DOMESTIC AND FOREIGN BIAS:

JAPANESE INVESTMENT TRUST HOLDINGS IN THE POST-BIG BANG ERA

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Abstract

This dissertation is an analysis of how domestic and foreign bias has affected Japanese overseas portfolio investment in the post Big Bang reform era. Times series analysis is used to identify three clear eras of investment behavior in terms of both composition of foreign and domestic asset and also the relationship between holdings and the underlying price of those assets. These time frames are then tested using existing models of investment preferences and incorporating content analysis of fund prospectuses to identify variables unique to Japan. The main findings are that it demonstrates how investment from Japan differs from the gravity model of foreign investment in that while trade ties, legal origin and governance are important, geographic and cultural distances are not, and may hinder investment. A lack of access to investment is explicitly rejected as an explanation to the well-observed lack of Japanese portfolio investment in Asia. In addition to the potential effects remaining in investors minds from the Asian Financial Crisis, the study introduces two unique attributes that contribute to this bias against investing in the Asia pacific region, over reliance on exports among economies of the region and a persistent bias against four countries that Japan has lingering foreign relations issues with: China, Russia, South Korea and Taiwan.

Keywords: domestic bias, foreign bias, behavioral investment, Big Bang, portfolio preferences, intra-Asian investment, mutual funds, investment trusts

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Definition of Terms

Definition of terms

- Collective Investment Scheme – a kind of fund intended for individual investors to be able to access a wider range of securities and risk, at lower transaction costs, than they would be able to do individually.
- Foreign Portfolio Investment –investment in securities such as stocks or bonds in a country and currency other than one's own. Americans (or American entity) buying a Japanese stock or Japanese (or Japanese entity) buying a Thai bond is considered a foreign portfolio investment.
- Fund – pool of money of several individuals or organizations intended to invest in securities.
- Japanese Investment Trust (JIT) – a registered (with the Japanese Investment Trust Association) collective investment scheme in Japan
- Professional Investor – an investor buying and selling securities on behalf of others.
- Retail Investor – an investor buying and selling securities on behalf of him or herself.
- U.S. Mutual Fund – A registered (with the Securities Exchange Commission) collective investment scheme in the United States.

Chapter 1: Introduction to the study.

Overview

The study employs a three-tract approach to examine the investment patterns of Japanese Investment Trusts (JITs), widely available collective investment schemes similar to US mutual funds. The review of literature will identify results from existing studies of other countries investment biases and form the basis of the model to be used to test for determination of biases to this subset of Japanese investors. It will be argued that, at least in the case of Japan, that the drivers of geographic investment decisions of the JITs are much more closely related to those of retail (i.e. unsophisticated) rather than professional (i.e. institutional) investors. The first tract will put in context the time frame for the study and how domestic bias of the holdings generally seems to have been greatly reduced over time. The second tract seeks to make use of literature used to market the funds to identify factors uniquely important to Japanese Investors. The third tract will then form a regression model to incorporate the existing literature, identified time periods and additional attributes found in the second tract to form a model that will show how the investment behavior of the JITs is similar to and differs from investors in other countries.

The first tract examines domestic bias on the part of JITs, specifically how the composition of foreign and domestic assets under management have changed since the so-called “Big Bang” reforms introduced by the 1996 cabinet of

Ryutaro Hashimoto and completed in March 2001. By doing so it is observable that these policy changes have largely failed at one of their main goals of making better use of household financial assets as the large amount of deposits and small amount of securities holdings remain relatively unchanged 20 years later. But this financial liberalization did have a significant role in facilitating the rapid growth of foreign assets under management held by JITs post the reforms. This analysis also identifies a second break in the pattern of holdings after the onset of the Global Financial Crisis in 2008, thus making 3 clear eras to further study.

The second tract of the study uses content analysis techniques to explore the relationship between the categorical and geographic preferences in legally registered prospectuses of the trusts in relationship to fund allocation. Doing so identifies possible investment preference factors that affect foreign bias on behalf of Japanese investors. Findings include apparent preferences for countries with natural resource endowments, strong inflation, high technological advancement, and the particular case of Asia, countries whose economies are *not* overly reliant on exports.

The third and final tract tests the significant findings of the second tract in addition to determinants from other investor countries noted in the literature. The results of this approach show how Japanese investors are similar to other countries' investors in preference for large and liquid markets, strong legal governance, and countries with large amount of trade with Japan. It also identifies significant differences regarding geographical proximity, language and cultural ties and this enables discussion on the effect of this in the context of Japan being

part of the Asian community of nations. This third tract is divided into three sub-tracts. The first examines the current status of factors affecting foreign bias in Japan; the second is an examination of how those factors have changed over time going back to 1992 and specifically before and after the Big Bang reforms; and finally an examination of how the bias affects two specific groups of countries, the countries in Asia, and countries considered Emerging.

In light of the ongoing multilateral efforts (in which Japan has played an important role) to nurture local currency financial markets in Asia (ADB, 2011), the study examines possible reasons for the lack of Japanese Investment trust investment in the region. It identifies the most obvious reason, the lingering effects of the Asian Financial Crisis, but also identifies several factors as yet noted in the literature including a strong and persistent bias against investing in Japan's 4 closest neighbors, China, Korea, Taiwan and Russia. The remainder of this introductory chapter briefly outlines the background of the study, the research objectives, and the problem statement. It also introduces the methodological approaches used to answer the research questions and academic and practical significance of the study. The final section frames the scope of the study with a discussion of the limitations and includes a definition of relevant terms used in the subsequent discussion.

Historical Background of the Study

In order to understand the significance of this study, it is useful to introduce the underlying historical, economic, and political factors that facilitated the financial reform in both Japan and elsewhere in Asia in the late 1990s and early 2000s. Writing shortly after the aftermath of the 1997 AFC, Hoshi & Kashyap (2001) offer a historical account tracing the major point leading up to the degradation of the Japanese financial sector beginning with the 1973 oil shocks, through the banking crises of the 1990s that caused massive mergers and required huge government injections of capital to preserve solvency, and collateral damage from the Asian financial crisis. The Big Bang reforms initiated by the cabinet of Ryutaro Hashimoto in 1996 were a suite of reforms aimed at transforming the Japanese financial system. A main goal of the reforms was addressing the long recognized issue of Japan's suboptimal use of household financial assets held as private bank deposits compared to their potential use as investments in capital markets both in Japan and internationally (Hoshi & Kashyap, 2001) (Hayes, 2000). Thus a large focus of the reforms was towards the asset management sector, specifically by targeting the investment trust market, the trusts being collective investment schemes for retail investors originally modeled after British Unit Trusts but generally similar to US mutual funds (Hoshi & Kashyap, 2001). (Horiuchi, 2000) (Ito, 2000) (Ito & Melvin, 1999). Aiming to decrease the large amount of domestic savings held in banks and encourage investment in capital markets, Japanese policy makers liberalized the sector by increasing points of

entry, allowing foreign investment management firms to enter the Japanese market, and enhancing rules related to investor protection.

At the same time that Japan was trying to encourage a shift in household investment from bank deposits to capital markets, the Southeast Asian countries of Thailand, Indonesia, Malaysia as well as Japan's neighbor Korea were searching for remedies and policy adjustments to recover from the 1997 Asian Financial Crisis and to prevent its reoccurrence. A major point of consensus in the discussion has been the negative consequences that have stemmed from a lack of a developed local currency financial market in many countries in Asia (Corsetti, Pesenti, & Roubini, 1999) (Kuroda & Kawai, 2003) (Bhattacharyay, 2011). This led to an overreliance on external borrowing in short-term international debt markets for government investment (including for long-term projects). The resulting mismatch in currency and term left countries such as Thailand dangerously susceptible to a vicious circle of a weakening exchange rates and increasing interest rates on borrowings. This resulted in the twin problems of the total value of existing debt growing as the exchange rate weakened and access to additional financing ever more costly as interest rates required by international lenders grew (Radelet & Sachs, 2000). Several multi-lateral and bi-lateral initiatives have since been launched with the goal of developing local currency financial markets in the region including the Chiang Mai Initiative of 2000 and various bond market initiatives, in all of which Japan has played a large role (ADB, 2011). The comparative lack of savings in the developing countries in the region acts as an impediment to financial market growth (Sheng, 2008), which

makes other (foreign) sources of capital potentially useful in the development of these nascent markets.

Theoretical Background of the Study

There is clear evidence of the phenomenon known as domestic bias both before and after the Big Bang reforms. Domestic bias, or home bias, was introduced by French & Poterba (1991) to describe the tendency for the investor to inefficiently overweight the allocation of one's financial assets to one's own country. The issue of domestic bias in Japan was noted in the same paper by French & Poterba (1991) who found 98.1% of the assets of all Japanese investors in 1989 were domestic assets. To put this into context, 93.8 of the holdings of US investors and 82% of the holdings of UK investors were in foreign assets. Looking at JIT holdings specifically (i.e. a subset of the total aggregate Japanese holdings referenced by French and Poterba), the proportion held in domestic assets hovered between 93 and 95% during the 3 year prior to the big bang reforms (JITA). What makes domestic bias extreme in Japan is that in addition to this large proportion of domestic portfolio holdings, the portfolio holdings are a much smaller part of household savings compared to other countries. The bulk of these household assets was (and still is) in the form of deposits at banks (all domestic) and the post office. Thus domestic assets are over weighted to an even greater degree than simply looking at portfolio holdings.

Expanding on the domestic bias described above, Chan et al. (2005)

have more recently introduced foreign bias as the tendency for the investor to favor one economy over another counter to what would be optimal on a risk adjusted basis. They suggest that explanations for this foreign bias relate to information asymmetry and specifically, considerations of geographic and cultural proximity. Since, many have used this gravity model approach to understand capital flows. It has recently been updated by Aggarwal et al (2012) who point theoretically towards Japanese having a higher proportion of their portfolio holdings in Asia compared to the rest of the world. Despite Japan's official involvement in various efforts to nurture financial markets in Asia, this is clearly not the case, indeed JIT investment in Asia is significantly *less* than that of any other region in the world. This disconnect with the results from the various gravity models in the literature of global capital flows has been observed by (Garcia-Herrero, Wooldridge, & Yang, 2009) in their study of intra-Asian investment but explanations remain incomplete.

Although there are many studies on the factors influencing foreign portfolio investment (Aggarwal, Klapper, & Wysocki, 2005) (Chan, Covrig, & Ng, 2005) (Ferreira & Matos, 2008) & many others, most of the existing research is conducted at the multilateral level of analysis, i.e. factors that can be generalized on a global scale. Bertaut & Kole (2004) note that there are likely factors unique to pairs of countries that are not applicable on a multilateral basis. Ahearne, Griever, & Warnock (2004) and others have done more localized studies on US investors and Mitra, Dime, & Baluga (2011) and others have done studies on foreign investment towards specific regions, but there is very little research on

investment preferences of Japanese investors (outside of Japanese data being included in multilateral studies) and none on specifically JIT investments.

One of the possible reasons for this lack of research on Japanese foreign portfolio investment is that until recently there was a lack of data: until the so-called "Big Bang" of financial liberalization initiated during the regime of Prime Minister Ryutaro Hashimoto in the mid-1990s, Japanese retail investors lacked the investment options of other developed countries' citizens (Hoshi & Kashyap, 2001) and foreign holdings were quite small relative to other countries. In 1993 JIT assets were held in just 9 foreign currencies (counting the currencies that would later make up the Euro as one), in contrast to today where assets in 46 different currencies are held. Since the reforms, holdings of foreign assets of Japanese Investment Trusts have grown by more than nine-fold (JITA), as has the amount of available data. As of 2015, there is now available in sufficient quantity to merit a more in depth study. As these Investment Trusts have now built up significant overseas holdings, the results of this study on Japanese flows are of timely interest to the nascent local currency financial markets in Asia.

To summarize, the lack of Japanese portfolio investment in Asia, despite large gains in foreign holdings since the Big Bang reforms remains relatively unexplained. There is an abundance of scholarly research on the factors affecting foreign portfolio investment from the U.S. and elsewhere, specifically relating to the twin biases, domestic and foreign. There is very little from the Japanese perspective, especially on factors unique to Japan/foreign pairs of countries. Research has identified information asymmetry as a key factor in

foreign bias, and close geographical proximity, trade, and shared language and culture as ways that bias is overcome. Despite this, JIT holdings in Asia are quite small. This is even more surprising given various Japanese-led efforts to improve the Asian financial sector including developing local currency financial markets.

Research Problem

Before Japan's Big Bang reforms of the 1990s there was too much savings held in domestic bank deposits (Hoshi & Kashyap, 2001) and evidence of a strong domestic bias on the part of Japanese investors (French & Poterba, 1991) in the little savings they held in capital markets. When the reforms were enacted, they prioritized the development of a domestic asset management industry by reforming the Investment Trust market. A direct and planned result of this policy shift has been a significant increase in investment options for retail investors, which has led to a large increase in the foreign holdings (both outright and proportionate) of these trusts.

At nearly the same time as these Japanese domestic reforms, Japan was playing a leading role in the ASEAN+3 member countries attempts to develop local currency financial markets for the developing economies of the region to avoid a repeat of the structural factors, which led the 1997 Asian Financial Crisis. However, the lack of domestic savings in the developing countries in the region has created a need for foreign capital to facilitate local currency financial market development.

Domestic and foreign biases in portfolio investment have been examined in detail since the early 1990s and findings suggest geographic proximity and similar culture to be two of the factors that positively influence foreign investment. This suggests Japan be in an ideal situation to provide some of this capital but this does not appear to be the case. Investor biases have been studied on a multilateral basis but it is recognized that there are factors specific to country pairs that have not been identified in broader studies (Bertaut & Kole, 2004). Investment from the perspective of investors from large economies such as the United States ((Ahearne, Griever, & Warnock, 2004) (Aggarwal, Kearney, & Lucey, 2012) and many others), yet at this point the nature of Japanese biases since the reforms, has not been methodologically examined. As such this dissertation fills this gap in the literature. This has both practical and theoretical significance as outlined in the subsequent section.

Problem Statement

The composition of assets held by Japanese Investment trusts has changed dramatically since the big bang reforms of the mid 1990s, specifically; there has been a dramatic increase in the proportion of assets in foreign currencies. While the overall growth has been less than expected, there is a significantly large amount of assets under management, which is worth of study. Gravity models of capital flows strongly suggest that geographical proximity and cultural ties positively influence foreign investment. The relative lack of Japanese investment in Asian countries, despite closeness in geographical proximity and culture,

suggests that there are factors unique to Japan that affect determinants of overseas portfolio investment.

Research Questions

Research Question 1:

How did the composition of assets under management change after the Big Bang reforms in terms of domestic bias?

1.1. Is there any difference in the composition of holdings of securities adjusted for the underlying price of assets before and after the big bang reforms?

1.2. Is there any difference in the relationship between underlying price and holdings of different categories of assets before and after the big bang reforms?

Research Question 2:

What does the content of prospectuses of Japanese Investment Trusts tell us about the preferences and biases of the buyers of these trusts?

2.1 How often are the individual countries named relative to expectations based on the relative size of each of their financial markets?

2.2 What descriptive words are found in the titles of the funds?

2.2.1 How frequently are these words used in the bodies of the prospectuses?

2.2.2 How does the usage of these words differ when describing assets of

Funds classified as Asian Funds?

2.2.3 How does the usage of these words differ when describing assets of Funds classified as Emerging Funds?

2.3 What does the relative frequency of the use of broad categories of these descriptors indicate about how the Funds perceive retail investor opinion about the importance of each category and how does it differ across regions?

Research Question 3:

What are the determinants of foreign bias on behalf of Japanese investors as represented by the collection holdings of Japanese investment trusts?

3.1 What general inferences regarding bias can be made from examination of the basic time series plots of holdings in each of the individual countries?

3.2 What is the current situation of foreign bias as represented by the foreign holdings of Japanese investment trusts in 2014?

3.2.1 How much does the gravity model explain this bias in 2014?

3.2.2 How do the variables identified in the content analysis in Research Question 2 affect the model?

3.3 How well does the model predict foreign bias since 1992?

3.3.1 How well does the model predict foreign bias in the three time periods identified in the results of Research Question 1?

Academic Significance of the Study

This study will attempt to address the disconnect between the literature of global portfolio flows being related to the gravity model introduced by (Ghosh & Wolf, 2000) and most recently updated by (Aggarwal, Kearney, & Lucey, 2012) and the lack of Japanese investment in Asia noted by (Garcia-Herrero, Wooldridge, & Yang, 2009). This study will fill an important gap in the existing literature in terms of domestic and foreign bias of Japanese investors. Previous research has identified a domestic bias on the part of Japanese investors, but no examination of its existence over time, which is particularly important since there has been significant regulatory reform since. Further, foreign bias on behalf of Japanese investors towards individual countries has not yet been examined and given the research on this topic linking determinants to geography and culture it makes it pertinent to the ongoing local currency financial market development in Asia. Also it will be the first research at identifying uniquely Japanese causes of foreign bias, though there are many studies of portfolio preferences of foreign investors, none of these studies has focused specifically on Japanese investors. It will also serve as an update to (Iwai, 2007) on the overall progress of the investment trust industry through the global financial crisis.

Professional Significance of the Study

This study is of practical importance to several groups. Firstly, to policy makers in countries seeking to attract foreign portfolio investment, it will

illuminate some of the affectable factors that have influenced Japanese foreign portfolio investment in the past. It will also be useful for financial intermediaries seeking to sell foreign securities to Japanese investors. Domestically, it will provide Japanese government officials a picture of what their citizens' view attractive abroad in terms of investment (and thus what remains un-attractive within Japan.)

The results will also be of interest to researchers of other types of foreign investment. In previous studies on FDI, researchers have identified uniquely Asian and uniquely Japanese determinants of FDI (Petri 2012). As there is very little research on Japanese portfolio investment, this study tests if this uniqueness extends to investment by Japanese Investment Trusts. There will be also useful comparisons made available contrasting the preferences of Japanese investors with those of other countries.

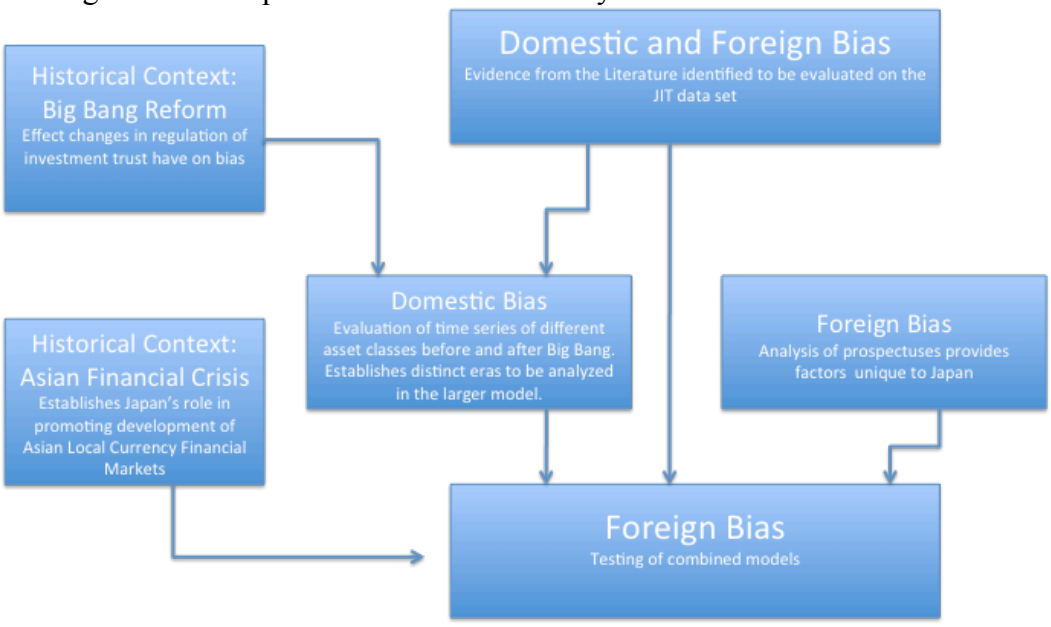
Although there is a long history of investment trusts in Japan, it was only in 1998, when changes to the Investment Trust Law as part of former Prime Minister Hashimoto's "Big Bang" reforms, that individual investors could purchase units of Japanese investment trusts without an account at a securities company (Hoshi & Kashyap 2004). Access through banks and the post office has provided much wider access for retail investors (Ibid, Iwai 2007). As such, both the amount of sales and thus the amount of overseas holdings has expanded since then. Overseas investment through these trusts has grown five-fold since the early 2000s. Data now exists in sufficient amounts to examine from an empirical point of view.

Despite portfolio preferences of foreign investment being a fairly widely studied field globally, most studies on this focus on decisions by the profession investors, ie the fund managers (Aggarwal et al 2005, Ahearne et al 2004, etc). While this is applicable for an examination of funds' behavior where the fund management team has total discretion on the portfolio, it is not nearly as useful when examining the investment in Japan, where many of the funds are either explicitly constrained to an index or to a specific geographic region. Part of this study will examine the choices by the end retail investors, who ultimately decide where to allocate money by their choice to buy (or not buy) the various geographically constrained funds. This approach of analyzing the fund allocation from the perspective of the end buyer is a unique approach to identifying determinants.

Overview of Methodology

The details of the methodological approach will be further discussed in chapter 3, but a brief introduction is useful here. Figure 1 outlines the conceptual overview of the study. A mixed method approach was used to evaluate the research questions. The first research question examines the pattern of holdings of the investment trusts before and after the big bang. An analysis of the monthly holdings since 1993 of different asset classes held by Japanese investment trusts is undertaken to examine for evidence of domestic bias and if that bias changed after the Big Bang reforms. Time series analysis techniques are used to test for structural breaks indicating era changes in investment patterns.

Figure 1: Conceptual overview of the study



Though studies of other countries' foreign portfolio investment (Aggarwal et al (2005), Ahearne et al (2004) and others) has focused on the portfolio choices of the funds themselves, this is only applicable to active funds that have the freedom to invest in whatever country they want. Many Japanese funds are either completely passive funds (linked to an index) or are explicitly constrained by a country or group of countries (JITA). Thus evaluating the decisions of a fund management team under such constraints may not give a clear picture of the true geographical determinants of Japanese foreign portfolio investment. So rather than examining the choices of the portfolio management team, it is important to study the choices of the individual retail investor. As the individual retail investor makes the ultimate choice of which of the hundreds of available funds to buy, he or she is in primary control of where these funds get allocated.

The many attempts to use a gravity model to explain portfolio flows in recent literature provide a rich basis from which to attempt to model Japanese investment behavior, but the documented lack of investment in close countries suggests other variables, unique to Japan, may be important. To identify what kinds of factors are important to these retail investors, Content Analysis is used to mine the investment prospectuses of each of the Japanese Investment trusts. These prospectuses are required to be shown to investors before final purchase; they contain a description of the asset content of the fund and investment strategy. Despite fairly rigid requirements in terms of structure, the Fund companies have a large amount of control as to the content of the descriptions and as such

presumably attempt to tailor these descriptions to appeal to the average investor. The prospectuses are also registered with the Japanese Investment Trust Association, and each fund is required to file one. This gives a consistent framework to compare across the entire body of funds.

This content analysis provides an opportunity for exploratory study, from the fund companies' point of view, of factors that are important to the retail purchasers of these funds. It is assumed that by including descriptions in the prospectus that they are intended to be positive descriptions as they are a form of sales literature. Important in any content analysis is the ability to test any abductive conclusions using other means. In order to ensure this, effort is made to identify factors that are also testable from the opposite direction, i.e. against the aggregate Japanese Investment Trust data.

Thus the final stage of this dissertation is an examination of the casual relationships of this aggregate data and will be split into three sub stages. First is an examination of the current status of foreign bias, defined as the over or underweighting of a country's assets in proportion to the average level of foreign assets. This will be in the form of a regression model from data from current foreign holdings. Next is an analysis of the same variables over time using panel data, using data back to 1992. From this analysis, countries that have experienced large changes to foreign bias on behalf of Japanese investors will be identified. The last stage is to evaluate any differences in the model in two specific cases, Asia and emerging markets. Asia is identified both because of Japan's various official roles in the region but also because though geographical proximity is a

widely found positive influence on foreign investment, this is not the case in Asia, which leads to further examination of the causes. The emerging example is identified because of the widely recognized role that foreign capital has in developing emerging financial markets.

In the first sub stage, current holdings of JITs in all 46 currencies where assets held are tested against several independent variables drawn from previous studies of investor preference and the content analysis above. The number of observations, 45, i.e. the number of different currencies held, is not a large number, but analysis is intended to give a general idea of the current state of foreign bias and offers a clear picture of several differences with other multilateral models in the literature. As discussed in the literature review, there are also indications that generally speaking, as financial markets in the world become more interconnected, domestic and foreign bias have decreased over time. Thus an examination of the most current data on its own is viewed as being useful.

The second and third sub stages use panel data analysis techniques to develop a model to explain the determinants of bias. The second sub stage develops an overall model and the third sub stage evaluates how this model differs in the two cases (Asia and emerging) noted above. Annual data of holdings in each country from 1992 until 2014 is used as the basis for this stage, with the specific dependent variable defined as relative foreign bias, the over or underweighting of holdings in a country relative to the total foreign assets held by the JITs.

This is similar to the approach of studies of U.S. mutual funds but with

a slightly wider set of independent variables. The multiple regression approach, used independent variables obtained from two sources: results and observations from the first two stages of this study, including the aforementioned content analysis results, and previous empirical studies of other countries' portfolio preferences (Aggarwal et al (2005), Ahearne et al (2004)). The goal of this third approach is two-fold, first to assess whether the factors identified in the content analysis of retail investors' preferences also hold true when evaluating the aggregate data, then to identify any significant differences with previous academic studies on foreign portfolio investment. The ultimate result will be a comprehensive analysis of Japanese Investment Trust investment in foreign countries, the first of its kind.

So, in summary the methodological approach to answering the research problems is as follows: Introduce the industry by analyzing how regulatory changes transformed the investment holdings into three distinct eras. Then identify potential determinants of biases of retail investors through a content analysis of Japanese Investment Trust prospectuses. Finally test those factors identified in the literature in combination with the results from the content analysis using a multiple regression model with aggregate data from Japanese Investment Trust foreign portfolio holdings.

Assumptions, Limitations and Delimitations

This study was intended to identify and measure influences of Japanese portfolio investment in foreign countries, with a specific focus on Asia. Although there are many different forms of Japanese portfolio investment, for the purpose of this study only allocations of Japanese Investment Trusts were considered. It is assumed that the conclusions regarding these determinants are generally representative of other types of portfolio investment but this was not academically evaluated. An important distinction should be made between professionally managed portfolio investment and retail portfolio investment – there are many studies suggesting that retail investors are less sophisticated compared with professional investors. Although JITs are professionally managed, as discussed above many funds are either index or geographically restricted – thus giving much more allocation influence to the end retail buyers of the funds. The conclusions for the determinants of these retail investors should not necessarily be viewed as an implication of the determinants for professional investors.

This research is focused solely on Japan's foreign portfolio investment. Japan's investment trust market has expanded greatly since the reforms in the late 1990s, but it is still small compared to that of the U.S. mutual fund market and that of other countries'. Japan is an important source of Capital for Asia's developing financial markets due to its geographic proximity and vested role in the region, but this capital is still relatively small, and the conclusions of the study are of consequence in proportion to this size.

The second part of the study focuses on the content of literature produced by the fund companies that is intended to appeal to retail investors. The only factors that can be measured therefore are factors that the fund companies evaluate to be important – that is, there is a possibility that there are other important factors that have yet to be identified by the fund companies (or cultural factors that they feel unnecessary in communicating.) Further, factors that are of importance may be so obvious that they are unnecessary to highlight in the prospectuses, i.e. what is contained in the prospectuses is what the funds perceive to be gaps in information.

A key assumption is that the fund companies themselves know what is important to investors. This cannot be completely true of course but is a key assumption in the analysis. Also one can't buy something that isn't there: the existence of various funds focusing on Brazil gives the option for retail investors to buy Brazil. If there are no Brazil-focused funds, then investors cannot allocate their funds there. Thus the fund companies' choices of regionally focused funds are also a limiting factor. (But again it is assumed that the fund companies have local knowledge of investor preferences that lead them to choose geographical concentrations that will appeal to investors.) An additional note on the content analysis is that the conclusions are for a single point in time. It is assumed that portfolio preferences are relatively stable over time, but until a future study can be conducted to compare, that cannot be empirically stated.

Other limitations on the methodology are in the usage of aggregate data in the third section of analysis, the regression model. In studies of other countries

foreign portfolio preferences, fund-level data is often used. The usage of aggregate data restricts sample size in comparison but is viewed as appropriate in the light of the fund manager control issues noted in the previous paragraph, and also because recipient countries are most interested in the total funds allocated to their country. Thus, despite its sample size-restricting approach, the aggregate amount of funds directed is the most pertinent factor to analyze. It should also be noted that a fund-level analysis for future study would be useful but that at this time the author lacks the access required for such an undertaking.

Although an effort was made to review all English-language literature on this and related topics, only limited effort was made to search foreign language (i.e. Japanese) research. It is presumed that any relevant studies in foreign languages will have been translated and published in English as well, but the author acknowledges that this may not be the case.

Chapter 2: Review of Literature

Overview

This chapter grounds the study into the various theoretical disciplines in the existing literature. As described in the background of the study, the Big Bang reforms were undertaken by the Japanese government in the late 1990s under the Hashimoto administration and necessitated by endemic bad loan problems in the domestic Japanese financial sector and the resulting research on this will be reviewed here. A major component of these reforms targeted the Asset Management sector was identified by scholars as a key reform prescribed in established financial theory. As such, this chapter surveys Modern Portfolio Theory, corporate finance theory, and agency problems to show how they relate to the reforms. This is followed by a discussion of behavioral finance theory. Combined, these two fields provide the theoretical underpinnings for central focus of this study, on the emerging field of domestic bias and foreign bias among investors. As of the time of this research in spring of 2015, there have been many studies using data from the IMF's global portfolio survey data for broad focused research and the conclusions point to information asymmetry as a leading cause whether that be in language, culture or geographic proximity. But as highlighted by (Bertaut & Kole, 2004) there are likely large factors unique to individual pairs of countries and there is a gap in the literature with regards to (Japanese investors) which warrants the deeper analysis provided in this dissertation. These theoretical

discussions provide the foundations of research, but it is also important to examine empirical findings, specifically the portfolio preferences of foreign investors, which will also be discussed.

An important consequence of the Japanese Big Bang since the 1990s has been the expanded opportunities for / agency granted to retail investors to balance risks by purchasing foreign assets. This change in the investor climate has not unsurprisingly lead to scholarly work on the effects of these adjusted investment flows and their influence upon emerging markets especially in relationship to shifts in differences with Foreign Direct Investment flows. As Japan was actively involved in the ASEAN reforms to prevent repeats of the Asian Financial Crisis in the late 1990s, an outline of the research regarding the developments of Asian local currency financial markets is be provided. This is then connected with the research on foreign bias. Finally this chapter returns to the Japanese Asset Management sector at the micro-perspective scale and surveys the state of the existing research on collective investment schemes, how they are advertised, and the current theories on the decisions making process of how individual investors choose which investments to buy, and how the twin biases of foreign and domestic bias impact those decisions.

The Big Bang

The so-called "Big Bang" reforms of the mid-to-late 1990s were initiated by the Cabinet of Ryutaro Hashimoto in 1996 in response to a financial sector in crisis. Japanese land and stocks prices had collapsed (the Nikkei had fallen from almost 40,000 in 1989 to below 15,000) (Nikkei) and the banking system was in such disarray that it would need a public bailout of ¥60 Trillion in 1998 (Hoshi & Patrick, 2000).

A main cause of the banking distress was the large proportion of banks' lending that was collateralized by rapidly declining asset prices. Two explanations for the situation have emerged in post-crisis literature. Hayes (2000) argues that the financial sector crisis was caused by poor lending choices forced upon banks because of a disjointed household assets system. The massive amount of deposits held by Japanese savers provided the banks with such a large amount of capital that they had to seek out ever more risky borrowers to lend to. (Hoshi & Kashyap, 2001) blame the regulatory environment. Though they also echo that the banks had too much money and that had more options for Japanese savers been available in the pre-crisis years banks would not have been able to act so dangerously, they place the blame for this situation at the foot of a regulatory environment that did not allow them to shift their business model.

As the economy boomed in the 1970s and 1980s, and the benefits of keiretsu financing (discussed below) became fewer, companies shifted from borrowing from banks to capital markets financing. The result was that even as

household deposits were rapidly increasing, banks had fewer of their former customers to lend to. Thus other (riskier) borrowers were sought out.

The genesis of postwar regulatory reform goes back to the mid-1970s. There is a narrative in the English mass media echoed by (Hayes, 2000) and others, that describe a pre-big bang Japan as stuck in long-held (and detrimental) traditions of keiretsu-style, bank-led financing, (Hoshi & Kashyap, 2001) outline how beginning with the 1973 oil crisis, through the banking crises of the 1990s, and collateral damage from the Asian financial crisis, the Japanese government has adapted by steadily deregulating its financial sector. In order to understand the motives for reforms, a background of the literature describing recent history is useful.

There is no doubt that at first, in post-World War Two corporate financing in Japan, banks were at the center. Hayes (2000) outlines how bank lending played the dominant role, achieved by a high rate of savings amongst the population, which was deposited into low-yielding bank accounts. This provided a stable, cheap and plentiful supply of capital for companies to access through bank lending.

It is important to isolate this system in the overall history of corporate finance in Japan and (Hoshi & Kashyap, 2001) provide a broader background to Japan's financial sector. While they agree with (Hayes, 2000) on how a period of bank-dominated financing was detrimental to the economy, they place it in a slightly different timeline that gives important historical context. The military buildup in the 1930s is given as the start of the bank-centered system. They then

note that change first began to surface in 1973, when the global oil crisis necessitated Japan run deficits and thus needed a functioning bond market in which to sell deficit-financing government bonds. But most importantly, while acknowledging the same skewed savings situation in the 1990s as Hayes, they contrast how in the 1800s and early 1900s it was actually not uncommon for Japanese individuals to hold shares in companies and consequently banks were much less involved in corporate financing. Thus a move to a more capital-markets centered financial system would actually be a return to a previous era in Japan. It is important to note that though this is not something unfamiliar historically in Japan, very few people would have had any memory of this system (and those that did would have been very young and thus less likely to hold securities). So though there may be a written history of such a system, any advantages of that in implementing something similar again would seem to be slight.

The post-war system of bank-led financing eventually led to levels of leverage higher than was typical in other countries, which contributed to some of the bad loan problems of the 1990s. Hayes (2000) argues that the banks had too much money, in the form of deposits from individuals. To put in context how skewed the situation was in comparison to other countries, he notes that just 7% of household financial assets were in stocks, 3% in investment trusts and 55% in bank deposits. At the same time Americans held 27% in stocks, 10% in mutual funds, and only 10% in bank deposits. Several explanations are given as to why so much was held in bank deposits including barriers to entry for investment and poor governance of securities firms. He goes on to note that many individual

stock prices were too expensive for average earners to buy even a single share and investment trusts were only available after opening a special stock trading account not available at a regular bank. So in the mid-1990s there was a financial system that had financially shaky banks incented to lend to over-leveraged corporations and few options for individuals to deploy their savings other than in those same banks (Hoshi & Kashyap, 2001) (Hayes, 2000). This led to more drastic reforms and in November 1996, the Hashimoto cabinet launched what it called the "Big Bang" of financial reform (Osaki, 2005).

The government targeted six areas for reform: expand means of asset investment, facilitate corporate fund raising, provide a wider variety of services, create efficient markets, assure fair trading, and lastly ensure soundness of intermediaries and prepare system for dealing with failures (Financial Services Agency of Japan, 2000), only the second and last areas can be considered to not target asset management or investment safety or choice. Indeed (Horiuchi, 2000) notes explicitly that the key aim of the Big Bang reforms was to revitalize the Japanese asset management industry. A well-functioning asset management industry would drain funds from banks' savings and invigorate and empower capital markets.

A key aspect of these reforms was the recognition that too much of Japan's large amount of household financial assets were held in bank deposits as opposed to in capital markets (Hoshi & Kashyap, 2001) (Hayes, 2000). Consequently, a large focus of the ongoing reforms has been in the asset management sector, specifically investment trusts (Horiuchi, 2000) (Ito, 2000)

(Ito & Melvin, 1999).

Investment trusts are collective investment schemes for retail investors originally modeled after British Unit Trusts but generally similar to US mutual funds (Hoshi & Kashyap, 2001). Investment Trusts in Japan were set up for the original purpose "to promote the sound development of securities investment trusts and to encourage the securities investments by ordinary investors, and thus to contribute to the proper management of the Japanese economy." (JITA) Started in 1937, with reforms in 1967 and 1998, they have become a ubiquitous investment choice for individuals, available at banks, securities firms and the post office (JITA) (Taki, 2005). As will be discussed in detail below, the most important aspect of collective investment schemes is their function in allowing individual investors to properly diversify their investments at a reasonable cost. Hayes (2000) notes how expensive some Japanese share prices are, making purchases of multiple stocks (for diversification) cost-prohibitive for all but the wealthiest investors.

Giving savers better investment options is just one side of the aims of the reforms. In terms of corporate financing, (Black & Gilson, 1998) (Milhaupt & Miller, 1997) have argued that loans from banks are a less-effective deployment of capital that capital market financing. At the same time, even those few individuals who owned stocks before the reforms had little influence on the companies that they owned. Horiuchi (2000) argues how the collusive culture within the securities industry and also with the government often works to the disadvantage of the end (retail) investor. He notes the possibility of an improved

(and enlarged) asset management sector being beneficial to Japan by forcing companies seeking financing to be more shareholder-attentive.

This idea of a secondary effect, of savers draining money from their bank accounts to buy securities or investment trusts, and thus causing companies to compete for this capital was well noted at the time of the reforms. Kanda (2000) argues that the reforms should have the beneficial effect of reducing banks' direct roles in corporate financing. (Hoshi & Kashyap, 2001) go into more detail and identify first, better use of JPY 1,200 trillion in personal assets and second, preventing a "hollowing out" of the Tokyo financial market. They also note the changing demographics of Japan will cause the aged to look for a better return than a savings account to boost their personal savings to augment their pensions. Others echo these sentiments: (Royama, 2000) identifies that the major thrust of the reforms is to shift assets from banks' savings to capital markets and that reform of asset management should contribute to both the domestic Japan and also world economies through allocation of capital. Gibson (2000) echo's this and explicitly states that reform is needed to increase the performance of financial assets to help cope with an aging population in Japan. He argues that corporate governance issues at this time were hampering Japanese firms' equity performance and also posits that by forcing reform on the financial sector, the firms will then have to reform to continue to attract cheap capital, or face capital fleeing to other companies or even countries to attract better returns.

