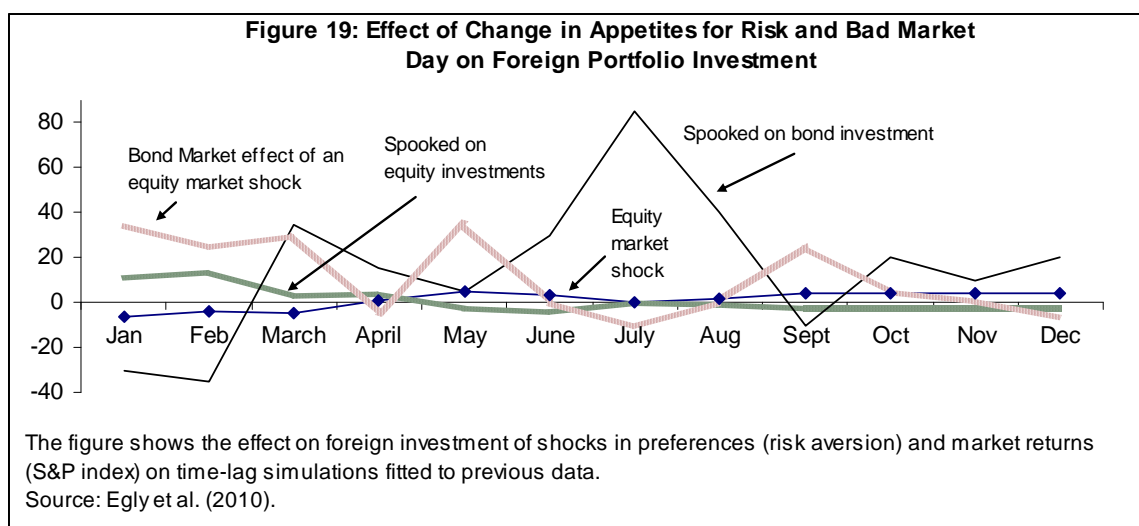


We hypothesize that relative risks and returns of US versus foreign securities still heavily influence foreign investors. However, we do not take the view that past performance reflects likely future performance. We think that perceived, expected risks and returns – again, heavily coloured and influenced by broker-dealer and investment advisor advice, plays a key role in determining foreign demand for US securities. More importantly, foreign investors should have more and better information about the relative risks and returns they face. As such, they can base their investment decisions on current information, rather than have to extrapolate past trends as predictors of future performance. **If our hypothesis is correct, our regression analysis should find positive regression coefficients for the effect of relative returns and risk on current year changes in investment rather than lagged investment as perceptions about changes pass through more quickly. Past relative risks and returns should not be statistically significant with changes in this year's level of foreign investment.**

Hypothesis 3: Shocks to Foreign Economies (or ours) drive foreign portfolio investment -- through relative risks and returns

Different investors – whether foreign or domestic – will have different risk-return preferences based on their job, social position, education and other factors. Significant shocks to an investor's circumstances (loss of income from a job, increases in the price of his or her morning coffee and so forth) should cause the investor to rebalance his or her portfolio. Relative (asymmetric) shocks to foreign economies should change the portfolio risks and returns of investors purchasing US stocks and bonds – causing them to rebalance their portfolios.

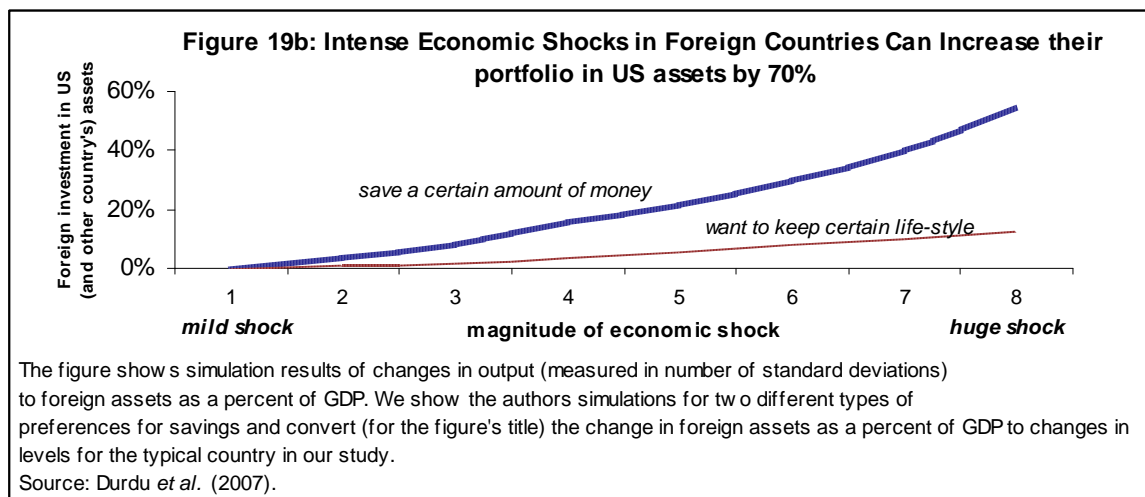
The effects of such shocks though have historically been shown to be relatively small. Figure 19 shows the estimated effects of a change to foreign investors' risk aversion and a change in relative returns (as measured by a change in the S&P 500 index). According to Egly *et al.*'s estimates, a shock (or change) in the acceptable level of risks to foreign investors in bond markets causes them initially to sell some of their US portfolio investments. These foreign investors compensate after about 2 months – going on a relative buying spree by the third month after the shock (we assume each shock happens on the 1st of January to keep the graph labelling simple). Feedback effects cause further portfolio investment until about the 7th month, where investment oscillates toward a slight increase over its initial value by the end of the year.



In relatively sharp contrast, a fall in the US stock market causes foreign investors to slightly decrease their US holdings. Their holdings oscillate, roughly overshooting their initial level after the third-month. By the end of the 12th month, foreign holdings of US securities are slightly above their initial level. Because Egly and co-authors use vector auto-regression (which uses past variation in order to predict future variation), we do not know the exact reasons why the data oscillate the way they do in their simulations. Such findings are also a bit surprising – as authors such as Curcurua and co-authors (2010) find that US investors investing in foreign markets tend to rebalance their portfolios “in real time” – even in anticipation of market-moving news. Given findings of relatively strong market efficiency in international portfolio investment, the effect of shocks on foreign portfolio investment in US securities remains a mystery.

Many of the economies we study suffer from irregular macroeconomic crises (including the US in the late 2000s!). Our own model – which we depicted in the flow-chart style graph in Figures 16 -- portrays foreign investors making investment decisions proceeding with “business as usual.” In the case of economic crises and “sudden stops” – foreign investors also use US securities as a form of savings – a safe harbour for their wealth and even a source of income. Durdu and co-authors (2007) model the demand for such assets during an economic crisis. As shown in Figure 19b, the effect of an economic crisis in the foreign economy can translate into significant changes foreigners’ US portfolio investment. For “mild” shocks – translating to roughly 1 or 2 standard deviations of the foreign country’s GDP – demand for US portfolio assets can increase by up to 30%.¹⁵

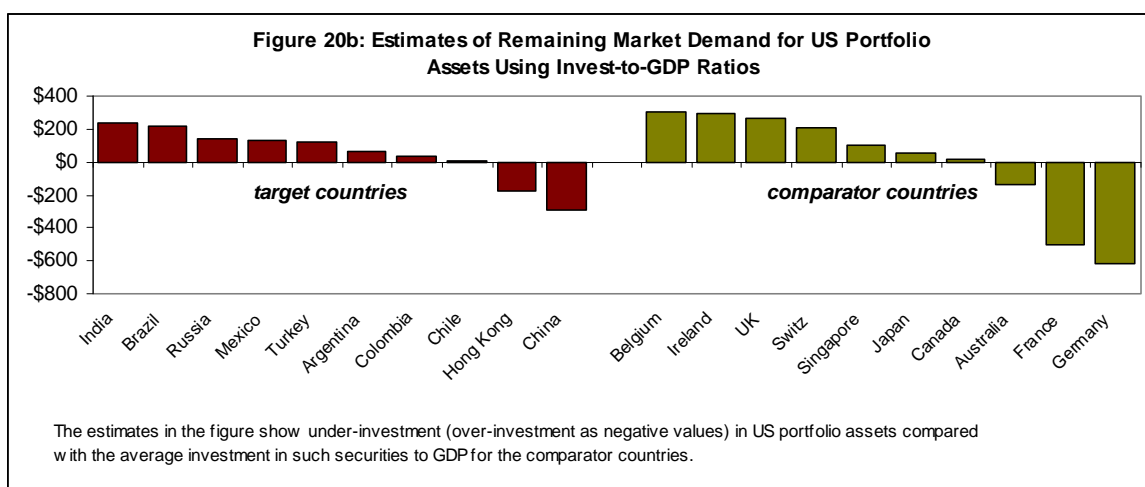
¹⁵ The authors show changes in foreign investment relative to GDP in their graph. We assume that not all foreign investment will be for US securities (as countries like Argentina have high proportions of investment in the US and France has low proportions). Moreover, the size of the country’s GDP affects the level of investment – as a 2% change in foreign investment relative to France’s GDP will equate to very large changes in absolute levels as compared to the same 2% change in Colombia’s. In this way, we argue that the 30% increase in their demand for US assets relative to their own GDP can equate to a 70% increase in their holding of US assets – as compared with the size of their overall international investment portfolio.



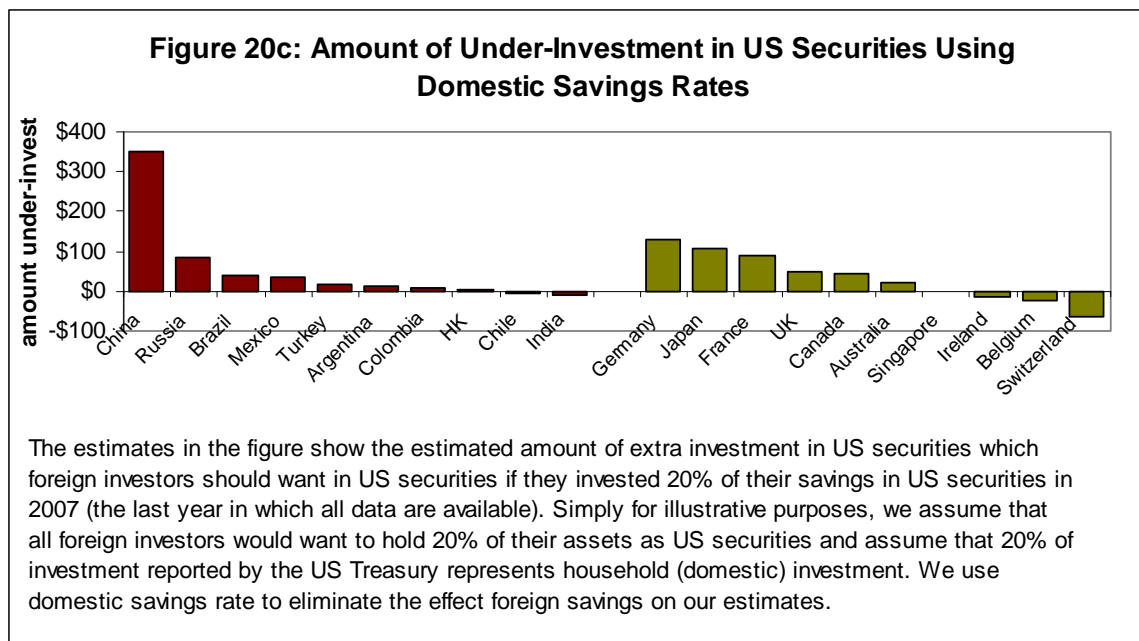
We hypothesize that foreign economic shocks will translate into changes in foreign US portfolio investment – as foreigners change their preferences for particular risks and returns. These shocks confound our analysis – as a huge negative economic shock can disrupt relational capital formed between a broker-dealer and its client. Such shocks can also cause decreases in foreign portfolio investment even though a broker-dealer intensifies its marketing effort in a particular market. **If our hypothesis is correct, our regression analysis should find that shocks affect the effect relational capital has on foreign portfolio investment. In other words, controlling for foreign economic shocks should increase our model's ability to explain the effects of relational capital on foreign portfolio investment.**

Hypothesis 4: There is pent-up demand in target countries for US portfolio investment which would resolve with more effort by US broker-dealers

Pent-up demand for US portfolio assets in foreign countries depends heavily on the method used to estimate such demand. Previously we found – as shown in Figure 20b – that extra demand for US portfolio assets is likely to be highest for countries like India, Brazil, Russia and Mexico. Using a simple average of the comparator countries' US portfolio investment to GDP, we estimated that extra demand in these countries likely equaled \$2.2 trillion for our entire sample of 20 countries.



Yet, looking at estimates derived from more microeconomic factors, the amount of pent-up demand decreases. With these estimates -- assuming that foreign investors in foreign countries might like to hold a modest 20% of their savings in US securities -- Chinese and Indian demand for US portfolio assets “switch places.”¹⁶ Namely, China moves from being an over-investor in US portfolio assets to being an under-investor. Using gross domestic savings explicitly already removes foreign savings, thus purposely trying to isolate the extra part of domestic demand interested in acquiring foreign assets. The overall level of such demand also decreases to about \$1 trillion (\$992 million). Yet, many of the qualitative conclusions remain the same. Foreigners under-invest in US securities – representing an opportunity for US broker-dealers to develop relational capital with these foreign clients.



We hypothesize that current levels of investment in US portfolio assets do **not** represent equilibrium levels of investment. In several foreign markets, levels of investment in US portfolio securities are high enough to attract US broker-dealer interest. Investors in these economies are also rich enough to place significantly more assets in US securities. If some countries have significant levels of under-investment relative to their desired levels, then they should catch up (or converge) with more developed countries' rates of investment in US portfolio securities. **If our hypothesis is correct, then our regression analysis should show that lack of broker-dealer involvement in particular foreign economies correlates with under-investment in US securities by those foreign investors.**

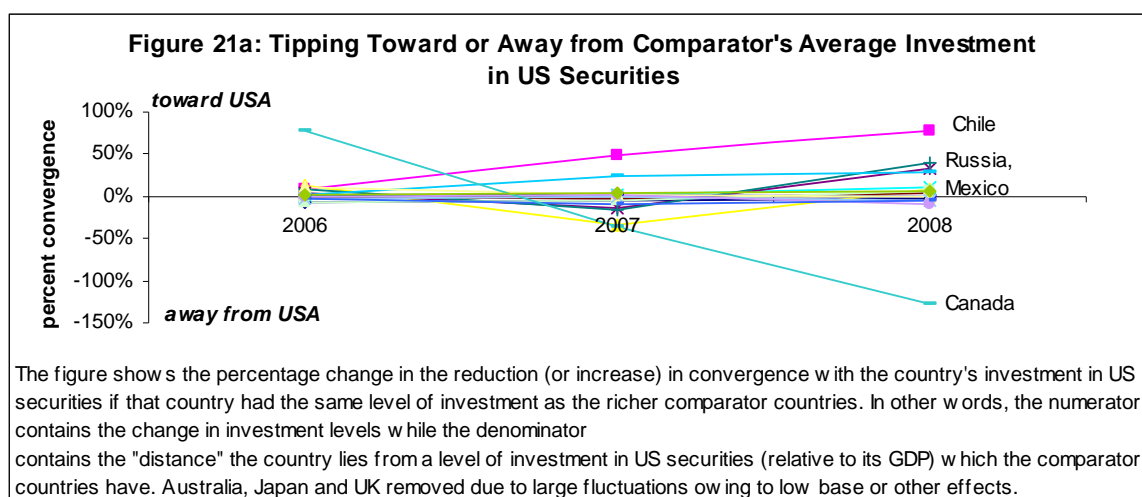
Hypothesis 5: These target countries would “catch-up” with comparator countries if capital controls, lack of information and other distortions disappeared

In a perfect world, foreign investors would have their equilibrium level of US portfolio assets. US broker-dealers would identify customers who would benefit most from their advice – and all investors would hold their optimal portfolio. In practice, the many distortions concomitant with real life make the equilibrium level of portfolio investment in

¹⁶ We assume that foreign investors might like to hold 20% of their domestic savings in US securities as 20% represents the average weight of all foreign investors' holding of US portfolio assets (as shown by Treasury data which we previously cited).

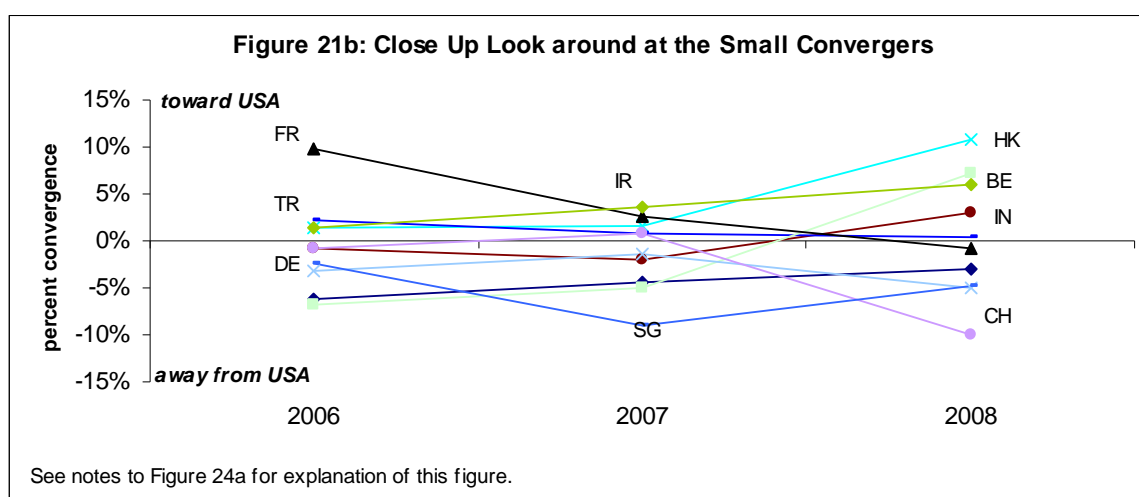
US securities different than the preferred (or optimal) one. “Real life” (as a description of the various regulatory, information and other barriers to trade) also results in slower than expected convergence to the equilibrium portfolio – and as we saw in the simulations previous cited, many even cause temporary divestment from US portfolio assets.

The issue of convergence should particularly interest US broker-dealers, as the speed by which countries converge with their preferred portfolios will determine the yearly revenues of these broker-deals. Figure 21a shows previous rates of convergence of the group of countries we call the broker-dealers’ target economies – showing rates of change in investment in US securities as a percent of the overall gap between their current level of investment in US securities and the level they are likely to achieve if they emulate investors in the comparator countries. Countries with positive rates of convergence – like Chile, Russia, Mexico and Brazil – are closing the gap. Economies with negative rates – particularly Canada – slowly moving away from comparator country levels of investment in US portfolio securities.¹⁷ Most economies move very slowly, neither converging nor diverging very quickly.