This secondary goal of trying to force firms to compete for capital necessitates an examination of the criticisms of the post-war system in the

literature. Though this keiretsu system[1] provided advantages for a period of time, the benefits were eventually outweighed by the costs (Hoshi & Kashyap, 2001). While the theorem developed by (Modigliani & Miller, 1958) introduced how the corporate financing of a firm shouldn't affect its valuation, (Hoshi & Kashyap, 2001) show how by violating key assumptions of this theorem, Japanese firms were affected adversely.

They show how at first, with main banks at the centers of each keiretsu acting as monitors of the firms they were lending to: if the main banks were willing to lend, then it signaled to others that it would be safe to lend too. This allowed the other firms to save on monitoring costs. Further, with such close ties to the firms, the main banks were familiar with the intimate details of the operations of the firms, making managerial moral hazard (at the firms) less likely. Finally, as the main banks both lend to and hold equity in member firms, they could provide effective mediation in the event of distress. (Hoshi & Kashyap, 2001)

They go on to argue that though the system was very successful in the post war period, slowly these benefits became more and more costly. The monitoring by main banks cemented a bank-led financing system that caused firms to be somewhat trapped into bank financing, which was more expensive than capital markets financing. Further, the close ties and large bank lending led

[1] For detailed explanations of the keiretsu system see Caves, R. E., & Uekusa, M. (1976). *Industrial organization in Japan.* Washingto: Brookings Institution. Berglof, E., & Perotti, E. (1994). The governance structure of the Japanese financial keiretsu. *Journal of financial Economics , 36* (2), 259-284. Gilson, R. J., & Roe, M. J. (1993). Understanding the Japanese keiretsu: Overlaps between corporate governance and industrial organization. *Yale Law Journal* , 871-906

to banks preferring to prop up firms in distress rather than letting them fail. And though the banks held equity in member firms, they had much more in debt and so were incented to counsel the managers of the firms to avoid excess risk, which led to a lack of risk taking, to the detriment of some of the firms (Hoshi & Kashyap, 2001).

As noted above, the financial system began to change after the oil shocks of 1973. As the financial system became more complicated as a result of these changes, the effectiveness of the monitoring by the main banks became reduced (Cargill, 2000). A stagnant, bank-led corporate sector resulted, and the government determined that by starving the beast of its funding, the firms would need to reform to attract capital. Thus became another reason for trying to drain bank deposits and foster the asset management sector.

It is necessary to note that many of the theoretical effects of the reforms, including a large-scale shifting of assets from bank accounts to capital markets did not actually take place in any significant size. As discussed in chapter 4.1, the asset mix within the investment trust holdings did significantly broaden post reform, but the size of the sector only increased marginally and rather than growing by shifting money from bank accounts, it appears to have mostly grown from individual securities holdings. Bank deposits remain roughly the same proportion of household savings almost 15 years later. But the implications of increased diversity in portfolios and the notion of savers needing to maximize returns and outflow of portfolio investment to foreign countries is important and will be discussed further below.

The Investment Trust Law of 1998 was the first of the Big Bang reforms to target the asset management sector (Hoshi & Kashyap, 2001) so it will be helpful to briefly outline a history of investment trusts in Japan. Collective investment schemes are aimed at allowing individuals to pool their money to invest in capital markets to take advantage of economies of scale and allow proper diversification. US Mutual Funds and Japanese Investment Trusts are two examples (Khorana, Servaes, & Tufano, 2005). First introduced in 1937, Japanese Investment Trusts were originally modeled after British Unit Trusts (Hoshi & Kashyap, 2001) but post-war, the Security and Investment Trust Law of 1951 was modeled after the US Investment Company Act (Cha & Kim, 2010). Assets under management grew to nearly JPY 60 Trillion at the time of the height of the Japanese stock market in 1989 (Nikkei) (JITA).

Though by the 1990s the assets under management had grown to this seemingly significant sum, Japan's Investment Trust holdings were still small when compared to the size of the economy (Cha & Kim, 2010). Several theories exist to why Japanese savers were so reluctant to invest in investment trusts until this point related to underperformance. (Cai, Chan, & Yamada, 1997) argue that tax dilution effects were a significant cause of underperformance leading to investors to shy away. (Hiraki & Ito, 2009) argued evidence of agency problems by using data from 1985 to 1998 to show that Keiretsu-affiliated fund companies tended to invest more in large firms than non-Keiretsu fund companies. They suggest this may indicate investment by a fund company tied to a Keiretsu designed to bolster the share prices of poorly performing firms in the same

Keiretsu rather than maximize return, leading to underperformance of these funds. Others (Takahara & Yamada, 2004) (Hoshi, 2001) (The Economist, 1997) have shown evidence of a slightly different agency problem related to churning. The investment trust companies were often owned by a parent company that was a securities firm. The investment trusts were encouraged to trade with that parent securities firm, thus generating trading fees for that firm. Churning, or unnecessary trading to generate fee income, was a problem and led to underperformance of those trusts. Underperformance then, it is argued by the three theories noted above, is posited to influence the relative lack of investment.

Later research also seems to confirm the results of these agency problems. In a study using data from before the start of most of the big bang reforms, (Gedajlovic, Yoshikawa, & Hashimoto, 2005) find not only that firms owned by foreign investors outperform in terms of dividend payouts, but also that firms owned by investment trusts underperformed. The foreign aspect of this will be discussed below, but it is important to note more empirical evidence of the agency problems of keiretsu funds.

Simple customer access to purchase the trusts was also an issue. (Hayes, 2000) talks about access: in order to purchase an investment trust a customer would have to set up an account at a separate securities firm. (Takahara & Yamada, 2004) outline other problems regarding product choices and access. Foreign-affiliated funds were not permitted until 1990, and could not sell their funds on their own. Only securities firms were allowed to sell Investment Trusts and only sold those funds that were affiliated with them. The largest four firms

controlled 75% of the offerings.

These factors limited investor choice, particularly in regards to foreign assets. Prior to the reforms the securities firms held a captive market and tended to promote funds within the same financial group. Naturally these domestic financial groups tended to have more expertise in domestic securities. But when banks, unaffiliated with financial groups were able to start selling investment trusts, both the number of foreign asset management firms and the sales of their investment trusts through the banks, started to increase (Gibson, 2000) (Wakazono, 2006).

(Hoshi & Kashyap, 2001) and others outline how reforms, beginning with the Big Bang, tackled these problems relating to the Investment Trust industry. Governance rules were enhanced to ensure that the funds would not be able to exclusively deal with their parent securities firm, but must shop for the best price. Also trading commissions were deregulated to ensure fair competition. Banks and Insurance companies were able to sell investment trusts themselves, allowing customers the opportunity to invest at the same place where they had their savings deposits. They also identify a change in regulation at the same time that allowed a new, less restrictive, more investor empowering type of trust, the "Company Based" IT, similar to US mutual funds.

In summary, before the big bang reforms, Japan was largely judged to have an inefficient capital markets system that affected borrowers, lenders and investors alike. Borrowers had become accustomed to access of cheap capital with little oversight, lenders had an abundance of capital that led them to make overly risky lending choices, and investors lacked options in which to invest their

substantial savings. This last point was magnified by Japan having an aging population that would need to maximize their investment returns to finance their retirements. Further, there was recognition that the glut of savings in Japan could be used internationally as an additional source of capital. Reform of the asset management sector, and in particular the investment trust industry was targeted as a key solution to all of these problems. So what happened?

Though the political ramifications of the Big Bang, including the change in dynamic within the Ministry of Finance regarding regulatory power have been detailed by (Toya, 2006) and others, there are very few studies on the effects of the big bang in literature. In a paper perhaps more geared to the financial industry than the academic community (Iwai, 2007) looks at post big bang effects and notes the upward trend in assets under management in the 2003-2007 period. He notes good market conditions (note that his data was from before the global financial crisis), increased investment choice through more distribution channels, product innovation and demographics as leading causes of this trend. He also notes specifically the growth in foreign assets under management. This enormous growth in foreign assets under management is contrasted with the lack of growth in Japanese assets and still-high bank savings rates, but (Aronson, 2011) notes that reform takes time and that a poor-performing domestic stock market (until very recently) has obscured a relatively successful policy. Both studies note the large growth in foreign portfolio investment by the investment trust sector but don't delve into details.

It should be noted that reform of the Asset Management sector in Japan

did not stop with the implementation of the Big Bang reforms. (Taki, 2005) details an important further step by allowing investment trust sales at the post office. He notes that this is important for two reasons, size and use of these funds. The post office was at the time the world's largest deposit-taking entity and thus represented a massive amount of savings. Though customers of the post office could theoretically withdraw money from low-paying accounts there and deposit into a bank or securities company, the ability to simply invest from the same window that customers do their banking would remove that barrier. Evidence of the strength of this barrier is in the rapid sales of investment trusts in the months after this was allowed (Taki, 2005).

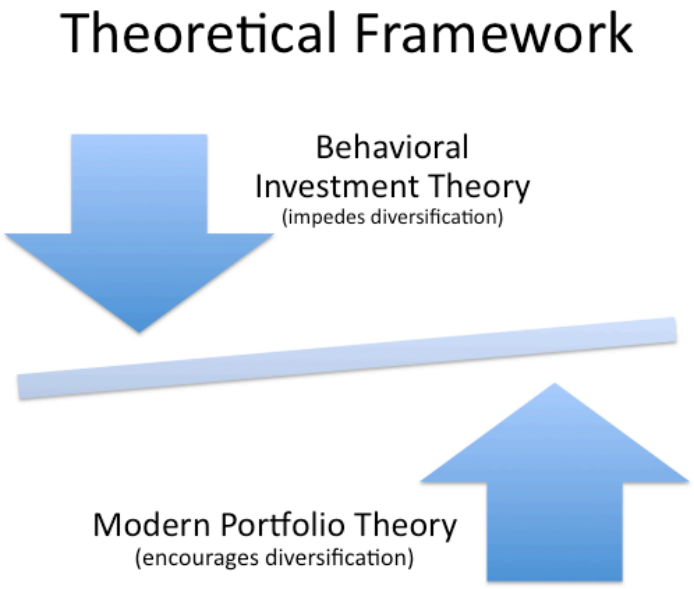
The second important point (Taki, 2005) makes is in the use of these savings, very different from how a bank would use them. The postal savings system was originally set up to be a simple deposit taking institution that would invest its assets in Japanese Government Bonds, but it gradually became a source of funding for special programs of the government (coined the "second budget"). Over time this fuelled criticism for the lack of oversight of this program because as it was not related to tax, there was less scrutiny regarding the spending of the funds. Reform at first focused on the government-spending program, but the cabinet of Junichiro Koizumi instead took aim at the post office itself, passing privatization legislation. Though at time of writing in 2015, the post office is still yet to be privatized the privatization process had various effects on its business and one of them was the decision to sell investment trusts and as (Taki, 2005) notes, the sheer size of the deposits have the potential to affect flows into

investment trusts: 18% of all household financial assets in Japan in 2003 were in the form of post office deposits.

Theoretical reasons for international diversification

The various barriers to foreign investment observed before the Big Bang reforms included the explicit (lack of foreign companies among the fund managers) and the implicit (Japanese funds tended towards firms of their own keiretsu and traded firms through their own trading companies, all domestic), but domestic bias, which will be discussed in detail below is also likely a large factor in lack of foreign holdings. The move towards more foreign holdings after the Big Bang cannot be considered unexpected, (French & Poterba, 1991) note the large increase in British holdings of overseas assets after the other Big Bang reforms, those of Margaret Thatcher in Britain in the 1980s. Recalling from above (Hoshi & Kashyap, 2001) (Gibson, 2000) regarding the need for Japanese investors to seek out better returns, it is useful to give some theoretical background on why diversification and specifically international diversification is important. Figure 2 depicts the two main theoretical bases for this study. Modern portfolio theory, which suggests holding a portfolio of securities across a wide variety of countries according to their relative market capitalization will be discussed first, followed by behavioral theory, in this case mainly the gravity model of investment and domestic bias.

Figure 2: Theoretical Framework



Modern Portfolio Theory

In 1907, Henry Lowenfeld introduced the idea that domestic securities have a shared "Market Influence" factor that affects the performance of these securities to such an extent that it leads to a large degree of similar movement in their share prices. Economic contractions and expansions affect firms in a country in similar ways. Foreign securities then are the only suitable counterbalance because they lack, or share less of, this "Market Influence" (Lowenfeld, 1907) (Goetzman & Ukhov, 2005). Modern Portfolio Theory was first introduced by Harry Markowitz in 1952, and in it he furthered Lowenfeld's work with more detail of the importance of diversification (Markowitz, 1952). Although recognizing that there are factors that affect the performance of all securities in a market, there also exist opportunities to diversify within that market. This is

achieved not by simply increasing the number of securities held in a portfolio to achieve optimal returns, but to ensure that the securities chosen have enough different characteristics to ensure proper diversification. He uses the example of buying 60 railway stocks verses buying 60 stocks of varying industries to highlight an important point: a shock unique to the railway industry will affect all railway stocks, yet not stocks for other industries. This takes Lowenfeld's work from countries having different risk profiles to showing that industries also have different risk profiles. He identifies an "efficient frontier" where different levels of risk are matched with the highest expect return.

This work was furthered with the introduction of the Capital Asset Pricing Model equation (Sharpe, 1964). Sharpe specifically identified the two separate types of risk, calling them "systematic" and "unsystematic". Unsystematic risks are unique to the firms or industries in which the firms operate. By balancing enough other firms and industries in one's portfolio, it is theoretically possible to reduce this risk substantially. Systematic risks affect all stocks (within a country or region) equally and thus even a diversified portfolio will retain these risks (Ackert & Deaves, 2010). The model suggests that investors are not compensated (via higher returns) for taking on unnecessary unsystematic risks. One critical assumption in Sharpe's work is that all investors have the same utility function of expected return and volatility.

Until this point, though importance of international diversification had been discussed theoretically, (Grubel, 1968) was the first to show it empirically. Using evidence of correlations between different countries equity market returns,

he developed a model to show quantifiable benefits to holding a certain amount of international investments. (Levy & Sarnat, 1970) expanded on this research using a wider group of countries and explicitly show the risk levels of a portfolio being reduced as the number of countries in the portfolio is increased. But, echoing the ideas of (Markowitz, 1952) they point out the countries with higher levels of market correlation offer less in terms of risk reduction benefits.

More recently, in each of their nine editions of the widely used text "Modern Portfolio Theory", the authors have used the most recent data to make the case for international diversification for US investors (Elton, Gruber, Brown, & Goetzmann, 2011). They analyzed the correlation between US stock indices and other countries' stock indices and showed that though there was a positive correlation between the returns of US stocks and each of the foreign indices tested, these correlations were much less than those of different sets of US stocks. I.e. there are diversification opportunities by investing in foreign markets that are impossible to achieve using domestic stocks alone, as shown first by (French & Poterba, 1991). (Elton, Gruber, Brown, & Goetzmann, 2011) also find similar results for bond indices.

When also taking into account the both the stock price risk and foreign exchange risk (as measured by the standard deviation of returns in US dollars) they found that the optimal portfolio during the period of 1990-2007 (in terms of lowest risk) was 30-35% international securities and 65-70% domestic securities for both stocks and bonds (Elton, Gruber, Brown, & Goetzmann, 2011). To show the case for ongoing diversification (in the future), they tested three separate cases

for returns on US stocks (10, 12 and 14% respectively) to find the minimum return levels in foreign markets needed to justify international diversification. In each case, the minimum required foreign return was "considerably" lower in most other countries' markets than the three test cases for US returns. Thus both in terms of risk minimization and return optimization, it's highly likely that international diversification will be beneficial in the future.

The importance of this research in terms of Japanese investors and whether they should diversify internationally is clear: US stocks tripled in the period that (Elton, Gruber, Brown, & Goetzmann, 2011) tested, whereas Japanese stocks decreased in price by a third (Dow Jones) (Nikkei). So if it has made sense for US investors to have significant foreign holdings despite foreign markets generally underperforming the US, then international diversification must be even more compelling for Japanese investors, (and the domestic stock market index is still less than half its 1989 peak (Nikkei)).

Another widely studied empirical example is that of Britain from the mid-19th century until World War 1. Rather than the "what should happen" approach of (Elton, Gruber, Brown, & Goetzmann, 2011), the "what happened and why" approach is used. From 1865 until the beginning of World War 1 there was a significantly large amount of capital, both in terms of overall amount, and share of national income, originating in Britain that was invested abroad (Goetzman & Ukhov, 2005). This has spawned a rich volume of research from both theoretical and empirical points of view to show evidence of why investing capital internationally is beneficial for both the exporting country and the

individual investor.

Addressing the question of whether or not these flows were beneficial to the country, neoclassical economic theory suggests capital exports are beneficial if the flows have the effect of raising national income (Pollard, 1985). If international assets have higher returns than domestic assets then the resulting capital flow abroad will enable higher national income than if it had stayed home (Pollard, 1985). (Edelstein, 1982) found that the international assets held by British investors during that time indeed had higher risk-adjusted returns than domestic assets. So in terms of raising national income this made sense for Britain.

Using the same data as Edelstein, it has also been shown using modern portfolio theory that portfolio diversification was the main driver of this overseas investment (Goetzman & Ukhov, 2005). Using mean variance optimization technique, they show that an optimal portfolio of stocks for that time period for a British investor would include 38% international assets. This is very close to the various scholarly estimates of British overseas investment at that time (Edelstein, 1982) (Hobson, 1906) (Feis, 1930) and others. To highlight the importance of diversification over individual country stock performance they show that even if the oversees assets had had the same return as domestic assets during that time period, it still made sense to invest overseas simply for the diversification.

(Elton, Gruber, Brown, & Goetzmann, 2011) also note an important caveat in terms of international diversification: each country has different regulatory and tax regimes. Some countries tax international investors at different

rates than domestic investors. Other countries have strict control of the buying and selling of foreign currency or securities. Thus it's theoretically possible for one country (with low tax rates for domestic investors) to have an optimal portfolio consisting entirely of domestic securities. They discount this as a likely actual scenario, but acknowledge that regulatory issues would affect calculations of optimal portfolios. There is certainly evidence to suggest that in Japan before the big bang, investors had at least indirect barriers to foreign investment (as noted above: lack of foreign investment trust managers, preference for keiretsu member investment trusts to invest in group companies (all domestic), etc.)

Relating these theories of rational investor behavior and efficient portfolios, it's also worth revisiting the problems of the keiretsu model, discussed above, again. Unlike American-style markets where firms are focused on maximizing return for the shareholder, the Japanese model is different. Stakeholders as varied as customers of a firm, employees, and creditors (especially the main bank) all have much more influence on the direction of the firm (Ahmadjian & Robbins, 2005) than they would in an American firm. This suggests that share performance is not maximized and thus rational Japanese investors would be inclined to look elsewhere if given the choice.

Behavioral theory

The foundations of portfolio theory discussed until this point have had one thing in common in that they are normative. That is, they are based on what investors should do, given a set of known and unknown risks. These theories have

been based on Expected Utility Theory, first developed by Von Neumann and Morgenstern, which assumes rationality on the part of investors (Von Neumann & Morgenstern, 1944) (Markowitz, 1952) (Sharpe, 1964). In contrast to this normative research, a more recent vein of study of investments has focused on what (rather than should) investors actually do and why, called behavioral finance.

Put forward as a positive alternative to the normative Expected Utility Theory, Prospect Theory (Kahneman & Tversky, 1979) note problems with EUT by noting several examples of where EUT is insufficient or incorrect. How this affects investment is that people follow irrational behavior in two cases: risk seeking in losing situations and risk aversion in winning situations. This "certainty effect" causes investors to seek out risk where (some) losses are already certain, but seek out safety if (some) gains are already locked in (Ackert & Deaves, 2010). This is akin to winners of a bet being unlikely to want to go "double or nothing" but losers very much keen to do so.

Domestic Bias

One of the most powerful and widely studied aspects of behavioral finance is called home bias or domestic bias. Ackert and Deaves (2010) suggest reasons to explain this bias including optimism about respective home markets verses alternatives, comfort-seeking investors' familiarity with domestic markets and unfamiliarity with foreign markets. Much of the research has focused on information asymmetry – simply put, investors are more comfortable with what

they know.

Home Bias was first introduced in empirical literature by French and Poterba (1991), where they showed how despite a large volume of information documenting the benefits of international diversification, investors tended to overly invest in securities in their home markets. The investors are shown to be choosing to give up significant risk reduction opportunities. Portfolio data from the U.S., the U.K. and Japan in 1989 showed that investors held an overwhelming proportion (94%, 82%, and 98% respectively) of domestic stocks in their equity portfolios. Using past market correlations they used expected utility maximization to show the flaw in this strategy. The domestic returns in each of the three cases would need to far outpace the returns in international markets in order for it to make sense.

Two ideas are presented as possible explanations for this evidence of bias, institutional barriers and over optimism about home markets. Although noted above in the modern portfolio theory discussion as being potentially important, (French & Poterba, 1991) explicitly discount institutional factors such as differing tax regimes, capital controls and other investment barriers as explanations for the lack of foreign investment. Rather, they view investor expectations regarding their home markets to be overly optimistic. Evidence for this was found by (Shiller, Kon-Ya, & Tsutsui, 1991), who surveyed institutional investors in Japan and the US from 1989-1990 and showed evidence of not only optimism about the home market but pessimism towards the foreign market. In recognizing that this is just one explanation of the domestic puzzle they also

hypothesize that this bias may disappear over time.

Further empirical evidence is gathered by (Cooper & Kaplanis, 1994) when they add France, Italy, Spain, Sweden and Germany to the UK, US and Japanese data used by (French & Poterba, 1991). But rather than looking for more evidence of behavioral explanations, they argue that there must be economic features of international portfolio investment that cause investors to refrain from apparent risk diversification opportunities. They tested for inflation hedging related explanations of the domestic bias phenomenon but found only in the case of extreme risk aversion on the part of investors would this be valid.

The literature begins to delve deeper into the potential causes of this bias and geographical proximity, which will be studied more later, is introduced for the first time. (Tesar & Werner, 1995) give more evidence of a strong domestic bias by studying portfolio flows of five countries and come up with three important conclusions. First that though international portfolio holdings appear to be increasing in Germany, Japan and the UK since 1970, they remain below levels for optimal risk diversification. In both Canada and the U.S., the levels of international holdings have not meaningfully increased and remain lower than the other three countries. Secondly, they find that the international portfolio investments by U.S. and Canadian investors are driven less by risk diversification motives than they are by geographical proximity. And finally, their results show evidence of much more active trading turnover on the part of foreign investors than by domestic investors. This last point is important in that if international investors are more active than local investors, there must not be institutional

barriers adding to costs of investment. So home bias is strongly evident, geography is important and institutional factors are not.

Further evidence that institutional factors are not a main cause of domestic bias can be seen in a separate study published later that year by the same authors who study US portfolio investment in emerging markets (Tesar & Werner, 1995). They use flow data to show that flows of foreign securities have a much higher turnover rate than flows of domestic securities. This, they argue, shows that there must not be added costs to trading in foreign securities. Domestic bias is still very evident but they also find that a key determinant of levels of investment in the emerging markets is that the holdings are proportional to the size of the market capitalization of the emerging countries' stock markets. The finding that holdings are proportional to size of market capitalization is consistent with the portfolio diversification theory above and this logic will be used in evaluating foreign bias in Chapter 4.

(Warnock, 2002) revisits their work and makes a critical point about the type of data used. Flow data tends to overestimate investment attributed to financial centers where the actual end investors may be from elsewhere. He also notes, using updated holdings data, that the turnover rates for foreign securities during the period of the Tesar and Werner study were overstated, undermining their conclusion that transaction costs cannot explain home bias. Citing more up-to-date research using holdings data studying more explicitly for cost, including that of (Domowitz, Glen, & Madhavan, 2001), he notes that their general conclusion, that transaction costs cannot explain the home bias, still holds.

Several studies have made reference to the steady process of global financial integration as being important in the reduction of the home bias phenomenon. Echoing the assertion made by (French & Poterba, 1991) that the passage of time would see an increase of foreign portfolio holdings, (Kang & Stulz, 1995) note the volume of financial deregulation since the 1970s but note that a bias towards domestic assets still existed. Though this seems a logical line of thinking, it is countered by the research noted above by (Edelstein, 1982) and (Goetzman & Ukhov, 2005) regarding large amounts of British overseas investment more than 100 years ago.

But in addition to the passage of time, the same paper by (Kang & Stulz, 1995) introduces two extremely important ideas that become parts of the foundation of the study of financial bias. First the idea that information asymmetry is a contributing factor and next that in addition to domestic bias there also exists relative biases to different foreign countries. They studied the pattern of investment by foreign firms in Japanese equity markets, a market both geographically and linguistically different from other countries. Their research found preferences by the foreigners to buy shares of Japanese companies that were very large, and of the companies that weren't very large, companies that did a lot of exporting. They specifically note the important idea that these preferences are related to information, i.e., that companies that the foreigners knew about were more likely to attract capital than companies that they were less familiar. This information asymmetry explanation becomes a key focus of domestic bias research. Though not identified explicitly in the paper, it would also serve as the

first idea towards foreign bias, i.e., bias of foreign investors to underweight (or overweight) another country's (or a sector of another country's) markets. Furthering this discussion, (Brennan & Cao, 1997) develop a model where publically released information is more valuable to foreigners than locals. This is used to further show how information asymmetry is a key factor in domestic bias.

The study of domestic bias is given explicit importance when examined from an empirical point of view: there are real costs by forgoing diversification. (Lewis, 1999) identifies domestic bias as the phenomenon where investors forgo an opportunity to reduce risk, and perhaps enhance return, by underweighting foreign securities in their portfolio. She identifies three explanations that have so far not completely solved the "puzzle" of the equity home bias: unique hedging requirements of local investors, cost barriers to international diversification, and differing perceptions of risk. In her excellent review of the literature until this point she also notes the importance of information asymmetry. (Karolyi & Stulz, 2003) also review the literature and specifically identify information asymmetry as a barrier to foreign investment.

Though most of the single country studies have focused on US investors, conclusions from non-US based studies echo similar findings. (Grinblatt & Keloharju, 2001) studied the behavior of Finnish investors, in a uniquely interesting market. Finland has both a large number of Swedish speaking citizens and also Finnish companies that do business in Sweden enabling a more detailed comparative study than available in most settings. They found that the investors are much more likely to invest in firms that have the same language (i.e. publish

annual reports in their language), operate nearby, and share culture than those who do not. Importantly they also found that these tendencies were much more pronounced in individual investors than in institutional investors.

There is more research on the dichotomy between professional and retail investors with specific reference to Japan. While analyzing individual investors (as opposed to investors of investment trusts, (Kim & Nofsinger, 2003) argue that Japanese investors make poor decisions by buying risky stocks when times are bad and safe stocks when times are good, resulting in significant underperformance. Updating their results with similar conclusions (Kim & Nofsinger, 2007) also note explicitly findings consistent with overconfidence bias by hanging on to previously good performing stocks too long, but also antithetical to overconfidence bias by chasing high risk stocks during bear markets. In a study comparing different groups of institutional investors with foreign and individual Japanese investors, (Kamesaka, Nofsinger, & Kawakita, 2003) identified a clear difference in trading behavior. Evidence of information-based trading in the foreign investors some of the institutional investors is contrasted with evidence of behavioral-based trading on the part of the Japanese individual investors. This is a good example of how different groups of investors may exhibit different investing behavior, which will become an important distinction in the data set used in this study.

Gravity model

Geographical proximity was hypothesized to be an important factor in bias (Tesar & Werner, Home Bias and the High Turnover, 1995) but a formal

attempt to link portfolio flows with the gravity model came a few years later. The gravity model for trade was introduced by Tinbergen in 1962 (Tinbergen, 1962) and in its most basic form equates bilateral trade to be a function of economic size and distance between two trade partners. This distance can be geographic, cultural or economic (Head & Mayer, 2013) and has since been extended to model financial flows. Ghosh and Wolf argued in a paper first presented in 1998 that geographical factors are important in the ability of emerging countries to attracting capital (Ghosh & Wolf, 2000). They argued that size (measured both by GDP and GDP per capita) and distance (physical distance, remoteness, whether the two countries have a common border, whether the two countries share a common language) are the two likely explanations of why some developing countries are successful at attracting capital but others are not.

Their results provided some interesting contents. Using dependent variables of (outbound) exports, FDI, bank loans, equity investment and debt investment from the G7 countries (Canada, France, Italy, Japan, the UK, and the US), they showed significant and consistent results for the size aspect of gravity. Less consistent was evidence of distance, though largely the correct sign, the regression coefficients were often not significant. Small sample sizes (all less than n=100) and some tiny (less than n=20) may have contributed to this. Though their results suffer from these inconsistencies, this paper was an important start of the discussion of using the gravity model for capital flows.

Portes & Rey followed shortly thereafter with a discussion paper (Portes & Rey, No. DP 7, 2001) where they used a much larger data set to attempt a

gravity model and show clearly that distance was a significant factor in bilateral equity flows. They also introduced that not only is distance between two countries important, but that it usually indicates a lower information flow between the two countries. The term they use to describe this phenomena, information asymmetry, will be a major focus of research in this field. They find that distance then is merely a proxy (though a good one) for information flow between two countries.

They used bilateral telephone traffic and bank branches of foreign banks (from the respective partner countries) as information indicators in a random effects regression. Their regression results provided many more significant coefficients than Ghosh and Wolf including showing that the bilateral telephone traffic variable alone can replace the distance variable in a gravity model with only a slight loss of explanatory power. Their results are not without criticism however, as will be discussed in (Warnock, 2002) below, there are inherent flaws in using flows rather than holdings.

Importance of their research is as follows: theoretically speaking, home bias – is it really just a lack of information about other markets? International capital flows have become quite large and have important effects, both positive and negative, and understanding determinants may help manage/avoid some of these effects. They also recognize that policy makers may wish to attract foreign capital to their own domestic financial markets, which they suggest may be aided by increasing information accessibility.

The significance of geographical proximity in relation to home bias is of particular interest to this study regarding Japan its context within Asia. The

research all points to how theoretically speaking, Japan should be overweight Asian financial assets. In fact this is not the case and is an important factor to examine. Other research pointing to the importance of geographic proximity includes (Froot, O'Connell, & Seasholes, The portfolio flows of international investors, 2001), who found significant regional preferences in foreign investment, more evidence that Japan should be biased towards Asia not against it.

Froot et al (2001) did not attempt a gravity-type equation, but rather use both univariate time series and vector autoregression to examine the daily cross-border flows between 44 countries between 1994 and 1998. Importantly they note how the pair-wise correlations of flows between countries change materially during periods of crisis, such as the Mexican peso crisis of 1994 and the Asian financial crisis of 1998. There findings of persistence of flows are not applicable to this paper directly but that they note strong geographical preferences (ie within region investment) is material. Again, as above (and to be discussed below) there are disadvantages of using flow verses holdings data, and additional criticism here is self noted as the authors note that by using the settlement data, the companies that trade the securities are identified by country but the investors on whose behalf they trade are not identified (it's possible an American fund with Thai investors is investing in a Thai stock – is this foreign or domestic investment?). Further though the flows through State Street are large and represent 40% of all US mutual fund data (ibid), it certainly cannot be considered to be complete and raises the question of whether different types of investors have different utility functions, which will be discussed below.

The information asymmetry explanations of home bias first noted by Portes and Ray (2001) have until this point focused on language, communication and distance, all somewhat related to culture. Legal culture too is an important determinant. While not referring explicitly to bias, (La Porta, Lopez-De-Silanes, Shleifer, & Vishny, 1997) (La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 2000) outline how different legal foundations in countries (English Common Law vs. French Civil Law for example) have created very different systems of corporate governance and investor protection in different countries. This suggests that countries with weaker or different legal foundations will have more difficulty building a robust financial market (and thus attracting foreign investment) than those with similar and stronger legal foundations.

Though the field of home bias was widely studied before, a common quantifiable measure of it had not been identified. Using proportion of world equity market capitalization as a base, (Ahearne, Griever, & Warnock, 2004) show that US investors are still highly underweight international stocks and explicitly define home bias to be 1 minus the share of foreign equities in US portfolios divided by the share of foreign equities in the world portfolio. So if US investors owned 5% foreign equities and the total world portfolio (including US stocks) contained 50% foreign equities, then the home bias would be 1 – 5/50, or 0.9. Close to 1 indicates a strong home bias and close to zero indicates a lack of home bias. (Chan, Covrig, & Ng, 2005) use similar logic but rather than using a measure ranging from 0 to 1, they measure deviation from expected portfolio resulting in an infinite range centered around zero. Zero represents a neutral

portfolio, negative readings represent anti-domestic bias (of which there are no cited examples) and positive readings represent degree of domestic bias. The logic of the calculation of home bias here will be used to quantify the relative foreign bias analyzed in chapter 4.

These measure of home bias makes much intuitive sense for US investors in that because the US makes up (very approximately) half of the size of the world financial market, a "rational" US investor will have a fairly large portion (a full half) of his or her financial assets in US securities. This seems to be less intuitive for an investor in New Zealand for example, where this logic suggests that he or she hold more than 99% of his or her financial assets in foreign securities. Indeed using the metric from Chan et al (2005), there is a fairly strong negative correlation (of 55.7%) between domestic bias and market capitalization for the 26 countries in the study. This means that the larger a country's market capitalization, the less domestic bias observed.

The use of market capitalization as a control yardstick also raises issues in the case of bubbles. A very simple example would be an investor in China in 2007. Very roughly, in dollar terms the capitalization of listed companies in China grew 150% from about 5% of the world to 6.25% of the world (all figures from (World Bank)). If an investor in China at the beginning of 2007 had a bias-neutral global portfolio and did not buy or sell during the year, then his or her portfolio would have gone from neutral to domestically biased. Unfortunately the only other logical alternative would be to use some form of GDP (as in (Martin & Rey, 2004)) but this then would less reflective of portfolio prices in general.

Irrespective of this, it has become a fairly standard metric as the quantified measure of domestic bias and is used to show that US home bias has decreased from very close to 1.0 in the early 1980s to roughly 0.8 in 2000 (Ahearne, Griever, & Warnock, 2004) and more importantly identify an important tool in overcoming information asymmetry. They use evidence from (Merton, 1987), (Kang & Stulz, 1995) & (Portes & Rey, 2005) to argue that a reduction in asymmetric information could be an explanation for this phenomenon. They test one specific type of information, corporate disclosure and find significant results. In order for a foreign company to list on an American stock exchange, it must satisfy several regulatory and governance tests. (Ahearne, Griever, & Warnock, 2004) argue that these tests are a form of information that makes US investors more likely feel comfortable owning these companies. They found that countries with higher proportion of companies with US listings to be more likely to attract US investment. They also found that if firms in countries with weak governance laws wanted to attract US investment, that listing on a US stock exchange would make this more likely. As this is potentially a solution for overcoming information asymmetry and attracting foreign investment, it is an extremely important finding although it requires actions on the part of the recipients of the investment (i.e. it does not identify anything actionable on the investor side to reduce the costly domestic bias.) The obvious drawback to the usefulness of this finding is that it is applicable mainly to the United States.

While governance in the form of shared disclosure standards and Legal origin similarities had been identified, corporate governance also seemed to be

important. Specifically focusing on foreign investment in emerging markets, (Ladekarl & Zervos, 2004) note its importance. They argue that investors make a two-step decision when deciding to invest. First they weigh political and macro-economic factors (the "housekeeping"), and the regulatory environment (the "plumbing") to determine a binary answer to the question of invest in this country or not. Only then do they apply the typical risk/reward estimations to assess how much to invest. This is an important finding, similar to the cross-listing finding noted above, in that it gives the recipient countries and firms actionable items on which to improve investment inflow. It is also similar in that it does not identify anything on the investor side.

The approach (Ladekarl & Zervos, 2004) use is unique in comparison to most of the other research in this field in that rather than use holdings or flow data, they gather information from a group of decision makers. They interview front and back office personnel from a variety of different types of institutional fund managers to gather direct information as to important factors when investing abroad. This approach adds to the empirical research above regarding corporate governance and legal rights, issues that will be thoroughly investigated in the coming years (and discussed below). Though they make efforts to include both equity and debt investments in their study, the relatively small number of companies from which interviews were obtained (30) and the breadth of investors within (mutual funds, pension funds, hedge funds, commercial banks all mentioned) and only from two countries (the US and the UK)

Perhaps not surprising, but in addition to the regulatory environment,

breadth of a country's financial system are important in attracting foreign investment. (Martin & Rey, 2004) use the same data set as (Portes & Rey, 2005) and find that a key factor in attracting foreign investment is the size and level of development of a country's financial system. This finding aids the development of the empirical model in Chapter 4.3, where market capitalization of each country's stock markets and the turnover ratio of those markets are included as independent variables to evaluate bias on behalf of Japanese investors.

Though the ideas behind "foreign bias" were first explored by (Kang & Stulz, 1995) as noted above, the term was defined explicitly for the first time by (Chan, Covrig, & Ng, 2005) as the tendency of investors to over/underweight other countries securities in their portfolios. They used mutual fund data from 26 countries, including some emerging markets to test for this and domestic bias. They found strong evidence that in aggregate, mutual funds tended to overweight domestic stocks but that the levels of domestic bias differ substantially from country to country. Using domestic bias and foreign bias scores derived from relative holdings in comparison to market capitalization, they then tested six groups of explanatory variables on how they affect this bias similar to the gravity-type models noted above: "economic development", "capital control", "stock market development", "familiarity", "investor protection" and "other". They found that the domestic bias and foreign bias were related: countries that were less familiar (geographically far, different language) not only attracted less investment, but they tended to overweight their own market more.

Chan et al use a different set of data than previous studies. First of all,

they use exclusively mutual fund data. This is important because although it is obvious that there are differences between each *individual* investor, it should also be clear that there are differences between different *types* of investors. Commercial banks may be more sensitive to short-term foreign exchange volatility due to shareholder pressure, pension funds managing defined-benefit plans may wish to immunized their liabilities rather than take foreign exchange risks, life insurance companies may be mandated to hold a certain amount of duration in their bond portfolios (not all countries issue long-term debt securities), etc. By focusing exclusively on mutual funds they eliminate some of these issues. Secondly, rather than using flow data, they use holdings data in their empirical model.

There is further research on familiarity issues affecting foreign bias by (Beugelsdijk & Frijns, 2010). Using culture scores defined by (Hofstede, 1984), they quantify cultural distance and find it to be a significant determinant in foreign bias, i.e., that culturally distant countries tend to underweight each other in international portfolios. They explicitly found that common language, shared common law and geographic distance to be significant explanatory variables for bias. This will be discussed further in the evaluation of (Aggarwal, Kearney, & Lucey, 2012) below.

In the mid-2000s, research on possible explanations for foreign bias begins to examine factors in more localized studies. The conclusions of the broader studies are largely confirmed and important corollary is observed. Using data from US mutual fund managers of active equity funds investing specifically

in emerging markets after the Mexican crisis of the 1990s, (Aggarwal, Klapper, & Wysocki, 2005) analyze country-level and firm-level allocation determinants. Specifically controlling for indexing factors (mutual funds are benchmarked to an index, so the important analysis is how much they deviate from the index, as opposed to simply charting total holdings), they show that these managers significantly preferred countries with strong accounting, shareholder rights and legal frameworks. On a firm level, consistent with other information-type conclusions, they find firms with greater transparency to be more desirable. Similar to (Edison & Warnock, 2004) they note that foreign firms that issue American Depository Receipts (foreign share equivalents from firms that register with the US securities exchange commission issued in US dollars by a US bank (SEC)) are more likely to attract US investment, which is also consistent with the information asymmetry findings of (Ahearne, Griever, & Warnock, 2004). They also note that foreign capital plays an important role in promoting economic growth in countries with developing economic systems. This last point is an important conclusion as has relevance to Japan's role in Asia and will be discussed in a separate section below.

It is useful to revisit the issue of type of investor here. Again as in (Chan, Covrig, & Ng, 2005) above, (Aggarwal, Klapper, & Wysocki, 2005) use mutual fund holdings data. And like (Ladekarl & Zervos, 2004) they focus exclusively on investment in emerging markets. Though they only use US mutual fund data, they make an important distinction with regards to type of fund: only active funds are studied. That is, only funds with mandates to trade on an active,

as opposed to passive (i.e. some sort of index mandate), basis are considered. By narrowing the field of view, they are able to focus on the determinants of a subset of investors, all with presumably very similar utility functions. In this case the investors are all (presumably) highly sophisticated investment professionals with mandates to invest in emerging markets. The focus on emerging markets alone allows a discussion of foreign bias independent of domestic bias, i.e., the money is already allocated away from home, and the only question that remains is in *which* foreign country to invest. This study makes use of such logic in the calculation of foreign bias in Research Question 3.

The strength of their approach is their focus, but there are also some weak points to consider. From the view of the emerging countries that desire foreign capital, it may be argued that there is no preference for the style of investment of the managers of the incoming capital, just the magnitude. And if there were a preference regarding active or passive capital, they may prefer the latter to avoid any "hot money"-type financial instability. There is also the matter to consider of amount of funds available to invest. This decision is made by retail purchases and sales of the funds, a factor not studied here.

Until this point, the research has focused on either overall investment or specifically institutional investment. As noted above it is a reasonable assumption that investors of different types have different utility functions. Detailing the difference between institutional and retail investors in terms of information asymmetry, (Ivkovic & Weisenbenner, 2005) find broad evidence of domestic bias among US investors, even more in individual investors than in professional

(institutional) investors. They also find that these local investors are able to exploit their local information to outperform with their stock choices, implying that firms that are over weighted by locals outperform those not. Note that this would seem to contrast somewhat with (Huang & Shiu, 2009) who find that Taiwanese firms with high levels of foreign ownership strongly outperform those with low levels of foreign ownership. This retail institutional divide is related to this paper in that though the managers of the JITs can be considered institutional or professional managers, there are constraints placed on these managers by each Fund's aims such that a large amount of control of aggregate asset movement is in the hands of the retail buyers of the Funds. This will be discussed in more detail in Chapter 3.2.

The relatively higher bias observed in retail investors is also observed by (Berkel, 2007), who also studies retail investors and finds that they exhibit an even stronger domestic bias than institutional investors. She too finds local retail investors able to take advantage of local information: the holdings of their local stocks outperformed their non-local stocks. In her models, she contrasts the strong explanatory power of indirect variables such as information asymmetry with the weaker explanatory power of direct variables such as capital controls.

Also, in order to differentiate between the foreign bias of underweighting another country's securities and overweighting another country's securities, (Berkel, 2007) introduces a new term: friendship bias. By using the international Capital Asset Pricing Model to predict bilateral holdings, this friendship bias is observed where actual assets held were higher than the model

predicts. Most of the friendship pairs were in Europe, which leads anecdotally to geography, culture, and financial integration as possible explanations. Given the efforts at Asian financial co-ordination detailed in the background of the study, this is further evidence that Japan *should* be more inclined to invest in Asia than in the rest of the world, and that the opposite is true is in need of explanation.

This observation of friendship bias echoes research by (Bertaut & Kole, 2004). While not using the term "friendship bias" their findings are consistent with other literature detailing information asymmetries in that close political ties, distance, trade are all significant explainers of foreign equity investment. But they identify a large gap in the model and hypothesize there are factors unique to individual pairs of countries that do not apply elsewhere. And regarding the listing of firms in the US as a way to overcome information asymmetries, they note that though foreign firms that issue American Depository Receipts attract more foreign investment than firms that do not, this mostly holds true for European and English speaking countries. This suggests that cultural and language issues complicate information asymmetry. This is the first of the research on foreign bias that suggests there may be unique explanations of why Japanese investors hold comparatively few Asian financial assets and this paper attempts to identify some of these in Chapters 4.2 and 4.3.

The importance of local currency bond markets (in the case of developing Asia in particular) was noted in the introductory chapter, but the research on foreign bias until this point was almost entirely focused on equities. In a study of foreign participation in local currency bond markets (Burger &

Warnock, 2007) found that volatile returns and negative skewness to be barriers for US investors in emerging markets. They suggest though that efforts to stabilize the macroeconomic situation in a country is likely to help attract US investment. Other findings specifically related to bonds include (Chitu, Eichengreen, & Mehl, 2013), who found that there is a significant "history effect" in bond holdings where holdings up to 70 years ago influence holdings today. They argue that this shows evidence of barriers to entry or exit bond markets. Comparing the effects of information asymmetry on equity and bond markets, (Brennan & Aranda, 1999) find that if foreign investors are less well-informed than local investors then the volatility of the portfolio flows for bonds is higher than that of equities. Relating this to the Asian Financial Crisis experience, it indicates that bondholders are more likely to flee markets than equity holders.

Further empirical research tied conclusions from the domestic bias literature to show how that also applied to foreign bias. Specifically showing information asymmetry being an important factor, (Ke, Ng, & Wang, 2010) use mutual fund holdings data from 22 countries to show how investors' home bias extended to foreign investment as well. They specifically identified the subset of foreign firms operating in an investor's home market as being able to attract significantly more investment from that country than firms without a presence. Similarly, (Kalev, Nguyen, & Oh, 2008) show how foreign investors in Sweden prefer internationally-well-known stocks and do better with their investments in them than do domestic investors. Domestic investors outperform their international counterparts in smaller, lesser-known stocks. This has interesting

implications for Japan and its role within Asia in that until fairly recently, and with some notable exceptions such as the Korean company Lotte, there were few well-known firms from Asian countries with obvious presences in Japan. This will be examined in Chapter 4.3 as a potential factor in the lack of Japanese investment in Asia.

Though this study is primarily interested in the determinants of bias towards other countries, there are some studies that when analyzing the determinants of equity investment, firm-level factors are much more important than country-level factors. (Ferreira & Matos, 2008), studied three groups of investors around the world, US, non-US foreign, and domestic, and found that all three prefer liquid, large market capitalization stocks with strong corporate governance. While some country-level findings were significant such as US investors preferring to invest in English-speaking countries, they identified firm-level factors as most significant. Echoing findings from (Ahearne, Griever, & Warnock, 2004), they found that international institutional investors had preferences for firms cross-listed in the US (and thus held to US accounting standards) and interestingly those firms that issued American Depositary Receipts[2] also showed an increase in foreign shareholdings in their own domestic market, which is consistent with the information asymmetry explanations of home bias. And similar to (Huang & Shiu, 2009) and in contrast to (Ivkovic &

[2] American Depositary Receipts (ADRs) are the most common method for foreign companies to list on US stock markets. A bank acts as an intermediary between the investor and the company and all settlements are in US dollars. SEC. (n.d.). *International Investing, get the facts*. Retrieved 4 10, 2014, from Securities and Exchange Commission Website: http://www.sec.gov/pdf/ininvest.pdf

Weisenbenner, 2005) they also found that firms owned by foreign investors tended towards higher valuations. This aspect of their findings will be discussed in the "Benefits for the recipient country" section below.

The empirical studies noted so far in the literature review are important to this study because it will fill a space within them, but the theoretical aspect is also important to note. (Okawa & Van Wincoop, 2012) attempt to coalesce the empirical models (which they classify as "gravity equations for cross-border financial holdings" and make three theoretical conclusions regarding this gravity. First is that information asymmetry is likely significant among global markets as there is still evidence of significant financial friction. But secondly they note that this financial friction has been steadily decreasing. And finally, that given the evidence from the integration of European markets, by removing obstacles the effect can be large and quick. This final point is significant for any country wishing to increase foreign portfolio investment and is particularly of interest to the study of inter-Asian investment.

The most recent empirical research has developed a regression equation to explain 60% of the variation of foreign stock and bond investment across all countries (Aggarwal, Kearney, & Lucey, 2012). Their study used twins of each of the variables in the form of destination country metric and originating country metric. As this study is only evaluating investment from a single country (Japan) the destination conclusions are of particular interest. Geographic distance, economic growth, bond and equity market development, investor protection and country risk were all significant variables in their first model, largely in agreement

with previous studies and achieving an R-squared of 0.54. This is a good result, but they then add culture measures (largely from (Hofstede, 1984)) to the model and improve to 0.63.

As this study will be using several aspects of this model to test for foreign bias on behalf of Japanese investors, it is useful to detail the variables used. To test for determinants they used average debt and equity holdings in 50 destination countries and 174 destinations countries as dependent variables. Against these dependent variables, they tested the following independent variables: distance (between capitals of the destination and originating country), growth (4-year average of GPD growth), bond market development (as measured by total corporate bond issuance as a proportion of GDP), equity market capitalization, accounting quality, investor protection, country risk (as measured by a private consulting firm), commonality of language, commonality of legal system, commonality of religion, cultural distance, uncertainty avoidance, power distance index, masculinity index, and individualism index.

Very recently (Erdogan, 2014) also uses measures from (Hofstede, 1984), specifically uncertainty avoidance scores, to show how countries with high uncertainty avoidance like Japan have a more pronounced geographic investment bias than those who have a low uncertainty avoidance like the US. This study also uses the data set from International Monetary Fund's (IMF) Coordinated Portfolio Investment Survey (CPIS) from 2001 to 2012. These can be added to the many findings above that suggest Japan should theoretically be less biased towards investment in near (i.e. Asian) countries than far (i.e. non-Asian countries).

Other recent findings focusing on country-level determinants in broad studies reinforce the significant variables of market size, liquidity, openness, bilateral trade, investor rights and common legal foundation. Using the most recent, and therefore broadest to date, data from the coordinated portfolio survey, (Thapa & Poshakwale, 2012) survey investment from 36 originating countries and found stock market size, transaction costs and market liquidity to be the most significant variables affecting cross-border equity flows. They found a lesser, but still significant relationship to equity market openness, bilateral trade, and whether or not the countries legal foundation is English common law or not. (Lee & Moon, 2011) use similar data and focus specifically on corporate governance. In the vein of "do as we say, not as we do", they note that regardless of whether corporate governance is weak or strong in the source country, investors prefer to invest in countries where corporate governance is strong. (Maela, 2013) finds legal rights important, but though both shareholder and creditor rights are appreciated by foreign equity investors, shareholder rights (perhaps at the expense of creditor rights) are a negative determinant for foreign bond investors.

On the firm-level determinants front of the literature, (Leuz, Lins, & Warnock, 2010) show that foreign investors are much less likely to invest in firms with weaker corporate governance. (Das, 2014) also shows the importance of firm-level governance, and identifies specifically the importance of effective boards of directors and independent auditors. This firm level research on the importance of corporate governance matches with the country-level data. This firm-level research is not of direct interest to this study, but is included both for

the sake of completeness and also to introduce factors that may affect the country-level results beyond the variables tested.

Other studies take a micro look at a specific market and obtain results of interest. Looking specifically at the phenomenon of the US being an attractive place for investment, (Forbes, 2010) found that it is more attractive for countries with underdeveloped financial systems than those with mature systems. This suggests that countries with more mature financial markets are either more willing to seek out risk elsewhere or are more prone to domestic bias. This has application to Asia in that Japan has the most mature financial market in the region, suggesting that Asian investment should be inclined to it. While only Japan outbound investment is studied in this paper, the opposite case may be worth studying.

As noted above, though most of the empirical research has focused on equities, there is some on bonds. Of interest to this study's focus on Japanese investment in Asia in particular, (Mitra, Dime, & Baluga, 2011), found that specifically for foreign participants in Asian local currency bond markets prospects for return, liquidity, and size of market to be important determinants. As (Bhattacharyay, 2011) and others have noted the importance of bond market development in the region, these findings are important, and set a benchmark to test Japanese investment in Asian bond markets against in Chapter 4.3.

Returning to (Bertaut & Kole, 2004) for a moment, who identified factors unique to individual pairs of countries affect investment and (Kahneman & Tversky, 1979) who introduced irrational motivations in making investment

decisions, it is useful to conclude this section with a reminder that the literature will only be able to provide a certain amount of testable conclusions. Indeed, perhaps (Sercu & Vanpee, 2007) write the most complete possible explanation of foreign bias: "international portfolio choice should be explained by a mixture of rational and irrational behavior." Methods for attempting to identify some of this irrational behavior will be outlined below.

Asian financial crisis and its aftermath

At the same time that the Big Bang reforms of the Japanese asset management sector were beginning to take effect and Japan was trying to encourage a shift of assets out of bank accounts and into capital markets, Japan was also playing an active role in the multilateral ASEAN + Three group in trying to find solutions for and prevent recurrences of the Asian Financial crisis of 1997. A key aim for these reforms was to encourage the development of local currency financial markets in the region.

To prevent this problem from recurrence, several multi-lateral and bi-lateral initiatives have since been launched with the goal of developing local currency financial markets in the region including the Chiang Mai Initiative and Asia Bond Funds I and II, in all of which Japan has played a large role (ADB, 2011). Development of local currency financial markets in Asia has been a priority since (Eichengreen, 2006) (Jang & Hyun, 2009). Japan, second to only the United States globally in size of its financial market and by far the largest in Asia (ADB) (World Bank)(Author's calculation), plays an important role in this.

The crisis spurred much research into its causes and potential remedies. A major point of consensus in the discussion has been the negative consequences that have stemmed from a lack of a developed local currency financial market in many countries in Asia (Corsetti, Pesenti, & Roubini, 1999) (Radelet & Sachs, 2000) (Kuroda & Kawai, 2003) (Bhattacharyay, 2011). The lack of local currency finance options led to an over reliance on external borrowing in short-term international debt markets for government investment (including for long-term projects). The resulting mismatches in currency and term left these countries dangerously susceptible to a vicious circle of a weakening exchange rates and increasing interest rates on borrowings. This resulted in the twin problems of the total value of existing debt growing as the exchange rate weakened and access to additional financing ever more costly as interest rates required by international lenders grew (Radelet & Sachs, 2000).

A very basic example of this phenomenon would be if Thailand needed to borrow money to build a bridge. Because of the lack of local (i.e. Thai Baht) options, they would need to go to the international markets to borrow. Despite the bridge being a long-term project, international lenders to developing (i.e. risky) countries are only willing to extend funds for short periods and only in major currencies. So Thailand borrows the money in US dollars and plans on revolving the debt after each short period until it has paid off the bridge. This plan works fine if the Thai economy is stable and lenders don't change the terms of the loans. But if the Thai economy falters, and the Thai Baht weakens to the US dollar, then the payments in Thai Baht required to service the US dollar loans increase. If this

increase is enough to concern the lenders then they may change the terms of the loan by increasing the interest rate required (or refuse to lend) at the next opportunity. The resulting vicious circle, if repeated enough and in large enough size, puts tremendous pressure on the economy and in a worst case leads to default. These impacts would be greatly reduced if the Thai government were able to borrow long term in Thai Baht.

The crisis spurred multilateral action in the region. The ten member-states of the Association of South East Asian Nations (ASEAN) were joined by China, Japan and South Korea in 1996 to form the ASEAN Plus Three forum. Post 1997, this group became a key conduit for dealing with the Asian Financial Crisis on a multilateral level. Out of this forum came the Chiang Mai Initiative, agreed to in 2000, which was the first government policy initiative to attempt to rectify some of the structural problems that caused problems leading up to the Asian Financial Crisis. In its initial form it was a series of bilateral swap agreements intended to provide mechanisms for inter country currency support to help stabilize the regional economy in case of crises. (Kuroda & Kawai, 2003) (Bhattacharyay, 2011)

The initiative has slowly evolved since. Although some (Kawai, 2008) (Kondo, 2000) etc, argued for dramatic action such as various kinds of pan-Asian currency unions or agreements to protect from external shocks, the actual progress has been more cautious. The initiative has evolved generally as (Eichengreen & Luengnaruemitchai, 2004) argued in that rather than using the collective financial resources of the region to support a series of currency pegs, it should be used to

collectively develop financial markets in the region. (Jang & Hyun, 2009) outline some of the initiatives in this vein such as the Asia Bond Fund (ABF) versions I and II, the Asian Bond Market Initiative, and ASEAN+3 commitments to various studies and support of bond market development. The growth in local currency bond markets for the ASEAN Plus 3 (ex Japan) has been significant: approximately 10-fold from the equivalent of USD 800 Billion in 2000 to more than the equivalent of USD 8 Trillion at the end of 2014 (ADB).

Japan has played an important role in the ASEAN+3 initiatives. At the time of the crisis and the Chiang Mai accord, it was the largest economy of the region, holder of the largest amount of foreign currency reserves and location of the region's largest bond and equity markets. Japan's equity market capitalization remains second largest (behind the U.S.) globally (all data here from (World Bank) except bond market data from (ADB)). Consequently the Japanese government's decision to participate in the accord and use its financial strength to back the various swap agreements can be seen as important.

Japan's private sector has also played an important role regarding financing development of the region in terms of Foreign Direct investment. In what the Japan External Trade Organization (JETRO) calls the "ASEAN 4" countries of Thailand, Indonesia, Malaysia and the Philippines, Japan's contribution has averaged 28.6% per year of the total FDI into those countries since 2000 (figures according to (World Bank) (JETRO) and author's calculations.)

The comparative lack of savings in the developing countries in the

region acts as an impediment to financial market growth (Sheng, 2008). If domestic funds are insufficient, an obvious solution to this problem is to attract foreign capital to supplement domestic savings. As will be discussed at length below, geographical distance, cultural ties and information asymmetry are some of the barriers to cross border investment. It would seem that Japan, in Asia, an active member of ASEAN plus 3, and with an abundance of savings would be a natural source of capital for the region.

Japanese Investment in Asia

That developing Asia is in need of foreign capital to aid the countries in the region in developing local currency financial markets is explained in the section above detailing the Asian Financial Crisis and its aftermath. The body of research pointing towards gravity and culture explanations of information asymmetry noted in the previous section implies Japan to be a natural source for this foreign investment in Asia. Using World Bank figures, Japan was the largest economy in the region until fairly recently and though China has since overtaken it in total GDP, it remains Asia's largest local-currency financial market – together, market value of Japan's equity and bond markets is larger than the value of the rest of Asia's financial markets combined (ADB) (World Bank)(Author's calculation). Most importantly perhaps, as discussed above, is that Japan has a large amount of private savings, much of which sits in simple bank deposits (Hoshi & Kashyap, 2001).

Recent research presents potential problems to the idea of Japanese

investment flow providing capital to the Asian region. (Garcia-Herrero, Wooldridge, & Yang, 2009) note the lack of bilateral holdings among Asian countries and find that a lack of liquidity of the developing markets in the region to be a large factor. What is not explained is why this is more important for Asian investors than for others. (They also do not go into detail of pairs of countries to find if there are exceptions to this phenomenon.) They recommend that better financial integration in the region would aid in increasing intra-Asian investment. Their data was from 2001-2005, all from post-AFC, so it seems reasonable to wonder if the bias against intra-Asian holdings is partially caused by this recent memory and this will be evaluated in Chapter 4.3.

There is some evidence that intra-Asian portfolio investment is improving but only partially in the case of Japan. Using portfolio data from 2001 and 2007, (Lee, Huh, & Donghyun, 2013) show a much higher degree of intra-Asian portfolio holdings but highlight Japan as having a comparatively small amount of Asian holdings. According to their data, Japan's proportion of Asian equity holdings relative to total equity holdings increased from about 3.6% to 9% in that time, which leads to the question of if it has increased since, and if it had been higher before the AFC. In addition, Japanese proportion of Asian bond holdings relative to its total bond was less that 1% in both of the years examined. Again a wider range of years to examine would be useful. The importance of Asian local currency bond development will be discussed below.

One explanation of the lack of intra-Asian portfolio investment is the lack of economic integration (in contrast to its high level of trade integration, as

evidenced by large FDI flows.) In developing their theoretical model of gravity, (Okawa & Van Wincoop, 2012) point to evidence from the European example that financial integration can have a rapid effect on improved portfolio flows. Evidence pointing to this lack of financial integration is provided by (Pongsapam & Unteroberdoerster, 2011) who compare the levels of integration with benchmarks in the form of other global regions. Importantly they point out that Asian economies tend to be more integrated with economies outside the region than inside the region. If economic integration were to be increased it would help stabilize the region's growth imbalances.

A recent study looking at foreign holdings of Asian debt securities shows that the home bias of foreigners towards Asia remains strong. (Horioka, Nomoto, & Terada-Hagiwara, 2014) use data from the coordinated portfolio investment survey and Bank of Japan flow of funds data to look at holdings of debt securities in Asia. They use a CAPM approach to an ideal portfolio to estimate the "rational" portfolio of debt for foreign investors in each country. An important finding related to this paper is that during the period of the Global Financial Crisis, the observed home bias increased.

The use of a CAPM approach as a benchmark for bond holdings has been criticized. Unlike its appropriateness for evaluating equity portfolios, the use of a market capitalization basis for evaluating bond portfolios may pose problems (Zelouf, 2013). Indeed in the "quantitative easing" era, as government balance sheets grown, it seems less intuitive to use the size of a debt market as the ideal portfolio weighting – should an investors portfolio of debt of a country grow with

that country's central bank's issuance of bonds? Other measures have been proposed, such as GDP, but the issue has not been resolved (Ibid).

More evidence showing some improvements in recent Japanese portfolio holdings has also emerged. Using the coordinated portfolio survey data from 2001 and 2007, (Lee, Huh, & Park, 2013) note that Japanese investment in East Asian equity markets increased from just over USD 8 billion in 2001 to almost USD 52 Billion in 2007 (from 3.6% to 9% of Japan's total foreign equity holdings). But their bond holdings only increased from USD 9.4 billion to USD 15 billion (representing a decrease from 0.9% to 0.8% of Japan's total foreign debt holdings). Despite the recent increase in equity holdings, Japan's intra-Asian investment share in both equities and bonds is the smallest of all the east Asian economies (in contrast with an intra-Asian trade share of almost 50%). They find that though inter Asian financial trade remains lower than that of the rest of the world, when controlling for market size, rate of return, financial openness, tax rate, geographical distance the evidence points to more inter Asian trade. But when they include trade as an explanatory variable, they conclude that inter Asian trade is not larger than expected. This is evidence of a high level of trade integration but low level of financial integration.

That Japanese holdings of intra-Asian equities and bonds is the smallest in the region has the implication that other Asian countries may hold more Japanese financial assets than Japanese hold of their assets. This is somewhat analogous with the findings of (Forbes, 2010) regarding US investments and provides a possible explanatory factor. If one assumes that Japan's financial

market is at least as mature as every other country's market in Asia, then this suggests that other countries investors have an opportunity to seek a more mature market in the region that Japanese investors do not.

Importance of foreign investment from the host country's perspective

As this study is evaluating Japanese foreign portfolio investment, it is useful to offer evidence of the importance of this not only from the Japanese investor perspective (in terms of diversification of risk as detailed above) but also from that of the recipient country. The importance of foreign investment to the development of financial markets has been documented in recent literature. Specifically benefits to firms within those markets, the overall development of those markets and important connections to foreign direct investment have been identified. Though there are clear benefits, there are also some drawbacks in the form of rapid withdrawal in crises. The next section will outline the literature in this area.

Several studies have made findings regarding foreign investment in particular firms and the findings are largely that it leads to firm outperformance though there are some exceptions. Looking at investment in emerging markets in general (Froot, O'Connell, & Seasholes, 2001) find that foreign investment into emerging markets has significant positive effects on equity returns. Using data from foreign institutional investment in Taiwan (Huang & Shiu, 2009) showed that foreign ownership links positively with stock outperformance even when controlling for firm size. In a study of 1,000 Indian firms, (Douma, George, &

Kabir, 2006) note that foreign institutional investment in India has overall positive effects on the firms they invest in but that foreign corporate ownership is more beneficial (links between FDI and FPI will be discussed below.)

These conclusions disagree with those of (Ivkovic & Weisenbenner, 2005) (where firms over weighted by locals outperform) noted above but there may be logical explanation. It is possible that this disconnect is caused by supply of capital factors: if there is not enough local capital to take advantage of attractive opportunities firms must look abroad. The implication here is that firms that take steps to overcome information asymmetry are willing to do so, and thus perhaps have attractive opportunities to make known. The firms that are not willing to do so in an environment where domestic capital is limited may not wish the additional scrutiny more open disclosure would entail. Related to this, (Brennan & Cao, 1997) found that publically released information is more useful for foreigners than locals. This has the corollary that if firms in less developed financial markets (with presumably weaker governance) seek out international investment they are incented to improve their own governance beyond that required in their local market.

More general studies have also shown some of the broader benefits of foreign portfolio investment. In a study of investing in the US, (Forbes, 2010) shows how portfolio inflows can mitigate a current account deficit. Clearly the US is highly developed market but the macro-economic math holds equally well in any market, emerging included. This particular finding is related to the discussion in Chapter 4.2 regarding Japanese hesitation to invest in markets with large trade

surpluses.

Several studies note attempt to identify the positive and negative effects of foreign investment. In perhaps an unsurprising conclusion given that more inflow of capital generally lowers the cost of it to firms, (Stulz, 1999) shows beneficial impacts on host countries' firms' cost of capital. More importantly this study addresses concerns regarding a potential negative impact of foreign investment in that foreigners may be quicker to flee markets in crises causing contagion. By analyzing the volatility of returns data (Stulz, 1999) finds no evidence of negative effects of contagion-type effects on the host markets. There is contrary evidence in this regard. Specifically looking at mutual fund investment in emerging markets, (Kaminsky, Lyons, & Schmukler, 2001) note the benefits of foreign flows (and the importance of mutual fund investments to these flows) but do find evidence of contagion-type effects during crises. Noting the cash positions of the funds being largely unchanged during crises, they conclude that the funds selling of securities is not due to strategy on the part of the funds but because of retail investors selling (aka redeeming) their investments. Though this notes a negative aspect to mutual fund investment in emerging markets it also gives an empirical example of how the retail investors control more where the money is invested than do the professional managers of the funds. This will be an important part of the justification for carrying out the methodology in Chapter 4.2 and is further discussed below in the literature review.

In their paper dating the integration of world markets (Bekaert, Harvey, & Lumsdaine, 2002) note the importance of foreign portfolio inflows to the

development of local financial markets. They make the point that in addition to the well-studied benefits to the investors in emerging markets in the form of diversification, there are also benefits to the emerging economies themselves in terms of growth. They use this to show how financial integration aids in this process. This relates directly to the efforts outlined above of Japan and ASEAN plus 3 to further integrate the financial markets in the region. The general benefits to an economy, rather than to the firms or markets themselves is an important point and related to the discussion on FDI below.

Symbiotic relationship between FPI and FDI

The benefits of inbound foreign direct investment have been detailed extensively in literature: (Findlay, 1978) introduced the idea of technology transfer from FDI contributing to growth in the host country, (Borensztein, De Gregorio, & Lee, 1998) document the importance to growth but note the host country's need to be able to absorb the incoming knowledge, (Noorbakhsh, Paloni, & Youssef, 2001) note that in addition to the obvious economic benefits the secondary benefits of technology and knowledge are also very important. (Kojima, 2000), using (Akamatsu, 1962) "Flying Geese Model" details how this applies to Japan and Asia. Empirical evidence of the benefits of FDI in Asia are outlined by (Bende-Nabende, Ford, & Slater, 2001), who identify in particular the human learning process aiding technology transfers.

There is evidence to show that the Asian experience of FDI has been materially different (for the better) in the area of technology transfer. (Petri, 2012)

found that Foreign Direct Investment flows within Asia were different that those outside Asia. He showed that unlike non-Asia, where investment tends to flow from technologically advanced countries to other technologically advanced countries, intra-Asian FDI also flows from high to medium technologically advanced countries. That is, the high technology countries are willing to allow knowledge transfer to countries with less high technology. This is analogous to Akamatsu's Flying Geese theory of economic advancement noted above.

The importance of FDI is not directly related to this study except that there is also recent evidence that a well-developed financial market is very much connected to the relative benefits of FDI. (Alfaro, Chanda, Kalemli-Ozacan, & Sayek, 2004) show that while FDI plays an important role in economic growth, it is greatly enhanced if local financial markets are developed and the benefits rendered negligible if they aren't. The intuitive logic of these findings is simple: if new ideas and technology are introduced into a country, the local population cannot take advantage without access to capital via a local financial market. These findings further highlight the importance of foreign portfolio investment into developing countries. The positive intra-Asian FDI examples noted above thus are thus tempered by developing Asia's lack of financial development.

Relating the research on home bias in regards to portfolio investment abroad with that on corporate finance and FDI, (Kho, Stulz, & Warnock, 2009) develop a model of an "optimal corporate ownership theory of home bias". They argue that agency problems between insiders and outside investors are proportional to the level of insider ownership. So in countries where governance

is poor, agency problems are high and so is the level of insider ownership of firms. Using logic developed by (Dahlquist, Pinkowitz, Stulz, & Williamson, 2003), they note an upper bound on foreign ownership determined by the level of insiders' holdings (insiders tend to hold and thus those shares are not available to buy). This limited amount of inventory to buy is further limited by what they call "domestic monitoring shareholders" who, because of local information advantages, tend to overweight these domestic stocks, which leads to a further reduction in inventory available to foreign investors. These domestic shareholders act as a monitor by their relatively close ties with the firm.

Previously, (Stulz, 2005) identified agency problems at the firm and country level as limiting factors for capital flows. These agency problems are worse when the governance frameworks (of both the country and firm) are weaker. This leads to the idea that the higher the level of these problems, the more important FDI is to that country when evaluating capital flows. (Kho, Stulz, & Warnock, 2009) take this further: while international investors are limited by stock inventory availability, foreign direct investors from countries with stronger governance regimes can act as monitors because they are limited by their own country's stricter rules. They argue that as the governance environment becomes better, the disadvantages of portfolio ownership decrease and both FDI decrease and FPI increase. This would seem to add to the idea of (Alfaro, Chanda, Kalemli-Ozacan, & Sayek, 2004) that FDI and FPI are related in the importance to a developing country.

While (Johnson, La Porta, Lopez-de-Silanes, & Shleifer, 2000) show

evidence that a weak corporate governance environment allows insiders to extract private benefits from their firms, there is an explanation. The idea that insider ownership can be beneficial comes from the relative lack of agency problems when insiders own their own firms. The higher the proportion of insider ownership of a firm, the more the interests of the insiders is aligned with those of the firm (Stulz, 2005). But (Kho, Stulz, & Warnock, 2009) find that in order to decrease bias towards a country, the insider-owned proportion must fall. So to attract foreign investment a country must improve corporate governance. This becomes an important theoretical justification for including measures of corporate governance in studies of foreign bias.

Research specifically on retail investors

Finally, it is important to outline some of the research on retail investors. As noted above big bang reforms were largely aimed at reforming the asset management industry in Japan to improve savings options for retail investors (Horiuchi, 2000) (Hoshi & Kashyap, 2001). Key differences in investment behavior were noted above by (Kim & Nofsinger, 2003) and (Ivkovic & Weisenbenner, 2005). It is necessary then to outline the some of the existing literature on how individual investors get information to make investment decisions.

The examination noted above of mutual funds investing in Emerging markets by (Kaminsky, Lyons, & Schmukler, 2001) identifies a key point in that retail investors of the funds hold a large amount of sway in to the aggregate

investment behavior of mutual funds. Studies of the determinants of mutual funds' investments have typically used aggregate holdings to evaluate bias. (Aggarwal, Klapper, & Wysocki, 2005) mitigate some of the retail influence by only including holdings of active mutual funds, which eliminates the cases of passive funds (where retail investors hold total control over the investments because the fund managers are restricted to indices stated in the prospectus.) But this only mitigates this issue somewhat: take for example the DIAM "Happy Clover" fund in Japan, an active fund. The manager is constricted on country choice (only securities from Australia, Canada, New Zealand, and Norway are allowed), security choice (only bonds, no equities), and quality (government related securities with a rating of at least double-A. Thus the presumably sophisticated fund manager has very little control over security selection and the presumably unsophisticated retail investor controls a lot. This necessitates an examination of the retail investors and how they make their decisions. A discussion of the literature regarding the advertising of mutual funds to retail investors is found below.

The literature on the advertising of mutual funds does not place the fund companies or the investors who buy them in very good light. Misleading content on behalf of the creators of the advertisements, pandering to perceived biases of the retail investor and evidence pointing to the relative unsophistication of a large proportion of the buyers of the funds has been identified. This echoes the findings of (Berkel, 2007), noted above, who found that retail investors exhibited stronger bias than professional investors.

Perhaps unsurprisingly there is evidence that fund advertising contains information misleading to investors. A study by (Cronqvist, 2003) on Swedish mutual fund advertisements resulted in three main findings relating to how it can mislead some investors. Regarding the types of advertisements he found that very few funds used "informative" advertisements, rather most used past-performance, which he considers to be "non-informative". The least knowledgeable investors were swayed most by the "non-informative" advertising (with word-of-mouth acting as reinforcement of such behavior). Further, the non-informative advertising leads less knowledgeable investors towards familiar (ie local) investment products (not necessarily a bad thing) and higher-fee products (not necessarily a good thing). Also, the specifically performance-based portion of the non-informative advertising leads less knowledgeable investors to choose "hot" sectors of the market.

Several studies have employed content analysis methodology to analyze the information content of mutual fund advertisements and have concluded that they are lacking. (Jones & Smythe, 2003) compare adverts from different eras and find that the information content has improved slightly in 2 decades, but that it is still insufficient. They also note the lack of investor sophistication, arguing that education is needed; this will be addressed below in the discussion of retail investor sophistication. (Huhmann & Bhattacharyya, 2005) analyze two years of magazine adverts and find that Mutual fund advertisements are designed to attract notice, but dissuade actual reading of them. They also find that the adverts are likely effective in this way and that regulatory action is needed to ensure less

misleading of retail investors. (Mullainathan & Schleifer, 2005) also find advertising to be important and specifically that the advertisers of the funds deliberately include information in the advertisements meant to highlight what investors already believe, regardless of the accuracy or pertinence. This last point has particular applicability to this study on foreign bias.

While not informative, mutual fund advertising seems to be effective. (Jain & Shuang, 2000) research the performance of funds before and after running advertisements. They found that the fund companies specifically chose funds with recent good performance (rather than consistent good performance) to highlight in ads. They demonstrated that these funds attracted more inflow of funds than funds that did not advertise. Though not studying advertising directly, (Barber, Odean, & Zheng, 2005) analyze fund flows over a period of 30 years show how higher or lower fees have little effect on mutual fund sales. They argue that effective fund advertising (and non-inclusion or de-emphasis of fee related information) is a key driver in the success of mutual fund sales. Investors are told what they want to hear.

As some of the works listed above (Huhmann & Bhattacharyya, 2005) for example, have argued for more regulation in the content of mutual fund advertisements, (Jones & Smythe, 2003) note one example of a strictly regulated form of advertising: the fund prospectus. These documents, registered with the financial authorities in each country, while not purely advertising, are nonetheless literature meant to convey information to investors. There is some evidence to suggest at least in the case of the US, a majority of investors make use of this

resource. While identifying the broad lack of investor knowledge about fees etc, (Alexander, Jones, & Nigro, 1998) note that 60% of US investors consult the prospectus. And in the case of Japan, the sellers of mutual funds are required to give a copy of the prospectus to investors before they finalize purchase of each fund (JITA).

Though it is assumed that the general information contained in the prospectuses to be factual, previous studies in different countries indicate that there may be bias in the prospectuses themselves. For example in the US, while the disclosure requirements are strict, there is broad discretion on the part of mutual fund companies on what constitutes pertinent information (Jones & Smythe, 2003). If we assume the motivations for Japanese Funds are the same as that for US mutual funds, then the way countries and regions are described in the prospectuses should be an indication of the biases that are believed to be held by the retail This relates to JIT companies designing prospectuses that are meant to entrench the biases that investors already have.

As noted above the relative sophistication of retail verses professional investors is an important factor in bias. If the retail buyers of the funds hold significant influence as to the geographical composition of the assets under management then the biases of the retail investors are of importance. The literature on mutual fund advertising suggests that they may be significant issues with this.

Several of the studies have identified lack of sophistication. (Capon, Fitzsimons, & Prince, 1996) found that though investors report using

non-performance variables to make investment decisions, there is just a small proportion of mutual fund investors that are highly knowledgeable. The remaining are quite naïve. Though one might assume that among the retail investors, the affluent would be more sophisticated is shown not necessarily to be the case by (Capon, Fitzsimons, & Weingarten, 1994). They identified four segments of affluent investors of mutual funds: ranking driven performance, active information/performance, advisor influenced/performance, and adviser influenced/service substance. They found that though these investors had higher knowledge of simple details regarding their investments (fees etc) they shared with less affluent investors the reliance on financial advisors for information. While making the argument for greater incentives to "nudge" investors towards more rational behavior, (Thaler & Sunstein, 2008) detail the problems of investors not acting in their own best interests. (Huhmann & Bhattacharyya, 2005) note this thinking from the other side: fund companies tend to not include useful information in their advertisements.