Most economies tend neither to converge nor diverge – maintaining their current gap with investment levels exhibited in the comparator countries. Figure 21b shows the extent to which various countries in our sample have been investing more or less in US portfolio assets. Lines about the abscissa (x-axis) represent countries which are slowly converging toward average comparator country proportions of investment in US securities (relative to their own GDPs). Lines which cross the abscissa change direction – from moving away toward moving closer to higher levels of investment in US assets relative to similar levels in comparator countries (or visa-versa). Lines which stay below the abscissa continue to move away from the average comparator country proportions of investment in US securities (relative to their own GDPs). For our data, Hong Kong and Belgium continue to converge whereas Singapore and Germany continue to move away.

¹⁷ Brazil represents an interesting case. The country overall has been increasing its proportions of investment in US securities. However, in comparison with the level of investment corresponding to similar levels of investment (as a share of its GDP) in the comparator countries, Brazil has been diverging from its “equilibrium” level of investment.



Obvious distortions – like capital market and financial regulations – clearly explain part of these trends. Figure 22 shows the various restrictions governments have placed on capital market, money market, and credit markets – as well as firm-specific restrictions in the countries in our sample. As shown (by the lack of crosses in the table), most countries have restrictive regulations in place. Evidence during the Argentine crisis shows that foreign investors used US portfolio investment as a way of circumventing capital controls -- by purchasing ADRs of Argentine stocks (Auguste *et al.*, 2002). In this unique type of case, capital controls actually served to increase rather than decrease investment in US portfolio assets.

Figure 22: Capital Markets Are Heavily Regulated Around the World
(asterisk denotes does NOT have control in that area)

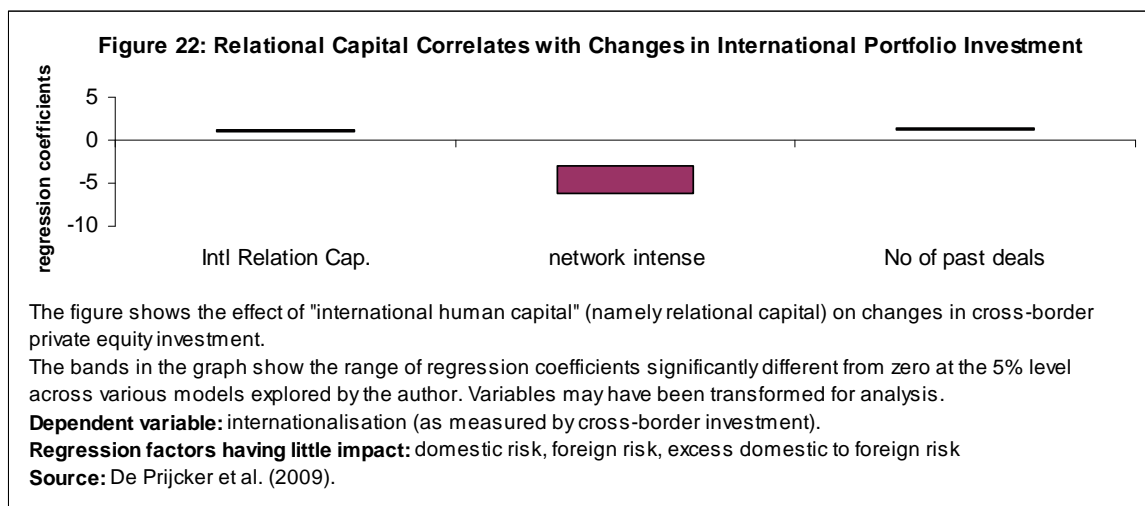
	Capital market	Money market	Financial credits	Commercial bank specific	Institutional investor specific
Argentina					
Australia					
Brazil		X			
Colombia		X			
Belgium				X	
France			X	X	
Germany				X	
Japan				X	
Ireland	X	X	X	X	X
India					
Mexico					
Russia					X
Singapore		X			
Switzerland				X	
UK	X	X	X		X
Turkey					
HK	X	X	X		
China					
Canada		X	X		
Chile	X	X	X		

Source: IMF (2009). We have changed their table such that tics represent cases where regulations do not exist in order to make the table sparser and thus more easily readable.

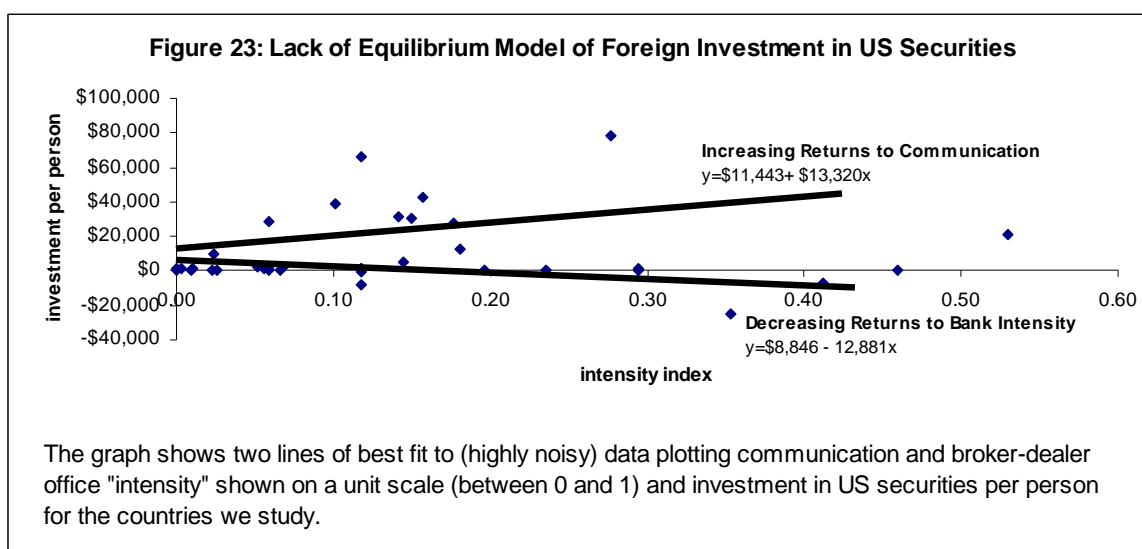
We hypothesize that if these distortions were removed – or if US broker-dealers could expand their services sufficiently cost-effectively so as to make these restrictions relatively ineffective – than foreign countries would converge more quickly with comparator-country levels of US portfolio investment. **If our hypothesis is correct, then the speed of convergence should be affected by our proxies for relational capital.**

Hypothesis 6: A Home-Foreign Bias “Tipping Effect” Emerges from the data and correlates in part with marketing effort of US broker-dealers

A home bias effect may result from the powerful effect of relational capital (which we hypothesize exist between broker-dealers and their international clients). Foreign investors with relational capital with US broker-dealers will invest in US portfolio – and those without such capital will not. Figure 22 shows the regression results of one study of such relational capital on foreign portfolio demand. As De Prijcker and co-authors (2009) show, relational capital – which they call international human capital – significantly correlates with private equity firms’ cross-border investment decisions. The number of past deals these private equity firms have done with a firm and the intensity of their foreign network also correlate strongly with their foreign investment decisions.



Yet, we saw that investors in some countries do not steadily acquire US assets in order to keep a fixed share of US financial assets in their investment portfolios. Investors in some countries accumulate increasing amounts of US portfolio assets while other countries’ investors increasingly prefer placements in other countries -- snubbing the US economy. Figure 23 presents one hypothesis for such diverging portfolio preferences. The hypothesis – as illustrated in the Figure – argues that no stable equilibrium exists for foreign investment in US securities. Rather than serving as complements, broker-dealer effort and communication with US residents serve as substitutes – having opposite effects on increased portfolio investment. According to our data (in bivariate or two-variable graphs), more communication with US residents leads to more foreign investment. However, more broker-dealer effort leads to **less** foreign investment. There is no level of communication and broker-dealer effort exist where both effects balance.



If our hypothesis is correct, then no underlying variable exists – which are referring to as relational capital (though it could be any tacit or unobservable variable) which helps explains the effect that both broker-dealer effort and communication with US residents have on foreign portfolio investment. The effects of broker-dealer effort and communication seem to “go in opposite directions” (as shown in Figure 23 above). But maybe some variable “ties them together” (namely explains variance in both these variables and the way these variables impact on foreign investment in US assets)? Such a mystery variable would also need to explain the movement in foreign preferences for US portfolio assets. Such movement – in this case – relates to the extent to which the proportion of US assets held by investors in various foreign countries moves toward or away from similar proportions in the comparator countries. **If our hypothesis is true, then we should find evidence of a tacit (or unobservable) variable which helps explain variance in broker-dealer effort in various countries, levels of communication with US residents and the way these variables impact on changes in foreigners’ preferences for US portfolio assets (as compared with similar preferences in the relatively more developed comparator countries).**¹⁸

Results: Does Relational Capital Help Predict Foreign Investment?

Overview of Results

Some factor clearly affects the way that the usual variables affect foreign portfolio investment in US assets. As summarised in Figure 24a, both the risks and returns of US portfolio assets (relative to those found in the foreign markets we studied) have relatively low effects on foreign investment decisions. Capital controls, investable income and the effect of economic shocks also play a relative small role. The data clearly suggest that another variable intermediates – or affects – the way the standard variables like risk and return affect preferences for US portfolio assets abroad. Other variables -- like foreign direct investment between the US and foreign markets, foreign holdings of US banking

¹⁸ Admittedly, the counter-hypothesis (or null hypothesis) in this case would be very different to disprove – that nothing at all affects the way broker-dealer effort and telephone communication with US residents affects rates of convergence of foreigners’ US portfolio holdings with those in the comparator countries. Anything – even the weather – might be shown statistically to have such an effect. As we will see later, we do not attempt to prove the existence of our mysterious relational capital as a tacit variable. Instead, we are content to point out that “something is out there.”

assets and telephone calls to and from the US -- help predict (to some degree) preferences for foreign holdings of US portfolio assets. We see that systematic patterns in the variance of the data largely disappear when we analyse variables related to the relational capital formed between foreign investors and US legal and person persons. Such results lead us to conclude that a tacit or unobservable variable – maybe relational capital – helps to explain foreign investment in US stocks and bonds. However, the best way to assess if such relational capital affects foreign investors’ decisions would have been to ask them directly using surveys (as the statistical results from our analysis, like the analysis of all the other authors in this field are rather inconclusive).

Figure 24a: Rules of Thumb for US Broker-Dealers Looking for Predictors of Foreign Demand for US Portfolio Assets

Variable	Likely Impact
Standard variables	
Last year’s investment levels	Last year’s investment levels – at least their trends – have the largest explanatory power of any of the variables we studied. However, without trends, last year’s investment provides a poor predictor of next year’s investment.
Under-investment relative to comparator countries	Data show that foreign investors will acquire over time a certain proportion of US assets in line with the proportion held in relatively rich countries. However, two “convergence clubs” exist – one group of investors wanting US portfolio assets and the other group increasingly divesting of them.
Under-capitalisation by GDP	Opportunities for investment at home (and opportunities to raise capital at home) have relatively little effect in explaining international portfolio investment.
Equity to debt ratios in foreign investment by country	Countries converging toward relatively high levels of US portfolio investment prefer to relatively high levels of equity. Foreign investors may prefer to buy exposure to risks in US markets which they can not purchase in other markets.
Relative Returns of US market compared with home market	Relative returns of US portfolio assets play a much smaller role in determining foreign purchases of US assets than might be assumed by theory or even common sense.
Capital Control	Weaker effect in our study than might be expected. Foreign investors may have ways around these controls – often with the advice of competent investment professionals.
Industrial Concentration (proxy for asymmetric shock)	Foreign investors seem to respond less vigorously to asymmetric shocks than might be expected. However, such a response does exist and can be considered by US broker-dealers as an important factor in deciding when foreign investors will adjust their portfolios.
Savings	The more money foreigners have, the more they are likely to invest in US markets. The relationship however is weak – particularly in this decade of economic turmoil – suggesting that investors may be persuaded to invest in US markets by particular persons or factors.
US Risk Compared with Target	Foreign investors seem to place a much lower emphasis on relative risks than might be expected. Other factors (which seem correlated to what we call relational capital) clearly affect their risk appetites.

Relational Capital Variables	
Telephone Calls with US Residents	Foreign investors probably do not make snap investment decisions based on phone calls. However, the overall level of investment in US securities does correlate with the volume of telephone communication – suggesting that relational capital plays a role.
Broker-dealer Concentration	Broker-dealer concentration in a country clearly correlates with some of the various measures of foreign investment in US assets we employ. US broker-dealers clearly have a role to play in determining where and when foreign investors place money. However, pure statistical analysis alone can not help draw more definite conclusions.
Interactions between phoning and broker-dealer presence in a country	Likely to be small. Some tacit variable (or common covariate which we call relational capital) likely explains the variance of both these factors. However, the data can not prove the existence of such a factor.
Other factors related to relational capital (as tacit variable)*	Other economic transactions, like foreign direct investment from the US and foreign holdings of US banking liabilities, point toward the importance of some kind of relational capital as an explanation for foreign investment in US assets. However, they do little more than “point.”

Note: The summary above provides our synthesize of the effects of each variable taken from the wider literature review and our own econometric studies.

* While not part of our formal analysis, we looked at the statistical correlation of foreign direct investment from the US to our sample countries and their holding for US bank liabilities. We wanted to see if the contact with US markets these transactions engendered could help explain trends in the Treasury’s dataset.

Descriptive Statistics

The countries which US broker-dealers might find most attractive markets for US securities (what we call the target countries) significantly differ from those countries which traditionally have purchased US securities (comparator countries). Since 2005, these target countries invested far more in US securities than their richer comparator counterparts. As shown in Figure 24b, target increased their investments in US portfolio assets on average by 25%; whereas comparator countries increased their investment by only 8%.¹⁹ Target countries under-invest in the US (relative to the average level of investment in US securities as a percent of their GDP) by 10% -- significantly more under-investment as compared with the richer, more established investors in US securities. Comparator countries are 22% more under-capitalised than target countries as a percent of their own group’s GDP (no doubt due to the relatively high weights given to France, Singapore and other countries by simple averaging). Target countries invested 17% in US equities as opposed to debt – whereas comparator countries invested almost equal amounts in US equity and debt. Both sets of countries outperformed the US economy – with target countries earning more than 20% more than US (mostly due to Brazil which significantly brought up the arithmetic average). Comparator countries earned about 8% more. Investors in target countries put more at risk though – with risk (as measured by the standard deviation of the market index) almost twice in target countries as in comparator countries. US broker dealers invested far more – in terms of offices – in comparator countries than in target countries. In target countries, the three major US broker dealers have about 2 offices whereas in comparator countries they have roughly 6.5 offices.

¹⁹ These numbers differ from the numbers reported in the first part of the paper because we used the correct procedure of averaging countries by their relative weights and using geometric – rather than arithmetic – averages where appropriate.

Figure 24b: The Scorecard – How Did Targets and Comparators Stack Up?
(un-weighted country averages within groups)*

	Target Countries	Comparator Countries	Statistically significant difference?
Change in Investment in US securities	25%	8%	Yes
Under-investment compared with own group	10%	-24**	Yes
Under-capitalisation compared with own GDP	10%	32%	Yes
Percent investment in US equity as a proportion of investment in debt instruments	17%	98%	Yes
Returns above US market return	22%	7%	Yes
Relative Risk Compared with US	8%	4%	Yes
Level of Capital Openness	0.5 (where 2.5 is best and -1.7 is worst)	2.3 (where 2.5 is best and -1.7 is worst)	Yes
Broker-Dealer Concentration (offices)	2.3 offices	6.5 offices	Yes
Percent of Industrialisation (proxy for asymmetric shocks)	32%	27%	Yes
Average savings available for investment (millions USD)	\$317 million	\$372 million	Yes

Note: These averages represent simple arithmetic averages of each variable between countries for each year.

* Because of the extremely uneven representation of China in the target country group and Japan in the comparator country group, we decided not to weigh variables by each country's GDP or share of investment in US securities. See Appendix I for further explanations.

** The average (if weighted by each country's investment in US securities within their group) should equal zero. As noted, we took simple averages to allow the reader to build intuitions about how investment differed between countries in the sample.

While looking correlations between pairs of variables can be misleading, these correlations also provide a quick way of detecting possible relations in the data. Figure 24c provides several of the important correlations. As shown by the correlation between investment and under-investment in US securities -- countries which invest the most in US securities also tend to be the countries that under-invest in US securities. For example, Argentina invests almost 80% of its portfolio in US securities. Yet, as a share of GDP, Argentina still under-invests enormously in the US (and in all markets in general). Capital controls also correlate strongly with a foreign preference for US equities instead of debt -- implying that foreigners will seek to overcome investment barriers to get access to opportunities in the stock market instead of higher interest rates tied to bonds. Following the other studies previously cited, familiarity seems to breed investment -- as telephone communication correlates strongly with investment.

Figure 24c: Significant Correlations in Investment Data

Correlation in the Data	Correlation*	Possible interpretation
“Normal” variables		
Under-cap by GDP (compared with own) and Under- investment (viz comparators)	50%	Under-capitalised markets under-invest in US (and other) securities
Percent of Invest in US Markets and Under-investment in US securities	40%	Big investors still are not investing enough in US securities
Relative returns of US Market and change in US investment	-60%	Higher domestic returns have an income effect – leading to more investment in US securities
Capital liberalisation **		
Capital liberalisation and change in US investment	-55%	Fewer capital controls correlate with <u>negative</u> changes in foreign portfolio investment in US securities. Open, liberal markets have less need for making large yearly changes in US portfolio investments?
Capital liberalisation and current investment level	40%	Investors in countries with fewer capital restrictions invest more in US assets.
Capital liberalisation and equity-to-debt ratio	55%	Investors in more liberal markets prefer US equity rather than debt?
Relational Capital-like variables		
Level of telephone communication and under-investment in US portfolio assets	40%	Investment somewhat keeps up with telephone communication between US and foreign residents.
Level of telephone and capitalisation to GDP	35%	Investors from highly securitised economies talk more with the US
Telephone calls and proportion of foreigner’s investment in US securities	80%	Foreigners who invest heavily in the US (as a share of their own portfolios) talk often with the US.
Telephone calls and capital liberalisation	-40%	Countries which restrict capital flows tend to communicate less with US markets
Broker-dealer concentration and equity-to-debt ratios	40%	US broker-dealers tend to deal in equities more than debt?
Savings and Shocks		
Industrial concentration and capitalisation to GDP	70%	Highly industrialised societies engage in corporatisation and securitisation
Industrial concentration and investment in US securities as opposed to other countries’ securities	50%	Industrial economies invest in the US
Level of telephone communication and industrial concentration	45%	Industrial societies require communication with US (as one of world’s largest markets)
Savings and under-investment in US securities	50%	More thrifty of foreign investors tend not to put enough in US assets
Savings and capitalisation to GDP	40%	Industrial capitalists abroad tend to save more.

Figure 24c continued: Significant Correlations in Investment Data

Savings and Investment	70%	As expected, foreign domestic savings correspond (pass-through?) into investment in US stocks and bonds.
Relative risk (with the US) and year-on-year changes in investment	-50%	Foreign investors avoid US markets (in relative terms) as the US market becomes riskier.
Relative risk in this period and last year's level of investment	-50%	Foreign investors foresee to some extent risks of US investment in the upcoming year?
Relative risk of US minus foreign market and levels of this year's investment	40%	Foreign investors still prefer some level of US risk (as part of optimal portfolio)***
Relative risk of US minus the foreign market and capital liberalisation	50%	More open foreign economies tended to exhibit <u>lower</u> levels of market index price fluctuation.