Summary of the review of literature

The big bang reforms shows how the Japanese government intended to use a reformed asset management sector to channel capital away from bank deposits and towards capital markets. This was intended to improve bank performance, corporate governance and enable better returns for savers. As it turned out, deposits remain approximately the same proportion of household assets as before the reforms. What has changed is the large increase in the

diversity of assets held, especially foreign assets.

There are two theoretical veins of finance that affect this diversification, Modern Portfolio Theory and Behavioral Economics. The normative rationale in Modern Portfolio Theory suggests that investors holding the widest possible selection of securities across the widest possible selection of countries will provide the best risk-adjusted return over the long term. While it is clear that portfolio diversification in general is beneficial, there are clear exceptions to this. The empirical literature provides several rational reasons for preferring certain countries to others. These include governance and legal protections, macroeconomic indicators such as growth and size and development of a country's financial market. Behavioral economics' positive response has been to identify less rational reasons to allocate investments, such as domestic and foreign bias. Specifically, there has been much focus on a "gravity model" to explain investment preferences. These models use size and distance to estimate holdings with distance having been broken down into geographic distance, cultural distance, etc. Empirical studies have found clear evidence of this, much of the distance component argued to be a form of information asymmetry. Common language, culture, and legal foundation have all been found to be significant contributors to bias, as has geographical proximity and strength of trade ties.

Japan's large amount of private savings and the above-mentioned empirical research on foreign bias suggests that Japan is a natural source of investment for countries in the Asia pacific region. In addition, Japan has played an active and official role in various multilateral efforts to develop financial

markets in the region in the wake of the Asian Financial Crisis. Yet Japanese investment in the region lags suggesting that some of the unique factors noted by (Bertaut & Kole, 2004) may be affecting this incongruence.

Chapter 3: Methodology

This chapter outlines the methodology used to evaluate the research questions noted in Chapter 1: Introduction to the study. In particular it will identify how each of the research questions relate to; and flow from; each other. For reference it is useful to restate the research questions here. The next section will give a brief overview of each question as a general perspective and then the three methodologies and data used will be explained in detail. Note that the research is conducted sequentially and that results from the first two questions are employed while attempting to answer Research Question 3. The methodology for all three questions are reported in this chapter, but as the research design from the introductory chapter outlines, the research for the first two tracts preceded the completion of the methodology used in the final tract.

A note on data and calculations.

This study uses holdings data from the Japan Investment Trust Association. As will be further discussed in the methodology for Research Question 1, the data from JIT does not make it clear of the composition of the holdings of the "other" category of assets, making it impossible to get an accurate measure for either total debt or total equity assets held. As such, the total foreign holdings data will be used to calculate foreign bias. In one sense this is undesirable because most other studies of portfolio holdings split the two asset categories. But close examination

of similar variables tested in previous studies and the variables tested in this study reveal that not only are the coefficients for debt and equity determinants of the same sign, they are typically quite close. For example in (Garcia-Herrero, Wooldridge, & Yang, 2009), equity and debt holdings have a correlation of 0.74 and in their most basic regression equation the distance coefficients of equity and debt holdings are -0.671 and -0.873 respectively.

The general perspective, research design and research questions

Once only available to those with accounts at securities companies in Japan, Investment Trusts are now also sold at every bank and post office. As of September 18, 2014, there were 1896 different funds available for purchase, though it's important to note that much like many other consumer productions, only a subset of these funds are available at each location. These funds range from the very broad, for example the Pimco Global Bond Fund, to the very specific, for example the Daiwa SB Investments North American Shale-Gas Related Companies Equity Fund. The collective holdings of the trusts amount to over JPY 93 trillion, including more than JPY 30 Trillion in foreign assets (JITA). Though this is much smaller than the holdings of US mutual funds, the world's largest, at USD 15 trillion (ICI) (more than 15 times the size of the Japanese trust holdings), the Japanese total is not an insignificant sum. The choice of funds is vast, the amount invested fairly large, and as research in the previous chapter detailed, investors don't necessarily make rational decisions as to where to invest.

The domestic bias phenomenon described in the Review of Literature has been shown to be clearly evident in Japanese foreign portfolio investment as a

whole, and data from the JITA confirms that this holds true for the subset of assets held by investment trust. Recent increases of foreign holding by the trusts have been noted by (Iwai, 2007) and examination of a time series chart of historical holdings seems to confirm this (Figure 4: Raw holdings of foreign assets from chapter 4) It would appear that this increase began around the same time as the Big Bang reforms were beginning to take effect and scholars at the time had expected this kind of result (Horiuchi, 2000). It is useful therefore, to empirically examine this shift and evaluate what effect, if any, the reforms had on it. The following research question will address this:

Research Question 1:

What effect did the Big Bang reforms have on domestic bias on the part of Japanese investment trusts?

1.1. Is there any difference in the composition of holdings of securities adjusted for the underlying price of assets before and after the big bang reforms?

1.2. Is there any difference in the relationship between underlying price and holdings of different categories of assets before and after the big bang reforms?

The determinants of overseas investment have been studied and research has focused information asymmetry as being a key driver of bias. As noted in the Review of Literature, the gravity model has been used to explain this

suggesting that geographic proximity, similar language and culture, trade ties and strong legal governance are all important factors for mitigating this information asymmetry and limiting bias to foreign portfolio investment. These models have yet to be applied to Japanese investment trust data and should be evaluated and examination of this will be detailed below in Research Question 3. But before detailing the approach to this, there is more in the literature that suggests deeper examination is needed.

There is evidence of Japan outbound foreign direct investment (FDI) being slightly different from the rest of the world (Petri, 2012) and others. In addition to the existing models of foreign portfolio investment (FPI), research has recognized that there are likely factors unique to individual pairs of countries that are not applicable to the broader set of countries (Bertaut & Kole, 2004). Therefore an attempt to identify factors unique to Japan is necessary. In addition both the literature (Garcia-Herrero, Wooldridge, & Yang, 2009) and a brief glance at the data (JITA) note a comparative paucity of Japanese investment in Asia (despite the gravity model literature theoretically suggesting this to be bountiful) and explanatory factors have yet to be fully explained. As this stem of the study is exploratory and will produce possible sources of bias not yet identified in the literature, it is useful to perform this in advance of the analysis of Question 3 so that these new factors can be added to the model.

To attempt to identify some of these important, yet unknown, factors, it is useful to revisit the mechanism of JIT investment. The details will be discussed in the section on Question 2 below, but basically though the fund managers

control the assets purchased in each fund, the retail investors decide which fund to buy. As a large proportion of funds have geographical constraints, this implies that these retail investors have tremendous influence over where the funds get allocated. It is useful then to look at information sources given to these retail investors. As retail investors are required to be given a prospectus before buying a fund, it is judged that these prospectuses are a potentially useful source of data.

The previously noted 1896 Japanese Investment Trusts (Funds) have different aims and hold different types of assets. Each Fund issues a prospectus that details (among other things) the investment strategies of the fund. This includes geographic information and descriptions of why these strategies should be advantageous for prospective investors. An analysis of these prospectuses was undertaken as an exploratory search for particular attributes attractive to Japanese investors.

The following research question and sub-questions will address this:

Research Question 2:

What does the content of prospectuses of Japanese Investment Trusts tell us about the preferences and biases of the buyers of these trusts?

In order to answer this question using a content analysis approach it is useful to split it into the following sections:

2.1 How often are the individual countries named relative to expectations based on the relative size of each of their financial markets?

2.2 What descriptive words are found in the titles of the funds?

2.2.1 How frequently are these words used in the bodies of the prospectuses?

2.2.2 How does the usage of these words differ when describing assets of Funds classified as Asian Funds?

2.2.3 How does the usage of these words differ when describing assets of Funds classified as Emerging Funds?

2.3 What does the relative frequency of the use of broad categories of these descriptors indicate about how the Funds perceive retail investor opinion about the importance of each category and how does it differ across regions?

Results from the first two approaches are then incorporated into the methods used in the final tract of the study, which attempts to empirically address the causes of bias. Analyzing the bias of the holdings of the investment trusts is first based upon models identified in the literature, specifically the gravity type models most recently updated by (Aggarwal, Kearney, & Lucey, 2012). But several findings from the first two research questions also bear investigation. The identification of the global financial crisis as a potential factor in foreign bias (from the results in Chapter 4.1) has been added. Also several factors identified in the analysis of the prospectuses (from the results in Chapter 5.2) appear to be potentially both important and unique factors to foreign bias on the part of Japanese investors. These include the destination country's natural resource endowments, levels of interest rates, level of technological advancement and reliance on exports. The following research question will address this:

Research Question 3:

What are the determinants of foreign bias on behalf of Japanese investors as represented by the collection holdings of Japanese investment trusts?

The question is split into the following separate parts to aid in the analysis:

3.1 What general inferences regarding bias can be made from examination of the basic time series plots of holdings in each of the individual countries?

3.2 What is the current situation of foreign bias as represented by the foreign holdings of Japanese investment trusts in 2014?

3.2.1 How much does the gravity model explain this bias in 2014?

3.2.2 How do the variables identified in the content analysis in Research Question 2 affect the model?

3.3 How well does the model predict foreign bias since 1992?

3.3.1 How well does the model predict foreign bias in the three time periods identified in the results of Research Question 1?

<u>The research context</u>

This study is focused on the investment holdings of Japanese investment trusts (JITs) in the time period between December 1992 and December 2014. These funds are a subset of Japanese investors and as will be outlined below in the section on Research Question 2 are viewed as being more representative of retail (ie unsophisticated) investors as opposed to institutional (sophisticated)

investors. Three distinct periods are evaluated, the period before March 2001 when the Big Bang reforms were completed, from then until the onset of the global financial crisis in August 2008, and thereafter until the end of 2014.

Methods for Research Question 1

How did the composition of assets under management change after the Big Bang reforms in terms of domestic bias?

1.1. Is there any difference in the composition of holdings of securities adjusted for the underlying price of assets before and after the big bang reforms?

The simplest way to observe the domestic bias of the JITS is to examine a time series of the proportion of assets held in foreign currency. But this is an incomplete analysis because it does not take into account price movements of the underlying securities. Japan is somewhat unique in that there has been a lengthy period of decline in the value of stocks since the peak in 1989 (Nikkei) whereas global stocks have increased roughly 5-fold (MSCI). If no changes are made to a hypothetical portfolio of foreign stocks and Japanese stocks held by investment trusts during this period, as the value of the foreign stocks increased and the value of Japanese stocks decreased, the proportion of foreign assets under management will rise despite no additional funds being invested. Therefore a further examination is necessary.

Much of the previous research in this field focuses principally on total assets under management of the JITs. Iwai (2007) took an additional step and split the total JPY holdings and total foreign currency holdings but there are weaknesses to making conclusions based on this basic data. The price of the

underlying assets owned by the funds change at different rates and can affect assets under management (AUM) significantly, leading to misinterpretation. For example if there is 1 trillion yen invested in generic Japanese equities at the end of December and 0.99 trillion yen at the end of January, it looks like AUM have decreased by 10 billion yen. But what if the Japanese stock market had a particularly bad month and the average price of those assets fell by 3% in that time? If no new investors had purchased Funds and no current owners of Funds had sold, then the original 1 trillion yen would have fallen to 0.97 trillion yen. If the total AUM at the end of January was 0.99 trillion yen this actually indicates a net inflow into that particular category of JIT assets. This phenomenon exists in all of the asset classes, and is correctable to a degree, but some of the asset classes are easier to correct for than others.

Monthly time series data of the holdings of Japanese Investment trusts from December 1992 through December 2014 is used. The Japanese Investment Trust Association provides the most recent ten-year period on its website[3] and older data can be accessed through their annual print reports (which have been unfortunately discontinued leading to a small gap in the data for holdings in small countries which will be discussed in the methodology for Question 3). December 1992 as a start date is somewhat arbitrary, but it provides sufficient data from before the first policy change in December 1998 (72 observations) to use time series analysis and as will be clear from the time series graphs, a reasonable starting point.

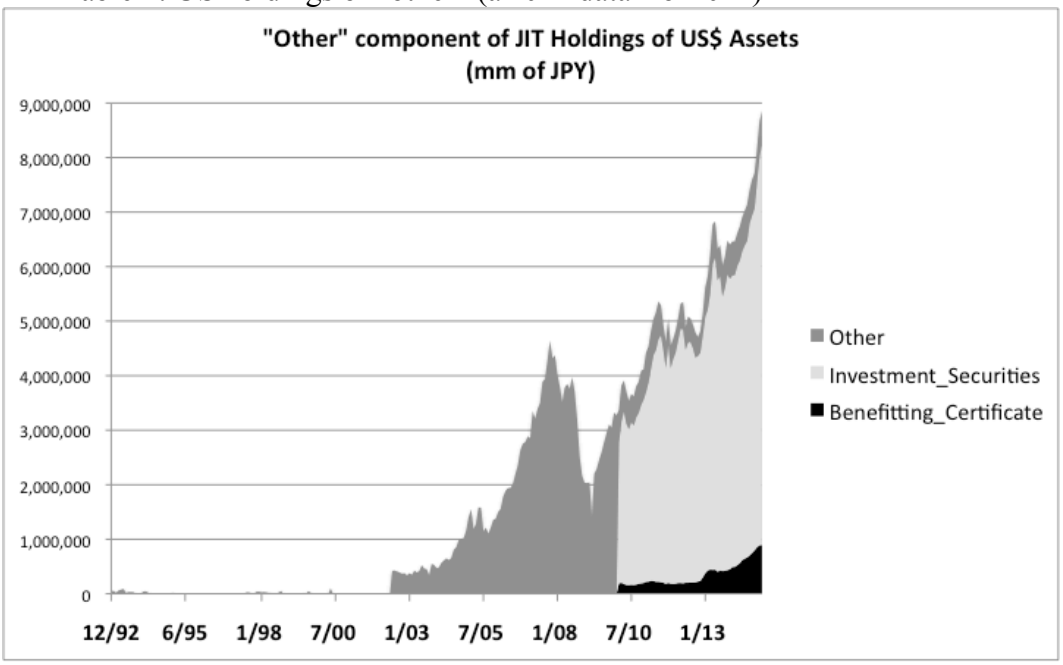
[3] http://www.toushin.or.jp/statistics/statistics/data/

The Japanese Investment Trust Association data categorizes assets under management into several sub-categories. Stocks and bonds have been categories since the beginning of our data but additional categories have been added over time. Initially, to remain consistent through each time series all of the non-stock, non-bond assets are considered as a single separate category, "other". So in addition to "total assets" under management, eight other time series from the JITA data are observed. First the total is split up into "total JPY" and "total foreign" assets. Then each of those two are split into "JPY stocks", "JPY bonds", "JPY other", "foreign stocks", "foreign bonds" and "foreign other".

It is important to note here that though the "other" categories were once quite small, they have grown considerably. Indeed if total Japanese domestic and foreign holdings are aggregated into 3 categories of equities, bonds and "other", the latter category actually represents the largest group of assets currently held by the JITs. For example in 2002 "other" represented less than 10% of the JIT-owned assets in the US, but by 2010 that had grown to 36%. In 2010, two new categories, "Investment Security" and "Benefiting Certificate" were added (these are the English translations of the original Japanese provided by the JITA). Though not noted explicitly on its data page by the JITA, the Tokyo Stock Exchange lists the Japanese word for "Investment Security" as part of its explanation of Exchange Traded Notes (TSE, 2015). Similarily Daiwa Securities lists "Benefiting Certificate" as part of its explanation of Exchange Traded Funds (Daiwa Sec, 2015). This is consistent with the recent rapid growth of these types of assets in the market (Ergungor, 2012).

There is evidence to show that in the case of foreign assets, the “other” category before 2010 can be assumed to be ETFs and ETNs. ETFs and ETNs were created in the US and have grown rapidly there (and spread to other countries). To examine this data issue it is then useful to look specifically at US holdings of the JITs in the “other”, “Investment Security” and “Benefitting Certificate”. As the explicitly noted “other” category fell from JPY 3.2 Trillion in January 2010 to JPY 600 Billion in February, the newly added “investment security” debuted at JPY 2.6 Trillion (“Benefitting Security” at about 10% of that and this level to “Investment Security” will remain fairly steady through the end of this study’s time frame). It seems reasonable that before 2010, the “other” was also largely ETFs/ETNs and becomes important for analysis because if equity ETNs are held instead of Stocks, it will have the effect of making the Equity portion of assets held look artificially low. Table 1: US holdings of "other", below, shows the time series of holdings for US “Other”, US “Investment Securities” and US “Benefitting certificates”. This is fairly clear evidence that the two new categories made up most of the former “other” category. As most of the assets held by ETFs and ETNs are in equities (Ergungor, 2012), in the case of foreign assets, “other”, “Investment Securities”, and “Benefiting Certificates” will all be considered to be part of the equity category.

Table 1: US holdings of "other" (all JIT data from JIT)



Similarly the two new categories can be obtained for JPY by subtracting the foreign amounts from the total amount. But the JPY "other" category seems to be more complicated that the foreign "other" category. The JPY "other" totals were a high proportion of total assets under management even before ETFs and ETNs became popular in the early 2000s (Ergungor, 2012) suggesting that in this case we cannot assume that the assets are all equity. As this study is primarily interested in the study of domestic and foreign bias, it is less necessary to attempt to break down the total of holdings of Japanese assets into precise categories. Analysis will be done on the JPY equity portion but commentary will be added to reflect this potentially confounding factor.

As described above, it is desirable to adjust the time series of assets held to reflect their underlying price movements. This is possible to varying degrees of

accuracy, but will be attempted in each asset class. The simplest category to correct for asset price movements is the domestic equity category. The Topix index is a market capitalization index of all the stocks listed on the first section of the Tokyo Stock Exchange. As such, it "is a measure of the overall trend in the stock market, and is used as a benchmark for investment in Japan stocks" (JPX) and no currency adjustments are needed. Similarly, domestic bonds need no currency adjustments but price movements are slightly more difficult depending on the term of debt owned by the funds. To approximate the ongoing value of a portfolio of Japanese bonds a total return index is constructed by taking the monthly auction results of the Japanese 10-year government bond[4]. Data for the Topix index was obtained from the Japan Exchange Group and the bond auction results from the Bank of Japan. As the composition of Japan "other" is not known, no corrections were made.

Foreign assets are more complicated to correct for as JITs have invested in 48 different currencies by the end of the time series (all JIT data from JITA). As an approximation of the underlying asset value in terms of Japanese Yen, all foreign assets are adjusted by the nominal effective exchange rate used by the Bank of Japan. This is a trade-weighted measure and a better approximation than using simple bilateral exchange rates (BOJ, 2015).

Correcting for asset price levels is more complicated still. Though there is evidence that global stock market movement is becoming more and more

[4] This is arbitrary as the average duration of a portfolio of bonds is probably closer to 7 years. But with 10-year data going back to the beginning of the tested time series and 5-year data not, a judgment call was made. It is assumed that this will still give a reasonable approximation of the value of a portfolio of bonds.

correlated (Quinn & Voth, 2008), the author recognizes that choosing any one index to approximate for price is only an estimate. In order to match best with the all components aspect of the Topix noted above and retain symmetry with the bond price adjustments[5], the NYSE "Big Board" index of all US companies is used to approximate global equity levels. Although there is a well-known bond index (Citi World Government Bond Index) to approximate for asset value, in order to remain consistent with the approach to "JPY bonds", we construct a similar index for US bonds using monthly closing yields for 10-year US Treasury bonds. So the five additional categories are titled "adjusted JPY stocks", "adjusted JPY bonds", "adjusted foreign stocks", "adjusted foreign bonds" and "adjusted foreign other" (including "adjusted foreign stocks").

Time series analysis on the series was done to analyze any effect on the asset classes that might be attributable to the Big Bang reforms. A Chow test (Chow, 1960), was employed to evaluate whether there is a statistically significant break at the pegged end of the reforms. The Chow test determines if the coefficients of a time series are significantly different before and after a particular date. This study will use the March 2001 date as the end of the reforms as noted by (Hoshi & Kashyap, Corporate Financing and Governance In Japan, 2001). The null hypothesis being that there is no structural break of each of the time series at that time. A regression with robust standard errors testing the dependent variables

[5] A global stock index such as the MCSI may be preferable to using a US index, but in an effort to retain consistency with the JPY bond correction of a 10-year yield index, a US index seems most appropriate. If US bonds are used then for consistency it is judged that using a US equity index is also preferable.

(logged values of the 4 categories of assets adjusted for price) against the independent variable, time, was obtained in Stata to obtain the following equation:

$$Assets_t = alpha_0 + xTime_t + e_t$$

Where,

- Assets is the natural log of the adjusted holdings for Japanese equities, Japanese bonds, foreign equities (incuding "other), and foreign bonds at time t.
- Alpha is the intercept at time zero
- X is the coefficient of Time at t = 0
- e is the error term.

Then to test for a break using the Chow test the following model was run:

$$Assets_t = alpha_0 + xTime_t + \delta\, d_t + \gamma\, d_t\, x_t + e$$

Where,

- Assets is the natural log of the adjusted holdings for Japanese equities, Japanese bonds, foreign equities (incuding "other), and foreign bonds at time t.
- Alpha is the intercept at time zero
- X is the coefficient of Time at t = 0
- d_t is the dummy variable = 1 pre break date and 0 post break date
- δ is the change in the intercept
- γ is the change in the slope

- e is the error term.

Null hypothesis is that both δ and $\gamma = 0$

The Stata function TEST was then used to obtain the Chow test results (a wald test of goodness of fit to compare the coefficients).[6]

The choice of date to pinpoint effects of the reform is somewhat arbitrary and some discussion is needed. The big bang reforms were not like the elimination of a tax, where until a certain day everybody paid it and after a certain day nobody did. As detailed in Chapter 2 the main reforms to the sector were an increase in investor protection (to prevent churning), an increase in firms (including foreign) being able to manage the funds and an increase in the places where the funds could be sold. Such reform takes time to plan and implement on the part of the firms affected. Further time is needed for customers to react to new opportunities and any improvements in investors being treated more fairly. Given the complex nature of both the reforms and the products that the industry sells, it is quite possible that the effect of the reforms might take time and also affect some asset classes faster than others.

It is also important to note that this test is not sufficient to determine causation of the reforms to structural breaks in time series, but will allow for discussion based on the existence or absence of a structural break in each of the asset classes. The goal of this step of the study is to determine not only if the reforms had any effects but also how the breakdown of assets has evolved.

[6] Specifically the syntax noted by Professor Bruce E. Hanson, the Trygve Haavelmo Professor of Economics at the University of Wisconsin on his website was used (http://www.ssc.wisc.edu/~bhansen/390/390Lecture20.pdf).

Specifically it aims to evaluate how the domestic bias exhibited by the collective holdings of the trusts has changed. As one of the main goals of the reforms was to increase assets in the sector, the expectation is that the adjusted time series will all have a significant break in slope upwards post reform. Looking at the basic charts it appears that Japanese assets declined after the reforms but this may be due to underlying price declines.

Obviously any attempts at adjusting the assets to underlying price levels is an impossible task without the knowledge of the exact positions held of each security for each of the 1896 funds. As this is impossible an examination of the holdings in separate currencies becomes more useful and will be attempted in answering Research Question 3.

1.2. Is there any difference in the relationship between underlying price and holdings of different categories of assets before and after the big bang reforms?

A different way of looking at the same data is instead of analyzing the relationship over time; analyze the relationship between the unadjusted holdings and the underlying asset prices. This is useful in two ways, first to confirm the appropriateness of the estimators of the underlying prices, second to analyze if there are significant changes in the relationships before and after the reforms. If the estimators of the prices of the underlying assets were poor choices, this will be evident in a lack of relationship between holdings and the underlying prices. If

there is a strong relationship, then this will indicate that the estimators are suitable.

One of the goals of the big bang reforms was to reduce the agency problems in the trading behavior of the trusts. Recall that there was evidence that the trusts A) supported member firms in need, irrespective of investment prospects and B) unnecessarily churned the holdings under management to generate profits for the parent securities company. Both of these behaviors should result in a less clear relationship between assets and underlying prices. If the reforms had any effect in reducing agency problem related trading behavior, then the relationship between holdings and price should become more clear post reform. In addition, in the evaluation of the trusts holdings of foreign assets in terms of domestic bias, the heavy domestic bias observed before the reforms should also be reflected in the relationship between foreign assets and the underlying price.

The scatter plots of each of the 5 unadjusted categories (the equity category without "other" is added to test how appropriate it was to include the "other" in the analysis above) suggest that there are exponential relationships here as well and so the natural log of each series is used. The analysis will be disussed in Chapter 5.1, but it became very clear that there are three linear relatioships in each of the charts, pre-big bang, post-big bang pre global financial crisis, and post financial crisis. As this may be directly related to the discussion of foreign bias in Research Question 3, this second break point will also be evaluated. Similar to the

analysis of the adjusted holdings over time, a chow test will be employed to see if there are structural changes in each of the series. The models are as follows:

$Assets_t = alpha_0 + xPrice_t + e_t$
Where,

- Assets is the natural log of the unadjusted holdings for Japanese equities, Japanese bonds, foreign equities (excluding "other"), foreign equities (incuding "other), and foreign bonds at time t.
- Alpha is the intercept at time zero
- X is the coefficient of Price at t = 0, Price is the price level of each of the chosen estimators of asset value as detailed above,
- E is the error term.

Then to test for a break using the Chow test the following model:

$Assets_t = alpha_0 + xPrice_t + \delta\ d_t + \gamma\ d_t\ x_t + e$

Where,

- Assets is the natural log of the adjusted holdings for Japanese equities, Japanese bonds, foreign equities (incuding "other), and foreign bonds at time t.
- Alpha is the intercept at time zero
- X is the coefficient of Time at t = 0
- d_t is the dummy variable = 1 pre break date and 0 post break date
- δ is the change in the intercept
- γ is the change in the slope

- E is the error term.

Null hypothesis is that both δ and $\gamma = 0$

The expectations for this stage of the analysis is as follows: It is expected that each of the series will become more linear post the big bang for the reasons detailed above. In addition to this increased linearity, it is expected that a more typical trading pattern will be observed post reforms in that an increase in the price of the underlying assets will attract more holdings and a decrease will attract fewer. The reasons for this expectation are the increased competition for funds post big bang both in regards to number of funds available and a wider asset mix available in addition to the reduction of churning-type trading behavior. This should result in a steeper slope of each of the regression equations post reform. It is also expected that the scatter plot for the total of foreign equity and "other" will be more linear than just foreign equity alone to reflect the previously described shift from holding individual stocks to holding ETFs/ETNs.

Methods for question 2

What does the content of prospectuses of Japanese Investment Trusts tell us about the preferences and biases of the buyers of these trusts?

Introduction

Though information asymmetry, in the form of structural, governance, geography, language and culture have been identified as leading explanations of domestic and foreign bias on a multilateral level, (Bertaut & Kole, 2004) and (Berkel, 2007) identified that there are likely factors which affect investment between two countries that are not pertinent to the overall picture. A simple hypothetical example would be if there were two countries, close in distance, with a shared language and culture that were at war. This would potentially affect investment between those two countries much more than others. A different explanation could be that there may be unique hedging opportunities on behalf of some countries but not others. For example, investors from a country with very few natural resources may wish to allocate a higher proportion of their portfolio to countries that have an abundance of natural resources. In order to identify such characteristics for Japanese investors it is useful to examine the information presented to them before they make a purchase decision.

In order to evaluate potential biases, it is important to evaluate the decision process in which the geographical choice of assets is made. There are many different types of Japanese investment trust funds (Funds). Each Fund has a set of guidelines that the Fund must adhere to when managers of those Funds

make investment decisions. Some of these guidelines can be quite restrictive: for example BNP Paribas has a Fund called the "AAA Sovereign Fund" where all of the holdings must be bonds guaranteed by a sovereign nation with a credit rating of AAA (BNP Paribas). As of January 2015 this would limit the managers of that fund to government bonds of just 12 countries. The guidelines can also be very broad, for example DIAM has a fund called "DIAM Emerging Bond Fund" where the Fund manager can buy bonds from any country deemed to be "emerging" (DIAM).

This results in two key factors that influence funds investing in certain counties, first is the decision by an individual retail customer to purchase a particular fund, second is the decision of the managers of that fund regarding where to invest the money received from all of its individual retail customers (but only within the guidelines of that fund). In order to determine how much influence these retail customers have over the geographical aspect of fund allocation it is necessary to examine further how many of the funds (representing how much of the total assets) have such geographical restrictions.

It should be noted that there is a third influencing factor on geography, product availability. The retail customers of each fund are limited to buying (and the managers are limited to managing) only those funds made available for sale. The potential for bias on behalf of the Funds will be discussed below, but for the purpose of this study, it is assumed that there are no significant differences in the availability of different countries' assets.

Of the 1896 funds in Japan as of September 18, 2014, 722 had some

explicit geographical description in the title of the fund as opposed to 1174 that had no geographical description (JITA) (Author's calculation). Though this represents less than two fifths of the total funds, these 722 funds were on average, much larger than the non-geographic restricted funds and represented almost two-thirds of the total assets under management (JPY16.6 trillion out of a total of JPY25.1 trillion) (JITA) (Author's Calculation). Further, this simple analysis does not include funds that have no explicit geographical descriptions in their title, yet still actually have geographical restrictions. For example the DIAM "High Income Open Fund", with no trace of geography in its title, is restricted to invest in just 4 countries (Norway, Canada, Australia and New Zealand) (DIAM). So clearly a very large proportion of the funds available for the collective managers to invest has some kind of geographical restrictions attached. Thus in Japan, the retail investors who control the decision of which funds to buy, have significant influence on where their money gets invested. This necessitates an examination of how these retail investors gather information about the funds they choose to buy.

Importance of the prospectus

Each separate fund in Japan is required to have a prospectus and this is required to be shown to investors before consummating purchase. The prospectus is required to contain (in strict order) 4 categories of information: fund objectives and unique features, investment risks, historical performance of the fund, and details of fees, taxes, and payments to the investor. Explicitly noted by the Investment Trust Association, Japan, the self-regulatory organization in charge of protecting investors, is that this structure is intended to be uniform to make easier

comparisons of different funds (JITA). Of particular interest to factors of foreign bias when choosing funds is any description of a geographical or national attribute nature.

Data gather

Data capture for the prospectuses commenced on September 18, 2014. At the time there were a total of 1896 Funds categorized by the Japanese Investment Trust Association (JITA) as investing in "foreign assets". The list of funds was obtained from the JITA website and a search for the prospectus for each commenced and was completed by November 30, 2014. The search involved going to the website of each of the 56 fund companies finding and downloading the prospectus for each of the funds. Some of the companies have many funds some very few. Nomura Asset Management is the largest of the companies and offers 248 different funds, Franklin Templeton Investments offers just 1. Through this process a total of 1867 funds' prospectuses was obtained representing 98.4% of all of the funds. Some of the fund companies had obvious pages dedicated to fund information (Nomura), others were less clear and the prospectuses harder to obtain.

Assumptions in this content analysis.

It is assumed that any descriptions listed in the prospectuses are positive, and any specific inclusion of a country or region is also positive. Though there are clearly unappealing countries for investment, such as countries in financial distress or countries with political instability, it is assumed that these countries

would be excluded from any targeted investment.

Specific Content Analysis Methodology

According to (Krippendorff, 2013) there are three points of entry into content analysis, text driven, problem driven and method driven. This examination of prospectuses of Japanese Investment Trusts is a problem driven analysis. A systematic reading of the words used to describe investment in different countries is used to glean information about the preferences of investors in those countries. He notes three criteria for forming research questions: to make abductive inferences from texts to outside phenomena, that the questions have several possible answers, and the results are testable using other means.

This study aims to make the following abductive inferences from analysis of the prospectuses:

- A country is named more (less) frequently in prospectuses than its relative market size would indicate suggests foreign bias towards (against) this country by the fund companies
- A country's allocation of Fund investment should be proportional to its frequency of mention in the prospectuses. If it attracts proportionately less investment than would be expected given its frequency of mention, then this may suggest bias on behalf of the retail investors.
- Attributes described in the titles of funds are important to Japanese retail investors and the frequency to which these attributes are used is indicative of their importance.
- Differences in the way funds in different geographic and economic

categories are described using these attributes is indicative of bias (perceived by the fund companies) by the retail investors of the funds.

By answering the following research questions:

2.1 How often are the individual countries named relative to expectations based on the relative size of each of their financial markets?

2.2 What descriptive words are found in the titles of the funds?

2.2.1 How frequently are these words used in the bodies of the prospectuses?

2.2.2 How does the usage of these words differ when describing assets of Funds classified as Asian Funds?

2.2.3 How does the usage of these words differ when describing assets of Funds classified as Emerging Funds?

2.3 What does the relative frequency of the use of broad categories of these descriptors indicate about how the Funds perceive retail investor opinion about the importance of each category and how does it differ across regions?

The questions were designed to fulfill the further requirements of (Krippendorff, 2013) in that each of these questions has several possible answers and the answers can be tested using other means. For the first question, this is achieved by comparing the results to both the market size of each country and the JIT holdings in each country. For the remaining the answers will provide additional variables to add to the regression models developed in the next section

while evaluating Research Question 3.

2.1 How often are the individual countries named relative to expectations based on the relative size of each of their financial markets and the amount of assets held by the trusts?

This question is evaluated from two sides, the writers of the prospectuses and the readers of the prospectuses. The writers of the prospectuses, representing the professional investors will be evaluated based on the relative market sizes of each of the countries. As the diversification theories outline in Chapter 2 reveal, a rational investor will allocate investments roughly according to market size of each country. The readers of the prospectuses, representing the retail investors, will be evaluated based on what they chose to do based on the mentions in the prospectuses. It is assumed that a country mentioned more frequently in the prospectuses will attract more investment that a country mentioned less frequently.

To evaluate the question of what evidence of bias is there in the relative frequency of countries named in prospectuses of Japanese Funds, recall (Jones & Smythe, 2003) and (Mullainathan & Schleifer, 2005) above that retail investors biases are different from professional investors and that Fund companies may pander to the biases of their retail customers. It is useful then, to examine the frequency of names of countries in the prospectuses. Given that the Funds have a large amount of discretion regarding the content of the fund objectives and unique features sections of the prospectus, it is assumed that countries mentioned

frequently are judged to be attractive to investors by the fund companies themselves. This frequency of mention can be analyzed in two ways, from the perspective of the writer (the intended effect) and the reader (the resulting effect).

From the perspective of the writer, the Fund company, the prospectus is a means to communicate information about the products they are selling. If we assume investor rationality on the part of both the fund companies and the buyers of the funds, the frequency of countries mentioned should be proportional to the size of their financial markets. If the frequency of mention of a country is significantly different than to be expected compared to its relative market size, then this indicates some evidence of "mention" bias on the part of the fund company.

There are several possible factors that could explain this mention bias. First, as noted above, the fund companies are likely to pander to investors' views. If they have the opinion that Japanese investors are especially attracted to British assets, then they are likely to refer to Britain (or the UK or England) more frequently in their prospectuses. Though there is evidence that professional investors (which would include the fund companies) exhibit less bias than retail investors (Kamesaka, Nofsinger, & Kawakita, 2003), there could still be some bias on the part of the funds, which would be reflected in using a country's name more or less frequently than its proportional market size.

Finally, it should be noted that the mention bias could be caused because of some reason that the funds want to sell assets from a particular country, if there was a higher profit margin on assets of that country for example. While

this is plausible for certain firms in the industry, for example if a Canadian fund company has a cost advantage transacting in Canadian equities, it seems unlikely that the profit margins would be higher for all of the fund companies in a certain country. Relating to the discussion of information asymmetry in the literature review, a country mentioned less frequently could also be due to the funds thinking less is needed to be described about countries that are already well known and more is needed about countries that little is known.

From the prospective of the readers of the prospectuses, an observation of the result of the frequency of country mentions can be observed. Again assuming investor rationality, a country mentioned comparatively more often should attract comparatively more investment. So if a country is mentioned frequently in the prospectuses but attracts relatively little aggregate Funds investment, then this may be evidence of bias on behalf of the retail investors (over an above that of the funds). Again, the caveats noted above regarding other explanations should also be echoed here.

To evaluate any bias in this regard two regression models are built. First relating country counts and size of market. This is used to evaluate bias on behalf of the fund companies. Second, relating country counts and current holdings. This is used to evaluate bias on behalf of the retail investors. In each case an examination of the residuals resulting from the regression models for each country will be examined. To achieve linearity, the natural logs of the variables are used.

The models then are as follows:

$CC_i = \beta_0 + \beta_1 * MC_i + \varepsilon_i$

Where,

i = country 1 to 45

CC = the dependent variable, is the country count of country i in the prospectuses

MC = the independent variable, is the market capitalization of listed companies in country i

β_0 = the intercept

β_1 = the coefficient of the independent variable

ε_i = the residual of the count of country i

$CC_i = \beta_0 + \beta_1 * FA_i + \varepsilon_i$

Where,

i = country 1 to 45

CC = the dependent variable, is the country count of country i in the prospectuses

MC = the independent variable, is the total of the Funds' allocation to country i

β_0 = the intercept

β_1 = the coefficient of the independent variable

ε_i = the residual of the count of country i

Of particular interest at this stage of the study is in the identification of

potential biases that are significantly different between the retail and professional investors. Biases that can be attributed to retail investors but not professional investors may give policy makers and private firms ideas of opportunities to make the portfolio choices of retail customers more efficient. That is they may be able to identify areas where retail investors hold views that prevent them from having a balanced portfolio in terms of risk-adjusted return (as discussed in the literature review).

2.2 What descriptive words are found in the titles of the funds?

Sampling and coding

To answer the second two of the three research questions in this section a discussion of coding and in particular the challenges of coding in the Japanese language is necessary. Japanese text presents a problem for test-driven content analysis that English text does not: spaces between words or tokenization. Because of the large number of pdf files and sheer volume of text in the prospectuses, converting each of the files to separate words is judged to be too cumbersome for this analysis. So a sample, in the form of the titles of the funds, will be used to identify the specific words to search for.