Note: Correlation coefficients have been rounded to the nearest 5% for easy of reading. See Table A2 for exact estimates. We have removed some of the significant correlations when these results have been redundant.

* The correlation coefficient (Pearson's r) describes the percent of variation in one variable that helps predict or explain variation in the other variable. We rescaled these coefficients – originally between from -1 to 1 – from -100% to 100% in order to help the reader rapidly interpret the results of our analysis.

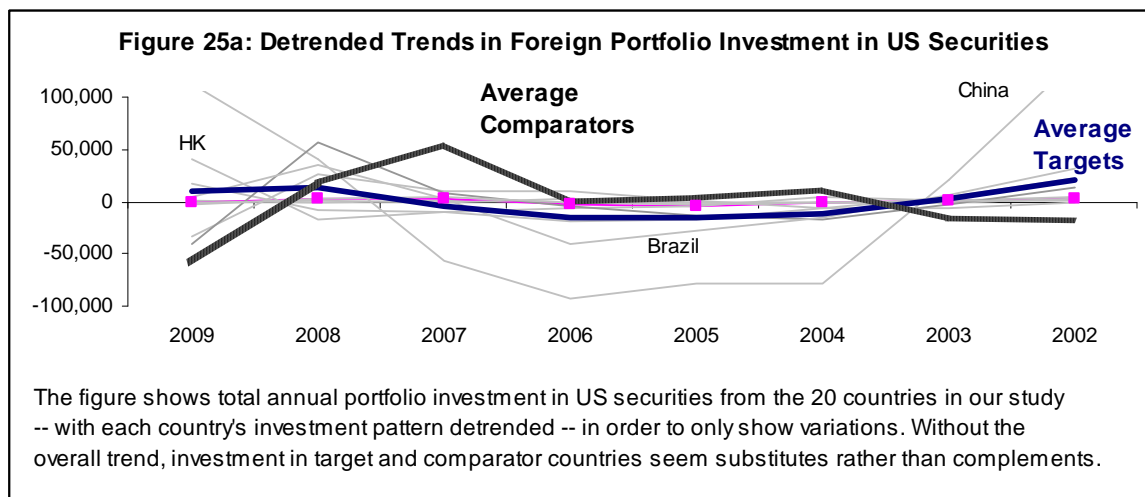
** The capital control variable we used increased as a country had fewer capital controls. As such, an increase in the capital controls variable signified more openness.

*** The correlation between relative risk and current investment probably picks up the overall increasing trend in foreign investment in the US (see below for our discussion of the effects which overall trends have any analysis of foreign investment in US assets).

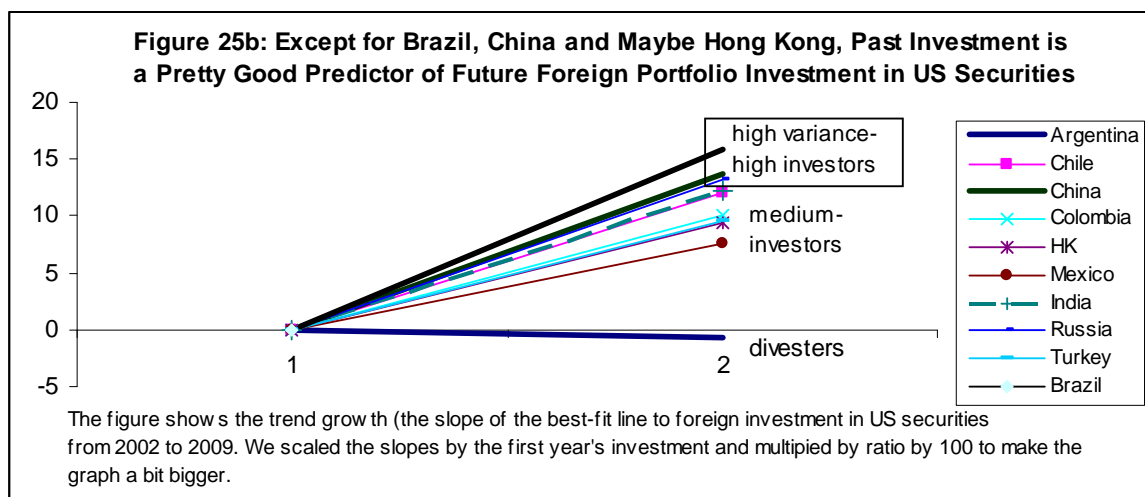
Testing for overall effects

The best explanation for this year's level of foreign investment in US securities from any particular country lies in what foreign investors did the previous year. The previous year's level of foreign investment "predicts" about 97% of the level of investment foreign investors will choose next year. However, such strong predictive power comes from a trend effect – investors from all the foreign countries we looked at (except one) all increased their investment in US securities. Figure 25a shows the variation in investment from various foreign countries in US portfolio assets once we removed the trends in each country's overall US portfolio investment. Without these trends, we clearly see many negative correlations in the preferences of some foreign investors with purchase decisions by other foreign investors from different countries. Foreign investment from Hong Kong in the last half of the 2000s tended to buy US portfolio assets when Russian investors sold them – and visa versa. Before removing the overall trend from the data – that all investors, Hong Kong as well as Russian – wanted US portfolio assets, Hong Kong investors' demand for US securities "explained" more than 70% of Russian investors' interest. However, once we removed the trends, Hong Kong investors sold US assets roughly 46% of the time that Russian investors bought them. If we had to predict whether investors in the target countries would buy or sell US securities based on our observations of investors in comparator countries, only 36% of the variation in our data could serve as a useful guide.²⁰

²⁰ In other words, the Pearson correlation coefficient between total current levels of investment in US portfolio assets from the 10 target countries and total current investment from investors in the comparator countries equals 0.36.

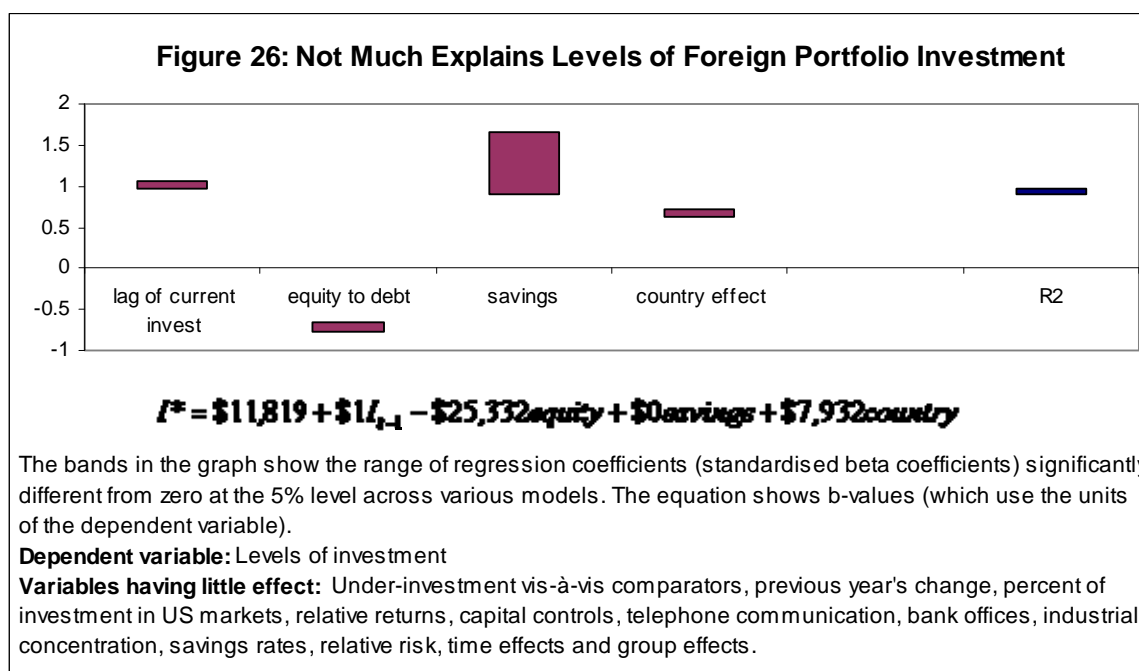


Nevertheless, analysing the trends of growth in foreign investment in US securities from various jurisdictions also reveals a bit about the nature of such investment. Figure 25b shows the trends around which investment fluctuated between 2002 and 2009. As shown, Brazilian and Chinese investors increased their holdings of US securities more dramatically over the period. Investors in these two economies also changed their minds about the purchase and sale of these securities more dramatically than investors in other economies -- as shown in the previous graph, overall investment from these countries exhibited higher levels of variance than investment coming from the other countries. The other target countries in our sample had more modest rates of growth (which were statistically indistinguishable from one another). Finally, Argentina marks the exception to the trend -- divesting from US securities over the period (admitted from very high proportions of investment in US as opposed to other foreign investments).



At first glance, different countries' investors want US securities because they just do -- because they belong to a country that wants US securities. Figure 26 shows the effect of various factors on levels of investment in US portfolio assets. For every \$1 foreign countries' investors placed in US assets in the previous year, they would want to place roughly the same amount again in the subsequent year. As they save more, they will want to invest miniscule dollar amounts in US investments (compared with overall levels of saving at the national level). As foreign investors desire greater amounts of US equities relative to debt, they will decrease their overall investment in US portfolio assets

(suggesting the normal **absolute** risk aversion).²¹ Finally, just belonging to one country rather than another – particularly a comparator country rather than a target country – leads the interested broker-dealer looking for new markets to conclude that country effects are worth an extra \$7,900 in foreign investment.²²



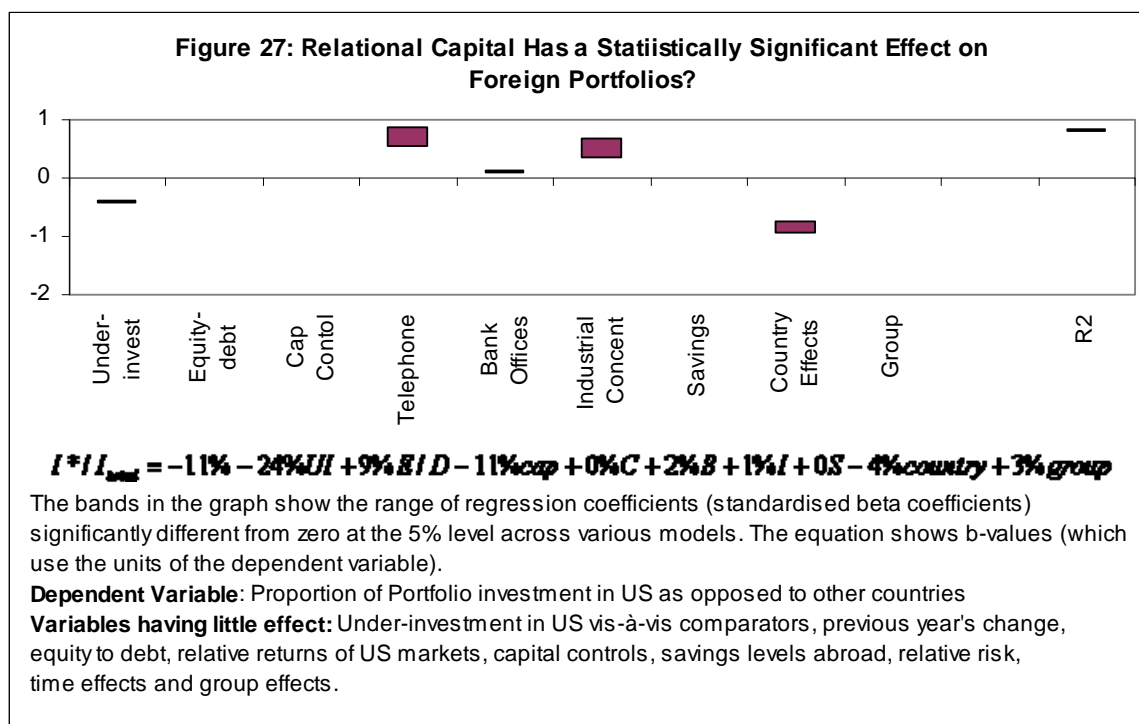
Once we try to explain foreign investors' relative preference for US assets vis-à-vis other countries' assets (rather than try to explain absolute levels of investment) – our confidence in our model of foreign investment in US securities increases significantly. Figure 27 shows the effect of the variables in our model on the proportion of foreigners' investment in US securities. Investors from countries with high proportions of US portfolio asset holdings (relative to other countries assets) tended to prefer equities – explaining again high absolute risk aversion but low relative risk aversion as these investors try to “buy risk” from US markets. Capital controls lead to large decreases in investment in US assets – roughly 11% for a 1 point change in the KAOPEN index. Extra communication between US and foreign residents correlates positively with extra investment in US securities – though not appreciably. Extra broker-dealer presence in a foreign market correlates with a 2% higher proportion of investment in US assets from that market. Having higher proportions of industrialisation (our proxy for the extent to which foreign investors might face particular asymmetric shocks) positively correlates with foreign investment (possibly picking up an indeterminate wealth effect).²³ While extra disposable income – as proxied

²¹ To paraphrase more simply – as foreign investors “swap out” debt for equity (or trade in their bonds for stocks), they take some money out of US markets. They might reduce their overall investment because they want to put only a smaller share of their overall wealth at greater risk. However, they are exhibiting a relatively higher risk appetite as a share of their overall portfolio (probably constant relative risk aversion).

²² Such strange statistic comes from the way we coded our data. Comparator countries had higher dummy variable numbers – thus “explaining” a greater part of the investment data. Most authors simply note the presence of such “country fixed effects” without giving the b-values.

²³ As foreign industrialists become richer, they may wish to invest more in US stocks and bonds. However, we tend to think of the large service sector economies as the rich economies – and the highly industrial societies as “second wave” countries. As such, we might expect to see an increase in investment coming from a largely industrialized country as an increase in investment coming from a relatively poor country (compared with the others in the sample). For our purposes, we only need to know that some shock caused a

by domestic savings – corresponded with increased levels of investment (in our last Figure), higher domestic savings correlates with decreased proportions of US investment in Figure 27 below. Investors from countries which save a lot tend to come from the relatively affluent comparator countries (which tend to increase their holdings of US portfolio assets much more slowly than our target countries).



Hypothesis 1: US Broker-Dealers and Telephone Communication Has an Effect on Foreigners' Investment in US Securities

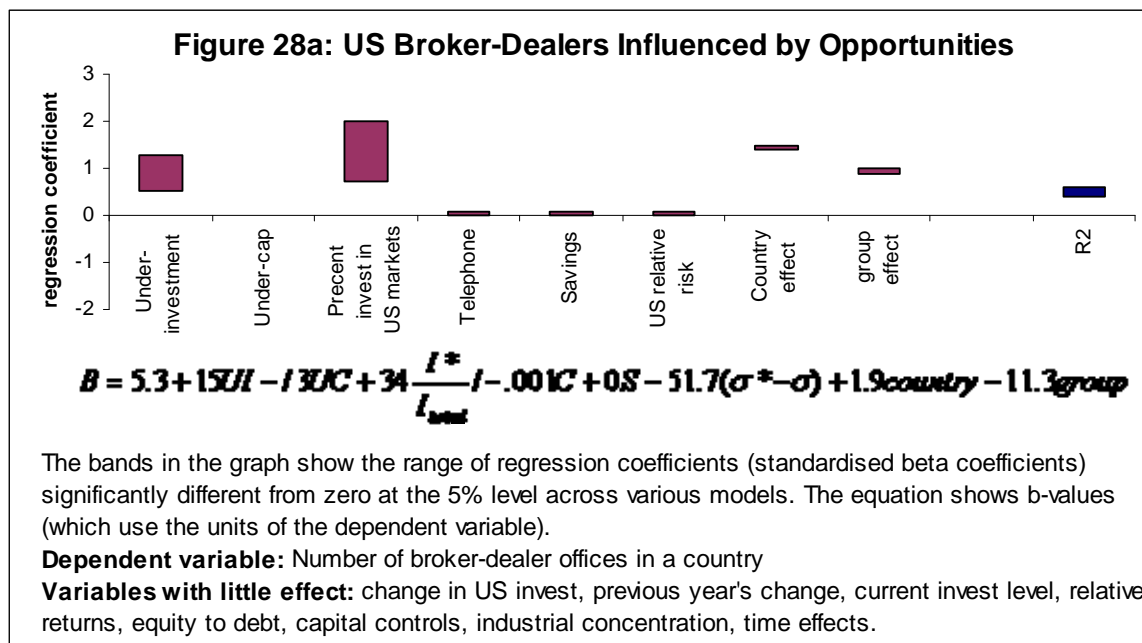
The presence of US brokers-dealers in a market explains (in some small part) foreign portfolio investment in US securities. Similarly, broker-dealers tend to concentrate in countries where investors under-invest in US securities -- or where prospects for foreign investment in US securities looks likely. Figure 28a shows regression analysis of several variables which might explain broker-dealer concentration in a country. US broker-dealers significantly congregate in markets already having significant levels of US portfolio investment. Broker-dealers also congregate in markets with less telephone communication with US residents – suggesting that broker-dealers focus on markets where they can generate the most sales (and thus largest changes in foreign investment in US securities).²⁴

US broker-dealers tend to locate in markets with relatively low market risk. Figure 28a shows a positive relation between the number of broker-dealer offices in a country and the extent to which the foreign market index varied less than the US market index. Such a finding also suggests that foreigners want to “buy US risk” through their investments in US securities. The lack of a significant effect by relative returns – the return foreigners could earn in the US as opposed to investing in their own market – also supports the “buying US risk” theory. Foreign investors – as also shown by Egly and co-author's

slight change in the foreign economy's economic structure which we can use in our regression analysis to correlate with changes in investment behaviour.

²⁴ As we will see below, there is little correlation between broker-dealer effort in a country and levels of telephone communication between that country and US residents.

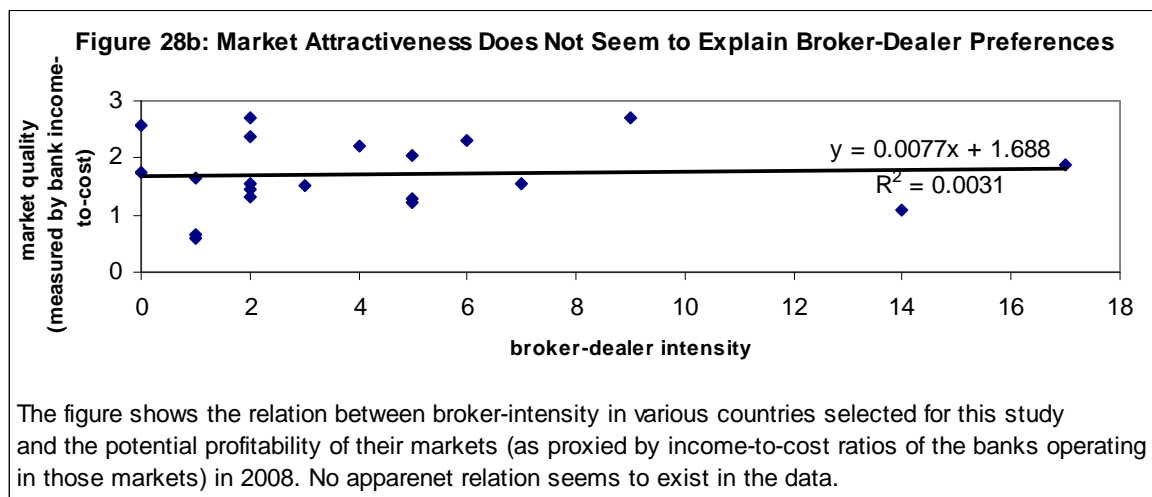
analysis – seem to respond (if broker-dealer presence serves as a gauge of such a response) much more to changes in relative risks and than relative returns. The regression almost certainly over-assigns importance to relative risks (as a 1% change in negative risk reduces broker-dealer presence in the foreign country by 52 offices) – suggesting that some other variable interacts (or has been omitted) which should help us determine the true effect of relative market risks on broker-dealer presence in a foreign market.²⁵



Under-investment in US securities – as compared with the average level of investment in comparator countries – correlates strongly with broker-dealer presence in a particular foreign market. We might explain such presence in two ways. First, broker-dealers seek out opportunities for marketing investment advisory services to foreign investors in the most need of them. Broker-dealers have identified (albeit not perfectly), these “under-invested” markets and have already responded to market demand. Second, broker-dealers can not market their services very effectively in these markets because of regulations prohibiting competition in financial services, capital controls, or incorrect product/service offering corresponding to local demand – resulting in large amounts of relative under-investment in these markets. Some factor interferes with broker-dealer marketing in these countries.

US broker-dealers do not seem to be cherry-picking foreign markets – selecting the most profitable ones to focus their marketing efforts on. Figure 28b shows the relationship between the number of broker-dealer offices in a foreign country and the “attractiveness” of that market – as proxied by income-to-cost ratios of banks operating in that market. In theory, if banks earn large mark-ups; then other financial services like securities dealing, should as well. Yet, US broker-dealers do not seem to clump together in markets where they might earn these high mark-ups. Another factor – or factors – must explain US broker-dealer preferences for working in foreign economies.

²⁵ True to our word, we do not attempt to clean the data or mine the data. We note the presence of an omitted variable which seems to interfere with the reliability of our regression. We postulate later that relational capital might correspond with such an omitted variable.



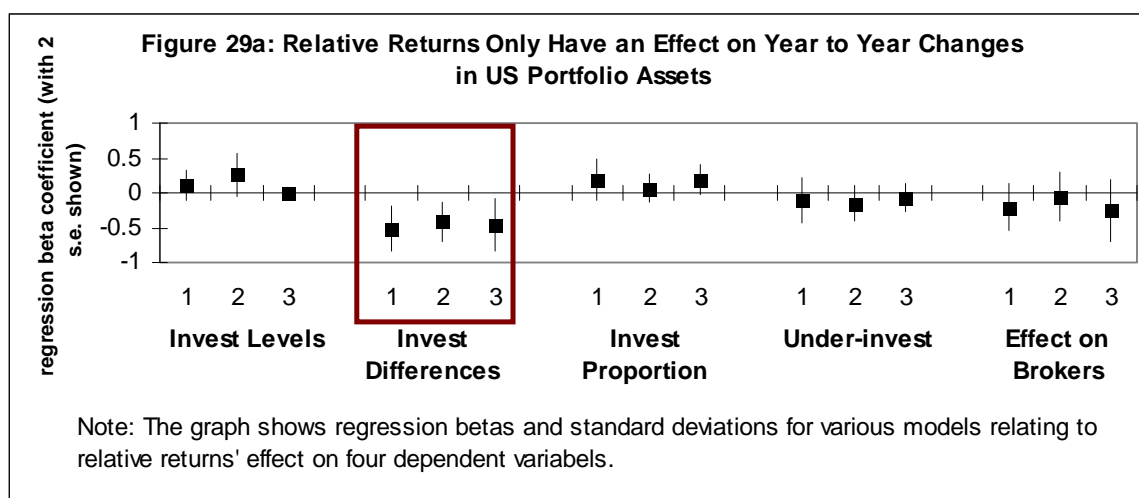
Some indefinable quality about particular foreign markets – called a country fixed factor effect – still seems to pre-dominate as the main effect in explaining why some broker-dealers choose some markets rather than others (and why foreigner investors from some countries choose the US rather than other markets). From a statistical point of view, country and group effects (whether the investors from a country belong to a target or comparator country) provide the greatest explanation for broker-dealer location in a foreign market.

We can not reject most of our hypotheses from these data. We guessed correctly that our regression analysis would show no statistically significant intercept in a regression on investment using broker-dealer intensity as a predictor. In other words, foreign investment does not “just happen” for reasons lying outside of our model (though our country-specific variable may pick up all these inexplicable, mystery effects). Broker-dealer presence in a foreign market has a statistically significant effect on foreign portfolio investment. We could not test any interactions between variables from the data we had – as we had some data missing when our data sources could not provide us with particular years’ data. We did not play with our data (or use advanced econometric methods) in order to coax these interactions out the data – so we could test for these interactions directly. However, from our simple regression analysis, we find that a number of factors correlate with US broker-dealers presence in a foreign market. Communication between markets did not comprise one of these variables. However, **the data point to specific and mysterious “country fixed effects” – which relational capital may help us to explain.**

Hypothesis 2: No matter what the pundits say, risk and return still matter

Actual differences in returns between US securities and foreign securities have less of an effect on foreign portfolio investment in US securities than predicted by standard finance theory. Figure 29a shows the probability or likelihood that relative returns between US and foreign investments explain four dependent variables – investment levels, year-on-year changes in investment, proportion of US investment relative to investment in other markets and the effect on broker-dealer intensity in a market. The figure shows the beta coefficient for relative returns – which measures the importance of relative returns as an explanation for foreign investment in US markets. The beta coefficients shown in the figure lie at zero (or have a band of uncertainty which stretches through zero), then relative returns probably do not significantly help explain foreign investment. We have drawn red boxes around the regressions in which these beta coefficients have differed

from zero – indicating that relative returns likely have an important effect on foreign investment in US securities.²⁶

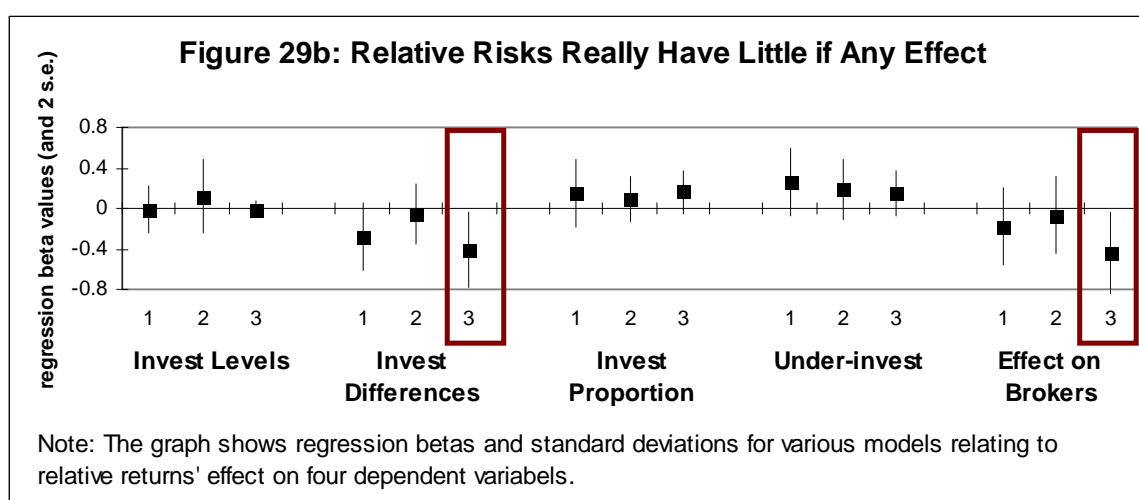


In most of these models, regression betas could not be distinguished from zero (meaning that relative rates of return have no reliable statistical correlation with these various measures of foreign portfolio investment in US markets). Large differences in relative returns between the US market index and the foreign market index had no appreciable effect on explaining differences in levels of foreign investment in US securities. Foreign investors also did not seem to adjust their proportionate holdings of US portfolio assets (relative to other countries' stocks and bonds) in line with changes in relative returns. As previously noted, US broker-dealers did not seem to locate in countries with appreciable differences in relative market rates of return.

Only yearly changes in portfolio investments correlated with changes in relative returns. The sign of such changes though perplexes – as increases in returns on US assets correlated with the sale of US securities. Two possible explanations cover these data. First, the data may simply reflect foreign profit-taking. Curcurua and co-authors (2010) found a similar pattern in cross-border investment data – though looking at US investment in foreign equities rather than foreign investment in US securities as we do. Instead of viewing these data as portfolio rebalancing (as Bohn and Tesar (1996) had argued much earlier), they find that investors sell winners and buy in anticipation of snagging future opportunities. Second, these data reflect a time period in which foreign returns exceeded US returns and investment still came into the US. As we argued previously, foreigners might have been diversifying the gains they made in other markets into US assets. Like a Las Vegas gambler, when they “win” in their local market, they take part of their winnings and diversify them into other markets... betting that the winning streak might not continue.

²⁶ Regression analysis can not (and does not) indicate causation – only correlation. The regression analysis we conducted, technically, says that there is less than a 5% probability that variance in relative returns occurs completely randomly for changes in foreign investment in US securities. Simply put, relative returns correlate with foreign portfolio investment. Our beta coefficients give a relative idea of the strength of this correlation compared with other variables in the model. Combining professional judgment with statistics, we make the causal jump – stating that we think the correlation in fact shows causality. We could test statistically for such causality – but such tests make the text denser and probably do not make our argument more or less convincing.

The huge increase in US market risk failed to show any exodus of foreign investors from US securities markets. Figure 1a showed a slight drop in foreign portfolio investment between 2008 and 2009 (of about 7%). However, more detailed data analysis failed to show many significant patterns in the way that increased riskiness of US portfolio assets translated into foreign divestment – certainly not to the extent predicted by traditional finance theory. Figure 29b shows the extent to which higher relative riskiness of US portfolio assets (as measured the variance of the S&P ETF daily prices) significantly correlated with changes in foreigners’ levels of investment in US stocks and bonds, their year-on-year changes in such investment, the amount of their portfolio they preferred to hold in US rather than other countries’ securities, the relative level of under-investment by investors in those countries, and broker-dealer position in a market. In only one model do higher risks associated with investment in the US market index correlate with foreign divestment of US assets. Increased risk of foreign markets (as measured by increased variability of the prices of their market exchange-traded fund) correlates with less US broker-dealer presence in that market in one of the models in our panel.

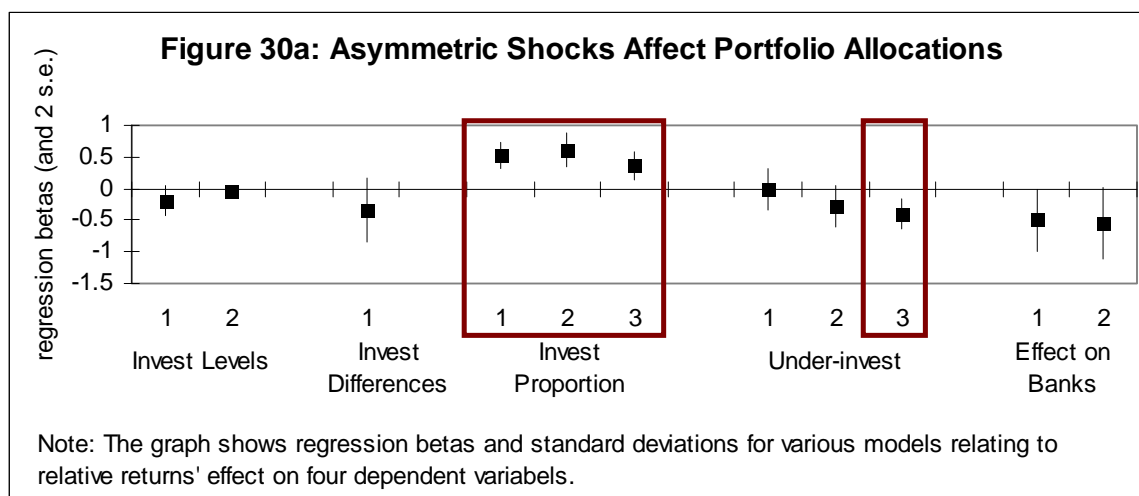


The data appear to disprove our hypothesis – the pundits were partially right. Relative risks and returns do not statistically correlate with investment levels. However, relative risks and returns did seem to affect changes in investment between years – though the effect remained relatively weak (as the effect did not come out in all of our models). We did not choose the best period to study – as the global financial crisis certainly made forward-looking predictions about risk and returns difficult to make across all economies. However, when combined with the finding of the previous authors who have studied cross-border financial flows, we tend to support their findings. **Relative risks and returns matter mainly as they shape the way investors use other information to frame their investment decisions.**

Hypothesis 3: Shocks to Foreign Economies (or ours) drive foreign portfolio investment -- through relative risks and returns

Asymmetric shocks also have less of an effect on foreign investment in US securities than tradition finance theory might predict. As shown in Figure 30a, of the models we investigated looking for effects of economic shocks on foreign investment in US assets -- only 2 showed any statistically significant effects. The proportion of industrial production (as our simple proxy for vulnerability to particular economic shocks different from those in the US) related strongly and positively with the proportion of investment in US (as

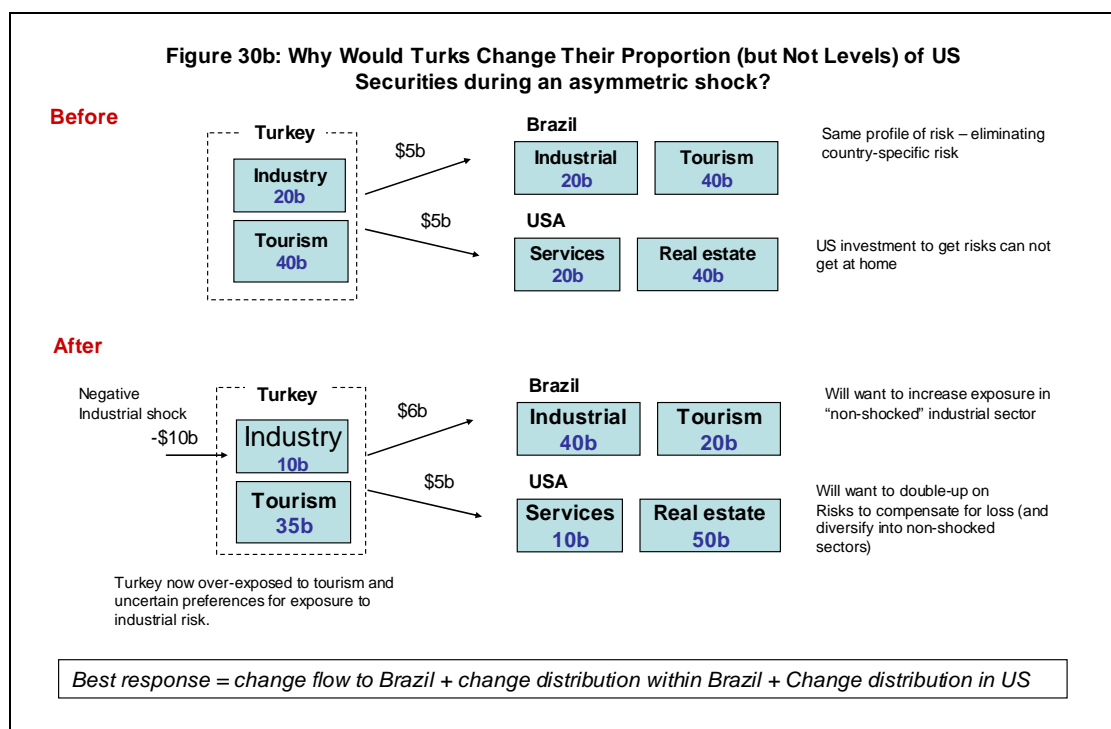
opposed to other countries') securities. However, like in the case of our other regression analysis, these shocks did not correlate significantly with changes in levels or yearly changes in foreigner's investment in US stocks and bonds. Such a finding – if correct – states that foreigners change their preferred proportion of investment in US securities without changing the flow or levels of such investment.



A number of reasons may explain why changes in the size a country's industrial sector might correspond to changes in the proportion they invest in US rather than other countries' securities – but not translate into significant changes in the amount (levels) of such investment. First, positive shocks to foreign countries' industrial sectors may change the relative risk of foreigners' portfolios – forcing them to reallocate investments within foreign countries but not between foreign countries. The US has a wide number of industries – with unique risk profiles unavailable in other markets. Foreign investors may simply reallocate investment within the US in order to change the risks and returns they face abroad. Second, foreign investors may pull funds out non-US markets – either to enjoy more consumption or to further domestic internal investment opportunities made available by the shock. They then may prefer to use extra investable funds to finance domestic industrialisation instead of invest in US markets.

A hypothetical example may help the reader understand how such portfolio rebalancing might occur. Figure 30b shows the logic of foreigners keeping the same levels of portfolio investment in US markets while changing their proportion of US portfolio investment. Imagine a shock adversely affects Turkey's industrial sector -- decreasing the value of the sector by \$10 billion. Before the shock, Turkish investors wanted to hold industrial assets and tourist assets in the proportion of half-and-half. After the shock, they hold only one-fourth of their assets in industry-related securities (and the profile of risks and returns attendant with those securities). Turkish investors – feeling over-exposed to the tourist sector – seek to hedge these risks in foreign markets. Imagine that Turks already hold foreign portfolio investments in Brazil and the US. For the sake of our simple exercise, imagine that the Brazilian economy looks like the Turkish one (with an industrial sector and tourist sector which Turks invested in the same proportions as at home to escape their own country's country-specific political or other risks). Imagine that these Turkish investors also put part of their money into US portfolio assets – exposing themselves to risks and returns which they could not find elsewhere. They invest specifically in a US service sector and real-estate sector. To keep our exercise simple, assume these Turkish

investors put the same amounts and proportions of funds in these US sectors which they put in at home and in Brazil.