In order to verify that the words in the funds' titles are a suitable sample from which to make larger inferences a simple correlation analysis was done. A count of each time a country is noted in the title of a fund was taken. Table 2: Country counts in name titles shows that 25 countries were mentioned a total of

914 times. The US was the most frequently mentioned country at 283 times. Qatar, Singapore and Malaysia were only mentioned once each. This list is compared with the amount of assets in each of the countries held by the JITs. JITs held JPY 16.6 Trillion in US assets at the end of 2014 and this represents 51.9% of the total of foreign assets. The correlation between the two lists is 0.86, which is judged to be sufficient to place value in the word content of the titles of the funds.

Table 2: Country counts in name titles of funds

	Title Mentions	Proportion of total JIT foreign assets		Title Mentions	Proportion of total JIT foreign assets
US	283	51.9%	Canada	12	4.1%
Brazil	113	3.9%	HK	9	1.5%
China	96	0.1%	Korea	9	0.3%
Euro	90	8.4%	UK	6	4.4%
India	77	0.9%	Switzerland	5	0.7%
Mexico	36	1.0%	Taiwan	4	0.3%
Turkey	34	0.5%	Viet Nam	4	0.1%
Australia	33	12.0%	Philippines	3	0.1%
Indonesia	30	0.8%	UAE	3	0.0%
South Africa	17	0.4%	Qatar	1	0.0%
Thailand	16	0.3%	Singapore	1	0.8%
New Zealand	16	1.7%	Malaysia	1	0.3%
Russia	15	0.1%			

To obtain a set of words and phrases easily replicable by other researchers, each of the one thousand eight hundred and ninety six funds' descriptive titles were manually analyzed for any words or phrases that might be useful for further analysis. Future coders wishing to replicate this analysis would require the following skills: Japanese and English language ability, and the skill to determine the difference between words used to describe attributes of the assets of the funds and the mechanics of the funds.

For example, the Japanese fund title ***"野村 PIMCO 新興国インフラ***

関連債券投信(資源国通貨コース)毎月分配型", translates to ***"Nomura PIMCO Emerging Countries Infrastructure-related Bond Fund (resource-rich country currency course) monthly distribution"***. The following words or phrases need to be excluded: "Nomura" and "PIMCO" are fund companies (the fund is a joint venture where PIMCO manages the assets but Nomura sells the funds), "Bond Fund" is describing the type of securities, and "monthly distribution" describes how often the fund pays out to holders. None of these words are applicable for this study. This leaves "Emerging Countries Infrastructure-related (resource-rich currency course)". In order to cast as wide a net as possible in the word search, this is reduced to its most basic elements: "emerging", "infrastructure", and "resource".

The Investment Trust Association, Japan, separates the funds into two broad categories, stocks and bonds. This is an important distinction because each of these assets is likely to be described differently. It is presumed that an equity fund will be more likely to describe the attributes of the equities that the fund aims to buy first and the region that these equities are located second. Conversely, though there are corporate bonds and corporate bond funds, the vast majority of the bond market is the segment of sovereign bonds where the assets being described are presumed to be more likely the countries themselves.

2.2.1 How frequently are these words used in the bodies of the prospectuses?

2.2.2 How does the usage of these words differ when describing assets of

Funds classified as Asian Funds?

2.2.3 How does the usage of these words differ when describing assets of Funds classified as Emerging Funds?

To answer the question of what attributes appear to be important to Japanese investors, a word frequency query was done using the NVivo software program on each of the 52 words or phrases identified in the analysis of the titles. The object of this was to both identify what words or phrases appear very frequently and what may be simply one-offs, and may not be of interest to the next stage of the study. As this stage of the study is classified as exploratory, the results are subjective, but identifying words, phrases or themes from them, may provide useful input for the data analysis in the third methodological approach.

Two specific groups were targeted for a detailed analysis of each of the words or phrases, Emerging and Asia. Emerging is of interest because of the clear developmental segmentation of the countries in or out of the category. As shown in the review of literature, foreign capital plays an important role in the development of financial markets and clues to how to attract investment are potentially useful. While the inclusion in this category is subjective (the companies alone decide what category each fund is), it is assumed to be relatively indicative of the types of countries in need of attracting capital. Asia was included because of the noted lack of Japanese (and other intra-Asian) investment in the region in the literature (Garcia-Herrero, Wooldridge, & Yang, 2009) and the official role the Japanese government has taken in trying to rectify some of the

causes of the Asian Financial Crisis.

2.3 What does the relative frequency of the use of broad categories of these descriptors indicate about how the Funds perceive retail investor opinion about the importance of each category and how does it differ across regions?

During the coding process of the titles it became clear that many of these words and phrases were related ("growth" and "growing", "ore" and "resources" for example, so categorization is deemed to be useful. As noted above, an important step in performing a content analysis is the ability to test the results using another method (Krippendorff, 2013). As such, the categorization process is very important so the resulting list of 52 words or phrases was then divided into ten categories thought to be testable as potential independent variables in the next (regression) phase of the study: natural resource related, industry, technology, environmental attributes, risk, risk-control, income, japan-related, inflation and "BRICs". This final group of 52 attributes in 10 categories represents the starting point for analysis of the bodies of the Funds' prospectuses.

The 10 groups were chosen on the basis of becoming testable variables in the next stage of the study, preferable variables in an easily accessible data set such as the World Bank database. The categories "Resources", "Industry", "Science and Technology", "Environment", "Inflation-related" all have reasonable datasets kept by the World Bank to test in a regression. "Japan links"

can be tested using Japan outbound FDI available from the Japan External Trade Organization. BRICs is a simple geographic category, testable using a dummy variable. “Income related” can be tested using interest rates (for bonds) and country dividend yields (for stocks). This leaves two somewhat more complicated groups: “Risk on” and “Risk off”.

The Fitch credit ratings agency provides sovereign credit ratings, but this may be too simple given that the words used in the “Risk on” categories related to “Growth”, “Future”, “Emerging” etc. seem to relate more to potential rewards than risk itself. Thus, though this country risk measure may be useful for testing the “Risk off” variables (along with credit ratings), “Risk on” could be proxied by inflation and GDP growth metrics

Finally, to compare how these categories of words are used across different regions, it is necessary to segment the prospectuses into regions. The Investment Trust Association, Japan lists 9 geographic and economic categories in which the funds self-identify: North America, South/Central America, Europe, Africa, Near/Middle East, Asia, Oceania and Emerging. Though not a geographic region, Emerging is also included as it may give perspective how economic development may change what is important to investors.

There are two other important ways to look at the category comparisons. Of the 339 Global bond funds and 275 Emerging bond funds, 45 overlap both categories (only 3 of the same groups of stock funds overlap). Given that they are describing a similarly wide geographical focus (i.e. the world) but with differing levels of development, significant differences are of particular interest. Similarly

comparing Emerging Funds (both bonds and stocks) to the entire rest of the funds will give insight as to factors that are important given a certain type of development.

Finally there are clear developmental differences in the regions and it is expected that the developed vs. developing difference from above will be reflected. Oceania includes only two countries, both of which are highly developed. North America and Europe are mostly developed but have some developing countries in their groups (for example Mexico is considered to be part of North America by some funds and Russia part of Europe by others). The Middle East and Asia have a relatively even mix of both and South/Central America and Africa consist of mostly developing countries. As such any differences between the region and its broadly defined economic category will be of particular interest.

These groupings are used as the basis to answer the third and final question of this section. A text search query for each of the 52 words and phrases was carried out for each of the groups of prospectuses and compared to the results from the set as a whole. The word counts were aggregated into the 10 categories of descriptors and compared against the population. The counts were observed in terms of both frequency (what proportion of prospectuses had at least one mention) and depth (how many in total). A Chi-square goodness of fit test was used to determine if the differences in the counts for each geographic category compared to the counts outside each category were significant.

The results from this stage of the study will give an idea of how

different regions are described in the texts. While this is interesting on its own, it also has an exploratory function similar to the previous question, which may provide useful input for the final methodological approach, the examination of the holdings data. Caution should be placed on making any direct causative conclusions without further testing. For example if a region is not developed, then the Funds may want to highlight what development has already taken place and so words and phrases describing industry may be used more frequently than in a developed country where presumably the average investor will be aware that a developed industrial sector exists.

Methods for question 3

What are the determinants of foreign bias on behalf of Japanese investors as represented by the collection holdings of Japanese investment trusts?

Summary of the methodology

Time series, regression and panel data analysis are employed in this section to attempt to empirically evaluate foreign bias on the part of the aggregate investment holdings of Japanese Investment Trusts. As noted in the introduction to the chapter, the Review of Literature identifies the basic model for evaluating the determinants of the investment and Research Questions 1 and 2 identify several additional factors unique to Japanese investment that will be added to this model. The final stage of the study is an examination of the details of the holdings of the investment trusts over the past 22 years. The initial observation of the data in this subsequent section will also identify factors to be added to the final model, which is used to empirically evaluate the factors affecting foreign bias.

3.1 What general inferences regarding bias can be made from examination of the basic time series plots of holdings in each of the individual countries?

It is important to observe the data that is available before any quantitative analysis (Hatanaka, 1996). The JITA keeps monthly records of holdings, in various categories including stocks or bonds, for the aggregate JIT holdings in every country where they have invested. To answer this question the

following time series are analyzed: total aggregate foreign holdings, foreign holdings in each country, and proportion of total foreign holdings for each country for the time period of December 1992 to December 2014 inclusive. As noted above, not all countries' data is available for all years. As such, this initial examination will only include the 25 most widely held currencies by the trusts. As with the approach in Research Questions 1 and 2, an effort will be made to make inferences that are potentially measurable in the next sections where regression models are developed. Given the aims of the study a special focus will be on the charts of the holdings in Asian currencies.

3.2 What is the current situation of foreign bias as represented by the foreign holdings of Japanese investment trusts in 2014?

Calculations of foreign bias

Research Question 1.1 addressed the issue of domestic bias of the holdings of Japanese Investment Trusts, Research Question 3.1 will address foreign bias given the results of 1.1. Thus foreign bias, or the tendency to overweight or underweight individual countries in a portfolio, will be measured on a *relative* basis, i.e., relative to the total holdings of foreign securities (that was evaluated above). If JIT holdings in a country as a proportion of that country's total stock market capitalization are similar to total JIT holdings as a proportion of world stock market capitalization, then the relative foreign bias will be close to 1. A relative foreign bias of 0.5 would indicate JIT holdings in a given country are

half as much as average, a relative foreign bias of 2 would indicate holdings in a given country are twice that of average. This relative measure removes home bias considerations from the metric to narrowly compare JIT investment in one foreign country verses JIT investment in all foreign countries.

Because the data set encompasses both equities and bonds, there is no way to set perfectly optimal portfolio weightings. Stock market capitalization data is readily available, but bond market data poses the problems noted in the review of literature regarding the appropriateness of using market capitalization as a benchmark for a bond portfolio (Zelouf, 2013). In addition the asset mix between equities and debt holdings of the JITs is unknown (see the section discussing the data at the beginning of the Methodology chapter). Therefore a compromise is necessary and equity market capitalization was judged to be the best approximation of a country's overall financial market size and this thus used as the metric here to estimate the ideal portfolio.

For example, JIT holdings of New Zealand assets at end of 2014 were JPY 525 Billion and holdings of Hong Kong assets were JPY 452 Billion. This represents about 6.5% of the size of the New Zealand stock market and 0.4% of the size of the Hong Kong stock market. Given that total JIT foreign holdings are roughly 0.6% of total world stock market capitalization, the relative foreign bias score for New Zealand is 6.5/0.6 or roughly 11 and for Hong Kong 0.4/0.6 or roughly 0.67. This means that JITs hold New Zealand assets 11 times more than the average foreign asset as a proportion of market size but hold Hong Kong assets only 2/3rds as much.

In order to test the reasonableness of the relative bias measure, the following analysis was carried out. The average JIT holdings as a proportion of global equity market capitalization was applied to each of the individual country markets in order to ensure that this was of sufficient size. It is presumed that there are fixed costs to entering a market, which become comparatively low if there is a large enough investment. Also, returning to Modern Portfolio Theory for a moment, it is also assumed that a large enough amount be allocated in each country so as to allow proper diversification within that country. An amount of JPY 1 Billion (very approximately USD 10 Million) was used as the minimum size to be considered a reasonable allocation. If the average proportion of global equity market capitalization applied to a market is less than this amount, it is judged that the threshold is too easily breached and that foreign bias is overly stated.

Data for holdings of the JITs going back to 1992 will be evaluated later in the study, but an examination of bias in 2014 alone is useful to account for reductions in bias over time and as a timely analysis given the results of the content analysis of prospectuses in 2014. (Shiller, Kon-Ya, & Tsutsui, 1991) theorized that foreign bias should dissipate over time (as information asymmetry lessens) so current results may be a more accurate reflection of inherent or persistent bias. This single snapshot approach also provides a suitable match for the results of the content analysis, which only evaluates current fund prospectuses. So while a more historical inspection is also needed, an evaluation of the 2014 situation is deemed useful.

Given the status of foreign bias at the end of 2014 the study will now evaluate the determinants of this bias in the following two research questions:

3.2.1 How much does the gravity model explain this bias in 2014?

3.2.2 How do the variables identified in the content analysis in Research Question 2 affect the model?

The following linear regression model was used to test independent variable sets 1 through 26:

$$FB = \alpha + \beta_1 X_1 + \beta_2 X_2 + \ldots + \varepsilon$$

Where,

FB = the dependent variable, the natural log of the relative foreign bias

α = the intercept

X_i = the i^{th} independent variable

β_i = the coefficient of the i^{th} independent variable

ε = the error term

In each case the null hypotheses being that the β_i coefficient(s) is(are) zero.

To answer these questions a regression analysis was performed on the assets for the 45 countries where JITs held assets at the end of 2014 (excluding the 46th, Uruguay, for reasons detailed above.) The holdings in 45 countries at the end of 2014 were examined in context of variables identified in the literature. Scatterplots were observed on each of the variables paired with foreign bias to observe any evidence of relationships or obvious anomalies. If a geometric

relationship was observed then the natural log of that variable was created. As the chosen method to evaluate foreign bias is an exponential scale the natural log of this measure is used to achieve linearity.

The independent variables used in the first step to test for foreign bias are taken from the literature. From the model developed by (Aggarwal, Kearney, & Lucey, 2012) Geographic distance, Economic growth, Equity market capitalization, Accounting quality, Investor protection, and Legal system origin are used. GDP per capita and Turnover are taken from (Aggarwal, Klapper, & Wysocki, 2005). Trade is taken from (Bertaut & Kole, 2004), Language from (Chan, Covrig, & Ng, 2005).

In an effort to make the study as replicable as possible it is necessary to modify some data or use proxies. Some of the variables are identical to those used in the literature, others slightly different. Geographic distance between capital cities is widely available and constant in this and other studies. Accounting quality and investor protection (and other similar governance-related variables used in other studies) are approximated by the World Bank's Strength of Legal Rights Index., exports to each country, total trade with each country, and outbound fdi towards each country from Japan. It should be noted that the fdi variable is expected to be very significant because it is assumed that the determinants for direct investment would be somewhat similar to the determinants of portfolio investment. But as this is not interesting in of itself, this variable will only be tested on its own, not in the larger model with one exception noted below in context to the disconnect between the bias of retail and professional investors.

Precise independent variable definitions and sources is found in the section on data below.

Various estimations of culture are used in the literature, many (including (Aggarwal, Kearney, & Lucey, 2012)) use the metrics developed by Hofstede (Hofstede, Hofstede, & Minkov, Cultures and organizations: software of the mind: intercultural cooperation and its importance for survival, 2010). While these metrics have great appeal for dealing with finding patterns in a multilateral study, it is judged that they are a poor measure for comparing Japan to its partner countries. Japan's ties to Asia are measured by a dummy variable Kanji and Japan's ties to the West are measured by a dummy variable if a country uses English. These are somewhat arbitrary, but given the role of language as a variable in most other studies it is judged that some kind of approximation should be attempted here. No other country in the study speaks Japanese as a first language, so English, Japan's most frequently spoken second language. In terms of written language, Japan uses a form of the Chinese alphabet, Kanji, so this is also included as an attempt at approximating the language variables of other studies.

List of independent variable sets tested in Research Question 3.2.1:

<u>Individual independent variables from the literature:</u>

1. GDP Growth
2. Log GDP per capita
3. Log market capitalization of listed companies

4. Log equity market turnover
5. Log exports from Japan
6. Log FDI from Japan
7. Index of legal rights
8. Log distance from Tokyo to each country's capital

   Macroeconomic

9. GDP growth & Log GDP per capita

   Market development

10. Log market capitalization of listed companies & Log equity market turnover

    Trade

11. Log exports & log FDI

    Best model with dummy variables

12. Log turnover & legal
13. Log turnover & legal & legal origin
14. Log turnover & legal & English
15. Log turnover & legal & Kanji

Several potential variables are identified from the results of Research Questions 1 and 2. The observations from Research Question 1 are much more applicable to analysis over time and thus will be discussed below, but several of the observations from the results of Research Question 2 are testable in this section. Thus, level of development, natural resource endowments,

inflation/interest rates, science & technology, and exports as a proportion of GDP are added to the model to assess any significance.

Some of these attributes are easier to quantify than others. Level of development and exports as a proportion of GDP are straightforward, using the UNs, Human Development Index and the World Bank data metric for exports as a proportion of GDP. Other are more complicated. Choosing a metric for science and technology it is useful to revisit one of the words categorized as Science and Technology related. "Aerospace" is mentioned 55 times in the prospectuses, and in each case it is related to countries or firms export capabilities. Thus the World Bank's measure for high tech exports as a proportion of manufacturing exports is chosen.

The question of what measure to use for inflation/interest rates is perhaps the most complicated. Higher rates give higher return on investment and thus are attractive, but rates that are too high can be indicative of economic instability, which is clearly unattractive. There are also many different interest rates possible to measure including inflation (explicitly mentioned 658 times in the prospectuses), central bank rates, money market rates, and longer-term bond rates. It is desirable to use a metric where reliable data is available for each country, as such, the inflation rate, as measured by cpi is used. To correct for higher rates caused by economic instability (rather than growth), this is tempered by the inclusion of a nominal score derived from each country's credit rating with Standard and Poors (S&P). The country ratings from the set of counties in the study range from AAA (Canada, Australia, etc) to CCC+ (Argentina). AAA is

given a score of 20, AA+ is given a score of 19, AA: 18, AA-: 17, A+: 16, etc.

In addition to the quantitative independent variables identified above, the content analysis in Chapter 4.2 notes a potential disconnect between the writers of the prospectuses (the professional investors) and the buyers of the Funds (the retail investors) in terms of bias, a phenomenon also noted in the Review of Literature. Specifically the bias towards neighbors China, Korea, Russia and Taiwan (all of whom have some sort of ongoing territorial dispute with Japan) was noted. While FDI is different from FPI, it is reasonable to assume that those in control of FDI can be considered professional and thus an interesting comparison with the retail investors represented by the JITs. A dummy variable is thus defined: a value of 1 for an ongoing territorial dispute, a value of 0 for otherwise. This is also tested against the main model.

List of independent variable sets tested in Research Question 3.2.2:

<u>Individual independent variables identified from the content analysis:</u>

16. Human Development Index (HDI)
17. Log resource rents
18. Log energy production
19. Inflation
20. Inflation & Fitch credit rating
21. Log tech exports as a % of manufactured exports
22. Log of exports as a % of GDP

<u>Best model with dummy variables</u>

23. HDI & inflation & log tech exports & log exports/gdp
24. HDI & inflation & log tech exports & log exports/gdp & border
25. Log turnover & legal & border
26. Log turnover & legal & legal origin border

3.3 How well does the model predict foreign bias since 1992

3.3.1 How well does the model predict foreign bias in the three time periods identified in the results of Research Question 1?

Research Question 3.3 will be evaluated using panel data analysis techniques. While monthly holdings data of the trusts are available for the entire period, most of the independent variables are only readily available on an annual basis. In 1992 there were 10 currencies (counting the currencies that would later make up the Euro as a single currency) in which JITs held assets. This has grown steadily such that there are now 46 currencies in which assets are held. Uruguay will be ommited from this analysis for the same reasons above[7]. As such the panel is 23 years long and 45 countries wide, though unbalanced because of the gradual entry of currencies, resulting in 729 observations of bias.

An important decision was made in regards to the composition of the assets in terms of equity, bond and other. Though the analysis in Research

[7] Recall that in the calculation of foreign bias, the holdings are adjusted for the size of each country's financial markets. Uruguay's markets are of such a comparative tiny size that any investment that would overcome the fixed costs of entering a market would be large enough to show a heavy bias towards Uruguay investment.

Question 1 splits the foreign assets into three categories delineated by JITA, this stage of the study will aggregate all of the foreign asset classes for several reasons. As noted in the methodology for Research Question 1 above, there is a change in categories in the year 2010 that complicates proper categorization. In addition, the main aim of this study is to evaluate foreign bias on the part of buyers of Japanese Investment Trusts, which is to say the geographical bias. While it is certainly recognized that different factors may affect different asset classes in terms of bias, it is assumed that the geographical determinants are not significantly different between the asset classes. Further research may warrant a deeper examination of the asset classes and the effects of bias on each of them.

The results for Research Question 1 strongly suggested that there are 3 distinct eras for the investment patterns of Japanese Investment Trusts, the period before the completion of the Big Bang reforms, the period after the completion of the reforms but before the Global Financial Crisis, and the period after the Global Financial Crisis. As such, the panel will be evaluated as a whole and in the three distinct time periods.

Similar to the approach above the regression models will first evaluate the non-stationary individual independent variables in the 4 time periods but this time using a random effects GLS regression to evaluate the panel. A random effects model is chosen because of the large number of stationary effects to be included, for which a fixed effects model would not be appropriate (Kohler & Kreuter, 2005) (Torres-Reyna, 2012). Two tests were done on the final model to confirm this assessment, a Hausman test and a Breusch-Pagan Lagrange

multiplier test (Torres-Reyna, 2012). The hausman confirmed that a fixed effect model was not more appropriate and the Breusch-Pagan Lagrange multiplier test confirmed that a pooled OLS would be not be more appropriate than a random effects model. The "robust" option is used in the Stata statistical software to control for heteroskedasticity.

The random effects model used to test variables sets 27 through 42 is as follows:

$$Y_{it} = \beta_1 X_{1it} + \beta_2 X_{2it} + \beta_3 X_{3it} + \ldots + \alpha + u_{it} + \varepsilon_{it}$$

Where

– α is the intercept

– Y_{it} is the dependent variable for the i^{th} country at time t

– X_{1it}, X_{2it}, X_{3it} … represent the independent variables,

– β_1, β_2, β_3, are the coefficients for the independent variables

– u_{it} is the between entity error term for the i^{th} country at time t

– ε_{it} is the within entity error term for the i^{th} country at time t

In each case, the null hypothesis is that all of the coefficients are zero.

Independent variable sets 27 through 32 will test the following independent variables against the full panel using a random effects GLS approach. This is then repeated with the three time periods a, b and c. 27a through 32a will test against the pre-Big Bang panel, 27b through 32b against the post-Big Bang

pre-Global Financial Crisis panel and 27c though 32c against the post-onset of the Global Financial Crisis panel.

Individual independent variables from the literature:

27. GDP Growth
28. Log GDP per capita
29. Log market capitalization of listed companies
30. Log equity market turnover
31. Log exports from Japan
32. Index of legal rights

Sets 33 and 34 will test the following independent variables against the full panel using a random effects GLS approach. 33a and 34a will test against the pre-Big Bang panel, 33b and 34b against the post-Big Bang pre-Global Financial Crisis panel and 33c and 34c against the post-onset of the Global Financial Crisis panel.

33. GDP Growth, Log GDP per capita, Log market capitalization of listed companies, Log equity market turnover, Log exports from Japan, Index of legal rights
34. As in 33 above but with the static Log of distance and the Kanji, English, and Common legal system dummy variables

Sets 35 through 41 will test the following independent variables against the full panel using a random effects GLS approach. 33a through 39a will test against the pre-Big Bang panel, 33b through 39b against the post-Big Bang pre-Global Financial Crisis panel and 33c though 39c against the post-onset of the

Global Financial Crisis panel.

35. Human Development Index (HDI)
36. Log resource rents
37. Log energy production
38. Inflation
39. Inflation & Fitch credit rating
40. Log tech exports as a % of manufactured exports
41. Log of exports as a % of GDP

Set 42 will test the following independent variables against the full panel using a random effects GLS multivariate approach. 42a will test against the pre-Big Bang panel, 42b against the post-Big Bang pre-Global Financial Crisis panel and 42c against the post-onset of the Global Financial Crisis panel.

42. Log GDP per capita, Log equity market turnover, Log exports from Japan, Index of legal rights, log of distance, inflation, fitch credit rating, log of tech exports as a % of manufactured exports, log of exports as a % of GDP, border conflict dummy variable

Data – Investment Trust Holdings

Data for holdings of Japanese Investment trusts were obtained from volumes 3 through 11 of the Annual Report of Investment Trusts, volumes 441 through 614 of the Report on Investment Trusts and supplemented with more current data from the JITA website. There is a gap in the holdings information: the website lists the current holdings in all 48 currencies but only lists the

historical (10 years) holdings of the most widely held 25 currencies. The annual reports list all of the holdings but have been discontinued since 2011, leaving a small gap that affects recent small entrants to the suite of currencies held. As part of a different project some current observations were recorded and saved to file during the last 3 years to enable linear interpolation to complete the data set. This is not a perfect solution but the estimates seem highly reasonable, as it does not appear to be a period of large volatility of holdings.

Data – Independent Variables

Following is a detailed list of all of the independent variables used, source and any comments or adjustments:

GDP Growth (annual%) is available until 2013 from the World Bank (World Bank) except for Taiwan, which is addressed at the end of this section. The Economist magazine publishes estimates of GDP for many countries for 2014 and this was used to extend the data from 2013 to 2014 where possible (Economist, 2014). The GDP for Bahrain, Kuwait, Kenya, Morroco, Nigeria, Oman, Qatar, Romania, Sri Lanka, Dubai, and Uruguay are not forecast in the Economist and so the national government forecasts were used. Bahrain data according to Economic Development Board of Bahrain; Kenya, the Budget Policy Statement 2014; Kuwait, the Central Bank of Kuwait; Morroco, the High Commission for Planning; Nigeria, the National Bureau of Statistics; Oman, the National Center for Statistics and Information; Qatar, the Ministry of Development, Planning and Statistics; Romania, the National Prognosis

Commission; Sri Lanka, the Central Bank of Sri Lanka; Dubai, the Dubai Economic Council; and Uruguay, the Central Bank of Uruguay.

(The natural log of) ***GDP per capita*** is obtained using the same sources/methods as GDP Growth above, with the addition of using population estimates from the World Bank to extend the data from 2013 to 2014.

(The natural log of) ***Market Capitalization of Listed Companies (current US$)*** is available from the World Bank until 2012 (World Bank). This was extended to 2014 by obtaining the equity market return for each of the national stock indices for the calendar years 2013 and 2014 from Bloomberg (Bloomberg). The returns were adjusted to USD equivalents using foreign exchange rates for year-end 2012, 2013 and 2014, data also from Bloomberg.

(The natural log of) ***Stocks traded, turnover ratio (%)*** data is available until 2012 (World Bank). As this data does not seem to typically change significantly in years where there is no new financial crisis, an average of the previous 3 years of data is used to estimate the figures for all countries for 2013 and 2014.

(The natural log of) ***Exports from Japan to each country*** is obtained from two sources, the Japan External Trade Orgainization (JETRO) and the Massechusetts Institute of Technology's Observatory of Economic Complexity (MIT Atlas). As JETRO data only goes back 10 years, and the MIT Atlas data only until 1995 the following procedure was used: From 1995 to 2012 data from Atlas, 2013-2014 from Jetro. 1992 – 1994 is estimated as the same amount as in 1995. Atlas does not include Taiwan, so further estimations must be made 1992

through 2003 assumed to be the same as 2004.

The theoretical reasons behind including a trade measure in the study is that trade is seen as a factor in reducing information asymmetry between countries. When evaluating what measure to use for trade it is observed that imports data in Japan is dominated by the energy sector, perhaps because of the lack of natural energy sources. It is judged that the purchase of raw commodities on the global market is not a good indicator of the kind of trade that would reduce information asymmetry. As such, exports is used instead of total trade or imports in this study..

(The natural log of) ***Japan outbound Foreign Direct Investment (FDI)*** is obtained from the Bank of Japan (BOJ).

Strength of Legal Rights Index (Legal) has been calculated since 2004 and is available for all countries in the study from the World Bank's "Doing Business" database (World Bank). As the index does not change much from year to year it is assumed that the index scores for 1992 to 2003 are the same as the 2004 levels. Qatar' rating starts from 2007, all ratings before that assumed to be the same at the 2007 level.

(The natural log of) ***Distance*** from Japan to other countries is from the French Research Center in International Economics (Centre d'Etudes Prospectives et d'Informations) (Cepii). The distance from Tokyo to each country's capital city in kilometers is used. This is the same data source as used in most of the other gravity models usage of distance, though there are a few obvious problems with using it for Japan. Moscow, Russia's capital, is extremely far away, yet Russia's

Sakhalin Island is the closest foreign territory to any of Japan's four main islands.

Legal origin is according to the Doing Business project (World Bank, 2004) with some additions and adjustments. Qatar, a former British protectorate, surrounded by other countries with English foundations of law, is assumed to also have English foundations of law. The Euro area is assumed to have both German and French origins of law for the purpose of this analysis. As Japan's legal foundation is of German origin (World Bank, 2004), a dummy variable of 1 is given to any country that shares this, and 0 to any country that does not.

Use of Chinese Characters (Kanji) as no other country uses Japanese as its first or second language, but as Japan uses a form of Chinese characters for its writing system, a dummy variable of 1 is assigned to other countries who also use Chinese characters and 0 to those who do not. China, Hong Kong, Taiwan and Singapore all use Chinese characters in at least some official capacity and are included. Korea and Vietnam are included because they have used forms of Chinese characters in the recent past. All other countries are given a 0.

English is the only language other than Japanese to be taught at all public junior and Senior high schools in Japan. A score of 1 is given to any country (or in the case of Europe, region) where English is an official language. Australia, Canada, Eurozone, India, New Zealand, Singapore, South Africa, the United Kindom, and the United States are considered to use English in some official capacity, other countries not.

Human development index from the United Nations is used to evaluate the level of each country's development. Data is available on the United Nations

website (UN) but only exists until 2013, so adjustments must be made. Unlike the variables above, the levels of the index have been generally increasing on a steady basis over time so a different approach to estimate the data is judged to be needed. 2014 data is thus estimated by averaging the growth of the previous 3 years to extrapolate to 2014. Nigeria and Oman data only exists since 2004, so previous years are estimated based on world average growth. The Taiwanese government calculates an estimate of their score using the same methodology as the UN so that estimate is used. Finally, the Euro score is a gdp-weighted average of its members' scores (GDP data from the World Bank).

(The natural log of) ***Total natural resource rents*** (as a proportion of GDP) is from the World Bank (World Bank). Data is only available through 2012 so 2013-14 is estimated as the average of the previous 3 years.

(The natural log of) ***Energy production (kt of oil equivalent)*** is from the World Bank (World Bank). Data is only available through 2011 or 2012 (depending on the country), so remaining data is estimated as the average of the previous 3 years. As it is unknown whether total resource endowments or the relative importance of the endowments to each countries economy is more important, the two natural resource variables are in different terms. Resource rents are included as a proportion of GDP and Energy production, as a total size.

Inflation, consumer prices (annual %) is taken from the World Bank (World Bank). Data for 2014 is estimated using the same method and sources as for GDP Growth above. There is widespread acknowledgement that the official inflation figures from Argentina have been suspect since the mid-2000s (The

Economist, 2012), and recently many publications simply refuse to publish any official estimates. As such, Argentina is omitted from any regression including this statistic. It is the judgment of the author that though this makes for a somewhat incomplete analysis, the relatively small investment in Argentina and its relatively small size makes this omission of very little consequence in the overall study.

In addition, as noted in the text above, the author recognizes that evaluating interest rates and in particular inflation rates is a double-edged sword: too low signals lack of growth, too high signals instability. The content analysis results from Research Question 2 seems to suggest that Japanese investors feel this to be *in general* a positive attribute but there are a few very high cpi readings which will potentially confound analysis. Of the over 900 reported cpi results, 18 of them were in excess of 20% per year. In order to preserve the in general low is bad, high is good interpretation of this indicator, these observations were dropped from the sample. Only 2 of these (Pakistan at 20% and Vietnam at 23%, both in 2008) occurred in the past decade.

Fitch Sovereign Credit Ratings taken from Fitch (Fitch) and converted to the following numerical scores: AAA: 20 AA+: 19 AA: 18 AA-: 17 A+: 16 A: 15 A-: 14 BBB+: 13 BBB: 12 BBB-: 11 BB+: 10 BB: 9 BB-: 8 B+: 7 B: 6 B-: 5 CCC+: 4 CCC: 3 CCC-: 2 CC+: 1 CC and below: 0. (The lowest rated country in the study is Argentina at CCC+.) A score for the Euro area was obtained by taking the GDP-weighted average of the scores of its member countries (the lowest rated country in that group is Greece at CCC)

(The natural log of) ***High-technology exports (% of manufactured exports)*** are taken from the World Bank. Similar to other data above the levels for 2013 and 2014 are averages of the previous 3 years.

(The natural log of) ***Exports of goods and services (% of GDP)*** are taken from the World Bank. Similar to other data above, the levels for 2014 are averages of the previous 3 years.

Territorial dispute (border) is a dummy variable where 1 is assigned to a country with an ongoing territorial dispute with Japan. China (Senkaku islands), Taiwan (Senkaku islands), Korea (Takeshima), and Russia (Kurils) are given 1 scores and all other countries 0. Many of the models include binary dummy variables to try and account for potential significance. For example (Garcia-Herrero, Wooldridge, & Yang, 2009) include such variables for common border and if a country was once a colony of another. Japan has a complex relationship with its neighbors due to many factors, presumably including those related to various wars in the 19th and 20th centuries. The territorial disputes are often reported in the mainstream media and thus are viewed a potential confounding factor for attracting Japanese investment.

The World Bank does not publish separate data for Taiwan (except data available through some of its sister projects such as the World Bank Group's Doing Business project, which includes Index of Legal Rights) and therefore other means is necessary to estimate. The website Trading Economics (Trading Economics) claims to use World Bank methodology to provide data for Taiwan and that data is used in the study. While this is not an official source, efforts were

made to ensure the reasonableness of the data by comparing to other data providers. For example the GDP data was compared over time to the IMFs data and appears to track very closely. As most of the indicators are from the World Bank dataset, it is desirable to use this rather than supplement a different source.

Chapter 4: Results

This chapter will outline the results of the three research questions. Each section will state the research question being evaluated, a brief review of the method and the details of the results. Discussion of the results in the context of each specific research question will be included, but overall discussion will follow in the next chapter.

Research Question 1 Results

How the composition of assets changed post reform

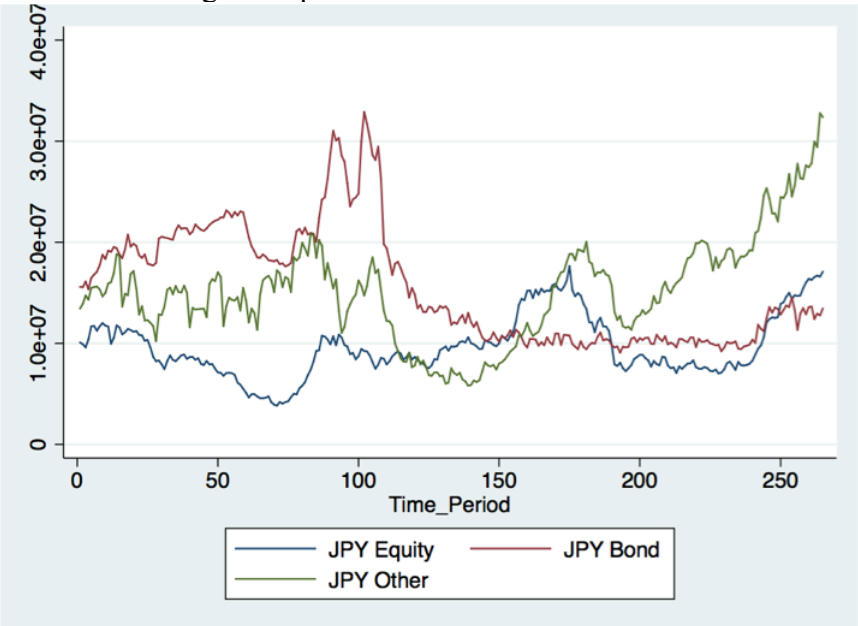
General observations

The unadjusted time series for the 3 Japanese asset categories (aggregate JIT holdings of Japanese equities, Japanese bonds, and Japanese "other") can be found in:

Figure 3: Raw holdings of Japanese assets.

Visual observation of the time series shows the following obvious movements for each category of Japanese assets. Japanese bond holdings show a large drop from period 102 (May 2001) to period 118 (September 2002). Holdings of Japanese stocks appear rise and fall with no observable broad trend. Holdings of Japanese "other" seem to indicate similar random-type movement until recently where there are large, steady observable gains. As noted in Chapter 3.1, this study is focused on domestic bias and because it is not clear what types of assets Japanese "other" is made up of it is not included at this stage. The large increases in recent years observed in this chart indicate that like the phenomenon in foreign equities where the trusts have shifted some of their assets from individual stock holdings to ETFs/ETNs, this is likely also the case in Japanese equities. As such, it is likely that the estimates for the size of Japanese equity holdings are lower than in actuality. As noted this does not affect the overall study, but is important to point out and would affect any future studies on the specific composition of Japanese assets.