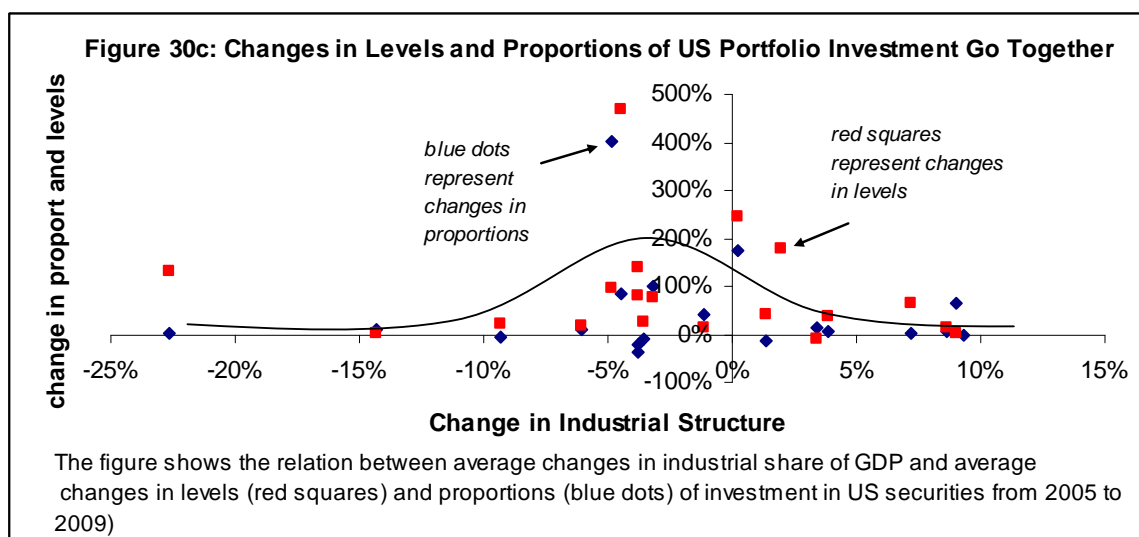


The Turkish investor – experience a \$10 billion fall in the value of his industrial assets – might readjust his portfolio in three ways without increasing or decreasing investment in the US (as shown in the lower part of Figure 30b). First, he might take money out of the Turkish tourism sector and invest part or all of these funds in the Brazilian industrial sector. As shown in our simple example, investment in Turkish tourism slightly falls and investment to Brazil increases – changing the relative proportion of investment in US portfolio assets from 1-to-1 to 6-to-5.²⁷ The Turkish investor will also want to sell Brazilian tourism shares and buy bonds in Brazilian industrial companies – in order to further adjust to the shock (as the investor can not draw from an unlimited amount of money from home). To further bring his portfolio back in line with the same risk-return profile he had before the shock, the Turkish investor may also transfer funds out of the US service sector into the US real estate sector (where in late 2009, he hoped to purchase bargains and earn enough capital gains to cover his losses in the Turkish industrial sector). The US real estate sector might provide a very high expected rate of return and the divestment from the US service sector might replicate the same risk profile as the Turkish investor could obtain by buying more Brazilian assets. The Turkish investor – through these series of investment transactions – replicates his former portfolio, changes his proportional amount of investment in US securities, while still maintaining levels and flows intact.

Yet, a closer look at the data suggest we need not bust our brain trying to find an explanation for these data – these regression results probably just assign the effects of shocks to proportions of investment in US securities more than to the other variables..

²⁷ We use these monetary amounts to make the example easier to read. The investment decision would depend on relative returns in the four sectors and their relative risks. We want to demonstrate the point without overly complicating our argument by providing a formal model.

Figure 30c shows the relationship between shocks (changes) in industrial structure, changes in levels of foreigners' investment in US securities, and changes in their proportions of US investment (relative to portfolio investment in other countries). As shown, industrial sectors in our sample tended to decrease by about 5% from 2005 to 2009. The majority of the countries in the sample roughly doubled their holdings of US portfolio assets in both absolute terms and in proportional terms (with significant variation between countries). Given the high amount of "noise" in our data, our regression results pointed us toward areas requiring further thought and analysis... in this case, smoking out a possible relationship between industrial shocks and investment which we had to find with a bit more circumspection.

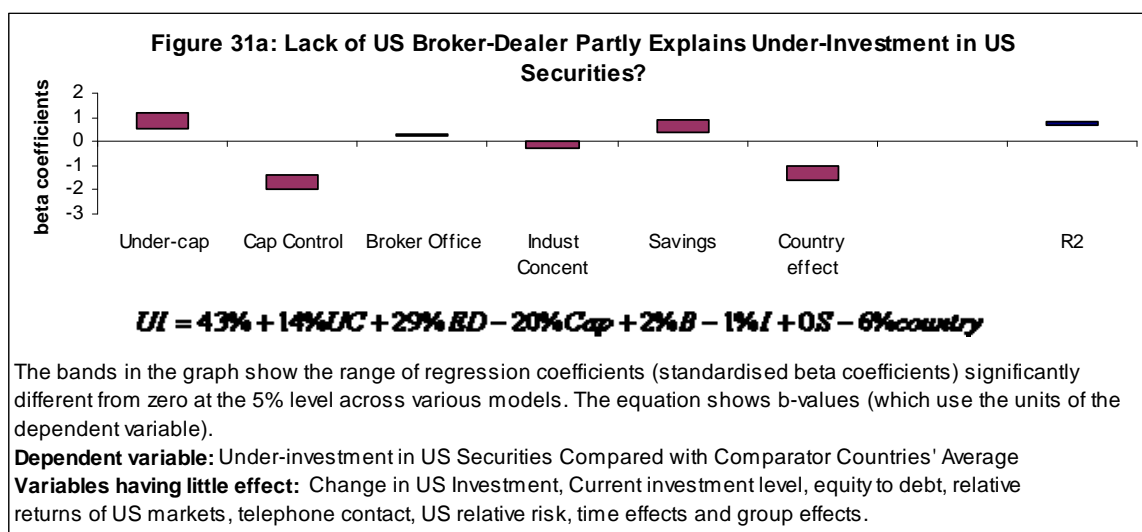


Our hypothesis about a link between foreign investment and relational capital provided difficult to accept or reject. Our regression analysis showed little statistical relationship between the size of a country's industrial sector and preferences by US broker-dealers to locate in those countries. Changes in the foreign countries' industrial sectors correlated with changes in the proportion which investors from those countries invested in US securities – with changes in industrial sectors "explaining" about 54% of changes in investment proportions. Yet, correlations between shocks (or changes) in these foreign countries industrial sectors and levels of investment (and levels of telephone traffic between these countries and the US) helps "predict" only about 13% of these shocks. **These very initial and tentative data suggest that relational capital does not disappear easily under economic stress. Such capital probably results from equilibrium decisions of demanders and supplier of investment advice.**

Hypothesis 4: There is pent-up demand in target countries for US portfolio investment which would resolve with more effort by US broker-dealers

Target countries invest a smaller share of their GDP in US securities than comparator countries. They also – with the exception of Argentina and Colombia – invest a smaller share of their international portfolio in US securities than comparator countries. What explains (or at least correlates with) their relative under-investment in US securities? Figure 31 shows the effects of several variables on such under-investment. Under-capitalisation represents one of the most important factors – both in terms of statistical significance (as represented by the beta coefficient) and in terms of actual under-

investment (as shown by b coefficients). Decreases in levels of market capitalisation coincide with large increases in under-investment.

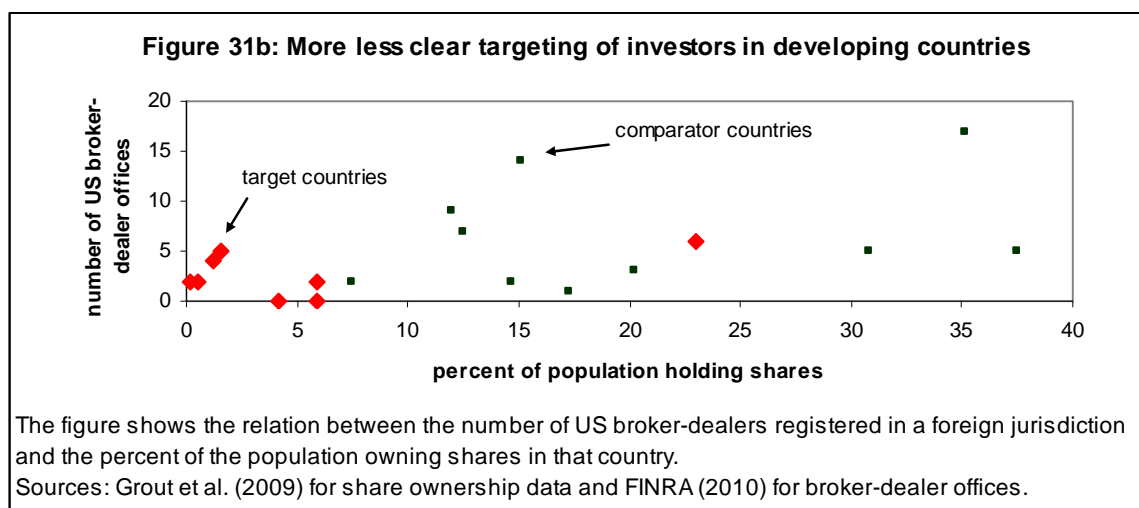


Several effects may account for the correlation between under-capitalisation of foreigners' home markets and under-investment in US portfolio assets. First, foreigners may be unaccustomed to portfolio investments of any kind in under-capitalised economies – preferring to keep their wealth in traditional bank accounts or other forms of traditional savings (like real estate). Second, particularly for low levels of capitalisation, the infrastructure for buying and selling stocks and bonds may be unavailable (or more costly to access). As previously noted, in countries like Russia and India, you can not easily spot a high-street broker. Third, capital markets represent an important way of raising funds – some of which may find their way on foreign markets (like US markets). Foreign countries with recourse to such a way of raising funds should have fewer funds to invest in US securities.

Strangely, investors from foreign countries strongly prefer more risky US equity instead of debt – yet tend to come from countries which under-invest more in US securities. Such data suggest these investors are constrained in their US securities purchases -- using US markets to obtain particular risks which they can not buy at home (or in other developing markets). However, as shown in Figure 2b, Canadian, Australian and French investors invest the most heavily in US equities (rather than debt). Among the comparator countries, the countries we identified as invest too little relative to their GDPs. Among target countries, only Argentinean investors seem to prefer high proportions of equity while still under-investing in US securities (relative to their country's GDP). Looking at these specific countries, the “investment constraint” theory might apply to Argentina, but not to the other countries. Canadians, French, and Aussies probably prefer US equity because of the returns-part rather than the risk-hedge part of the investment.

Broker-dealer concentration in the country explains a part of foreign under-investment in US securities. As previously discussed, more broker-dealer offices in a country tend to correlate with higher levels of under-investment. As we previously noted that these US broker-dealers probably do not choose to locate in a foreign market because of higher margins, they must be choosing to locate in markets with more pent-up demand for their services.

Yet, the available data from other sources only very weakly suggest that US broker-dealers are locating in markets with pent-up demand. Figure 31b shows the relationship between the number of US broker-dealer offices in a country and the percent of the population owning stock shares. Among the more developed comparator countries, US broker-dealers do seem to locate in markets with higher proportions of shareholders (as a percent of the overall population).²⁸ Among the lesser developed “target” countries, such a trend seems much less distinct. Other factors appear to intervene in the relationship between broker-dealer “effort” (at least as defined as the number of offices in a country) and investors’ desire to hold US (or any) shares.

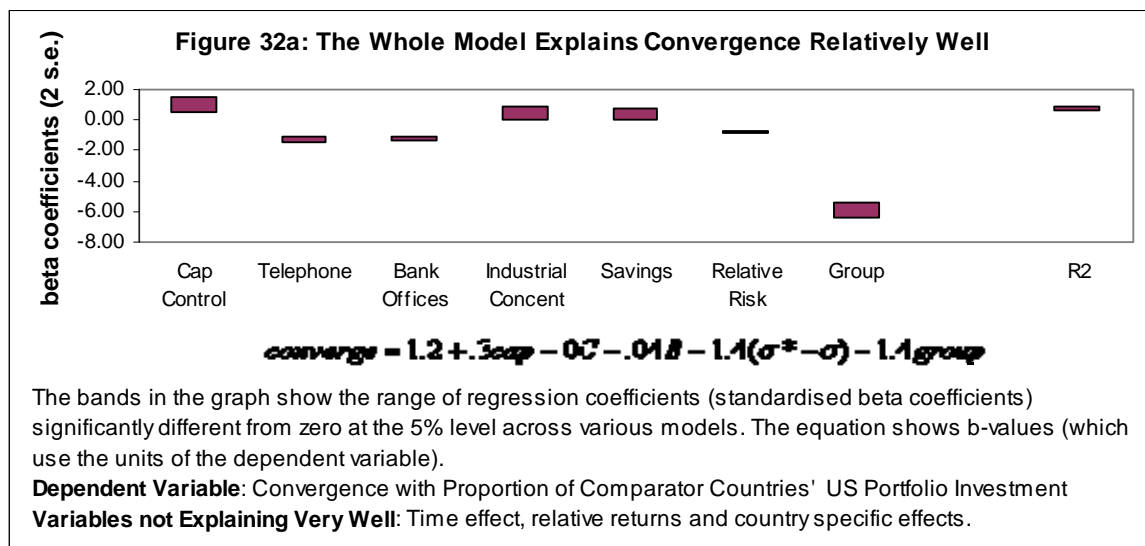


The data – once again – failed to disprove our hypothesis. US broker-dealer involvement in foreign markets seems to correlate with foreign investment in US securities from that country. However, the data do not strongly support the hypothesis that broker-dealers exert greater “effort” in markets with higher levels of under-investment in US securities (as compared with the average of our comparator countries). **Especially in their target countries, some other variable seems to interfere or affect the way that US broker-dealers target particular markets – possibly pointed toward the way they form relationships in those markets.**

Hypothesis 5: These target countries would “catch-up” with comparator countries if capital controls, lack of information and other distortions disappeared

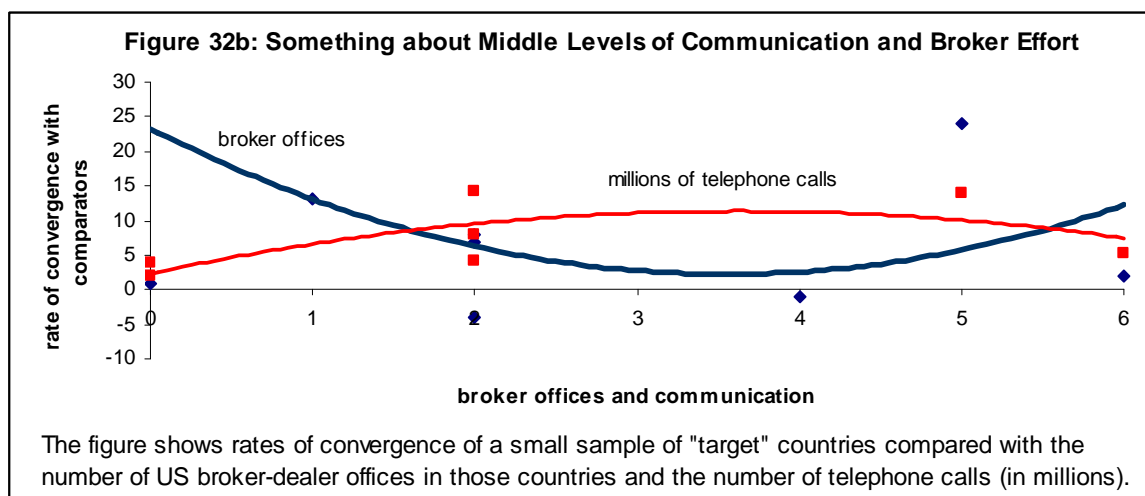
The “best” regression we ran – the most convincing in terms of specification and the “diagnostic information we received about its quality -- looked at the effects of various factors on the extent to which countries catch up with comparator-country levels of investment in US securities. Figure 32 shows the range of regression coefficients for various factors we explored in our analysis. As shown, the largest effects come from the usual factors – capital controls, industrial concentration and savings – having significant effects on the extent to which countries converge with their comparator-country levels of investment in US securities.

²⁸ This figure brings up the interesting question of causality. Perhaps more foreigners own shares because of the presence of a US broker instead (as we assert) that US brokers prefer to locate in markets with higher percentages of the population owning stock shares. We do not believe that more French or Australian investors own shares because a US broker decided to open in office in their country. In this case, the question of causation seems relatively straight-forward.



Our relational capital variables – telephone communication and broker-dealer presence in a country – significantly correlate with the extent of convergence with comparator-country levels of investment in US securities. Again, though, both variables have relative small effects on convergence – with telephone communication affecting changes in investment by less than a proportional rate. Broker-dealer presence has a similar relationship with convergence toward comparator levels of investment in US securities. More importantly, broker-dealers and telephone callers seem to congregate in countries where investors are slowly decreasing their share of US portfolio investments (when expressed as a percent of the average percent held by comparator countries' investors in general).

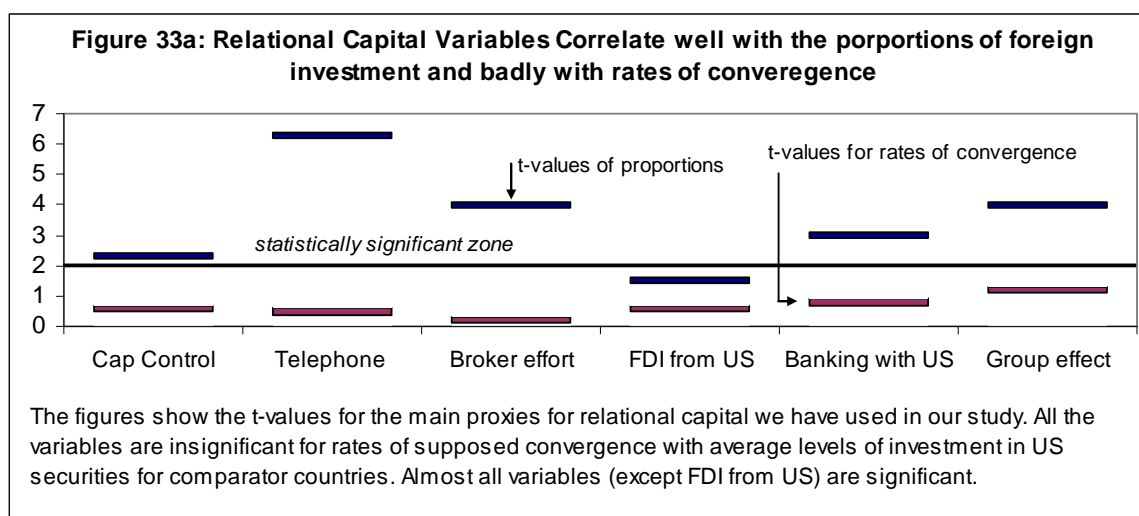
While regression analysis may give the precision needed to detect relationships hardly visible with the naked eye, a cursory look at the data still show some other variable (or variables) intermediate in the relationship between convergence and broker-dealer effort in these foreign markets. Figure 32b shows a simple correlation between rates of convergence of target countries' portfolio investment, number of US broker-dealer offices in these countries and millions of telephone calls with the US. We have drawn lines of best fit in order to illustrate a general point – that some other variable may be varying along with our predictors of relational capital.



The data do not disprove our hypothesis -- that something about broker-dealer effort and communication affects the rate at which target countries converge on comparator countries' levels of US portfolio investment. However, no clear relation exists in our noisy data between rates of convergence and our proxies for relational capital. **The data seem to point toward some co-variate – some mitigating factor – which influences the way broker-dealer effort affects the extent to which foreign investors decide to increase or decrease purchases of US securities in relation to the level of such securities comparator countries' investors possess.**

Hypothesis 6: A Home-Foreign Bias “Tipping Effect” Emerges from the data and correlates in part with marketing effort of US broker-dealers

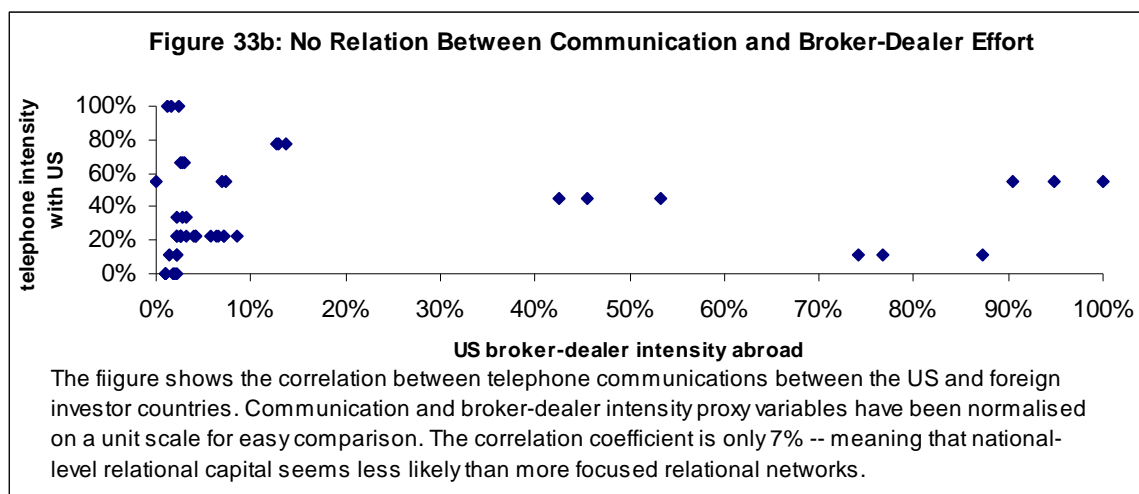
The proxy variables for relational capital explain relatively well foreigners' proportional holdings of US portfolio assets. However, they fail to explain (at least statistically) rates by which they “close the gap” with comparator country levels of investment in US securities. Figure 33a shows the effects of regression analysis looking primarily on the effect of these relational variables in order to explore their effect on foreign investment in US securities. For proportions of foreign investment in US securities, all the proxies for relational capital, except for FDI from the US to these foreign countries, show statistically significant relationships. These variables clear “pick up” a factor common to all of them as a way of explaining foreign investment in US securities.



When explaining rates of convergence though, all these variables do poorly. None of these variables seems to detect the effect of any underlying tacit variable on convergence with comparator country levels of investment in US securities. The careful reader may note that our communication and broker-effect variables are not significant in this regression – whereas they were significant in the previously reported regression. The difference stems from the “mis-specified” nature of this regression – we purposely excluded control variables which may help isolate variance in order to understand better the way we could split up possible variance between our various proxies for relational capital.

The relational capital story then seems difficult to support -- particularly as none of our proxies correlate well with each other (and in all likelihood do not correlate with the extent to which foreign investors feel comfortable using the services of US broker-dealers).

Figure 33b shows the simple correlation between the level of telephone communication between these foreign countries and the US – and the concentration of US broker-dealer offices in these foreign jurisdictions. As shown, the lack of a correlation clearly shows that foreign citizens which telephone the US are not necessarily the ones that US broker-dealers plant several offices around. In theory, these two variables must be measuring some extent of relational capital between these citizens and US markets. In practice, however, they measure completely different aspects of this relationship. In the elusive quest to find the relational capital which explains foreign investment in US securities markets, we must look for the hidden patterns in the data which we do not see (rather than attempt to measure directly a relationship between relational capital and foreign investment in US portfolio assets).



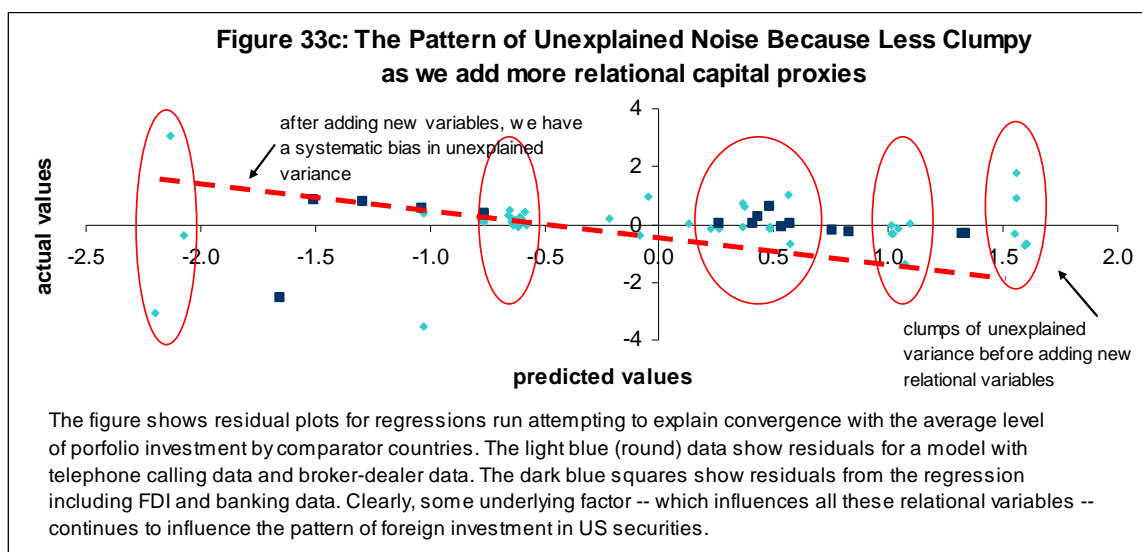
Analysing the remaining information (or variance) after accounting for all data which could serve as a proxy for relational capital may lead the way toward a better understanding of the role of relational capital in explaining foreign portfolio investment. Most previously researchers used statistical methods to remove unwanted variance from their data (variance which reduced the statistical power of their predictor variables in explaining foreign investment in US securities). Our approach is to attempt to use such variance to uncover variables we can not directly measure – like relational capital.

As we add more variables which capture various aspects of relational capital's influence on foreign portfolio investment in the US, patterns in our unexplained data become simpler. Figure 33c shows the pattern in the regression residuals after regressing our relational variables on the extent to which these foreign economies converge with comparator country's level of US portfolio investments.²⁹ The first pattern – represented by light blue circular dots -- shows several clusters of groups of unexplained variance. We added two more proxies for relational capital – the amount of FDI from the US into foreign countries and the value of foreigners' US bank accounts (from 2005 to 2007).³⁰ In both cases, foreigners would need to establish business relations with US institutions which they could use in investment relationships. Once we include these two variables in the regression, the pattern of unexplained variance simplifies. After including them, we are

²⁹ These residuals – in theory – contain all the information and variance which our predictors could not explain. In theory, once these residuals “disappear,” then we have a perfect model. Regular patterns appearing in these residuals also suggest that the effect of some omitted variable might be showing up as a pattern in the residual data.

³⁰ Publicly available data for these variables end in 2007.

missing only a variable which captures the effect of extreme cases of non-convergence and convergence – like Chile and Canada. US broker-dealers likely form relations with foreign investors in these countries which newspaper articles could better record than statistics can.



Relational capital – as a tacit variable – can only be measured by observing what proxy variables for relational capital can not capture. Official statistics can not capture, what Marcela Sanchez of the Washington Post calls “Chile's Investment Deepening Ties to U.S.”³¹ Similarly, official statistics can not capture the generalised malaise in Brazil investment climate that stifles US business interests operating in the country (Beath, 2006). Statistical analysis, though, can point the way toward credible hypotheses for further qualitative research.

Conclusions

Many papers have attempted to explain why foreigners invest relatively little in US portfolio assets from a macroeconomic perspective. In this paper, we have tried to take the perspective of an investor working next to the Bosphorus or Mayakovskaya Station – and ask why they would pick up a phone (or laptop) and invest in US securities. We hypothesized that they place money in US investments often because of the influence of relational capital with a US broker-dealer. These broker-dealers offer them better investments than they can find alone. They also have the regulatory ability to execute trades on US exchanges.

Ostensibly, foreign demand for US securities from year to year depends on the fundamental factors -- what they invested the previous year, their appetite for risk (as evidenced by a preference for equity rather than debt investment), and their level of savings. Unexplained factors relating to the person's country also has an impact. In line with many findings from the literature, foreign demand for US securities depends much more on contact with US markets than with the fundamental features of risk and return. Foreign investors likely rebalance their portfolios based on telephone conversations and asymmetrical shocks to their economy (or the US economy).

³¹ Chile's Investment Deepening Ties to U.S by Marcela Sanchez, Marcela. (2008) at the Washington Post. Available [online](#).

Yet, the presence of US broker-dealers also has an impact on foreign investor demand in US portfolio assets. Placing an office in a foreign country has the usual effects – most likely increasing demand for US securities at a decreasing rate. US broker-dealers are likely to locate in countries which communicate frequently with the US. These broker-dealers do not seem to locate to where returns abroad are particularly low or high relative to the US. Instead, markets with significantly different risk profiles tend to be the target of broker-dealer office placement. US broker-dealers tend to place themselves in foreign markets based on non-market criteria – following the costs and benefits accruing to an unobserved variable we call relational capital.

How does relational capital likely affect the supply and demand of US securities abroad? First, relational capital probably accounts for much of the “country fixed effects” that we and other authors find in the data. Simply holding a passport from a particular country still provides one of the best predictors of your foreign portfolio investment decisions. Second, relational capital likely interacts with the typical variables of communication and “distance” observed in the literature. The macro-level proxies fail to accurately measure such relational capital – accounting for their weak effect in statistical analysis. Third, large gains can still accrue to US broker-dealers who have not invested sufficient amounts of relational capital in particular markets (India, Brazil and China serve as obvious examples). The relational capital US broker-dealers invest in these countries will likely serve as important a variable in predicting their future demand for US portfolio assets as relative risks and returns.

Clearly much more research is required in this area. We used an extremely noisy estimate for broker-dealer effort (the number of offices in a country), and extremely simple statistical procedures (avoiding more complicated transformations of variables and statistical procedures) in order to make our argument and evidence reachable to a broader audience. Future econometricians will certainly wish to reassess our findings in the light of more powerful econometric tests. The best research methodology for finding such relational capital would have been giving surveys to foreign investors. We can only hope deep-pocketed future researchers might use such survey results in future econometric analyses.

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Appendix I: The Model

We start with a foreign investor who wants to maximize his or her risk-adjusted income, subject to some budget constraint. The foreign investor's budget constraint then equals:

$$S \geq \beta I^*[f(r^*, \sigma^*)] + (1 - \beta)I[f(r, \sigma)] \quad (1)$$

where S = the investors level of savings, β = represent the proportion of US securities in the investor's portfolio, I^* = amount of investment in US securities, I = investment in foreign securities, r^* = US rate of return, σ^* = risk of US portfolio assets, and (r, σ) = returns and risks of foreign securities respectively.

We assume – in order to keep the model simple -- that the investor does not differentiate between types of securities (stocks, corporate bonds, government bonds and so forth) and we do not look at the way the investor allocates investment in the domestic economic versus other non-US economies. We also assume all foreign investors act the same, so we do not need to sum over investors.

To make the model a bit more realistic, we add the effect of relative shocks and add functional forms to the effect that relative returns and risks have on foreign investor. We look specifically at the foreign investment decision, which takes these shocks, relative risks and returns into account and the investors overall savings:

$$I^* = \beta(\theta)[\alpha + \gamma(r^* - r) + \phi(\sigma^* - \sigma)] + \varepsilon \leq S \quad \text{where:} \quad (2)$$

$\beta(\theta)$ represents the effect on investment of randomly distributed shocks θ ; γ = marginal effect on investment in US securities of a change in relative rates of return and ϕ = marginal effect of increases in risk of US securities relative to the investor's home securities.

As discussed in the text, foreign investors are likely to place importance on information about “investment opportunities” in US markets. We model the effect of such information i as:

$$I^* = \alpha(i) + \beta(\theta)[\gamma(B)(r^* - r - i - c) - \phi(B)(\sigma^* - \sigma)] + \varepsilon < S \quad (3)$$

We can think of i as representing some stock or level of information about investment opportunities and risks related to US securities which can be monetised (or represented by a monetary expenditure). The variables $\gamma(i)$ and $\phi(i)$ represent the effect that extra information about US investment opportunities has on the foreign investor. The term $\alpha(i)$ represents some “fixed level” of investment (which comes mainly through the marketing efforts of US investment information providers or other sources). The term c represents the effect of capital controls and regulatory barriers.

We need to define more precisely the way that information comes to the investor and include possible fixed effects into our model. For the fixed level of investment, we have simply $\alpha(i) = \alpha_B B$ where $0 < B < 1$. B represents information-providing “effort” of these broker-dealers by the number of offices they have in the foreign jurisdiction, sales effort or any other observable variable, $\alpha_B B$ represents the effect that broker-dealer effort has on foreign investment through providing information,

The more information an investor has, the more likely he or she is likely to benefit. However, such benefits are likely to exhibit decreasing returns to scale – knowledge is power, but only to a point. We can model the effect of such information as

$$I^* = \alpha_B B + \alpha_C C + \alpha_{BC} B^* C + \beta(\theta)[\gamma^{(B+C)}(r^* - r - i - c) - \phi^{(B+C)}(\sigma^* - \sigma)] + \varepsilon < S \quad (4a)$$

where we include C as the level of communication and an interaction between broker-dealer effort and communication (which we show in Figures 16). However, in order to keep the math simple, we can assume that the variable B includes all the effects of the supposed “relational capital” which we seek. Thus,

$$I^* = \alpha_B B + \beta(\theta)[\gamma^B(r - r - B - c) - \phi^B \sigma + \varepsilon < S] \quad (4b)$$

where $\gamma(i) = \gamma^B$ and similarly with $\phi(i)$ such that ϕ^B represents the way that more information affects foreign investors' responses to changes in relative risks between the two markets. As shown, we simply replace some monetary value of information in our model i by B which represents the effort that US broker-dealers make.

In our model, broker-dealer effort has two effects. The first (and dominating) effect is that such effort increase investment in US securities – as foreign investors learn about assets which they can use to hedge in their current portfolio and learn about assets with higher risk-adjusted rates of return. The second (and more minor) effect is that such information costs investors money – decreasing their expected rates of return. In the simulation exercises we showed in Figures 16, both broker-dealers and investors look at their relative risks and returns when deciding how much broker-dealer effort to supply and demand.

How much **extra effort should broker-dealers exert in marketing US investments** to foreign investors? Differentiating equation (3), we have:

$$\frac{\partial I^*}{\partial B} = \alpha_B + \beta(\theta)B r \ln \gamma - \beta(\theta)B^2 \ln \gamma - \beta(\theta)B \ln \phi \sigma = \alpha_B + \beta(\theta)B[r \ln \gamma - B \ln \gamma - \ln \phi \sigma] \quad (5)$$

In order to estimate the **amount of pent-up demand for US portfolio assets**, we can assume that $I^* = (I/k)I^e$ or $k = I - I^e$, where k represents pent-up demand for US portfolio assets. If three factors could influence k 's value -- where we choose the simplest possible function form $k = \zeta_B B$, then we have:

$$I^e = \zeta_B B[\alpha_B B + \beta(\theta)[\gamma^B(r - B) - \phi^B \sigma] \quad (6)$$

We also know that at I^e , $\partial I^*/\partial B = 0$, meaning that investment will not change with a change in effort by broker-dealers. Thus:

$$I^e = \zeta_B \alpha_B B^2 + \zeta_B B \beta(\theta) \gamma^B + \zeta_B B \beta(\theta) \gamma^B r - \zeta_B B \beta(\theta) \phi^B \sigma \quad (7)$$

$$\frac{\partial I^e}{\partial B} = 2\zeta_B \alpha_B B + [\zeta_B \beta(\theta) \gamma^B + \zeta_B \beta(\theta) \gamma^B B \ln \gamma] + [\zeta_B r \beta(\theta) \gamma^B + \zeta_B r B \beta(\theta) \ln \gamma] - [\zeta_B \sigma \beta(\theta) \phi^B + \zeta_B \sigma \beta(\theta) B \ln \phi]$$

$$0 = B[2\zeta_B \alpha_B + \zeta_B \beta(\theta) \gamma^B \ln \gamma + \zeta_B r \beta(\theta) \ln \gamma + \zeta_B \sigma \beta(\theta) \ln \phi] + \gamma^B [\zeta_B \beta(\theta) + \zeta_B r \beta(\theta)] - \zeta_B \sigma \beta(\theta) \phi^B$$

$$B = \frac{-\gamma^B \beta(\theta)[1 + r - \sigma \phi^B]}{[2\alpha_B + \beta(\theta) \ln \gamma + r + \sigma \beta(\theta) \ln \phi]} \quad (8)$$

These target countries would **“catch-up” with comparator countries** if capital controls, lack of information and other distortions disappeared we start with our equation:

$$\frac{\partial I^e}{\partial B} = 2\zeta_B \alpha_B B + [\zeta_B \beta(\theta) \gamma^B + \zeta_B \beta(\theta) \gamma^B B \ln \gamma] + [\zeta_B r \beta(\theta) \gamma^B + \zeta_B r B \beta(\theta) \ln \gamma] - [\zeta_B \sigma \beta(\theta) \phi^B + \zeta_B \sigma \beta(\theta) B \ln \phi] \quad (9)$$

In this case, $\partial I/\partial B$ is negative under five circumstances. First, when α_B is negative – namely when broker-dealer effort repulses foreign investors. Second, when $\beta(\theta)$ is negative (such that increases banking effort translate into decreased investment). Third, when γ is negative (only when foreign investors prefer lower returns or when high information costs or capital controls somehow cause foreign investors to prefer more US portfolio assets like a Giffen good). Fourth, when ϕ is possible – foreign investors invest more in US assets as they become riskier.

For a **tipping-point**, we must assume that foreign investors desire US securities only based on the marketing effort of US broker dealers. For some values of B , $\partial I/\partial B < 0$ while for higher values, $\partial I/\partial B > 0$. If we assume that $\partial I/\partial B = -a$ or $\partial I/\partial B = a$, then the values for B equal:

$$-a = \alpha_B + \beta(\theta)B[r \ln \gamma - B \ln \gamma - \ln \phi \sigma]$$

$$B^- = \frac{-(a + \alpha_B)}{\beta(\theta)[r \ln \gamma - B \ln \gamma - \ln \phi \sigma]} \text{ for } a < 0 \text{ and } B^+ = \frac{a - \alpha_B}{\beta(\theta)[r \ln \gamma - B \ln \gamma - \ln \phi \sigma]}.$$

The **interpretation of our regression coefficients** might be analysed as follows.