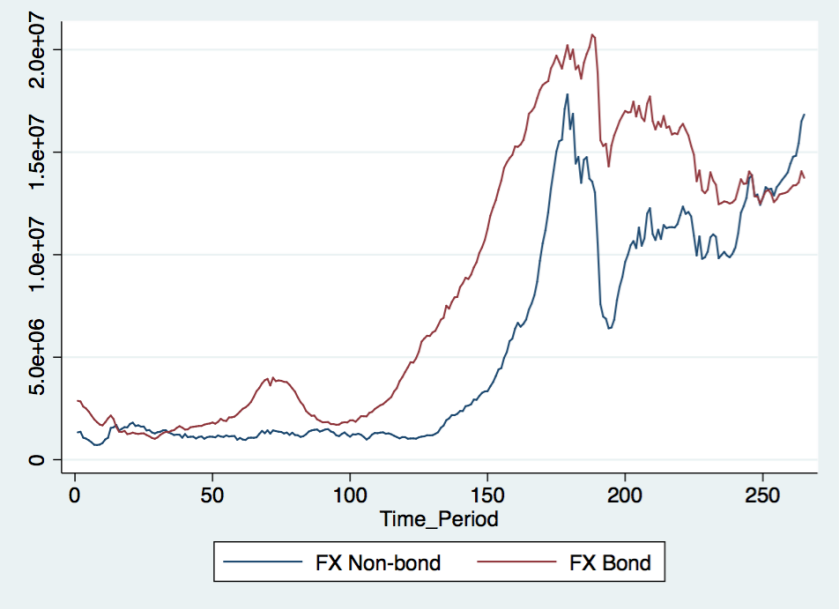
Figure 3: Raw holdings of Japanese assets



Monthly raw holdings data in JPY, period 1 is 12/92, period 264 is 12/14

The unadjusted time series for the 2 foreign asset categories (foreign equities (including foreign "other"), and foreign bonds) can be found in Figure 4: Raw holdings of foreign assets. As noted by (Iwai, 2007) both charts show dramatic increases starting at slightly different points after the reforms. There are several other observable phenomena in the two series. There is a bump in foreign bonds around the time of the Asian financial crisis (where they may have been a "flight to quality" and perhaps an increase in the holdings of US treasury bonds). Both charts show a dramatic decrease around the time of the onset of the Global Financial Crisis, but while the time series appears to show a recovery in the holdings of foreign stocks, the holdings of foreign bonds do not appear to have recovered so well.

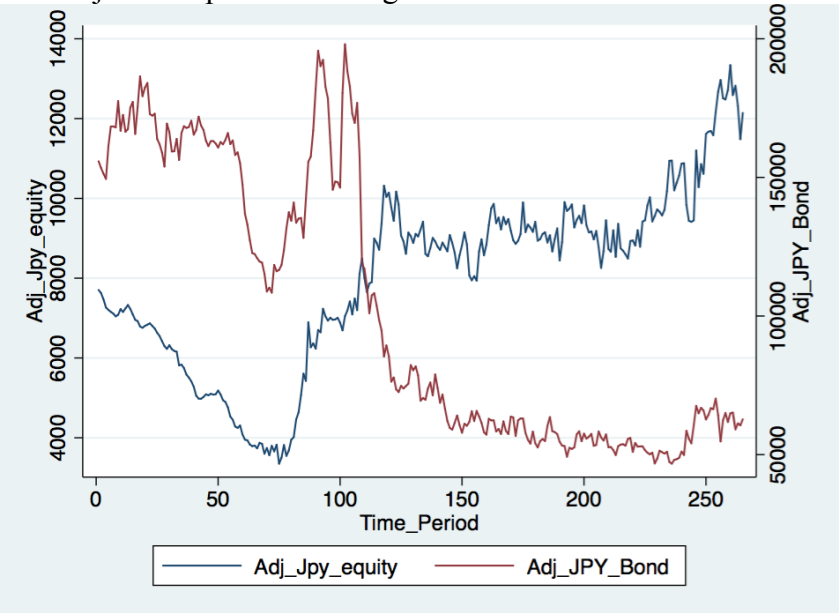
Figure 4: Raw holdings of foreign assets



Monthly raw holdings data in JPY equiv, period 1 is 12/92, period 264 is 12/14

It is necessary to restate that though this has been the basis of evaluation of the asset mix of the trusts it is misleading to not adjust for price. That the assets held in Japanese equities have not had a large decrease in a period where the Nikkei index has gone from a level of above 22,000 to below 8,000 and then up again towards 20,000 recently seems significant. Conversely, the recent increase in the holdings of foreign equities/other has come during a fairly strong bull market in global equities. Indeed, when looking at the adjusted time series plots in Figure 5: Adjusted Japanese holdings, asset held in Japanese equities have climbed steadily from a low in period 71 (October 1998). As noted above, without accounting for the presumed shift from some holdings of individual shares to ETFs/ETNs likely makes the true total holdings of Japanese equities even larger than it appears.

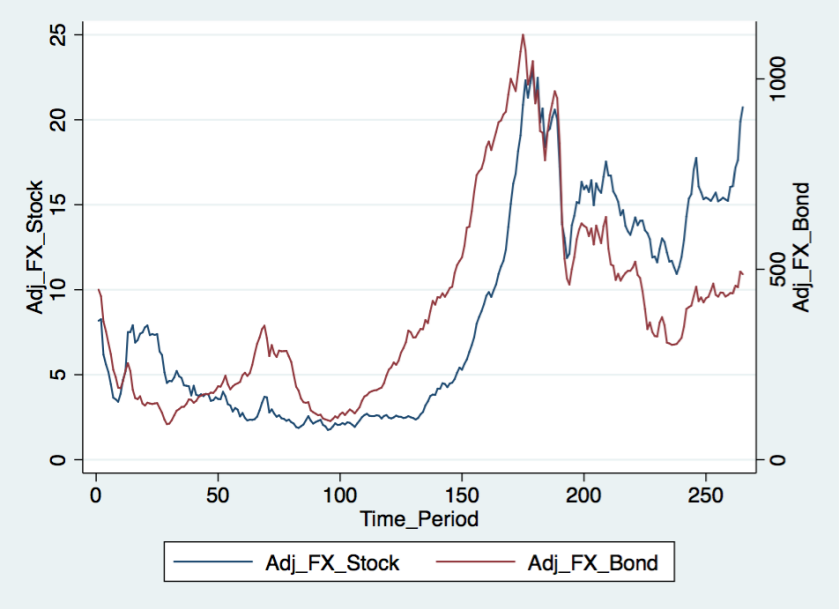
Figure 5: Adjusted Japanese holdings



Monthly adjusted holdings data, period 1 is 12/92, period 264 is 12/14

The other adjusted charts show increases in all foreign assets post big bang reforms and these (and the equity increases) appear to be somewhat at the expense of Japanese bond holdings. The adjusted chart of Japanese bonds seems to confirm the large drop in assets held in the same timeframe as the unadjusted chart. Assets held in foreign stocks also appear to confirm the unadjusted chart (including a clear decline from period 189 to 191, August to October 2008, at the height of the global financial crisis). The adjusted chart (figure 6) confirms a large inflow into foreign bonds after period 102 (May 2001), but also makes clear that these holdings continued to decline after the global financial crisis, in contrast to holdings of foreign equities.

Figure 6: Adjusted foreign holdings



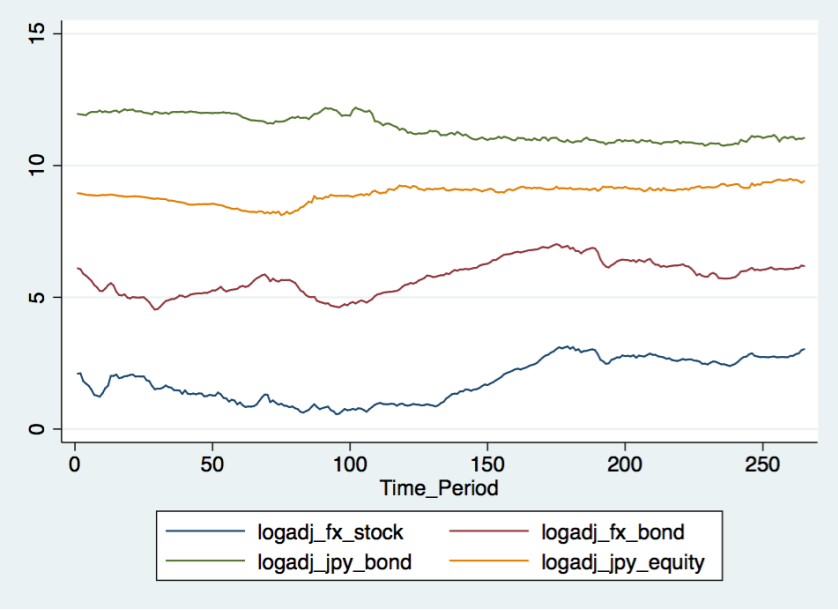
Monthly adjusted raw holdings data, period 1 is 12/92, period 264 is 12/14

Several important discussion points are raised here. As detailed in Chapter 3.1, trying to pinpoint an exact date of change in pattern of inflow is difficult to begin with, and each of the asset classes may change at different rates. Investor sentiment can also change based on recent market performance. For example the reforms took effect in 2001, the year of the Enron scandal in the United States. It is conceivable that the sentiment for buying foreign stocks may have been affected adversely. Perhaps those purchasing JITs at this time preferred one of the asset classes to the other.

Looking at the graphs of both the unadjusted and adjusted time series, it is clear that there are exponential relationships with time. To smooth this, and to aid in evaluating linear relationships, the natural log of each of the adjusted time series is taken and can be found in Figure 7: Logged adjusted holdings. Visual

inspection of the logged adjusted time series still *appears* to show changes around the 101st time period (March of 2001), the end of the reforms as pegged by (Hoshi & Kashyap, Corporate Financing and Governance In Japan, 2001) in the two foreign asset holdings' graphs and the Japanese bond holdings graph. The Japanese equity holding's graph appears to break slightly earlier. (There also seems to be a break in the foreign assets graphs around the 180th time period, around the time of the onset of the global financial crisis, but will not be evaluated in this section as it is focused on the big bang reforms. It will be addressed in the next section and also the conclusion of this chapter as a potentially useful determinant for Question 3 of this study).

Figure 7: Logged adjusted holdings



Monthly logged adjusted holdings data, period 1 is 12/92, period 264 is 12/14

Research Question 1.1

The difference in the composition of holdings of securities adjusted for the underlying price of assets before and after the big bang reforms.

Each of the series is regressed against the time variable using the robust option in Stata to account for robust standard errors to determine the overall relationship with time. Then this step is repeated for all time series on each side of the break date. The results can be found in Appendix 1: Logged Adjusted Japanese Stocks regressed against time. The R-squared of the 4 categories of Japanese equities, Japanese bonds, foreign equities and foreign bonds are 0.56, 0.81, 0.49, and 0.43 respectively indicating some overall level of connection to time in each case. All of the series have a significantly positive slope except for Japanese bonds, which has a significantly negative slope. In the split time series of the natural log of the adjusted holdings of Japanese equities, foreign bonds and foreign equities, the coefficient of the time variable switched from negative to positive after the reforms were complete. In the series of the natural log of Japanese bond holdings, the coefficient of the time variable switched in the opposite direction. All of the coefficients tested were significant at the 0.01 level at least except for the series for the logged holdings of foreign bonds before the big bang where the coefficient was only weakly significant (at the 0.1) level. This last result may have been impacted by the previously observed spike in the holdings of foreign bonds (speculated to be flight to safety US treasury holdings)

during the Asian Financial Crisis. This is not material to this study but should be noted for any further work in this area.

A Chow test is employed to determine if the co-efficients of the 4 univariate time series' are significantly different before and after March 2001. The regression results with robust estimates and Chow test results can be found Appendix 5: Regression and Chow test for Adjusted Japan Equity. The null hypothesis that the coefficients are the same before and after then break can be rejected at the 0.0001 level for each of the time series tested.

As stated earlier this is not intended as causative proof that the reforms caused this shift in assets and specifically an increase in foreign assets and Japanese equity assets held. It is clear however that each of the time series shifted direction at or very near to this date. So it can be concluded that around the time that the reforms ended there was a significant change in the accumulation of assets owned collectively by the trusts and that this pattern continued for a number of years.

The goals of the big bang reforms (reported in detail in Chapter 2) were to shift assets from banks into capital markets. Clearly this has not happened: before the reforms 55% of Japanese household savings was in the form of bank deposits and today still 52.5% remain there (BOJ). Though the holdings of investment trusts have increased, from 3 to 5.5% of all household savings, one would have to assume that the authors of the reforms were hoping for a great deal more. What has happened though, is that the structure of assets held within the trusts has changed.

Part of the aims of the big bang reforms was to increase savings in capital markets, for both the benefit of the investors and of the corporate financing environment in Japan in general. The hope was that more funds would flow into the Japanese equity markets. Though the magnitude of the increase in the trusts holding of Japanese equities (as opposed to Japanese bonds) is presumably smaller than desired, the proportionate increase has been significant. Japanese bonds represented almost 60% of all Japanese assets held before the reforms, now approximately 20%. Though it's not possible to quantify this exactly, the large number of ETFs and ETNs held by the trusts in Japanese yen indicate that the overwhelmingly main beneficiary of this decrease has been an increase in the holdings of Japanese stocks.

For the purpose of this study, it is assumed that more money into stocks, and less into bonds, is something that would be seen as economically desirable for a country. This assumes the Japanese bonds are mostly government bonds and not corporate bonds, which are a form of the non-bank financing described by (Hoshi & Kashyap, Corporate Financing and Governance In Japan, 2001) and others that is needed in Japan. That Japan has an underdeveloped corporate bond market is evidenced by (Bhattacharyay, 2011), but underdeveloped does not mean non-existent. It seems reasonable though to assume that the vast majority of the bond holdings of the trusts were (and are) not corporate bonds.

What is eminently clear is that in the post-Big Bang era, the composition of price-adjusted assets changed materially. Aside from money flowing from the domestic bond holdings, all sectors grew (some faster than

others). This is important to note because although the increase in foreign holdings was largely expected and observed, it does not seem to have come at the expense of domestic holdings with the possible exception of bonds.

Research Question 1.2

The difference in the relationship between underlying price and holdings of different categories of assets before and after the big bang reforms.

The analysis above of the relationship of the relative holdings of the adjusted assets showing changes after the big bang reforms can be augmented by the results from regression 1.2. The relationships between the levels of holdings and the underlying price levels also show significant differences before and after the reforms, consistent with expectations. Scatter graphs of the different asset classes suggest a log linear relationship so the natural log of each of the different asset classes was used. Appendix 9 shows the four different asset classes against the chosen underlying asset price level approximator and general observations are given here. The charts are too many to be included in the text, but as they are very revealing the reader in encouraged to refer to them while reading the next few paragraphs.

The scatterplot of the natural log of Japanese equity holdings and the price of the Topix index appears to be slightly linear and upward sloping before the Big Bang reforms, and fairly linear but slightly less upward sloping after the reforms. This indicates that as the price level of the Topix rises, Japanese equity assets owned by the trusts increases by more than the increase in the price. This

suggests unsurprisingly that a rallying equity market attracts investors and a falling equity market causes holders to sell. This direction relationship seems to hold true in each of the time periods studied with slightly differing levels of slope. Consistent with expectations, the linearity is much clearer post reforms than after suggesting a more logical relationship between price levels and holdings, indicative of improved fiduciary trading practices of the trusts.

The scatter plots for the natural log of Japanese bond holdings are not nearly as easy to interpret but show three distinct patterns. Before the reforms there appears to be a generally upward sloping line that shows slight linearity. This is somewhat consistent with the plots for Japanese equity holdings. The post reform, pre global financial crisis plot shows fairly clear linearity but the vertical shape indicates an infinite relationship between the price of the Japanese bond index and the amount of Japanese bonds held by the trusts. This indicates that there is a very large range of assets held for a fairly narrow price level, consistent with a rapid shift in holdings (in either direction) independent of the underlying price. Post the global financial crisis there is a weakly upward sloping group of data with weak linearity. This is the hardest of the four asset categories to make inferences from but in general the upward sloping shape before the reforms and after the global financial crisis is consistent with other asset classes. The shape of the data in the interim is hard to explain other than sales or purchases of bonds independent of the price, which is consistent with a forced-sales scenario where outside factors necessitate the sales of assets. The linearity does not appear to improve after the reforms is contrary to expectations. Possible explanations for

this are that the trusts felt the need to shift assets out of Japanese bonds and into other assets because of an expected fall and rise in expected price levels. Or it is possible that the well-documented low yield environment that Japan has been in for the past two decades has caused the price changes of the bonds to be so marginal that the assets are treated more as cash equivalent and are related to prices *outside* their asset class more than inside.

The scatter plots for the natural log of bonds held in foreign currency is the polar opposite of the case of Japanese bonds in that the pre reform plot is very hard to interpret but the two post reform charts show clear linearity, which is consistent with expectations but with a caveat that the post global financial crisis trend is downward, contrary to expections. In the period after the reforms and before the global financial crisis, there was a very strong relationship between the price levels of the US bond index and the amount of foreign bonds held by the trusts, in that as price of the index rises, the holdings increase (substantially). After the global financial crisis there is also a nice linear relationship, but in the opposite direction. This is unexpected, but there are possible explanations for this change in slope. The bond index, unlike either of the two stock indices used, has grown on a steadily upward sloping line for the entirety of the period of this study. If there were a shift into foreign bond assets after the reforms and a shift out of foreign bond assets after the global financial crisis, this would result. Still to be explained is the reason that this line continues to slope downward, even as the crisis has clearly passed. Two explanations for this may be the sovereign debt

crisis in Europe and perhaps even increased attractiveness of Japanese domestic assets in recent years.

The scatterplots for the natural log of foreign equities and the combined foreign equties and other category will be discussed jointly. The scatterplots for these categories also show 3 fairly clear linear trends, a period of very little relationship, but consistent level of holdings before the big bang reforms, a clear upward sloping relationship between price and holdings after, and a lesser, but still upward sloping relationship after the global financial crisis all consistent with expectations. Comparing post global financial crisis period between the two categories seems to give further justification for including the foreign "other" category of assets in the foreign equity category. The relationship between holdings and price is better in the combined category than in foreign equities alone. (This would be consistent with a slow drain of assets from equities into ETFs/ETNs, causing a slowing of the rise in equity holdings per given price increases). Unlike bonds these positive relationships hold both before and after the global financial crisis.

It should be noted that the scatter plots for both the Japanese and foreign equity categories appear to show better relationships to underlying prices than do the two bond categories. It may be that the estimators for the underlying prices of stocks may be better than those of the bonds. Given that both bond price estimators are only government bonds, it may also be the case that credit spreads (the difference in yield between a corporate bond and a government bond of the

same maturity) have a significant effect on price or the bonds owned by trusts are more diverse than thought.

The regression results found in Appendix 13 confirm the visual analysis. The R-square results for the time series are as follows in

Table 3: Relationship between assets and time

R^2 Results	Overall	Pre Big Bang	Post Big B:	Post GFC
Logged Japan Stocks	0.16	0.53	0.90	0.82
Logged Japan Bonds	0.38	0.30	0.16	0.45
Logged Foreign Stocks	0.62	0.00	0.93	0.79
Logged Foreign Bonds	0.68	0.14	0.87	0.66

These results confirm the increasing linearity observed post big bang in all but the Japan bonds category. A Chow test is employed to determine if the co-efficients of the 4 regressions are significantly different before and after March 2001 (though the post global financial crisis break seems to be apparent, it is not part of the aim of this study and does not need to be confirmed here). The null hypothesis that the coefficients are the same before and after then break can be rejected at the 0.0001 level for each of the time series tested. Again it should be noted that the results here are not causative proof that the reforms caused this significant change in linearity or the coefficients. It is clear that the linearity improved and the coefficients changed around this time.

It is not clear what these results mean, but the strong linearity observed post reform starkly contrasts with the non-linearity pre-reform. There is documented research on the ineffective trading patterns of investment trusts (whether related to tax or churning) so it is postulated here that the increased linearity may have something to do with improved investor confidence in the asset class. Given that most of the growth in assets was from sales from banks

(rather than securities) firms, it is also possible this is evidence of a new group of investors who have different investment habits.

This analysis has also shown a decrease in the domestic bias on the part of Japanese investment trust holdings. The natural outcome of that is an increase of foreign holdings, which necessitates an examination of foreign bias. Such an examination will follow in Research Questions 2 and 3. In addition to highlighting the differences between the pre and post-big bang eras, this examination has identified another period where the compositions assets under management appear to be significantly different, the period beginning with the onset of the global financial crisis. The additional period will be added to the analysis in Research Question 3.

Results Part II – Content Analysis

Preferences and biases identified in the content of prospectuses of Japanese Investment Trusts

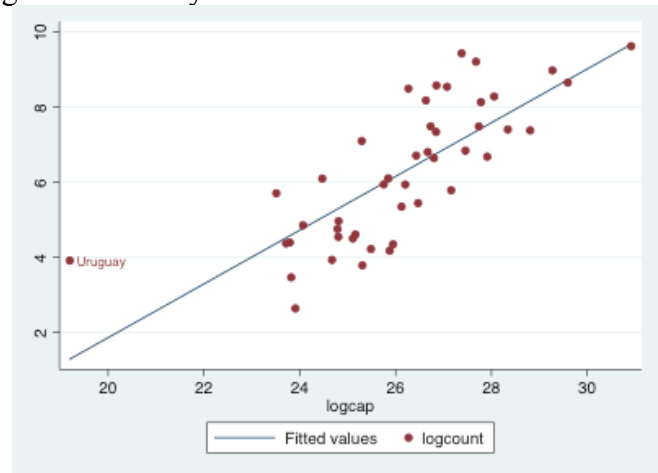
Research Question 2.1

2.1 Frequency of countries named in the prospectuses relative to the size of their financial markets

There appears to be a relatively strong linear relationship between the log of the count of country mentions in the prospectuses and the log of the magnitude of each country's financial market as measured by the total market capitalization of listed companies. The scatterplot of this relationship is found below in Figure 8: Country counts vs market size 1. Consistent with expectations, in general, countries with large financial markets are mentioned frequently and countries with small financial markets are mentioned infrequently. There is a clear outlier at the far left of the chart that needs to be addressed, Uruguay. It is apparent that the size of the market capitalization of listed companies of Uruguay is smaller by several multiples than any other country (this is a natural log chart so any decrease by 1 in the log represents a multiple of approximately 2.7 times). As will be discussed in the calculation of foreign bias below, any attempt to evaluate investment in such a small market may be misleading. There are fixed costs to entering markets, there are fixed costs to each trade, so it's conceivable that any

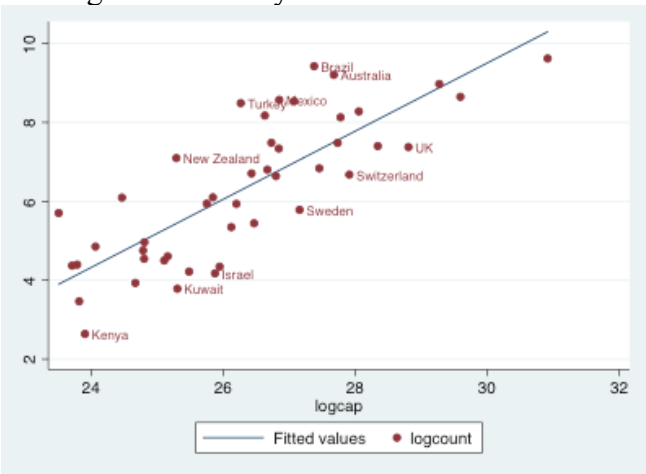
investment that overcomes these fixed costs may reflect a larger than expected investment in that country. The chart seems to indicate that this may be the case and as such, Uruguay is omitted from the study.

Figure 8: Country counts vs market size 1



The new chart with Uruguay omitted is found below in Figure 9: Country counts vs market size 2. There is some variation in the linear relationship, however and this represents a bias towards/against a country by the writers of the prospectuses, for a given market size. Observations above the trend line represent countries mentioned more frequently than would be indicated by their relative market size. Turkey, Mexico, and Brazil seem to be the most extreme examples of positive bias in terms of being mentioned more frequently that we would expect given market size. Observations below the trend line represent countries mentioned less frequently than their market size. Kenya, Kuwait, and Israel seem to be the most extreme examples of negative bias in terms of the number of mentions in the prospectus texts. As all of these are considered emerging economies, it is worth noting Australia, and New Zealand on the positive side and Sweden, Switzerland and the UK on the negative among developed countries.

Figure 9: Country counts vs market size 2

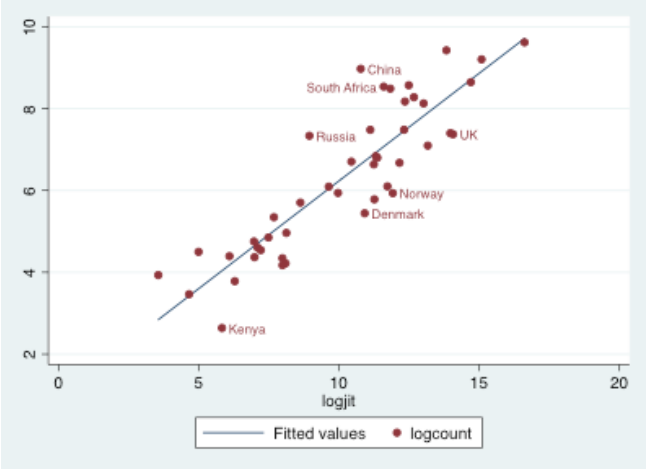


A regression model of this relationship shows basic results are an Adjusted R-square of 0.63 and a slope of 0.86 suggesting that on average that the log of a country's count increases by a value of 0.86 for every increase of 1 in the log of a country's market size. This positive relationship is consistent with expectations, and while an R-squared of 0.63 suggests other factors are also important in the frequency that a country is mentioned in prospectuses, this simple model identifies a significant relationship between the two metrics.

The next stage evaluates mentions of the countries in terms of the relationship between the country counts and the total assets held in each country. To evaluate this, a scatter plot of the log of the counts and the log of the assets allocated to each country is shown in Figure 10. Dots above the trend line represent countries where JITs hold fewer assets than average based on the frequency of mentions in the prospectuses. China, Russia and South Africa stand out in this regard. Dots below the trend line represent countries where JITs hold more assets than average based on the frequency of mentions in the prospectuses.

Kenya, Denmark, Norway and the UK stand out in this regard.

Figure 10: Country counts vs JIT holdings



A regression model of this relationship shows the basic results are an Adjusted R-square of 0.78 and a slope of 0.53 suggesting that on average, the log of a country's count increases by a value of 0.53 for every increase of 1 in the log of a country's assets held by the JITs. The 0.78 R-square compares favorably to the 0.63 above and indicates that the relationship between country counts and investment is stronger than that of country counts and market size. This is significant in that it gives further evidence that the content of the prospectuses reflects more on the buyers of the funds (and readers of the prospectuses) than the sellers of the funds (and writers of the prospectuses). It also gives indication the content of the prospectuses contains information that is indicative of the preferences of the buyers of the funds. This last point is important in justifying the further examination of the prospectuses below.

As previous research ((Aggarwal, Kearney, & Lucey, 2012) and others) has shown a clear link between geographical distance and foreign investment, it is surprising that two countries, Russia and China, that are of the two closest to

Japan, appear to be invested in much less than we would expect given the frequency of their names being used in the prospectuses. While there are rational reasons to hesitate to invest in any country at a particular time, the apparent dichotomy of opinion between the writers and the readers of the prospectuses on the topic of two countries that are theoretically advantaged in attracting Japanese investment is interesting and will be further investigated in subsequent chapters.

Research Question 2.2

2.2 Descriptive words found in the titles (names) of the funds.

2.2.1 Frequency of the descriptive words found in the titles in the bodies of the prospectuses

A complete list of the 1896 fund titles is too cumbersome to include in this paper, but is available upon request. From it 52 words or phrases were deemed useful enough for further study. The list of the words or phrases in both Japanese and English and the 10 resulting categories can be found in Table 4. Several adjustments were necessary to aid in the next stage of the study. Though the word "gold" was found in several titles of funds it was removed from the study because of complexity. Gold can be written in two ways in Japanese, in katakana or in Kanji. Searching for "gold" in katakana runs into difficulties because a large number of funds are owned by Goldman Sachs, which when written in Japanese contains the same katakana characters as the metal. In the case of "gold" written in Kanji, there are literally hundreds of Japanese words that

contain this character, including “interest rate” and “financial”, two words found frequently in prospectuses. As no work-around could be devised, the word was dropped. In other cases plurals or singulars were shortened to the simplest possible form in order to capture as wide a range of results as possible. “Science” and “Scientific” become “Scien”, “BRICs” becomes “BRIC”, etc.

Table 4: Descriptors from the titles

Category	Word/Phrase	Original Japanese
Resources	Energy	エネルギー
	Shale	シェール
	Harvest	ハーベスト
	Metal	メタル
	Ore	鉱
	Resources	資源
	Food	食糧
	Natural	天然
	Agriculture	農
Industry	Infrastructure	インフラ
	Health	ヘルス
	Structural Reform	構造改革
	Manufacturing	製造業
	Domestic Demand	内需
	Defense	防衛
Income	Income	インカム
	High Income	ハイ・インカム
	Hi Yield	ハイイールド
	Attractive Dividend	好配当
	High Interest Rate	高金利
	High Dividend	高配当
	High Yield	高利回り
Inflation	Inflation	インフレ
	Inflation Indexed	物価連動
BRICS	BRICs	BRIC
	BRICs	ブリックス
Risk on	Emerging	エマージング
	Growing	グローイング
	Growth	グロース
	New World	ニューワールド
	Frontier	フロンティア
	Rising	ライジング
	Leveraged	レバレッジド
	Next Generation	次世代
	Developing	新興
	Future	未来
Risk off	AAA	AAA
	Quality	クオリティ
	Risk Control	リスク・コントロール
	Careful Selection	厳選
	High rating	高格付け
	Major Currency	主要通貨
	Advanced	先進
	Investment Grade	投資適格
	Excellent (high quality)	優良
Japan Links	Japanese Firm Related	日本企業
Science and Technology	Internet	インターネット
	Science	サイエン
	Technology	テクノロジー
	Aerospace	航空宇宙
Environment	Environment	環境
	Green	グリーン

The overall counts of the words and phrases split into equity and bond prospectus groups can be found below in Table 5. There are two figures cited in each case, first the percentage of funds that contain at least one mention of each word or phrase, next the total number of mentions in all of the funds in each group. So the word “Resources” is found in 11% of the bond fund prospectuses, less than

in the 17.3% of the equity fund prospectuses. But the total count of “Resources” is 2,201 in the bond funds, higher than the 1,249 in equity funds. Quite clearly some of the words are much more relevant to either one of stocks and bond fund prospectuses but not the other. For example “High Interest Rate” is clearly more of a descriptor of a bond fund and “high dividend” more a descriptor of a stock fund. Others are mentioned evenly in both bond and stock fund prospectuses. Perhaps showing evidence of attempting to appeal to their readers, 73% and 86% of stock and bond funds respectively, contain some kind of reference to “Risk off” or safety. But 59% and 60% also contain some kind of reference to “Risk on”!

Several of the words or phrases were mentioned relatively few times throughout the prospectuses of either bond or stock Funds but most of these were closely related to another word or phrase. For example “Harvest” and “Food” were mentioned a total of just 46 and 51 times respectively, but clearly these words are quite close in meaning to “Agriculture”, mentioned 322 times. Similarly “Metal” seems closely related in meaning to “Ore” and “Gold”. Only “Structural reform” and “Japan Links” stand out as being mentioned relatively infrequently and not closely associated in meaning with other words and phrases tested. These two cases will be discussed in the next section on how the descriptors differ by region.

Table 5: Descriptor counts 1

Category	Word/Phrase	% Bond Funds Mentioned	Total Bond Fund Mentions	% Stock Funds Mentioned	Total Stock Fund Mentions
Resources	Energy	6.8%	180	55.1%	1289
	Gold	0.1%	1	1.8%	107
	Shale	0.0%	0	1.2%	95
	Harvest	0.0%	0	0.3%	46
	Metal	0.3%	5	0.9%	41
	Ore	6.5%	189	12.3%	599
	Resources	11.0%	2201	17.3%	1249
	Food	1.2%	18	1.5%	33
	Natural	3.1%	96	11.4%	261
	Agriculture	4.8%	99	11.6%	223
	Total	23.1%	2729	66.0%	3943
Industry	Infrastructure	7.9%	507	22.7%	871
	Health	3.2%	54	24.9%	471
	Structural Reform	0.6%	8	0.4%	10
	Manufacturing	1.6%	22	5.4%	93
	Domestic Demand	0.9%	12	6.0%	555
	Defense	1.1%	13	0.5%	52
	Total	14.5%	616	45.0%	2052
Income	Income	50.0%	2942	10.1%	354
	High Income	3.1%	542	1.9%	107
	Hi Yield	34.1%	12192	1.8%	34
	Attractive Dividend	0.7%	8	6.9%	671
	High Interest Rate	9.1%	549	0.7%	10
	High Dividend	0.0%	0	6.9%	567
	High Yield	22.0%	1138	0.5%	14
	Total	64.0%	17371	18.0%	1757
Inflation	Inflation	12.5%	597	5.1%	61
	Inflation Indexed	2.1%	170	0.0%	0
	Total	13.7%	767	5.0%	61
BRICS	BRIC	0.3%	8	1.4%	83
	BRIC (English)	0.0%	2	1.0%	7
	Total	0.3%	10	2.0%	90

Table 6: Descriptor counts 2

Category	Word/Phrase	% Bond Funds Mentioned	Total Bond Fund Mentions	% Stock Funds Mentioned	Total Stock Fund Mentions
Risk on	Emerging	35.3%	7538	28.0%	1122
	Growing	0.9%	10	0.7%	18
	Growth	1.2%	417	7.8%	698
	New World	1.5%	298	0.0%	0
	Frontier	0.5%	32	1.2%	92
	Rising	0.1%	1	0.9%	38
	Leveraged	0.0%	0	0.3%	34
	Next Generation	0.0%	0	1.1%	15
	Developing	55.9%	7392	49.4%	2166
	Future	0.2%	14	0.1%	6
	Total	60.0%	15704	59.0%	4196
Risk off	AAA	32.1%	1226	0.7%	12
	Quality	1.6%	21	4.5%	101
	Risk Control	2.9%	38	6.1%	213
	Careful Selection	1.6%	50	13.4%	451
	High rating	10.4%	263	0.1%	2
	Major Currency	16.6%	227	3.7%	27
	Advanced	59.4%	2526	57.8%	1473
	Investment Grade	41.7%	1844	3.0%	47
	Excellent	1.7%	20	11.0%	199
	Total	86.0%	6215	73.0%	2525
Japan Links	Japanese Firm	1.3%	32	0.4%	7
	Total	1.3%	32	0.0%	7
Science and Technology	Internet	11.8%	244	15.2%	237
	Science	0.4%	7	17.3%	372
	Technology	4.5%	151	32.1%	665
	Aerospace	0.3%	3	0.5%	52
	Total	16.1%	405	44.0%	1326
Environment	Environment	49.9%	1216	47.8%	613
	Green	0.7%	43	0.9%	29
	Total	50.1%	1259	48.0%	642

2.2.2 Usage of the descriptive words in Asian fund prospectuses

2.2.3 Usage of the descriptive words in Emerging fund prospectuses

In contrast to the Emerging category below, where there are many more bond funds than equity funds, in the Asia category, the opposite is true. There are just 115 Bond Funds compared with 244 Equity Funds. This may be due to the lack of bond market development in the region noted by (Bhattacharyay, 2011)

and others. As such any abductive conclusions drawn from the two groups will be considered accordingly. Also, because it is known that there is a dearth of Asian investment in Asia (Garcia-Herrero, Wooldridge, & Yang, 2009) the attributes found in more non-Asia prospectuses are of as much interest as the attributes found in more Asia prospectuses.

Asia Bond Fund Prospectuses

The words or phrases found in a significantly different proportion of Asia Bond Fund prospectuses can be found below in Table 7. Just 7 words or phrases were found in a significantly different proportion of Asia Bond Fund prospectuses compared with non-Asia Fund prospectuses. Perhaps reflecting the wide range of development across the region, words and phrases describing development were not found in significantly more or less of the Asia Bond Fund prospectuses except “Emerging”, which was found in less. And much like the Emerging Fund prospectuses of both stocks and bonds, “Advanced” is found in a higher proportion of Asia prospectuses compared to non-Asia prospectuses, though in not as often as in the “Emerging” prospectuses.

Table 7: Asia bond significant descriptors

Word/Phrase	% Asia Bond Funds Mentioned	Average times mentioned	% non-Asia Bond Funds Mentioned	Average times mentioned	Chi-Square Statistic	Significance
Found significantly more frequently in Asia Bond Fund prospectuses						
Domestic Demand	4%	1.4	0%	2.4	17.9	0.00
Ore	14%	2.5	6%	2.3	10.9	0.00
Advanced	75%	2.9	58%	2.4	5.1	0.02
Technology	9%	2.6	4%	2.6	5.0	0.03
Found significantly less frequently in Asia Bond Fund prospectuses						
Resources	2%	4.0	12%	10.8	9.9	0.00
Emerging	20%	4.0	37%	1.0	8.4	0.00
Agriculture	1%	1.0	5%	1.6	4.1	0.04

Regarding national attributes, there is a conflicting result. “Ore” is found in a higher proportion of Asia prospectuses than non-Asia prospectuses, but “Resources”, found in a lower proportion. An examination of the usage of “ore” within those prospectuses though (an average of 16 mentions in each prospectus where it is found, verses just 2.5 times in the non-Asian prospectuses) suggests that Japanese investors may place importance of that resource in particular. At the same time Asia is perhaps not seen as having significant natural resources other than ore. The significantly fewer number of prospectuses containing references to “Agriculture” is further evidence of this, though its relative use overall is quite rare, so results should be viewed with some caution.

Two more attributes were mentioned significantly more in Asia Bond prospectuses and each have interesting abductive implications. That “Technology” is mentioned more often is interesting in view of the research on inter-Asian FDI, which suggests that investment within Asia is directed towards countries with less developed technological capabilties (Petri, 2012). Also “Domestic demand” was also mentioned in a much higher proportion of the Asia prospectuses (though still

in relatively small numbers). This phenomenon is also evident but to a much greater degree in the Asia Equity Fund prospectuses so the implications will be addressed in that section.

Asia Equity Fund Prospectuses

The words or phrases found in a significantly different proportion of Asia Equity Fund prospectuses can be found below in Table 8: Asia stocks significant descriptors. Perhaps not unexpectedly because of the much larger number of Asia equity funds compared to bond funds – a full third of all of the stock funds are categorized as Asia Funds, verses less than 10% of the bond funds – there are many more significantly used words and phrases. In terms of development, "Advanced" again is found in significantly more Asia Equity Fund prospectuses, as is "Rising", but "Emerging" and "Growth" are found in fewer. This is consistent with the results from the Asia Bond Fund prospectuses and may simply reflect the mix of development in the region, though the less frequent use of "Excellent"[8] may reflect the lack of highly developed countries.