If our regression equation equals: $\frac{\partial I^*}{\partial(\theta, \gamma, \phi, B)} = \alpha + \lambda_\theta \theta + \lambda_B B + \lambda_r r + \lambda_\sigma \sigma$. The effect of a relative change in returns would be equal to $\frac{\partial I^*}{\partial r} = \beta(\theta) \gamma^B = \lambda_r$, changes in risk result in $\frac{\partial I^*}{\partial \sigma} = \beta(\theta) \phi^B = \lambda_\sigma$ and the change in investment due to external shocks equals $\frac{\partial I^*}{\partial \beta(\theta)} = [\gamma^B - \phi^B] = \lambda_\theta$.

and our final regression equation is:

$$\Delta I^* = (\alpha + \alpha_B) + [\gamma^B - \phi^B] \Delta \theta + [\beta(\theta)B[r \ln \gamma - B \ln \gamma - \ln \phi \sigma] \Delta B + \beta(\theta) \gamma^B \Delta r + \beta(\theta) \phi^B \Delta \sigma,$$

$\Delta I = \left[\frac{[\beta(\theta)B[r \ln \gamma - B \ln \gamma - \ln \phi \sigma]]}{-(\alpha + \alpha_B) - [\gamma^B - \phi^B] \Delta \theta - \beta(\theta) \gamma^B \Delta r + \beta(\theta) \phi^B \Delta \sigma} \right] \Delta B$ and if all other shocks = 0, then

$$\Delta I = \left[\frac{[\beta(\theta)B[r \ln \gamma - B \ln \gamma - \ln \phi \sigma]]}{-(\alpha + \alpha_B)} \right] \Delta B \quad (10).$$

which says that changes in broker effort pass into changes in foreign investment through effects on changes in shocks, the level of broker-dealer presence in a country – minus the cost of obtaining information and minus increased risk.

Appendix II: US Procedures for Offering Securities to Foreign Investors

The complexity of marketing US securities to foreign investors depends on the jurisdiction involved. In most cases, the broker-dealer will need to comply with all US securities law and other laws in force in the targeted foreign jurisdiction. For example, a US broker-dealer selling shares in India or Moscow will need to be a qualified and licensed US registered representative or investment advisor as well as register with the Russian or Indian securities agency. In other cases, a registered representative selling shares in Hong Kong to a limited number of non-US investors will need to observe relatively few regulatory requirements.

US law does not provide many exemptions or derogations of broker-dealers marketing securities abroad. Figure A shows some of the main provisions in force. In general US advisors must pass a range of examinations and certifications – as well as comply with a body of securities law passed in the 1930s and 1940. Exceptions include the recent analysts certification (Regulation AC) designed to close a gap leading to a fair amount of self-interested advice given by domestic and foreign analysts. Other key exceptions – which probably cover a large share of the market for US securities purchases abroad – relate to exemptions when selling securities in non-public fora to qualified buyers and institutional investors.

Figure A: Some US Law Pertaining to the Sale of Securities to Foreign Investors

Rule or Regulation	Description
Securities Exchange Act (Section 15) ³²	One of the pillar laws – passed in 1934. Lays out various requirements for broker-dealers operating as US legal persons (giving the SEC jurisdiction over their activities).
Analyst Certification	Governed by the provisions of the 2002 Regulation AC. Requires that foreign analysts providing views about the market put disclaimers on their research if they are compensated for such research.
Investor Protection and Securities Reform Act of 2010 (Dodd-Frank Act) ³³	Increases the SEC's jurisdiction over foreign marketing involving US securities or with effects in the US.
Obtaining and furnishing information to the Fund ³⁴	Sets down rules for reporting financial transactions with foreigners, including forms TIC B, TIC C, TIC D, TIC S, FC, and BEA forms.
Foreign Broker-Dealer Exemption (Rule 15a-6)	Allows for US citizens who reside abroad to sell to foreign citizens as long as they do not target US citizens (part a.4.v) and as long as they are associated with a US broker (part b.3). ³⁵
Regulation S	Broker-dealers do not need to be licensed if they offer US securities strictly outside the US as long as the offerer him or herself does not try to induce a foreign sale. If many US citizens are like to want to purchase the security, these broker-dealers can not offer these securities to US

³² See 15 US Code § 78a which is available [online](#).

³³ See Pub.L. 111-203, H.R. 4173.

³⁴ See 22 U.S.C. 286f; 22 U.S.C. 3103.

³⁵ The US Securities Industry has recently called for amendments to the Rule to make the purchase of US securities by foreign investors easier. See SIFMA. (2009). *Summary of Securities Exchange Act Rule 15a-6 and Mutual Recognition*. Available [online](#).

³⁶ See Wang (2001) for a full exposition of Regulation S.

	citizens abroad. ³⁶
Private Placement to Qualified Institutional Buyers ³⁷	Known as the Rule 144A exemption. Broker-dealers may sell securities of a minimum \$500,000 units of restricted securities to Qualified Institutional Investors which own at least \$100 million in investable assets.
Accredited/ Qualified Investors ³⁸	Known as the Regulation D exemption. Rule 504 provides an exemption for the offer and sale of up to \$1,000,000 of securities in a 12-month period. Rule 505 provides an exemption for offers and sales of securities totaling up to \$5 million in any 12-month period. In contrast, section 4(6) does not require accreditation of the investor.
“Hedge Fund” Exclusions ³⁹	Allows exemption from registration for companies whose outstanding securities (other than short term paper) are beneficially owned by not more than 100 investors and which is not making and does not presently propose to make a public offering of its securities and acquisition of such securities are “qualified purchasers” (high net worth individual) and which is not making and does not at the time propose to make public offering of its securities.

Note: excludes Exon-Florio provisions dealing with the acquisition of strategic interests and thus registerable by the Committee on Foreign Investment in the United States (CFIUS). The provisions in the table only illustrate the types of regulatory requirements facing foreign investors and do not represent a complete list or legal advice.

Sources: SEC (2008) and others.

Foreign investors – as far US authorities are concerned – also need to comply with a couple of provisions in the US tax code (ensuring that Uncle Sam gets his share of the foreigners’ capital gains). Figure B shows the forms which a foreign investor most likely would need to file with the US Internal Revenue Service. In general, these forms seek to identify the taxable investor and assess the amount of taxes due. In many cases, the foreign investor may use an intermediary in dealing with the US tax authorities.

Figure B: Forms to be Filed by Foreign Investors on US Side

Form	Description
W8-BEN	Filled in by foreign party to report taxable income from US securities ⁴⁰
1040 NR	Used by foreigners who reside briefly in the US and/or receive dividends or capital gains from US stocks.
Form TIC-S	Treasury International Capital - Filled in by party executing trade for foreign investor. ⁴¹
Form W-8IMY	Form provided by Qualified Intermediary abroad.
W-7	Foreign Taxpayer Tax Identification Number (ITIN). ⁴²

Source: IRS (various instruction manuals). The provisions in the table only illustrate the types of regulatory requirements facing foreign investors and do not represent a complete list or legal advice.

So far, the US has done very little to encourage the adoption of international investment agreements which would allow its broker-dealers to market US securities abroad (or allow foreign brokers to market in the US). Figure C shows some of the current (and expected)

³⁷ Securities Act of 1933

³⁸ Section 4(6) of the 1933 Securities Act.

³⁹ Section 3(c)(1) of the Investment Act and Section 3(c)(7)

⁴⁰ <http://www.irs.gov/pub/irs-pdf/fw8ben.pdf>

⁴¹ What Transactions to Report - U.S.-Resident Dealers and Brokers, available [online](#).

⁴² Only certain agents registered with the US IRS may accept applications for Foreign Taxpayer ID numbers abroad. These include Deloitte and Touche, Ernst & Young, KPMG and PricewaterhouseCoopers, accepting W-7s in Belgium, Brazil, Canada, Germany, Hong Kong, Japan, Mexico, Singapore, and United Kingdom.

agreements in place. Most of the most interesting agreements come as part of overall free trade agreements which the US has signed with foreign countries (with the exception of the on-going SEC deliberations to offer mutual recognition to foreign financial institutions operating in the US).

Figure C: List of Bilateral Investment and Financial Services Agreements

Country	Year
EU*	Ongoing
Colombia	Pending Congressional approval *
Australia**	2008
Chile	2004
Singapore***	2003
Japan	1995
Argentina	1994
Mexico	1992
Canada	1992
Russia	1992
Turkey	1990

Sources: UNCTAD (2010) of the Russian and Turkish agreements. See SEC (2010) for the Australia agreement and Office of the US Trade Representative (2010) for trade in financial services provisions related to general free trade agreements.

* See Karmel (2008) for an interesting legal discussion on the possibilities and prospects for mutual recognition between the US and EU.

** The agreement with Australia represents a bilateral agreement signed between executive agencies.

*** The Singapore agreement contains significant exemptions in the financial services sector.

Appendix III: Legal Provisions in Various Jurisdictions

In addition to the US regulations governing the offer of securities to foreign investors, foreign countries also have their own regulations. The general rule for foreign portfolio investment comes from international principles encouraging national treatment and most-favoured nation treatment (Bondiotti, 2008). However, at present, the current trend is for tightening of foreign country regulation over foreign portfolio investment – with the US and EU working on mutual recognition arrangements.

Figure D: Legal Provisions in Various Target Countries in 1998

Target Countries	
Argentina	US broker-dealers in Argentina participate on an equal footing with domestic broker-dealers in terms of legal requirements. Argentina has no regulations restricting the purchase or sale of foreign shares or foreign exchange. Oversight of broker-dealers provided by the National Securities Commission (CNV). ⁴³
Colombia	Colombian investment foreign portfolio assets must be registered with the Central Bank (as such investment required foreign currency) and investments in the foreign financial sector must also be approved by the Colombian Banking Superintendence. ⁴⁴
Chile	Must have Chilean subsidiary. Restrictions on the purchase of foreign (US) assets depend on the type of legal or physical person purchasing these securities.
India	Registration with the Securities and Exchange Board of India (SEBI) and partnership with local broker-dealers. Foreign Investment Promotion Board (FIPB), Reserve Bank of India (RBI). As of 1998, US broker-dealers could open representative offices which did not trade. As of 1998, Indian residents could not invest in portfolio assets abroad. ⁴⁵
China	May offer shares in “B” securities in cooperation with a local broker-dealer. Must hire staff through approved labour supplier. ⁴⁶
Hong Kong	Hong Kong places few restrictions on portfolio investment abroad. The Securities Ordinance requires “fit and proper” persons and capital requirements. ⁴⁷
Mexico	The NAFTA agreement provides for national treatment of US broker-dealers operating in Mexico. ⁴⁸
Turkey	In theory, the purchase and sale of foreign shares should be done through depository receipts by Turkish brokers. ⁴⁹ However, Turkish law allows for liberal exchange of foreign assets.
Russia	Russian investors can only purchase Qualified Securities by Qualified Issuers (as defined under Russian law). Once purchased, securities purchases must be registered with the Federal Service for Financial Markets (FSFM). Only

⁴³ See Public Offering of Securities Law No. 17.811, 1968, available [online](#).

⁴⁴ See Section IV, Decree 2080 of 2000, available [online](#).

⁴⁵ See Stock Brokers and Sub-brokers Rules (2002), available [online](#).

⁴⁶ Regulations Governing Representative Offices by Foreign Financial Institutions, see [online](#). Also See Securities Law of 2005, available [online](#).

⁴⁷ See the Securities Ordinance, available [online](#).

⁴⁸ See NAFTA Agreement, chap. 14, available [online](#).

⁴⁹ See Capital Markets Board Law, art. 33, available [online](#). See also Communiqué on Principles Regarding Registration with the Board and Sale of Foreign Capital Market Instruments, available [online](#).

	qualified investors can purchase foreign securities which are not Registered Securities and then sold only by a Russian broker. ⁵⁰
Brazil	Foreign investor purchasing US shares must be registered with the Brazilian Securities and Exchange Commission (CVM) and report purchase on electronic database. Companies investing abroad must comply with various laws as outlined by the Central Bank of Brazil. ⁵¹
Comparator Countries	
Canada	The NAFTA agreement provides for national treatment of US broker-dealers operating in Canada. ⁵²
Singapore	Singapore residents face no restrictions in buying foreign stocks. Several US broker-dealers own shares of local brokerage houses. May offer foreign mutual funds if offer prospectus and register prospectus with the Registrar of Companies.
Japan	Foreign Exchange Law of 1998 liberalised Japanese ownership of foreign shares. National treatment – except in the case of new products. Securities firms regulated by the SEL, FSA and Foreign Securities Company Law.
Switzerland	Federal Banking Commission approves securities representatives in Switzerland and the Swiss Financial Markets Surveillance Authority (FINMA) oversees all foreign securities dealers operating in Switzerland. The Stock Exchange and Securities Trading Act (SESTA) governs the actual dealing in securities. ⁵³
Australia	Mutual recognition agreement with Australia * , though obstacles remain.
EU (Belgium, France, Germany, UK, Ireland)	The Markets in Financial Instruments Directive provides for “tied agents” from any Member State to sell securities in any other Member State – providing mutual recognition of home country regulations (or EU law). ⁵⁴

Sources: Treasury (1998), IMF (2007), eStandards Forum (2010). See footnotes for specific country sources.

⁵⁰ See Linklaters (2010). The offer and sale of foreign securities in Russia, available [online](#). Specific provisions are governed by the New Law On the Securities Market (No. 74-FZ, 28 April 2009), available [online](#).

⁵¹ See International Capital and Foreign Exchange Market Regulation, available [online](#).

⁵² See NAFTA Agreement, chap. 14, available [online](#).

⁵³ See FINMA (2009), Guide Pertaining to Applications for Authorisation as a Domestic or Foreign Stock Exchange or Stock Exchange-like Organisation, available [online](#).

⁵⁴ Directive 2004/39/EC. For a simple overview of the Directive, and the way which one Member State must respond – see FSA (2006), available [online](#).

Appendix IV: Empirical Analysis

The following table represents the variables (and sources) we used in our regression analysis.

Figure E: Description of Variables

Variable	Description of Variable and Data source
Foreign portfolio investment in US.	US Department of Treasury Database. The Treasury reports these data on a June-to-June annual basis.
Market capitalisation to GDP	We used Beck et al.'s (2010) database on financial structure and development – dividing their estimates for stock market capitalisation by GDP.
Relative returns	We calculated relative returns by taking the annual returns from popular exchange traded funds for that economy and subtracting them from the US rate of return on an S&P 500 exchange traded fund. We calculated from market indices from the following exchange traded funds – US (IVV), Canada (EWC), Australia (EWA), Mexico (EWW), Chile (ECH), Japan (EWJ), UK (EWU), Netherlands (EWN), USA (IVV), Brazil (EZW), Singapore (EWS), Swiss (EWL), Hong Kong (EWH), Italy (EWI), China (FXI), Germany (EWG), France (EWQ), and Belgium (EWK).
Communication	Federal Communication Commission annual report on Statistical Trends in Telephony - Section 43.61 International Traffic Data. We used combined phone traffic from the US to the foreign country and from the foreign country to the US (in minutes).
Broker-dealer offices abroad	Data from US Financial Industry Regulatory Authority (FINRA) Broker Check service.* We downloaded registration documents for the largest broker-dealers in terms of annual revenues.
Relative market risk	We downloaded daily share price information for each of the exchange traded fund (ETF) we used as a proxy for market returns in the economies we studied. We calculated the standard deviation for each year and then divided those standard deviations by the average share price for that year. We subtracted these normalised standard deviations for each ETF for each country we studied.
Savings Rates	From World Bank's World Development Indicators Database – current domestic savings in current US dollars.
Equity to Debt ratios	US Department of Treasury Database.
Capital Controls	Chinn-Ito Index data downloaded online .
Relative weights of US securities in foreigner's portfolios	IMF Coordinated Portfolio Investment Surveys (CPIS) from 2005 to 2009.
Foreign Direct Investment from the US.	Bureau of Economic Analysis International Economic Accounts, Selected Data by Country 1999-2006 and for 2007.*
International Banking./	Bank for International Settlements - Foreign claims by nationality of reporting banks, ultimate risk basis (for United States).
Industrial Concentration	From World Bank's World Development Indicators Database, industrial production as a percent of GDP.
Bank income to cost ratios	From Beck et al.'s (2010) database on financial structure and development. The original uses cost-to-income, of which we take the reciprocal.

In addition, we calculated several variables which we used in our analysis. These variables are:

Under-capitalisation

If UC represents under-capitalisation, K_i represents stockmarket capitalisation in country i and K_w represents the total world stock market capitalisation, and Y represents GDP (again with i representing country i and w representing world GDP), then:

$$UC = K_i / K_w * \frac{Y_i}{Y_w}$$

Under-investment relative to comparator countries

If I^* represents country i 's investment in US portfolio assets, if j represents the country member of the comparator group and if t represents time, then under-investment equals the proportion of investment in US securities to GDP by the country's residents subtracted from the average proportion of such investment only in the 10 comparator countries. In that way, we could express under-investment relative to global levels. We made the negative value of this figure under-investment – so under-investment would be shown as positive numbers and over-investment in negative numbers.

$$UI = -[(I_i^* / Y_i - [\sum_{j=1}^{10} I_j / \sum_{j=1}^{10} Y_j] / 10)_t].$$

Convergence

If I_e represents some equilibrium level of investment in US securities as represented by the average proportions of such investment by the comparator countries --

$$[\sum_{j=1}^{10} I_j / \sum_{j=1}^{10} Y_j] / 10)_t, \text{ then:}$$

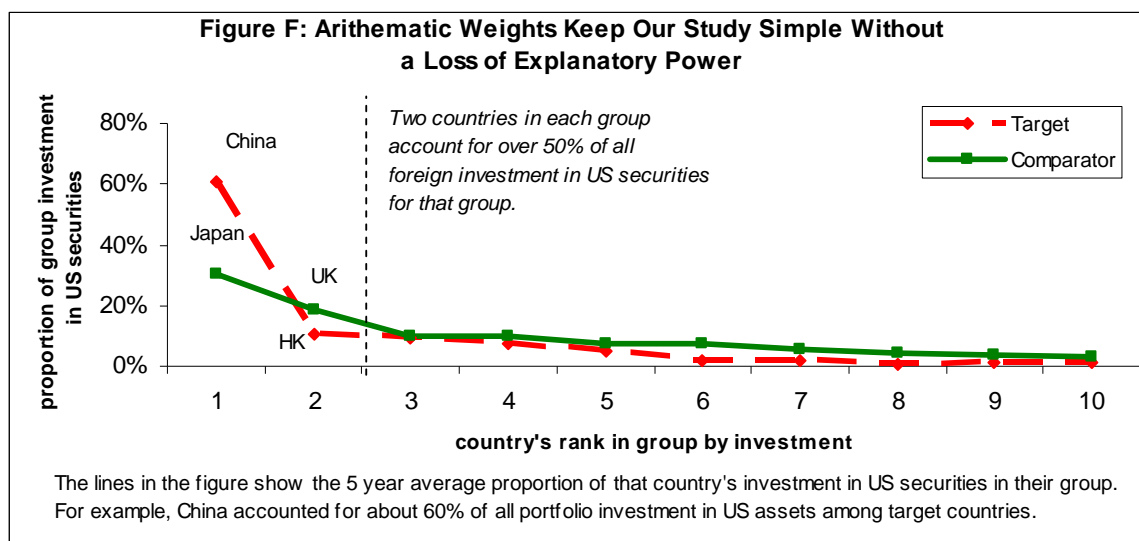
$$convergence = \frac{I_t^* - I_{t-1}^*}{I_t^e}$$

We strongly encourage the reader to use their own judgement when judging the conclusions we draw from the data. We assume that our estimators represent somewhat adequately the underlying parameters we are trying to work with. Figure F provides critiques of our variable selection.