[8] The term "Excellent" is translated from the Japanese "**優良**" , which has a much closer connotation to "quality" than its English equivalent.

Table 8: Asia stocks significant descriptors

Word/Phrase	% Asia Equity Funds Mentioned	Average times mentioned	% non-Asia Equity Funds Mentioned	Average times mentioned	Chi-Square Statistic	Significance (1 deg fr)
Found significantly more frequently in Asia Equity Fund prospectuses						
Domestic Demand	12%	17.8	3%	1.5	24.60	0.000
Agriculture	18%	2.1	8%	3.1	14.50	0.000
Advanced	72%	2.9	51%	3.9	12.98	0.000
Infrastructure	32%	6.9	18%	3.8	12.48	0.000
Inflation	9%	1.0	3%	2.3	8.50	0.004
Manufacturing	9%	2.2	4%	2.4	6.86	0.009
Green	2%	5.0	0%	2.0	4.67	0.031
Rising	2%	5.0	0%	6.5	4.67	0.031
Harvest	1%	23.0	0%	0.0	4.06	0.044
Found significantly less frequently in Asia Equity Fund prospectuses						
Emerging	16%	2.1	34%	6.2	20.12	0.000
Science	9%	1.4	21%	3.2	13.11	0.000
High Dividend	2%	1.7	9%	12.4	10.42	0.001
Growth	3%	1.9	10%	13.7	9.69	0.002
Excellent	6%	1.9	13%	2.6	7.70	0.006
Income	6%	6.0	12%	4.4	6.98	0.008

It appears that Fund companies do not view Asia Equity Funds as having high income-producing potential. “High Dividend” and “Income” are found in a significantly lower proportion of the Asia Fund prospectuses than the non-Asia prospectuses. “Inflation” is mentioned more however, and this is somewhat surprising as it is usually associated with interest rates and thus bonds rather than stocks. It is possible that rather than describing the higher interest rates effect of inflation (normally associated with bonds) it is describing a stable inflation environment that may make equity investment attractive.

There are several takeaways from the usage of attribute-type words. “Infrastructure” and “Manufacturing” are found in a significantly higher proportion of the Asia Fund prospectuses. In contrast to the Asia Bond Fund prospectuses, “Agriculture” and “Harvest” are used in significantly more Asia

Fund prospectuses. The usage of these three (if counting "Agriculture" and "Harvest" as one) words describing fairly basic industries contrasts with the significantly infrequently found "Science" that presumably describes a higher level industry-type. The "Science" result in the Asia Equity Fund prospectuses is in somewhat contrast to the "Technology" result in the Asia Bond Fund prospectuses but is consistent with the previously mentioned FDI research. Again, given the comparatively large number of Asia Equity Funds compared to Asia Equity Funds, the results from the former will be given more weight.

Echoing the result noted above in the Asia Bond prospectus section, there appears to be a something unique about the term "Domestic demand" that makes it applicable to be used in prospectuses of Funds related to Asia. It is mentioned a total of 555 times in all of the Stock Fund prospectuses, of these 534 are in those for Asia. This seems to be good evidence of a clear difference in the way the Funds are describing their Asian assets. It may be because of the image of Asian economies being export driven and susceptible to external shocks. Highlighting the ability of the economy (or particular firms within that economy) to withstand such shocks may be the motivation behind the frequent usage of the word.

The large difference in usage of "Domestic demand" also leads to further investigation of its use within the prospectuses. Of the 534 cases where it is used in Asia Equity Fund prospectuses, 462 are found in just 6 prospectuses. Mitsui Sumitomo Asset manages 5 of them: Nikko Asia High Growth Domestic Demand-related Fund, China Domestic Demand Fund, India Domestic Demand Fund, Korea Domestic Demand Fund, and ASEAN Domestic Demand fund. The

other, managed by Daiwa, is Daiwa ASEAN Domestic Demand Fund. It is somewhat noteworthy that these are all domestic companies, as it is assumed that domestic companies would have a slight edge in being able to cater to any unique preferences of Japanese retail investors. The funds are not large (the Daiwa fund is the largest with AUM of JPY 8.2 Billion) but not tiny either. What stands out is how small the Korea and China funds are at just JPY 100 Million and 11 Million, respectively, compared to the India, general Asia, or ASEAN funds. This echoes the findings from section 1 of the Content analysis where these two countries were mentioned much more often in prospectuses than their ability to attract JIT investment.

In addition, though not part of the set of words from the titles, it is prudent here to also do analysis on the opposite word, "External demand"[9]. Just 4 instances are found in bond prospectuses, so that will be ignored, and though there are relatively few cases of its use in the stock funds, it is overwhelmingly used in Asia Fund prospectuses. 14 out of the 15 prospectuses where it is mentioned are Asia Fund prospectuses as are 50 of the 51 total mentions. This seems to indicate further a special focus on internal and external demand when describing Asia Equity assets.

To summarize the findings from the analysis of Asia Bond and Equity Fund prospectuses, there are several conclusions that may be testable in the next phase of the study. Inflation, specifically stable inflation, is hypothesized to be

[9] The Japanese character for "internal" in "internal demand", 内 is often paired with another word, in this case "内需", and contrasted with its opposite character for external "外", in this case to make "外需". This makes the inclusion of it in the study as natural in the view of the author.

important thus inflation volatility can be tested as an independent variable. Infrastructure can be tested in the same way as noted in the Emerging prospectus analysis. As it appears that the mix of industries seems to be important, Asia having more primary-type industry words, non-Asia having more science related words, an examination of the proportion of GDP each sector represents is a useful variable. Dividend yields can be easily quantified to see if there is a preference towards countries with higher-dividend-yielding stock markets. Finally domestic demand can be quantified using the proportion of exports to GDP.

Emerging Bond Funds prospectuses

The words or phrases found in a significantly different proportion of Emerging Bond Fund prospectuses can be found below in Table 9. The words found significantly more or less in Emerging fund prospectuses fall into three groups, status of development, level of interest rates and attractive national attributes. Words describing status of development fall into the two ends of the scale, developing and developed. Unsurprisingly words commonly associated with developing countries were found significantly more frequently. All of “Emerging”, “Developing”, “New world”, “Growing”, and “BRICs” (either the roman letters or the Japanese equivalent) were found in a significantly higher proportion of Emerging prospectuses than in the non-Emerging prospectuses. Words describing credit worthiness such as “Investment Grade”, and “AAA” are found in significantly fewer Emerging Fund prospectuses, which is consistent with expectations. The word “Internet”, which could be used to characterize

technological development in a country, is found in significantly fewer Emerging prospectuses.

Table 9: Emerging bond significant descriptors

Word/Phrase	% Emerging bond Funds Mentioned	Average times mentioned	% non-Emerging bond Funds Mentioned	Average times mentioned	Chi-Square Statistic	Significance (1 deg fr)
Found significantly more frequently in Emerging bond Fund prospectuses						
Emerging	97%	26.5	16%	2.7	397.07	0.000
Developing	95%	20.9	44%	4.9	99.75	0.000
Advanced	96%	4.1	48%	3.4	84.48	0.000
New World	6%	17.5	0%	0.0	53.75	0.000
Growing	4%	1.0	0%	0.0	31.62	0.000
Resources	18%	16.7	9%	17.8	18.10	0.000
High Income	7%	20.6	2%	8.9	16.30	0.000
Structural Reform	2%	1.0	0%	2.0	14.59	0.000
Major Currency	24%	1.1	14%	1.2	13.64	0.000
Income	63%	7.8	46%	3.9	12.37	0.000
High Interest Rate	14%	2.4	7%	7.0	11.38	0.001
BRIC	1%	2.7	0%	0.0	9.49	0.002
Ore	10%	1.8	5%	3.0	8.80	0.003
Metal	1%	1.0	0%	2.0	5.69	0.017
Infrastructure	11%	13.3	7%	1.6	5.02	0.025
Found significantly less frequently in Emerging bond Fund prospectuses						
Emerging	16%	2.1	34%	6.2	20.12	0.000
Hi Yield	24%	17.6	37%	33.7	10.64	0.001
Investment Grade	31%	3.4	45%	3.9	9.44	0.002
Internet	7%	1.8	13%	1.8	7.54	0.006
AAA	24%	2.4	34%	3.5	6.60	0.010
Inflation Indexed	0%	1.0	3%	7.3	5.19	0.023
Health	1%	1.7	4%	1.4	5.14	0.023
High rating	7%	1.0	11%	2.4	4.41	0.036

As noted in the review of literature, there is the possibility that the prospectuses slant the descriptions to benefit the countries being described. Two words, “Advanced” and “Major Currency”, are found in significantly more Emerging Fund prospectuses, contrary to expectations. Indeed “Advanced” is found in 96% of all Emerging Fund prospectuses compared to just 48% of non-Emerging Fund prospectuses. This seems to indicate the goal of assuring investors in Emerging Funds that though the assets are in countries that are

emerging and therefore have a higher degree of risk, that some (vague) aspect of this development can be considered "Advanced" and therefore perhaps somewhat less risky than the general set of Emerging countries.

It appears that words conveying high rates of return are used in more Emerging Fund prospectuses than in non-Emerging Fund prospectuses. "Income", "High Income", and "High Interest Rate" are all found in a significantly higher proportion of Emerging prospectuses and while "High Yield" is found in a significantly smaller proportion of Emerging Fund prospectuses, when it is used it is used much more frequently within that prospectus.[10] As this group of prospectuses is for bond funds, we can hypothesize that this result shows that higher interest rates are of higher importance to buyers of Emerging Funds than buyers of non-Emerging Funds.

The final group of words is slightly less easy to categorize, but generally seem to focus on attributes that can be easily associated with certain countries. Natural resource attributes "ore", "metal", and "Resources", are all found in a significantly higher proportion of Emerging Fund prospectuses. "Structural reform" and "Infrastructure" seem to indicate levels of government commitment to development and are both found in a significantly higher proportion of

[10] The word "High Yield" has two meanings (in both English and Japanese), a simple descriptive or the name of a segment of the bond market. Descriptively it can simply refer to the relative value of interest rate on a security or fund. But it is also commonly used to describe a segment of the bond market of lower rated (higher risk) bonds (also known as Junk Bonds), these "High Yield" bonds are typically corporate bonds. As corporate bonds are found much more frequently in developed financial markets we can also abductively suggest that the corporate bond related meaning's use in developed markets may cause the descriptive terms use in Emerging market prospectuses seem artificially low. This seems to be a reasonable explanation to the surprising outlier.

prospectuses and in the case of "infrastructure" used much more frequently (13.3 times vs. 1.6 times) in the prospectuses where the word occurs.

To summarize there are some clear differences between the content of Emerging Fund prospectuses and non-Emerging Fund prospectuses. Words describing interest rates, natural resources and government commitment to development are all more important to Emerging bond Funds than non-Emerging Funds. These are all somewhat testable in the next phase of the study. Other words describing relative safety within the context of growth are also important and will be noted for comparison but are less obviously testable in the next phase. There is also some evidence of the kind of pandering and slanting of narrative noted in the literature (Mullainathan & Schleifer, 2005).

Emerging Equity Funds prospectuses

The words or phrases found in a significantly different proportion of Emerging Equity Fund prospectuses can be found below in Table 10. Only 9 of the words from the set are used in significantly more or less of the Emerging Equity Fund prospectuses that in the non-Emerging Equity Fund Prospectuses (compared to 22 for the bond Fund prospectuses) but they can be similarly categorized into two of the same three categories of status of development and attractive attributes. Words describing payments or interest rates do not appear to be used differently in the two groups of prospectuses. As this is text describing assets that include individual companies, the category above of national attributes is better described as simply attributes as they may reflect either the countries or

the firms within the countries.

Table 10: Emerging stocks significant descriptors

Word/Phrase	% Emerging Equity Funds Mentioned	Average times mentioned	% non-Emerging Equity Funds Mentioned	Average times mentioned	Chi-Square Statistic	Significance (1 deg fr)
Found significantly more frequently in Emerging Equity Fund prospectuses						
Emerging	82%	7.6	16%	3.0	168.49	0.000
BRIC	6%	10.1	0%	1.0	26.05	0.000
Brics	3%	1.8	0%	0.0	18.23	0.000
Advanced	83%	4.3	52%	3.1	17.44	0.000
Developing	68%	13.1	45%	3.6	11.89	0.001
Found significantly less frequently in Emerging Equity Fund prospectuses						
Science	3%	1.0	20%	3.0	19.18	0.000
Health	12%	1.3	28%	2.7	10.79	0.001
Careful Selection	5%	2.7	15%	4.7	8.01	0.005
Technology	21%	1.8	34%	2.9	6.14	0.013
Risk Control	2%	1.0	7%	5.0	3.91	0.048

The usage of developmental words used is similar to that of the bond fund prospectuses. Words associated with developing countries, “Emerging”, “BRICs”, and “Developing” are all used significantly more frequently in Emerging Equity Fund prospectuses than non-emerging prospectuses. And again the word “Advanced” is used in 83% of the Emerging Equity Fund prospectuses (compared with 52%) of the non-Developing fund prospectuses. This appears to be further confirmation that the writers of the prospectuses feel the need to assure the readers. Also as stated in the assumptions, there is the possibility that this word is being used in a different way than the author’s interpretation. This may still be the case but given the very high proportion of both Emerging equity and bond Fund prospectuses that include a reference to “Advanced”, it seems reasonable to conclude that it is being used for the purpose suggested by the author.

In other areas where developed countries are likely to have advantages the

words used to describe firm types and risk levels are consistent with expectations. “Science”, “Health”, and “Technology” are all assumed to be types of companies that are attractive. These words are found in significantly less of the Emerging Equity Fund prospectuses than in the non-Emerging prospectuses. Though “Careful Selection” and “Risk control” might be used similar to “Advanced” to attempt to mitigate the risk levels, they are both found in a significantly lower proportion of the Emerging Fund prospectuses.

In summary it seems that positive attributes unique to Emerging equity funds are less obvious than those of the bond funds. Indeed the lack of safety and lack of higher-level industry are the most obvious takeaways from the usage of the set of words. Among the findings from the two groups of prospectuses there are several findings that may be tested in the next section. Interest rates are explicitly testable, and natural resource-type attributes can be approximated using World Bank categories of Natural Resource Rents and Energy Production. Structural reform is less obviously quantifiable, but the Index of Legal rights

in a country may be somewhat of a proxy. Infrastructure is similarily difficult to quantify but the OECD has a data set for “Transport infrastructure investment and maintenance spending” that may be a useful measure to evaluate in emerging countries.

Research Question 2.3

2.3 Identification of broad categories of descriptors and how their usage differs across regions

General observations

The final stage of the content analysis is an attempt to categorize the 52 words identified into broader categories to assess whether further abductive inferences may be drawn. The results for all the funds is Table 11: Category counts. High risk attributes were found in 59% and 60% respectively, of the Stock and Bond Fund Prospectuses, but the frequency of mention within the prospectuses was much lower in stocks (a total of 4186 cases verses 15700 cases respectively.)

Table 11: Category counts

Stock Funds				Bond Funds		
Category	% inc	Total Count		Category	% inc	Total Count
Resources	0.66	3643		Resources	0.23	2729
Brics	0.02	90		Brics	0.00	10
Low risk	0.73	2525		Low risk	0.86	6215
Japan related	0.00	7		Japan related	0.01	32
High Risk	0.59	4186		High Risk	0.60	15700
Inflation	0.05	61		Inflation	0.14	767
Green	0.48	642		Green	0.50	1259
Tech	0.44	1326		Tech	0.16	405
Industry	0.45	2052		Industry	0.15	616
Income	0.18	1650		Income	0.64	16829

The comparisons of each of the geographical categories can be found in Table 12: Significant category findings. To avoid overwhelming with numbers, the table simply shows whether the words are found more frequently (designated by a "+") or less frequently (designated by a "–") and if they are significant at the 0.05 level or better (highlighted).

Table 12: Significant category findings

	SCA Stocks	O Stocks	NA Stocks	ME Stocks	EU Stocks	Asia Stocks	Afr Stocks
Resources	+	+	+	+	−	+	+
Brics	−	−	−	−	−	−	−
Low risk	+	−	−	−	−	+	−
Japan related	+	−	−	−	−	+	+
High Risk	+	−	−	+	−	+	+
Inflation	+	−	−	+	−	+	+
Green	−	−	+	−	+	+	−
Tech	−	−	+	−	−	−	−
Industry	+	−	+	+	+	+	+
Income	−	+	+	+	+	−	+
	SCA Bonds	O bonds	NA Bonds	ME Bonds	EU Bonds	Asia Bonds	Afr Bonds
Resources	+	−	−	+	+	−	+
Brics	−	−	−	−	−	−	−
Low risk	−	+	−	+	−	−	+
Japan related	−	−	−	−	−	−	−
High Risk	+	−	−	+	−	+	+
Inflation	+	−	+	−	+	−	+
Green	+	−	−	+	+	−	+
Tech	+	+	−	+	+	+	+
Industry	+	−	−	−	+	+	−
Income	−	−	+	+	+	−	−

It is useful to make some general observations before attempting to identify quantifiably useful abductive inferences for further study. It seems that there are two levels on which to evaluate the descriptors. The most obvious is that they are used to highlight attractive attributes about the assets contained in a Fund (and by inference the countries where those assets are from). But there are also examples of prospectuses describing countries with an abundance of well-known attributes included in the tested set, that use these descriptors significantly less than expected. It is hypothesized by the author that this is due to these attributes being so well known that the Funds' don't feel it necessary to include much information

on them.

The “Resource” category is a good example of this. “Resource” type descriptions were found in 66% of all of the Stock fund prospectuses and the inclusion rate is not significantly different in any of the 9 categories. While found in comparatively fewer of the bond fund prospectuses (23%), its inclusion rate was not as uniform. Fewer “Global” bond prospectuses and more “Emerging” prospectuses included reference to “Resources”, which is consistent with expectations. Somewhat puzzling is the significantly lower use in Oceania bond fund prospectuses, given Australia and New Zealand’s fairly well known natural resource endowments (For example Australia had the 10th highest “Ores and metals exports (as a proportion of merchandise exports)” in the world in 2012 (World Bank)).

Several of the categories are not directly testable but are useful in confirming the reliability of the logic of the study. For example, significantly more “Emerging” prospectuses of both bonds and stocks Funds’ prospectuses contained references to BRICs. As the countries included in the group are all generally seen as “Emerging”, an opposite result would have been surprising and potentially confounding. An interesting corollary to the results from this group is that only 12 stock funds and 4 bond funds in total included reference to it suggests that Japanese investors are either not as familiar with the term, or for some reason not attracted to some or all in the group of countries.

Other results which seem to confirm the logic of the study include “High Risk” descriptors which were found in a significantly higher proportion of both

stock and bond prospectuses in the South/Central America and Emerging groups, and in a significantly lower proportion of North America and Global. As all South/Central American countries are considered "Emerging" by the IMF (IMF, 2012), this is consistent with expectations. Further, "High Risk" attributes also found in a lower proportion of Oceania bond prospectuses. North America and Oceania are the two regions with no developing countries.

There is also evidence of the pandering tendency found in the literature (Mullainathan & Schleifer, 2005). Descriptions for "Low risk" attributes were found in 73% and 86%, respectively, of stock and bond fund prospectuses. This is clearly an attractive attribute and the frequency of inclusion appears to be fairly steady across all groups except for "Emerging" bond fund prospectuses where references are included at a significantly *higher* proportion of the prospectuses. This is consistent with expectations in that the Fund companies are incented to balance the obvious riskiness of investing in a developing country with descriptions of safety.

The first testable attribute found is "Inflation", with related attributes mentioned significantly more in both South/Central America bond and stock prospectuses and significantly less in both Global bond and stock prospectuses. This is somewhat tricky as stable inflation is likely a desirable trait, but higher inflation (not too high) is desirable in that it suggests an expanding economy and higher interest rates. Stability, in the form of inflation variance is testable, but it is difficult to quantify "high but not too high" in a regression model. This is discussed at length in the methodology section for Research Question 3.

The comparison of Global and Emerging bond fund prospectuses reveals stark differences in the usage of the descriptors. Attributes describing "Resources", "Risk on", and "Income" were all found in a significantly higher proportion of prospectuses for Emerging bond funds and also in a significantly lower proportion of prospectuses for Global bond funds. The opposite phenomenon (more in Global, less in Emerging) was observed for "Japan related" and "Technology". References related to "BRICs", and "Risk off" were found significantly more often in Emerging bond fund prospectuses, and "Inflation" and "industry" found significantly less often in Global bond fund prospectuses, but the opposite cases were not also true. These results indicate that investors are thought to be looking for higher income producing yet riskier assets but also looking for safety signals and collateral (in the form of resources). Further evidence of this is that in no other bond fund category (other than Emerging) was "Resources" found in significantly more prospectuses than expected.

This pattern is slightly less evident when looking at the results for Emerging stock funds, but there may be explanation. "BRICs" and "Risk on" words were found in significantly more prospectuses than in non-Emerging stock funds, but "Risk off", though found more often than in non-Emerging funds, was not significant. And "Resources" was actually found in a smaller proportion of the prospectuses than we would expect, but not significantly. But given that "Resources" is much more commonly used in describing equity funds, a slightly less frequent occurrence does not seem to be evidence of non-importance.

When comparing the 6 regional categories "Japan related" and "Inflation"

are used in a significantly higher proportion of South/Central American stock funds but not in Emerging stock funds. “Income” is used in significantly fewer South/Central American funds but in significantly more Emerging funds. There is also more frequent use of “Inflation” in the South/Central American fund prospectuses, so the implication may be that higher inflation indicates higher interest rates indicates higher income. Whereas in Emerging bond fund prospectuses “Low risk” and “Resources” are included significantly more frequently, they are not in South/Central American bond fund prospectuses.

While the Asia region is of particular interest to this study, there do not appear to be any more inferences to be mined from the groups of attributes that were not previously identified in the individual descriptor analysis. There does seem to be further evidence that Funds see Asia equities as not having enough income-producing qualities to highlight. Inflation-type variables and Tech-type variables are found in significantly more of the Asia Equity and Bond Fund prospectuses respectively but the overall counts are still fairly low.

Another interesting phenomena observed from the results is that the absence of description of “Risk on” may be a better reflection of actual risk than an abundance of “Risk off” attributes. If we assume that the three regions with the highest development, Oceania, North America and Europe, have the lowest risk then it is interesting that “Risk off” is not used in a higher proportion of prospectuses than expected but that “Risk on” is used in a significantly lower proportion of prospectuses in all three of the bond categories as well as in North American stocks. For further evidence, “Risk off” attributes are only mentioned in

significantly more prospectuses in the Emerging bonds grouping, presumably a comparatively higher risk grouping than each of the other bond groupings.

In addition to variables identified in the previous section, several variables are identified here as worth testing in the next phase of the study. Analyzing the amount of Japanese FDI towards that country may test "Japan related" factors. In addition, the "High Risk" category words were found more in four groups of prospectuses, South/Central America Stock and Bond Funds and Emerging Stock and Bond funds. In each of the cases except Emerging Stocks, there was some kind of clear counterbalance to the risk: "Japan-related" and "Inflation" in the case of the South/Central America Bond group, "Inflation" and "Industry" in the case of the South/Central America Stock group, and "Resources" and "Income" in the case of the Emerging Bond group. This points to the importance of using a multiple regression model to incorporate the balance of the variables.

Research Question 3 results

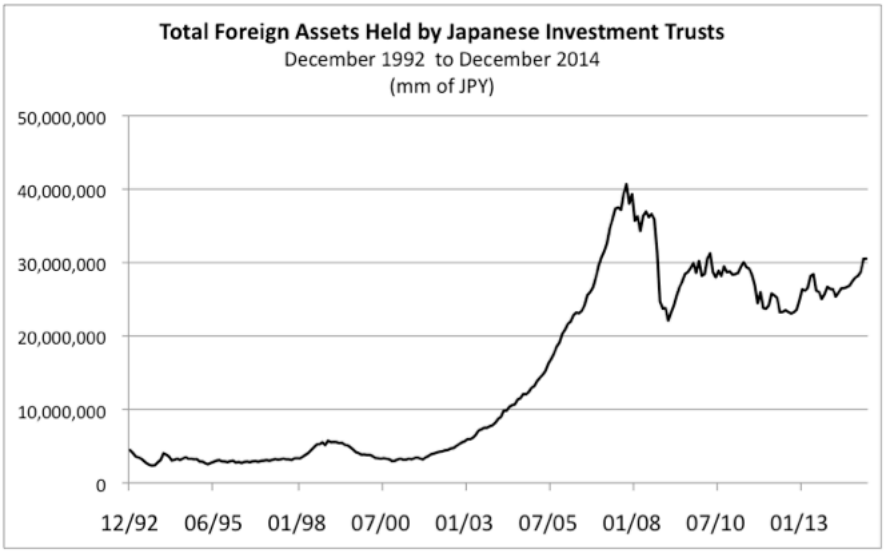
General inferences

Research Question 3.1

General inferences regarding bias from observation of the data

At the end of 1992, Japanese investment trusts collectively held just over JPY4 Trillion in foreign assets in 10 different currencies (counting the currencies that would eventually make up the Euro as 1. At the end of 2014, they held almost JPY30 Trillion in 46 countries. Seven times as much capital invested in three times as many countries. The time series chart of the assets held is shown in Figure 11 and shows a relatively steady level of holdings until 2002, followed by a 5-year period of dramatic increase. Though this was followed by a sharp decrease, the levels of holdings still remained much larger than before 2002 and have increased in recent years.

Figure 11: JIT foreign assets



Two peaks are observed, a small one in 1997 and 1998, and a large one

in 2007. A hypothesis of the cause of the creation of the first is that Japanese investors fled Asia (ie fled their own market) in the wake of the Asian Financial Crisis. That holdings of US bonds roughly doubled around this time suggests this is a possible explanation. The second peak is in late 2007, as the Global Financial Crisis was unfolding. As there is no corresponding inflow of assets to the Japanese currency holdings it is speculated that general investor sentiment caused the holders of investment trusts to redeem them for cash. Japanese holdings began to steadily increase post 2010, suggesting that this cash may have returned to the market after a period, but in to Japanese assets rather than foreign.

The time series charts for the holdings where all data is available (the 25 most widely held countries) are found in Appendix 15. The chart is split into 4 categories to ease congestion and allow easier observation. Some of the patterns of holdings seem to make intuitive sense, especially those in the largest economies. Investment in US assets has consistently been by far the highest proportion of foreign assets held. Until the European sovereign debt troubles of the 2010s, Euro assets were the second largest holdings, and that decrease in Euro holdings observed is accompanied by an approximately equal concurrent rise in US holdings. This large holdings of assets in currencies from the two largest equity markets in the world (World Bank) is consistent with expectations, though the recent reduction in assets held in Euros is of enough magnitude to drop them from 2nd most held to third.

Several countries appear to be surprisingly attractive to Japanese investors others surprisingly unattractive. As of the end of 2014, Australian assets

were the second largest held. Japanese investment trusts hold more Australian assets than they do in the sum total that they hold of the British Pound and the Euro. Brazilian lira and South African Rand appear very popular but their fellow BRICS members Russia, India, and China do not. The increase in holdings of Brazil and South African assets appears to have started at different times, leading to observe that there does not appear to be a "BRICS" group effect. Other examples of surprisingly few holdings include Swiss assets, which are not nearly as popular as their currency – of the six most traded currencies**Invalid source specified.**, Swiss Francs (CHF) is the only one not significantly held by the trusts. These initial observations suggest that there are material issues of foreign bias in the holdings worth investigating.

As previously noted, Asia is theoretically advantaged in terms of attracting Japanese assets and is a particular focus of the study. The time series charts of the Asian countries show a large decline in assets held starting before the Asian Financial Crisis and declining to almost negligible levels for about 5 years after suggesting profound effects from it. Since 2002, the amount of assets held in Asia appears to follow approximately the same general upward trend of overall foreign assets held but there are clear differences within Asia. Malaysia seems to have not regained its pre Asian Financial Crisis favor shown by the trust investment but Indonesia has attracted much more interest in recent years. Given the geographic proximity, bilateral trade and cultural ties to Japan, it is noteworthy and surprising that neither China nor South Korea seem to be popular investment choices.

An examination of the times series of aggregate holdings in each country as a percentage of the total is useful to look further at the data and examine potential bias. In the 5 largest held currencies, the percentage chart largely confirms the nominal chart but there are additional details revealed. US assets represent between 30 and 60% of total holdings for the entire period, largely within expectations. While Euro holdings between 5 and 30%, again decreasing in recent years, there is an additional decrease in proportionate holdings in the years coinciding with the adoption of the Euro currency.

The results of Research Question 2 above noted frequent use of natural resource related words in the prospectuses of the trusts. The proportion of assets held in countries traditionally associated with the abundance of resources seems to suggest that there may be a relationship. As in the aggregate holdings, Australian holdings seem surprising: higher than 20% of total assets at the peak in 2012. This is also echoed in the percentage chart for Brazilian assets, which peaks at 10% of total holdings in 2011. (Norway, another country with high levels of natural resources, also peaks in 2010).

The Asian charts for percentage holdings are particularly revealing. The percentage chart for Hong Kong assets is a striking contrast to the total holdings of Hong Kong assets. Unlike the total holdings chart which appears to roughly pattern after the total foreign holdings (all countries) chart, there is an additional observable pattern: while holdings have stabilized in the 2 to 6% range of total assets held in recent decades, pre 1997 Asian Financial Crisis, it hit a peak of 17% of total assets. Assets held in Malaysian Ringgits follows a similar pattern to those

in Hong Kong dollars, peaking at 8% pre Asian Financial Crisis, but less than 0.5% since. The charts for Singapore dollars, Thai Baht and Philippine peso all follow a similar pattern. It certainly seems that in the post-Asian Financial Crisis era, Japanese investors have allocated a significantly less proportion of their overseas investments in the region. It also seems worth noting that in the period after the AFC Japanese investors have returned to Indonesian rupiah, Singapore dollars and Indian Rupee assets at a higher level relative to other Asian currency assets.

There is an additional takeaway from the percentage data in the form of almost total absence of investment in Chinese Renminbi, Taiwan dollar or Korean won assets. China is the largest economy in the region and both South Korea and Taiwan are larger than all other Asian economies except for India and Indonesia. Outside of these three countries, before the AFC, there was evidence that the gravity model may also be appropriate for Japanese investment if not after. But these 3 particular cases are puzzling to account for. As this paper focuses on bias, it seems possible that there are non-rational investment reasons for this situation. The lack of investment in China and Korea relative to the two countries being named in the prospectuses in the findings of Research Question 2 also merits reference here. One possible explanation may be that strained relations dating back to World War II may be affecting the investment in these countries. This issue will be discussed below.

To summarize this initial examination of the data, several inferences can be made that are measurable in the next section. Three well-documented financial

crises seem worth testing for, the Asian Financial Crisis, the Global Financial Crisis and the European Sovereign Debt Crisis. There appears to be no relationship between the BRICs countries, but given the size of the holdings of Brazilian assets it is judged to be worth evaluating in case any relationships between BRICs becoming a marketing phrase for investment and Brazilian (and to a lesser extent South African) holdings exists. There is some indication from the charts that the natural resource attribute identified in the findings of Research Question 2 have merit and that this influence appears to peak in 2010. Finally, it now seems very clear that there is something unique affecting Japanese investment in its three closest neighbors and that some measure of strained relations needs to be included in the model.

Current situation of bias

Research Question 3.2

The current situation of foreign bias as represented by the foreign holdings of Japanese investment trusts.

Table 13: Relative Foreign Bias in 2014 depicts the current relative foreign bias scores for the 45 countries in the study. There are 11 countries (recall Uruguay has been dropped from the study) towards which JIT investors exhibited a foreign bias to in 2014: Australia, Brazil, Canada, Indonesia, Mexico, New Zealand, Norway, Poland, Singapore, Turkey, the US. A further 11 countries have had bias exhibited towards them at some point since 1992: the Czech Republic,

Denmark, Euro area, Hong Kong, Hungary, India, Malaysia, Philippines, Sweden, Thailand, and the UK. Holdings of the JITs has displayed consistent bias against the remaining 23 countries.

Table 13: Relative Foreign Bias[11] in 2014

Rank	Country	Bias	Rank	Country	Bias	Rank	Country	Bias
1	New Zealand	10.9	16	Euro	0.68	31	UAE	0.056
2	Australia	6.8	17	Thailand	0.45	32	Nigeria	0.046
3	Brazil	2.6	18	India	0.42	33	Sri Lanka	0.041
4	Poland	1.5	19	South Africa	0.38	34	Argentina	0.036
5	Indonesia	1.3	20	Denmark	0.35	35	Israel	0.034
6	Norway	1.3	21	Malaysia	0.35	36	Russia	0.034
7	US	1.2	22	Switzerland	0.29	37	Qatar	0.032
8	Mexico	1.2	23	Columbia	0.28	38	Egypt	0.028
9	Canada	1.1	24	Sweden	0.25	39	Kenya	0.028
10	Singapore	1.1	25	Philippines	0.23	40	Chile	0.020
11	Turkey	1.1	26	Taiwan	0.19	41	China	0.019
12	UK	0.8	27	Czech	0.13	42	Kuwait	0.011
13	Hong Kong	0.8	28	Korea	0.12	43	Oman	0.009
14	Vietnam	0.7	29	Peru	0.11	44	Pakistan	0.004
15	Hungary	0.7	30	Romania	0.11	45	Morocco	0.001

The difference between this examination and that of the previous section on percent of holdings is the adjustment for size of market. The results hold here for many of the observations above but there are several noteworthy additions. There is a negative bias observed for holdings in the Euro and in countries in or near Europe but all of these countries have had a positive bias at some point after 1992, except for Switzerland. The Switzerland result is not explained by any of the obvious factors identified so far. There seems to be an obvious bias towards developed countries and against less developed countries, which is consistent with expectations and testable in the regression model in the next section.

On the other side of the bias scale, the JITs seem to strongly favor

[11] As defined in the Methodology chapter

investment in assets in Australia and New Zealand. Both foreign bias scores several degrees higher than any other country. Similar to the Swiss observation above, there are no obvious reasons for this extreme bias. JITs appear to favor Brazilian assets as well, but by a less extreme margin. Perhaps what is most striking is the diversity in the group of 11 countries towards which Japanese investors exhibited positive foreign bias towards. Geographically there are 2 countries from Asia, 3 from Europe, 3 from North America, 1 from South America, and 2 from Oceania. And though the low end of the foreign bias scale seems to be almost entirely underdeveloped countries, the top of the scale includes 6 countries considered "advanced economies" by the IMF and 5 considered "developing economies".

There is an interestingly wide range of bias regarding countries in Asia. Indonesia and Singapore are favored, Hong Kong, Thailand, India, Malaysia and the Philippines have been favored, but Vietnam, Korea, China and Taiwan have always been unfavored. The Vietnam result is easily explainable by both its small size and recent financial market development, but once again, this measure confirms the somewhat puzzling bias against Japan's three closest neighbors. To this list we might add Russia, also a neighbor but with less linguistic and cultural similarities.

Gravity model explanations

Research Question 3.2.1

The gravity model applied to Japanese investment trust data in 2014.

The detailed regression results for regression equations 1 through 8 can be found in Appendix 17, and but the basic results are provided in Table 14: Regression results 1-8. Several of the results appear to match with the literature in explaining bias. The natural log of the relative bias measure detailed in chapter 2 has significantly positive relationship with the natural log of the size of the market capitalization of equities (Adjusted R-squared of 0.15) and natural log of liquidity (0.21) of a country's equity market, and it's level of legal rights (0.37), all at the 0.01 level of significance. At the lesser 5% level of significance there is a positive relationship between the natural log of bias and log of exports from Japan to that country (0.12) and the natural log of GDP per capita (0.09).

Table 14: Regression results 1-8

	1	2	3	4	5	6	7	8
GDP Growth	−0.22							
Log GDP/Cap		0.52 **						
Log Market Cap			0.48 ***					
Log Turnover				0.97 ***				
Log Exports					0.46 **			
Log FDI						0.46 ***		
Legal							0.38 ***	
Log Distance								−0.03
Adj R-Sq	0.03	0.09	0.15	0.21	0.12	0.37	0.32	0.00
***/**/*	denotes significance at the 0.01, 0.05 and 0.10 level respectively							

Other results seem at odds with previous studies. GDP growth does not appear to have a relationship with the foreign bias measure in 2014. Possible explanations for this are a difference in observed GDP growth with expected GDP growth, something unique about world GDP growth in 2014 that acts as a

confounding factor, or that GDP growth is not important to Japanese investors. This may become clearer in when historical data is added. Most surprising is that in both examination of the scatter plot and regression results of the natural log of bias and natural log of geographic distance there seems to be a total absence of relationship. Noted in several of the examinations above are the potentially confounding issues of China, Korea, and Taiwan (Russia too but as capital city distances are used here, Moscow is relatively far away from Tokyo and thus would not affect this logic because as a "far" country (in distance between capital cities) its lack of investment is not inconsistent with previous models). But the scatter plot does not show any evidence that these three are outliers of a trend that would replicate a pattern similar to multi country studies in the literature. This suggests a significant difference in the preferences of Japanese investors with those from other countries.

Regression equations 9, 10, 11 test of the pairs of macro economic variables, market variables and trade variables to assess whether there is overlap in what the regressors are capturing. The full results can be found in Appendix 15 and the summary in somewhat within expectations.

Table 15: Regression results 9-11. These showed that some of the variables are likely explaining similar parts of the variance of bias. Confirming above, the chosen measure of GDP growth does not add to the explanatory value of the model. In the market categories it appears that turnover by itself explains as much of the variance as does the size of the market. And the export measure is totally absorbed by the FDI measure, which is somewhat within expectations.

Table 15: Regression results 9-11

	9		10		11	
GDP Growth	0.45					
Log GDP/Cap	−0.09	*				
Log Market Cap			0.18			
Log Turnover			0.75	*		
Log Exports					−0.2	
Log FDI					0.57	
Legal						
Log Distance						
Legal System						
English						
Kanji						
Adj R-Sq	0.074	*	0.2	***	0.37	***
***/**/*	denotes significance at the 0.01, 0.05 and 0.10 level respectively					

The limited size of observations in the sample suggests that only a few independent variables be used in any multiple regression. As such, the best pair of variables is identified and tested against the dummy variables. Results for equations 12 through 15 in Appendix 19 and summary in Table 16: Regression results 12-15. Using only the market turnover and legal rights variables gives a model with an R-squared of 0.47. Of the three dummy variables of legal system, English and Kanji, the latter two were neither significant nor improved the model at all. The legal system variable (whether countries share having a German legal origin with Japan) is both significant (at the 0.05 level) and improves the R-squared of the model to .52.