Why We Decided Not to Weigh our Variables

We decided to use a simple arithmetic average of the variables in Figure 24b because a weighted average would have – while being more “scientifically correct” – obscured trends in the data which the reader would not be able to see with such a weighting. Consider Figure F, which shows the average weights of each country's investment in US securities within its own group. As shown, China accounts for over 60% of all investment among target countries and Japan accounts for about 50% of all portfolio investment from investors from comparator countries. Any group average of target country variables -- of

relative rates of return for example – would reflect mostly China’s economic growth, ignoring India, Turkey, Argentina, Chile, and Colombia and (which make up only 7% of foreign portfolio investment in the US within their group of target countries). Weighing all our variables would also increase the “value” of China’s variance in our regression analysis – and decrease the weight of 4 out of 10 of our other countries.



We think using the technically incorrect procedure of giving all countries the same weight allows the reader to better understand trends in the data for three reasons. First, a simple average reduces the impact China, Japan, Hong Kong and UK (only 4 out of 20 countries) have on our understanding of deeper trends in foreign investment in US securities. Taking a simple averages gives these countries the same weight as the other countries in their group. Second, simple averages amplify trends in the countries most likely to increase their share of investment in US securities in the future. Quantitatively, we want mathematically accurate calculation – of the average rate of return for the target countries over the time period (for example). Qualitatively, though, we want to know what was happening in Colombia, Turkey, India, Argentina and Chile. US broker-dealers look to the future rather than the past – and so will likely focus their attention on “up and coming stars.” Third, we do not report both sets of statistics (weighted and un-weighted) statistics in order to keep the paper readable. Many of the studies we reviewed for this paper provided so many tables and groups of statistics that we had difficulty staying focused on the messages and ideas the authors tried to convey. So, we sacrifice completeness for readability – allowing dissatisfied readers to compute these statistics for themselves.

Figure G: Critiques in our Choice of Variables and their Interpretation

Estimator	Critique
Foreign portfolio investment in US	Several authors have criticised Treasury's data. See Gros (2006) and Bertaut <i>et al.</i> (2006) for clarifications and critiques.
Under-capitalisation	Different countries might have different levels of capitalisation to GDP based on desire to spread risks, preference for bond finance, and so forth. There is no a priori reason (other than computational simplicity) why a country's world share of market capitalisations should equal its world share of GDP.
Relative returns	We use exchange traded funds which represent only part of the market we seek to study. We could not find adequate ETFs for almost half the countries in our sample – which significantly further reduced the reliability of our statistical analysis.
Communication	We assume that telephone traffic equals roughly the level of productive communication between the investing country and the US. Much of this traffic though is for family, friends and has little commercial interest (explaining why the indicator is so noisy in other studies also).
Broker-dealer offices abroad	One of the most problematic – and important – indicators in our study. We simply count the number of foreign offices in a country, without regard for its size of the number of accounts serviced (as these data are not available). We also assumed that the number of country offices does not vary during the period we study.
Relative market risk	Fluctuations in ETF provide a poor basis for judging investment risks in the country (as these fluctuations are determined by changes in the supply and demand for the ETF).
Savings Rates	We assume that savings will pass into portfolio investment. We also use domestic savings, which by definition, already excluded foreign savings.
Equity to Debt ratios	We treat equity-to-debt ratios in our study as proxies for the preference for higher risk assets.
Capital Controls	We use the Kaopen index which takes a fair amount of complexity about foreign portfolio regulation and maps such complexity into an index which is relatively hard to assess. We assume that the level of capital control does not vary much over the time period we study (as we did not have access to more detailed data).
Relative weights of US securities in foreigner's portfolios	We exclude foreigner's investment in their own markets. Analytically, we treat such investment as investment in just another foreign market.
Foreign Direct Investment from the US.	We use this as a very rough proxy for commercial relations between US companies and foreign investors.
Amounts held by foreigners in US Bank Accounts	We use these data to suggest patterns in relational capital with US financial institutions. If foreign investors hold US bank accounts, they should be more familiar with US finance – and particular individuals working in the US financial industry.
Under-investment relative to comparator countries	We do not assume – like the other authors – that each country's share of investment in US assets should equal the US's share of global GDP. However, we do assume that convergence countries have somehow found the right or best proportion of investment. Such an approach ignores that each country (and each investor in that country) will have different optimal portfolio mixes based on their preferences and assets they already hold in their portfolio (including real estate, human capital and a wide range of other assets). Even in a world of perfect capital mobility, countries would be expected to have very different proportions of US assets in their investment portfolios. We take the average of comparator countries in order to reduce of this complexity – realising that our estimates represent “ball-park figures.”

Convergence	Our measures of convergence rely on two very unsettling assumptions. First, that the short time period we cover (three years for which data were available) portray adequate the general direction toward which the countries in our study converge. Second, they are converging toward the average level of investment in US portfolio securities in the comparator countries. There is little reason (other than convenience) why the average proportion of investment in comparator countries (relative to their GDP) represents some bench-mark against which all countries can be assessed.
Industrial Concentration	We use industrial concentration as a quick and easy way of assessing the propensity of the foreign economy to experience asymmetric shocks relative to the US. We assume that mostly industrial economies would be differently affected by shocks in the world price for copper (for example) than a service-based economy. We hope that changes in industry-to-GDP ratios would “pick up” the effect of shocks affecting those economies. We do not adjust for changes in the US’s industry-to-GDP ratio because the US represents a highly diversified economy which under-went a very large shock during the time of our study.

Figure H: Descriptive Statistics for Target and Comparator Countries

	Target Countries		Comparator Countries	
	Mean	Standard Error	Mean	Standard Error
Change in US Investment	25%	0.05	8%	0.03
Under/Over invest viz comparators (compared with intl)	10%	0.02	-24%	0.06
Under-cap by GDP (compared with own)	-10%	0.22	-32%	0.11
Previous years change	29%	0.05	13%	0.02
Current level invest	\$154,523	\$42,233	\$398,361	\$45,612
Percent of Invest in US Markets	40%	5%	24%	2%
equity to debt	17%	3%	98%	11%
Absolute returns	27%	9%	232%	222%
Relative returns of US Market	-22%	6%	-7%	2%
Cap Control	0.5	0.18	2.3	0.07
Telephone	3066	743	3066	816
Bank Offices	2.3	0.28	6.5	0.73
Industrial Concent (proxy for asymmetric shock)	32%	156%	27%	64%
Savings	317087	76666	372135	53797
US Risk Compared with Target	-8%	1%	-4%	1%

Figure I: Descriptive Statistics for Whole Sample by Year

	2009		2008		2007		2006		2005	
	Mean	s.e.	Mean	s.e.	Mean	s.e.	Mean	s.e.	Mean	s.e.
Change in US Investment	-1%	8%	11%	4%	34%	8%	21%	3%	18%	5%
Under/Over invest viz comparators (compared with intl)	0%	4%	-9%	9%	-7%	8%	-7%	8%	-7%	8%
Under-cap by GDP (compared with own)	0%		-42%	30%	-26%	26%	-16%	23%	-2%	21%
Previous years change	11%	4%	34%	8%	21%	3%	18%	5%		
Current level invest (thousands)	\$313	\$90	\$323	\$82	\$300	\$75	\$236	\$63	\$207	\$59
Percent of Invest in US Markets			35%	6%	32%	5%	30%	6%	29%	5%
equity to debt	50%	15%	57%	16%	59%	16%	60%	16%	61%	16%
Absolute returns	606%	564%	-44%	2%	24%	6%	36%	5%	19%	4%
Relative returns of US Market	-14%	8%	7%	2%	-19%	6%	-19%	5%	-14%	4%
Cap Control	1.4	0.30	1.4	0.3	1.4	0.30	1.4	0.30	1.4	0.30
Telephone			3200	1148	3017	1079	3086	1163	2960	1080
Bank Offices	4.4	1.01	4.4	1.0	4.4	1.01	4.4	1.01	4.4	1.01
Industrial Concent (proxy for asymmetric shock)			29.3	2.0	29.6	1.97	30.0	1.95	29.7	1.90
Savings			422046	119777	368990	96739	311585	80744	275824	72748
US Risk Compared with Target	-6%	1%	-7%	1%	-6%	2%	-3%	1%	-4%	1%

Figure J: Correlation Matrix for Model Variables

	ΔI	I-I*	Cap/ GDP	I (t-1)	I	IUS/It otal	E/D	r	R*-r	Cap	Tele	Bank	Indus t	Savin gs	U S s
Change in US Investment	1.00														
Under/Over invest viz comparators (comapred with intl)	0.27	1.00													
Under-cap by GDP (compared with own)	0.14	0.50	1.00												
Previous years change	0.26	0.32	0.11	1.00											
Current level invest	-0.19	0.01	0.14	-0.25	1.00										
Percent of Invest in US Markets	-0.05	0.41	0.31	0.10	0.02	1.00									
equity to debt	-0.24	-0.18	-0.12	-0.17	-0.18	-0.14	1.00								
Absolute returns	0.47	0.02	0.05	-0.30	-0.18	-0.10	0.05	1.00							
Relative returns of US Market	-0.61	-0.08	-0.02	0.16	0.32	0.10	-0.03	-0.86	1.00						
Cap Control	-0.56	-0.29	0.03	-0.54	0.39	-0.29	0.56	-0.16	0.30	1.00					
Telephone	0.00	0.38	0.35	-0.04	-0.08	0.80	-0.27	0.04	-0.04	-0.39	1.00				
Bank Offices	-0.04	0.07	-0.09	0.03	0.13	0.11	0.42	0.06	-0.05	0.25	-0.17	1.00			
Industrial Concent (proxy for asymmetric shock)	0.01	0.25	0.72	0.08	0.02	0.53	0.03	0.02	-0.05	0.01	0.44	-0.05	1.00		
Savings	-0.12	0.49	0.40	-0.14	0.68	0.05	-0.16	-0.10	0.15	0.25	0.01	0.00	0.20	1.00	
US Risk Compared with Target	-0.47	-0.02	-0.05	-0.49	0.40	-0.01	0.25	0.16	0.09	0.49	-0.04	0.01	0.04	0.31	

Figure K: Correlation Matrix for Variables Stratified by Year and Country Effects

	Time	Country	Group
Change in US Investment	0.14	-0.19	-0.38
Under/Over invest viz comparators (comapred with intl)	-0.04	-0.29	-0.23
Under-cap by GDP (compared with own)	0.07	0.18	0.20
Previous years change	-0.32	-0.24	-0.42
Current level invest	-0.06	0.48	0.44
Percent of Invest in US Markets	-0.08	-0.35	-0.32
equity to debt	0.06	0.51	0.57
Absolute returns	0.85	0.02	-0.07
Relative returns of US Market	-0.52	0.07	0.21
Cap Control	-0.01	0.61	0.89
Telephone	0.04	-0.33	-0.41
Bank Offices	0.04	0.33	0.33
Industrial Concent (proxy for asymmetric shock)	-0.01	0.19	0.11
Savings	-0.06	0.31	0.35
US Risk Compared with Target	0.34	0.30	0.39
Time		0.08	0.06
Country	0.08		0.84
Group	0.06	0.84	

Figure L: Regression Results on Levels of Foreign Portfolio Investment in US Securities

	Canonical	Error Correction	Basics	Full	Autoregress
Curr Invest Lag					0.97
(s.e)					0.06
Under/Over invest viz comparators (comapred with intl)		0.39		-.39	
(s.e)		0.18		.15	
Under-cap by GDP (compared with own)		-0.17			
(s.e)		0.16			
Previous years change		-0.22	-0.03	.07	
(s.e)		0.17	0.07	.14	
equity to debt		-0.66		.25	
(s.e)		0.16		.12	
Percent of Invest in US Markets					0.03
(s.e)					0.05
Relative returns of US Market	0.11	0.26		.13	-0.01
(s.e)	0.11	0.16		.11	0.04
Cap Control	0.42	0.25		-.65	
(s.e)	0.26	0.40		.26	
Telephone	0.08		-0.03	.66	
(s.e)	0.10		0.07	.12	
Bank Offices	0.03		0.02	.40	
(s.e)	0.10		0.07	.08	
Industrial Concent (proxy for asymmetric shock)	-0.18			.38	-0.04
(s.e)	0.12			.09	0.05
Savings	0.91		0.74	.34	0.01
(s.e)	0.12		0.07	.14	0.05
US Risk Compared with Target	-0.01	0.12		.18	-0.01
(s.e)	0.12	0.18		.10	0.04
Time Dummy	0.00	-0.06	-0.05	-.07	0.02
(s.e)	0.11	0.17	0.06	.09	0.04
Country Dummy	0.62	1.11	0.21	-.93	0.06
(s.e)	0.23	0.34	0.14	.21	0.07
Group	-0.68	-0.41	0.16	.71	-0.03
(s.e)	0.38	0.56	0.15	.33	0.06

Figure M: Regression Results on Changes in Foreign Investment in US Securities

	Model 1: Autoregressive	Model 2: Error Correction	Model 3: Communi cation	Model 4: CAPM	Model 5: Full
Intercept					
Under/Over invest viz comparators (comapred with intl)		0.16			0.78
(s.e)		0.16			0.31
Under-cap by GDP (compared with own)					0.20
(s.e)					0.27
Previous years change		0.00			-0.36
(s.e)		0.17			0.23
Percent of Invest in US Markets		-0.21	0.06		0.75
(s.e)		0.14	0.14		0.37
Current level invest		0.21			
(s.e)		0.15			
equity to debt					-0.31
(s.e)					0.22
Relative returns of US Market		-0.51		-0.41	-0.47
(s.e)		0.16		0.14	0.19
Cap Control		-0.62		-0.77	0.03
(s.e)		0.39		0.30	0.49
Telephone			-0.21		-0.90
(s.e)			0.13		0.31
Bank Offices			0.10		-0.36
(s.e)			0.12		0.20
Industrial Concent (proxy for asymmetric shock)					-0.34
(s.e)					0.26
Savings			0.03	0.04	-0.58
(s.e)			0.12	0.11	0.26
US Risk Compared with Target		-0.28		-0.06	-0.41
(s.e)		0.17		0.15	0.19
Time Dummy		0.01	0.03	-0.07	-0.03
(s.e)		0.16	0.11	0.13	0.17
Country Dummy		-0.18	0.67	-0.26	1.14
(s.e)		0.33	0.24	0.30	0.49
Group		0.40	-0.91	0.60	-0.70
(s.e)		0.54	0.24	0.47	0.63

**Figure N: Regression Results on the Proportion of Foreign Investment
in US Markets**

	Error Correction	CAPM	Comm	Full
Intercept				
Under/Over invest viz comparators (comapred with intl)	0.00			
(s.e)	0.15			
Previous years change	-0.01			-0.05
(s.e)	0.11			0.13
equity to debt	0.16			
(s.e)	0.15			
Relative returns of US Market		0.18	0.06	0.18
(s.e)		0.15	0.10	0.11
Cap Control		-0.28	-0.26	-0.36
(s.e)		0.39	0.26	0.28
Telephone			0.85	0.56
(s.e)			0.09	0.12
Bank Offices			0.34	0.38
(s.e)			0.09	0.09
Industrial Concent (proxy for asymmetric shock)	0.52	0.62		0.37
(s.e)	0.10	0.13		0.11
Savings	0.07	0.05		0.01
(s.e)	0.16	0.13		0.09
US Risk Compared with Target		0.15	0.09	0.16
(s.e)		0.17	0.11	0.11
Time Dummy	-0.12	-0.03	-0.10	-0.07
(s.e)	0.10	0.15	0.10	0.11
Country Dummy	-0.73	-0.56	-0.51	-0.54
(s.e)	0.21	0.26	0.20	0.18
Group	0.18	0.20	0.41	0.39
(s.e)	0.24	0.50	0.34	0.34

Figure O: Regression Results of Foreign Under-Investment in US Securities

	Simple	Structural	Error Correct	Full
Intercept				
(s.e)				
Change in US Investment			0.17	
(s.e)			0.16	
Previous years change			0.21	
(s.e)			0.16	
Current level invest			0.01	
(s.e)			0.15	
Under-cap by GDP (compared with own)		0.54		0.63
(s.e)		0.18		0.15
equity to debt			0.14	0.44
(s.e)			0.20	0.12
Absolute returns			0.08	
(s.e)			0.15	
Relative returns of US Market	-0.10	-0.15		-0.07
(s.e)	0.16	0.13		0.10
Cap Control	-1.37	-0.56		-0.63
(s.e)	0.35	0.37		0.28
Telephone				0.16
(s.e)				0.10
Bank Offices				0.22
(s.e)				0.09
Industrial Concentration (proxy for asymmetric shock)	-0.01	-0.28		-0.41
(s.e)	0.16	0.16		0.12
Savings	0.43	0.40		0.59
(s.e)	0.16	0.12		0.10
US Risk Compared with Target	0.26	0.18		0.15
(s.e)	0.17	0.15		0.11
Time Dummy	-0.12	-0.19	-0.14	-0.18
(s.e)	0.15	0.13	0.15	0.10
Country Dummy	-0.95	-0.50	-0.40	-0.57
(s.e)	0.32	0.27	0.29	0.21
Group	1.72	0.47	0.12	0.26
(s.e)	0.53	0.52	0.31	0.41

Figure P: Regression Results on the Number of Broker-Dealer Offices in Various Foreign Countries

	Structural Model	Looking for Markets	CAPM for I-Banks	Full
Intercept				
Change in US Investment		0.05		-0.34
(s.e)		0.13		0.24
Under/Over invest viz comparators (comapred with intl)		0.52		0.75
(s.e)		0.18		0.28
Under-cap by GDP (compared with own)	-0.10	-0.57		0.03
(s.e)	0.24	0.16		0.30
Previous years change		0.15		-0.19
(s.e)		0.13		0.27
Current level invest		-0.19		
(s.e)		0.18		
Percent of Invest in US Markets	0.73	0.30		1.27
(s.e)	0.19	0.17		0.30
equity to debt		-0.26		
(s.e)		0.21		
Relative returns of US Market	-0.21		-0.05	-0.25
(s.e)	0.17		0.18	0.22
Cap Control	0.06		0.09	0.59
(s.e)	0.48		0.39	0.48
Telephone				-0.97
(s.e)				0.34
Industrial Concent (proxy for asymmetric shock)	-0.50			-0.54
(s.e)	0.25			0.28
Savings	-0.13		-0.15	-0.47
(s.e)	0.16		0.15	0.22
US Risk Compared with Target	-0.18		-0.07	-0.45
(s.e)	0.19		0.19	0.21
Time Dummy	0.02	0.10	0.00	0.13
(s.e)	0.17	0.12	0.17	0.19
Country Dummy	0.49	0.26	0.06	1.37
(s.e)	0.36	0.29	0.38	0.43
Group	0.34	0.89	0.28	-0.93
(s.e)	0.65	0.29	0.60	0.70