Table 16: Regression results 12-15

	12		13		14		15	
Log Turnover	0.82	***	0.93	***	0.76	***	0.87	***
Legal	0.34	***	0.35	***	0.3	***	0.34	***
Legal System			1.34	**				
English					0.81			
Kanji							−0.5	
Adj R-Sq	0.47	***	0.52	***	0.47	***	0.47	***
***/**/*	denotes significance at the 0.01, 0.05 and 0.10 level respectively							

The results from this first attempt at regression suggest several things.

First that geography, widely found in other studies to be an important factor in the foreign bias of investment, does not appear to be important to Japanese investors at all. Second, that several of the variables identified in previous studies as important are indeed important for Japanese investors, most importantly legal rights and the turnover of a country's equity markets. That both of these variables are significant in a positive way is very intuitive, in that they can be seen to somewhat represent the "housekeeping" (market turnover being an indicator of broad macro-economic factors) and the "plumbing" (the legal rights) noted by (Ladekarl & Zervos, 2004) and discussed in Chapter 2. That the commonality of having a legal foundation in German Law is the one aspect that suggests at least some of the gravity model also applies to Japan, despite the geographic distance result. The lack of any significance of the use of Kanji is somewhat surprising given language findings in previous studies and though it first appeared in the scatter plot that the use of English might be significant, in combination with Legal rights and market turnover suggests that it is merely an side effect of English-speaking countries having other attributes attractive to Japanese investors.

Variables from the analysis of the prospectuses

Research Question 3.2.2

Regression models using variables identified in the content analysis.

Regression equations 16 through 222 measure the effects of the new variables, details are found in Appendix 20 and the summary below in Table 17: Regression results 16-22. Development and the natural log of tech exports as a

percentage of GDP appear to have fairly strongly positive and significant influence on relative foreign bias consistent with expectations. There does not appear to be any positive relationship between foreign bias and either of the two natural resource metrics (and even a mildly significant *negative* effect observed on the part of resource rents), which is contrary to expectations, but both variables will be tested as part of a larger model. As expected, the rate of inflation alone is not significant, but somewhat surprising is that despite the combination of inflation rate and S&P rating being significant, the inflation variable remains not significant.

Table 17: Regression results 16-22

	16	17	18	19	20	21	22
Development	7.23 ***						
Log Res. Rents		−0.23 *					
Log Energ Prod.			0.11				
Inflation				−0.1	0.16		
S&P Rating					0.22 ***		
Log Tech Exp.						0.68 ***	
Lot Exp. % GDP							−0.8 *
Adj R-Sq	0.16 ***	0.06 *	0	0	0.14 **	0.19 ***	0.05 *
***/**/*	denotes significance at the 0.01, 0.05 and 0.10 level respectively						

It is somewhat surprising that none of these new variables, when added to the simple Legal and Turnover model (regression equation 12 above), make any improvement upon it. But when four of them are combined together they form a fairly good model. Regression results for equations 26 through 29 can be found in Appendix 21 and their summaries below in Table 18: Regression results 23-26. Using the best of the new variables we can obtain regression equation 26, which seems to explain a similar amount of the variance of the natural log of bias as does equations 15 and 16 above. Within expectations, human development, interest rate, and the natural log of tech exports as a proportion of GDP are all

positively related to the natural log of relative foreign bias at the 0.01 level. Interestingly the S&P rating variable loses its significance in any larger model suggesting that its metrics are entirely captured by the other variables. Exports as a proportion of GDP is negatively related to foreign bias, giving more weight to the finding in Chapter 4.2 above, but it was only significant at the 0.1 level. When combing the border conflict dummy variable to equations 15, 16 and 26, we can see an improvement in the adjusted R-squared of the models from 0.05 to 0.15.

Table 18: Regression results 23-26

	23		24		12		25		13		26	
Log Turnover					0.82	***	1.01	***	0.93	***	1.1	***
Legal					0.34	***	0.31	***	0.35	***	0.32	***
Legal Foundation									1.34	**	1.24	**
Development	10.5	***	10.9	***								
Inflation	0.34	***	0.37	***								
Log Tech Exp.	0.68	***	0.80	***								
Lot Exp. % GDP	−0.63	*	−0.81	***								
Border Conflic			−3.0	***			−1.8	**			−1.7	**
Adj R-Sq	0.43	***	0.58	***	0.47	***	0.52	***	0.52	***	0.57	***

To summarize this final section, it appears that several of the variables identified in the content analysis have significant explanatory effect on the quantitative measure of foreign bias in 2014 used in the study. Human development, inflation rates, technological advancement as measured by the proportion of high tech exports as a proportion of GDP all seem to be significantly positive factors for bias and the reliance of a country's economy on exports as measure by exports as a proportion of GDP and the dummy variable territorial conflict both seem to be negative factors.

It is very important to note the significance found in the "territorial dispute" dummy variable does not represent causative evidence that the territorial disputes Japan has with its 4 closest neighbors is the reason behind the bias shown against investment in these countries. The author recognizes that the categorization of these 4 countries together for this reason is only an assumption, and while it seems reasonable, the author also recognizes that there may something else about this group of countries that is affecting this observed bias. It is clear that there is something about these 4 countries that makes them

unattractive for Japanese investment, and in particular Japanese retail investment, but more study in this area is needed to obtain any attempts at causation.

Also important to highlight is that the absence of significance of some attributes does not necessarily mean proof of absence of significance of these attributes. Best efforts were made to quantify the characteristics identified in the findings in Chapter 4.2, but as noted in Chapter 3.3, some of the attributes are harder to quantify than others. So that though natural resources, as explained by either natural resource rents or energy production, was not found to be a significant explanatory factor in the analysis, this does not mean that a country having significant natural resources is not an important factor in Japanese retail investor decision making.

That natural resource attributes were so frequently found in the prospectuses but not empirically shown necessitates further work in this area. Similarly, efforts to pinpoint the exact factors that cause Japanese investors to shun their 4 closest neighbors should also be undertaken.

Panel model results

Research Question 3.3

Panel results of foreign bias in the three time periods identified in research question 1.

The summary for results for regression equations 27 through 32 are found in Table 19: Regression results 27-32 and the full results for the first 7 are in Appendix 22. As the output of data increases only individual variable

regressions will be reported fully in the appendix (any and all regression results available upon request). In the full panel each of the independent variables that were found significant in the 2014 sample remained significant (all at the 0.01 level) in the same direction (all positively). The results when split into the three distinct periods were quite different, however, which is expected as it's consistent with the results from Research Question 1. In the pre-Big Bang era (equations 27a through 32a) only the size of market, turnover and level of legal rights remained significant, but at a less certain level (the 0.1, 0.05, and 0.05 levels respectively) and with fairly large reductions in R-squared. In the post-Big Bang era (but before the onset of the GFC), all of the independent variables were significant including GDP growth, which is not significant in the overall panel. Post GFC, only GDP per capita, exports and legal rights were significant. Thus only legal rights remained significant in all three time periods.

Table 19: Regression results 27-32

1992-2014	27	28	29	30	31	32
GDP Growth	0.00					
Log GDP/Cap		0.77 ***				
Log Market Cap			0.40 ***			
Log Turnover				0.55 ***		
Log Exports					0.75 ***	
Legal						0.179 ***
Within R-Sq	0	0.1	0.07	0.04	0.08	0.01
Between R-Sq	0.13	0.04	0.07	0.22	0.13	0.3
Overall R-Sq	0.02	0.07	0.033	0.117	0.08	0.20
***/**/*	denotes significance at the 0.01, 0.05 and 0.10 level respectively					

1992-2000	27a	28a	29a	30a	31a	32a
GDP Growth	0.02					
Log GDP/Cap		0.18				
Log Market Cap			0.22 *			
Log Turnover				0.571 **		
Log Exports					0.27	
Legal						0.23 **
Within R-Sq	0.01	0.01	0.03	0.06	0	0
Between R-Sq	0	0	0.01	0	0.09	0.12
Overall R-Sq	0.01	0	0.01	0.01	0.07	0.12
***/**/*	denotes significance at the 0.01, 0.05 and 0.10 level respectively					

2001-2007	27b	28b	29b	30b	31b	32b
GDP Growth	0.09 **					
Log GDP/Cap		1.15 ***				
Log Market Cap			0.62 ***			
Log Turnover				0.55 ***		
Log Exports					0.93 ***	
Legal						0.40 ***
Within R-Sq	0.07	0.20	0.17	0.07	0.19	0.02
Between R-Sq	0.15	0.18	0.07	0.11	0.13	0.19
Overall R-Sq	0.02	0.07	0.05	0.13	0.08	0.22
***/**/*	denotes significance at the 0.01, 0.05 and 0.10 level respectively					

2008-2014	27c	28c	29c	30c	31c	32c
GDP Growth	-0.02					
Log GDP/Cap		0.49 **				
Log Market Cap			0.17			
Log Turnover				0.354		
Log Exports					0.63 ***	
Legal						0.08 **
Within R-Sq	0.00	0.02	0	0.02	0.11	0
Between R-Sq	0.22	0.10	0.14	0.24	0.1	0.27
Overall R-Sq	0.09	0.10	0.09	0.19	0.08	0.22
***/**/*	denotes significance at the 0.01, 0.05 and 0.10 level respectively					

The summary of results for regression equations 33 and 34 are found in

Table 20: Regression results 33-34. None of the dummy variables are significant

in the full panel models but their addition does improve the R-squared of the model marginally. It is interesting to note the direction of the distance and the Kanji dummy variables as being negative, however. In particular they are weakly significant negative in the second time period. This gives more evidence that the distance and language components of the gravity models found in the literature are not applicable for Japanese investors. Other results are generally in line with expections: few variables significant in the first period, more in the second two, consistent with less agency problems in the trading behavior of the funds. There are two somewhat unexpected results. First that GDP growth has a significantly negative coefficent in the third period, which is contrary to expectation, but may just be indicative of negative growth results in many countries during the period. Also it is somewhat surprising that the Legal variable is not significant in the post-Big Bang time period, but this may be explained by correlation with other variables used.

Table 20: Regression results 33-34

	All	33	All	34	1992–2000	34a	2001–2007	34b	2008–2014	34c
GDP Growth	−0.01		−0.01		0.01		0.05		−0.03	**
Log GDP/Cap	0.47	***	0.48	**	−0.2		0.75	**	0.39	*
Log Market Cap	−0.05		−0.08		0.02		−0.06		−0.04	
Log Turnover	0.44	***	0.45	**	0.48		0.30		0.24	
Log Exports	0.42	***	0.45	***	0.13		0.38		0.57	***
Legal	0.14	***	0.14	***	0.25	*	0.11		0.05	*
Log Distance			−0.16		−0.2		−1.09	*	0.48	
Kanji			−0.97		−0.5		−2.09	***	−0.57	
English			0.67		0.25		0.88		0.73	
Legal System			0.72		0.52		−0.07		0.64	
Model Wald Test	0.00	***	0.00	***	0.00	***	0.00	***	0.00	***
Within R-Sq	0.14		0.14		0.05		0.22		0.15	
Between R-Sq	0.30		0.36		0.12		0.36		0.34	
Overall R-Sq	0.22		0.26		0.18		0.39		0.30	
***/**/*	denotes significance at the 0.01, 0.05 and 0.10 level respectively									

The summary of results for regression equations 35 through 41 are found in Table 21: Regression results 35-41. Similar to other results above, there is only one significant variable from the pre-Big Bang period, exports as a proportion of GDP. This result is noteworthy, however, as it is contrary to expectations founded on the results of Research Question 2 where it was found that domestic demand (and thus not export demand) is desirable. There is the possibility that export demand was a positive attribute but no longer is (perhaps the effects of the Asia Financial Crisis), this is given somewhat further indication in that in the next period it is only slightly significant and then in the final period, not significant at all.

It is also observed that the development score and fitch ratings seem to be significant and non-significant in the same cases. A correlation analysis reveals the two have a fairly high correlation, 0.76, indicating they are likely describing some of the same attributes. This is intuitive as higher developed countries should presumably have higher credit ratings. Only one of these two variables is then necessary going forward in the multiple regression analysis.

Table 21: Regression results 35-41

1992-2014	35	36	37	38	39	40	41
Development	5.98 **						
Log Res. Rents		0.04					
Log Energ Prod.			0.21				
Inflation				0.02	0.04 *		
Fitch Rating					0.21 **		
Log Tech Exp.						0.21	
Log Exp. % GDP							0.05
Within R-Sq	0.03				0.06		
Between R-Sq	0.13				0.15		
Overall R-Sq	0.10				0.13		
***/**/*	denotes significance at the 0.01, 0.05 and 0.10 level respectively						

1992-2000	35a	36a	37a	38a	39a	40a	41a
Development	3.64						
Log Res. Rents		0.07					
Log Energ Prod.			0.06				
Inflation				0.03	0.03		
Fitch Rating					0.05		
Log Tech Exp.						0.34	
Log Exp. % GDP							0.71 **
Within R-Sq							0
Between R-Sq							0.17
Overall R-Sq							0.13
***/**/*	denotes significance at the 0.01, 0.05 and 0.10 level respectively						

2001-2007	35b	36b	37b	38b	39b	40b	41b
Development	13.40 ***						
Log Res. Rents		0.18					
Log Energ Prod.			0.12				
Inflation				-0.1	-0		
Fitch Rating					0.29 ***		
Log Tech Exp.						0.38	
Log Exp. % GDP							1.23 *
Within R-Sq	0.2				0.1		0.06
Between R-Sq	0.24				0.38		0.03
Overall R-Sq	0.23				0.31		0.04
***/**/*	denotes significance at the 0.01, 0.05 and 0.10 level respectively						

2008-2014	35c	36c	37c	38c	39c	40c	41c
Development	4.35 **						
Log Res. Rents		-0.15 *					
Log Energ Prod.			0.06				
Inflation				0.05 ***	0.04 ***		
Fitch Rating					0.18 ***		
Log Tech Exp.						0.37 **	
Log Exp. % GDP							0.08
Within R-Sq	0.01	0.001		0.04	0.04	0.01	
Between R-Sq	0.19	0.1		0.02	0.15	0.25	
Overall R-Sq	0.16	0.07		0.01	0.10	0.18	
***/**/*	denotes significance at the 0.01, 0.05 and 0.10 level respectively						

The summary results for regression equation 42 is found in Table 22:

Regression result 42. As this is the largest model the full results are also reported in Appendix 23. The overall results are generally consistent with expectations except for the distance variable, where once again there is evidence that there is a negative relationship between Japanese investors interest in assets from a country and the distance that country is from Japan. It is only weakly significant, but as the literature suggests this to be a significant positive factor, this is an interesting contrary example. The overall R-squared of the model is 0.32, which suggests that though there are other factors that affect investment, these 11 variables together seem to explain roughly one third of the variance of bias over the past 23 years.

When split up into the three separate eras, the results also are generally in line with expectations in that the variables affect bias in the first era much less than in the next two, consistent with improved trading behavior on the part of the fund companies. Before the Big Bang reforms the only significant variables were inflation and the dummy border conflict variable. Post reform the two eras shared GDP per capita, exports from Japan (positive) and the dummy border variable (negative) as significant factors. Inflation only seems (slightly) significant after the GFC and distance only before (but again with a negative sign contrary to models in the literature.) An explanation could be that in a relative economic boom era (before the GFC), investors ventured farther away from home with less emphasis on established economies (such as those that might produce high-tech exports). Two of the determinants identified from the content analysis of (current) prospectuses were significant in the most recent period, which seems to confirm those results.

Table 22: Regression result 42

	1992–2014	42	1992–2000	42a	2001–2007	42b	2008–2014	42c
Log GDP/Cap	0.50	**	−0.12		1.12	***	0.51	*
Log Turnover	0.37	*	0.46		0.26		0.23	
Log Exports	0.46	**	0.24		0.69	**	0.51	***
Legal	0.11	**	0.03		−0.04		0.03	
Log Distance	−0.80	*	−0.05		−1.31	*	−0.10	
Inflation	0.05	**	0.07	***	−0.07		0.04	*
Fitch rating	0.04		0.02		−0.02		−0.01	
Log Tech Exp.	0.22		0.38		−0.70	*	0.38	***
Log Exp. % GDP	−0.65	*	0.70		0.11		−0.73	**
Border Conflict	−3.94	***	−2.34	*	−4.38	***	−3.46	***
Model Wald Test	0.00	***	0.00	***	0.00	***	0.00	***
Within R-Sq	0.17		0.09		0.35		0.19	
Between R-Sq	0.49		0.25		0.57		0.49	
Overall R-Sq	0.32		0.21		0.46		0.44	
***/**/*	denotes significance at the 0.01, 0.05 and 0.10 level respectively							

Chapter 5: Conclusions and recommendations

This study sought out to examine the investment behavior of Japanese investment trusts in the context of foreign and domestic bias in the post big bang era of increased foreign investment. The three tracts of the study outlining the three main problems are discussed in order:

Domestic bias before and after the big bang

The first tract of the study examined the historical holdings of different asset classes and demonstrated that the investment patterns changed materially after the end of the big bang reforms in terms of a dramatically reduced domestic bias. It also identified the onset of the global financial crisis as the beginning of another distinct pattern of investment behavior. Further to this, there is also evidence of a clear break in the relationship between asset prices and holdings before and after the big bang. The increase in foreign holdings is consistent with previous research and with the indirect effect of many more foreign firms entering the market. Interestingly, before the big bang there was very little observable relationship but afterwards there was a clear relationship in each category. This gives some evidence that the collective portfolio choices changed post reform, which is consistent with what might be expected after improved governance.

Investor preference: Content of Investment Trust Prospectuses

The second tract analyzed the prospectuses from each of the funds and

identified several unique attributes that may influence the buyers of the funds. These attributes were natural resource endowments, inflation, technological advancement from the positive side and reliance on exports (lack of domestic demand) on the negative side. The results of the first two tracts were then added to the literature on investment bias from other countries and this provided the framework for the final tract. As will be discussed at length below, there was also an interesting dichotomy between the frequency of countries named in the prospectuses and the amount of assets held in that country.

Empirical determinants of Japanese investment trust overseas holdings

The third and final tract of the study evaluated the foreign bias on behalf of the JIT holdings. This analysis of the holdings in individual countries confirmed several findings from the literature but importantly identified several key differences. The gravity models developed in the literature widely find geographical proximity, shared language and cultural similarities to be significantly positive influences on foreign investment. These factors were found to be either insignificant or significantly *negative* influences on Japanese portfolio investment. The third tract also provided evidence that several of the attributes identified in the analysis of the prospectuses are empirically significant. Evidence that reliance on foreign demand (as measured by the value of a country's exports as a proportion of its GDP) was identified as a negative attribute in several models and the technological advancement of a country (as measured by the proportion of high tech goods of total manufacturing) was identified as a positive attribute in

several models.

Persistent bias against neighbors

Perhaps the most significant practical takeaway from the study is the very strong bias against the four countries geographically closest to Japan: Russia, China, South Korea and Taiwan. In each stage of the study where this issue was examined, there was strong evidence of this bias. Every multiple regression model attempted with the dummy variable "border dispute" showed it to be a significantly negative effect on bias. The inclusion of this dummy variable in every one of the multivariate regressions attempted showed improved explanatory powers of the model (as measured by higher R-squared) by as much as an increase of 0.20. This study will make no attempts to identify the specific cause of this bias, but will address its potential adverse effect on the performance of the JITs aggregate portfolio.

The portfolio theory and diversification theory detailed in the review of literature all point to risk adjusted returns increasing with the broadening of a portfolio of securities. The empirical studies noted also show strong evidence of this in practice. This study will not debate the merits of investing in these 4 countries at this particular time other than in the aforementioned theoretical context. It will make the argument though, that even if there are reasons to not invest in a particular country at a particular time, the underweighting of any country over a prolonged time seems highly likely to induce lower than optimal returns. The evidence of bias against these 4 countries is consistent over the 23

year time period of the study.

Adding to the importance of this finding is that there is evidence that this bias is affecting retail investors (less sophisticated investors) in particular. The analysis in Research Question 2 of the study of the frequency of the countries mentioned in the prospectuses showed that these countries are noted about as often as we would expect based on their relative size of market. That they have attracted very little investment despite this is perhaps evidence that this bias is much more prevalent among retail investors as it is institutional investors. The adverse effects this may have on retail investors should be a concern to policymakers in Japan.

Note on the current economic context

Any attempt to analyze the investment patterns of Japanese investors in recent decades and compare them with other investors around the world needs to acknowledge two persistently unique factors, stock market decline and deflation. It is viewed as "rational" that an individual would choose to invest in financial markets rather than deposit large sums in a simple savings account. By doing so, that individual is forsaking the gains of investment that the bank is sure to make (otherwise would not be able to survive as a business). Indeed, even if one ignores the stock market performance in Japan over the past three decades, it has been possible to make steady, if unspectacular, profits by purchasing government bonds. But if those gains are so small, the advantages become less, especially

when generous deposit insurance is available to protect depositors at banks.12 When also take into account a stock market that despite a widely hailed 2 year period under "Abenomics" (Economist, 2014) has is only halfway to its 1989 peak, it is understandable that investors may choose the "no thank you" option. This lack of participation is seen in the largely unchanged bank savings portion of household assets in the Bank of Japan's flow of funds survey.

Recommendations

As noted in the data section of the methodology for Question 1, there is a somewhat puzzling phenomenon in recent years. As the asset class has expanded that ETFs and ETNs have proliferated in this time is not surprising, but that the investment trusts are holding large amounts of them seems to indicate potential inefficiencies in the market. As noted in the literature review, one of the chief aims of a collective investment scheme is to allow non-wealthy investors to employ economies of scale when purchasing financial assets and also allow for better diversification opportunities. In exchange for this a fee is paid to the manager of the funds. But ETFs/ETNs are also available to investors directly and though they also charge a fee, it is typically quite a bit smaller than an investment trust fee.

There are plausible reasons for managers of investment trusts to hold

[12] Deposit insurance in Japan is limited to JPY 10 million, but that is for each bank, and there are over 100 banks in Japan (http://www.zenginkyo.or.jp/en/banks) so except for the extremely wealthy, there is no safety need to hold financial securities.

ETFs/ETNs as there are cost efficiencies for them as well, some of which benefit the retail buyers of the funds, some of which do not. In periods where there are no obvious companies or sectors particularly attractive for investment *and* no obvious sectors particularly unattractive for investment, it is certainly possible that these types of assets provide reasonable investments. But if these investments are prolonged, there is the possibility that the funds are providing an unnecessary filter to retail investors who might otherwise buy the ETFs/ETNs directly. As noted in the background of the study, the big bang reforms allowed for investment trusts to be sold at banks (and later the post office) but this is not yet true for ETFs/ETNs. If there is evidence of inefficiency in this area, the government may need to address access to this type of security.

For Further Study

There are many possible reasons for lack of shift from deposits since the big bang that have no relation to any lack of access or education. Persistent deflation (thus real interest rates fairly high) and poor stock market performance (until recently) has created an environment where rational investors can make reasonable arguments that bank deposits are a viable investment strategy (at least in terms of JPY assets). An examination of these macro economic factors as impacting investment strategy merits further study.

In addition, as noted in the methodology section, the final stage of this study focused on the aggregate holdings of all types of securities by JITs between 1992 and 2014. Research Question 1 split the foreign assets into stocks, bonds and other but the detailed analysis of the holdings was on aggregate holdings. The

reasons for this narrow focus are outline in the methodology of Research Question 3, but there remains the potential to look deeper at the different asset classes and how bias affects each one.

The noted differences in investor behavior between retail and professional investors were outlined in the review of literature. This study of investment trust bias argued that it was more reflective of retail, rather than professional investor behavior based on the number of funds that have geographical restrictions, thus placing large influence on the retail buyers of the funds. But there is another retail investment class in japan, the "Uridashi" market. These are securities, usually bonds, available for sale to a broad group (more than 50 investors) because they (and their issuers) have been registered with the FSA[13]. These investments are entirely retail, and thus worth investigating in the context of the results of this study.

The genesis behind this study was the author's experience marketing foreign securities to the JITs in the mid to late 2000s. At that time securities from New Zealand, Australia and Brazil were in good demand, which seems to be confirmed by the analysis of the study. But there was a popular anecdotal narrative in the financial community at the time that Brazil and South Africa were

[13] See http://disclosure.edinet-fsa.go.jp for more information on all issuers, see https://disclosure.edinet-fsa.go.jp/E01EW/BLMainController.jsp?uji.verb=W00Z1010initialize&uji.bean=ek.bean.EKW00Z1010Bean&TID=W00Z1010&PID=W1E63011&SESSIONKEY=1428493034666&lgKbn=2&pkbn=1&skbn=1&dskb=&askb=&dflg=0&iflg=0&preId=1&mul=スウェーデン&fls=on&cal=1&era=H&yer=&mon=&pfs=4&row=100&idx=0&str=&kbn=1&flg=&syoruiKanriNo=S10032TP&s=S10032TP for information on disclosure for Kommuninvest, a Swedish Agency and frequent Uridashi Issuer for details (all in Japanese)

popular countries for Japanese investors to invest because of the selections of World Cup hosts in 2014 and 2010 respectively. The time series of the foreign bias metric of each of the two countries points to evidence supporting this, in Brazil's case a sharp increase in positive bias, and in South Africa's case a sharp reduction in negative bias after the selections were announce. The subsequent selections of Qatar and Russia show less obvious effects. Though this is outside the scope of the current study, an examination of investor attitudes in relation to this would be worthy of study.

As noted in the Review of Literature, information asymmetry is a key factor in foreign bias in investment. If it can be shown that the selection of a country to host an international event like the World Cup of soccer (or the Olympics etc) has effect on foreign bias then this would have interesting implications for potential steps to be taken to overcome information asymmetry.

Further content analysis

The limited time scope of the content analysis of Research Question 2 is contrasted with the 23-year period of study in Research Questions 1 and 3. It is therefore useful to repeat a similar study of prospectuses if suitable material exists from past years. If this is impossible, then it may be interesting to repeat this same study after a period of time such that differences in the prospectuses may be observed. In addition it may be possible to analyze the data files on the prospectuses in 2014 in PDF form in more detail in the future, which could also add to the discussion.

Non-inclusion

The regression models used in the study included countries where JITs held assets in 2014. But this examines the amount of assets not the binary decision of whether to invest in a country or not. As such further research may examine the binary "yes" entry decisions, the "exit" decisions, and the puzzling still "no" decisions over time, rather than focusing on aggregate amounts.

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Appendices

Appendix 1: Logged Adjusted Japanese Stocks regressed against time

Source	SS	df	MS	Number of obs =	265
				F(1, 263) =	331.77
Model	14.8843425	1	14.8843425	Prob > F =	0.0000
Residual	11.7989808	263	.044863045	R-squared =	0.5578
				Adj R-squared =	0.5561
Total	26.6833233	264	.101073194	Root MSE =	.21181

logadj_jpy~y	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
time_period	.0030981	.0001701	18.21	0.000	.0027632	.003433
_cons	8.527913	.0260965	326.78	0.000	8.476528	8.579297

Appendix 2: Logged Adjusted Japanese Bonds regressed against time

Source	SS	df	MS	Number of obs =	265
				F(1, 263) =	1097.66
Model	50.1415967	1	50.1415967	Prob > F =	0.0000
Residual	12.0139665	263	.045680481	R-squared =	0.8067
				Adj R-squared =	0.8060
Total	62.1555631	264	.235437739	Root MSE =	.21373

logadj_jpy~d	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
time_period	-.0056862	.0001716	-33.13	0.000	-.0060242	-.0053483
_cons	12.16625	.0263331	462.01	0.000	12.1144	12.2181

Appendix 3 Logged Adjusted Foreign Equities (including "other") regressed against time

Source	SS	df	MS	Number of obs =	265
				F(1, 263) =	250.70
Model	83.0206482	1	83.0206482	Prob > F =	0.0000
Residual	87.0935468	263	.33115417	R-squared =	0.4880
				Adj R-squared =	0.4861
Total	170.114195	264	.644371951	Root MSE =	.57546

logadj_fx_~k	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
time_period	.0073167	.0004621	15.83	0.000	.0064069	.0082266
_cons	.8610068	.070901	12.14	0.000	.721401	1.000613

Appendix 4: Logged Adjusted Foreign Equities (including "other") regressed against time

Source	SS	df	MS	Number of obs =	265
				F(1, 263) =	202.95
Model	47.7418379	1	47.7418379	Prob > F =	0.0000
Residual	61.8682904	263	.235240648	R-squared =	0.4356
				Adj R-squared =	0.4334
Total	109.610128	264	.41518988	Root MSE =	.48502

logadj_fx_~d	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
time_period	.0055485	.0003895	14.25	0.000	.0047816	.0063154
_cons	5.029543	.0597577	84.17	0.000	4.911879	5.147208

Appendix 5: Regression and Chow test for Adjusted Japan Equity

Linear regression

Number of obs	265
F(3, 261)	307.42
Prob > F	0.0000
R-squared	0.7723
Root MSE	.15256

logadj_jpy~y	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
time_period	.0018411	.0001773	10.39	0.000	.001492	.0021901
d	-.0032238	.0460599	-0.07	0.944	-.09392	.0874724
prebigtime	-.0057687	.0009192	-6.28	0.000	-.0075787	-.0039587
_cons	8.80624	.0324748	271.17	0.000	8.742294	8.870186

F(2, 261) = 46.26

Prob > F = 0.0000

Appendix 6: Regression and Chow test for Adjusted Japan bonds

Linear regression

Number of obs	265
F(3, 261)	986.50
Prob > F	0.0000
R-squared	0.8493
Root MSE	.18941

logadj_jpy~d	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
time_period	-.0041744	.0005056	-8.26	0.000	-.00517	-.0031787
d	.1982659	.1024576	1.94	0.054	-.0034827	.4000145
prebigtime	.0021268	.0006933	3.07	0.002	.0007616	.0034919
_cons	11.84983	.1009593	117.37	0.000	11.65103	12.04862

F(2, 261) = 33.01

Prob > F = 0.0000

Appendix 7: Regression and Chow test for Adjusted foreign stocks (including "other")

```
Linear regression                               Number of obs =     265
                                                F(  3,   261) =  598.54
                                                Prob > F      =  0.0000
                                                R-squared     =  0.7900
                                                Root MSE      =  .36995
```

logadj_fx_~k	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
time_period	.0135337	.0005929	22.83	0.000	.0123664	.0147011
d	2.266439	.1301449	17.41	0.000	2.010172	2.522707
prebigtime	-.0271735	.0010277	-26.44	0.000	-.0291972	-.0251498
_cons	-.303279	.1164593	-2.60	0.010	-.5325984	-.0739597

```
. test d prebigtime

 ( 1)  d = 0
 ( 2)  prebigtime = 0

       F(  2,   261) =  392.61
            Prob > F =    0.0000
```

Appendix 8: Regression and Chow test for Adjusted foreign bonds

```
Linear regression                               Number of obs =     265
                                                F(  3,   261) =  127.61
                                                Prob > F      =  0.0000
                                                R-squared     =  0.5075
                                                Root MSE      =  .45478
```

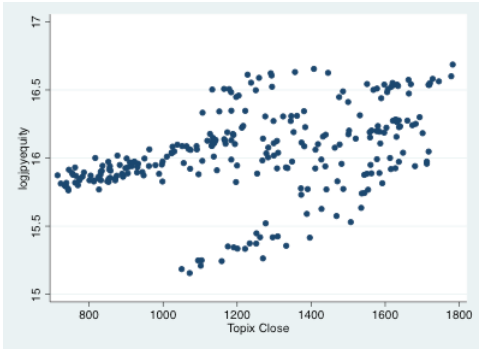
logadj_fx_~d	Coef.	Robust Std. Err.	t	P>|t|	[95% Conf.	Interval]
time_period	.0037796	.0008451	4.47	0.000	.0021154	.0054437
d	-.0869687	.190627	-0.46	0.649	-.4623314	.288394
prebigtime	-.0060777	.0016034	-3.79	0.000	-.009235	-.0029205
_cons	5.413448	.1742754	31.06	0.000	5.070284	5.756613

F(2, 261) = 21.69

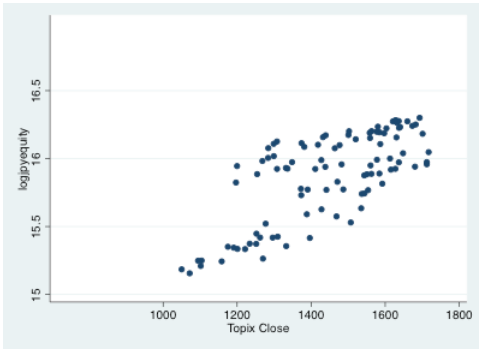
Prob > F = 0.0000

Appendix 9 Scatter plot of logged Japan equity holdings and Topix close

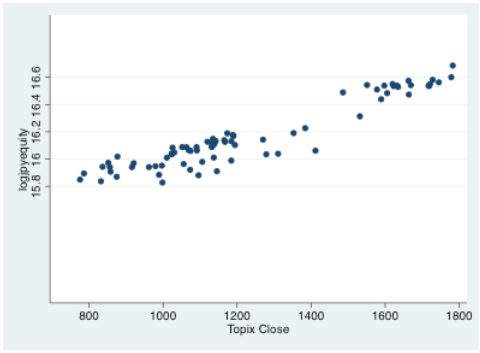
All three periods:



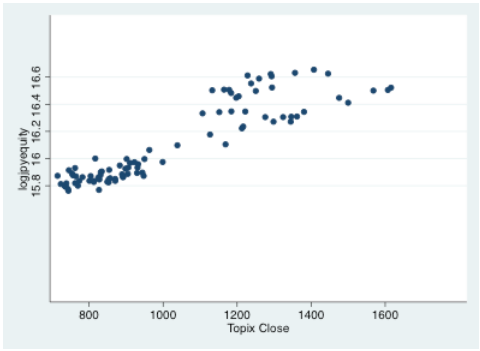
Before Big Bang:



After Big Bang, before GFC:

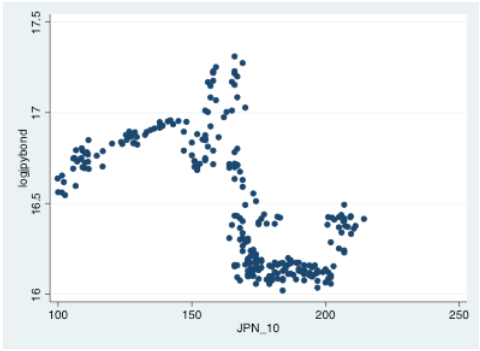


After GFC:

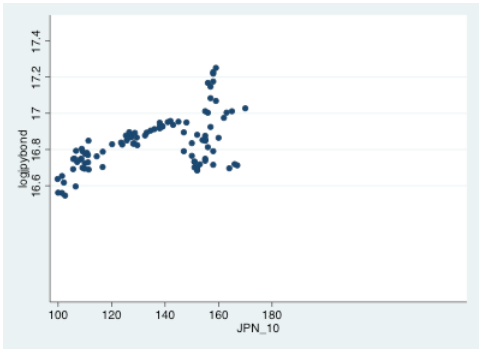


Appendix 10: Scatter plot of logged Japan bond holdings and bond index value

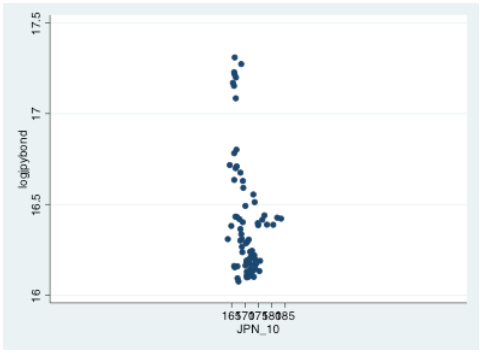
All three periods:



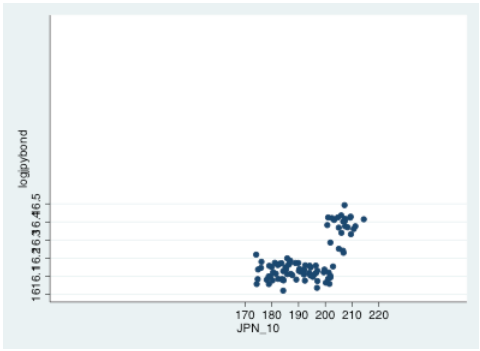
Before Big Bang:



After Big Bang, before GFC:

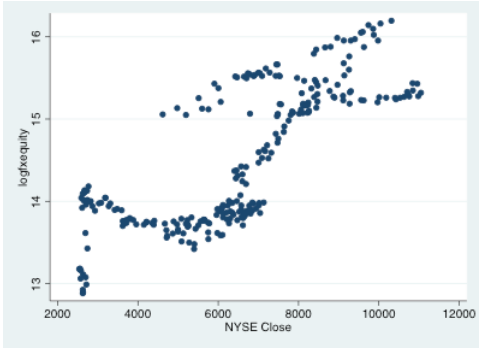


After GFC:

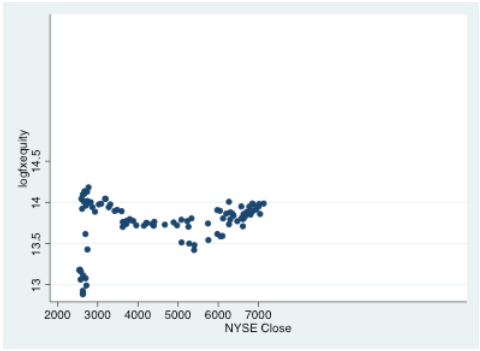


Appendix 11: Scatter plot of logged foreign equity holdings (inc. "other") and NYSE close

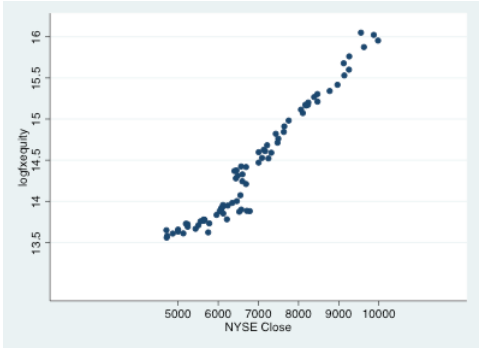
All three periods:



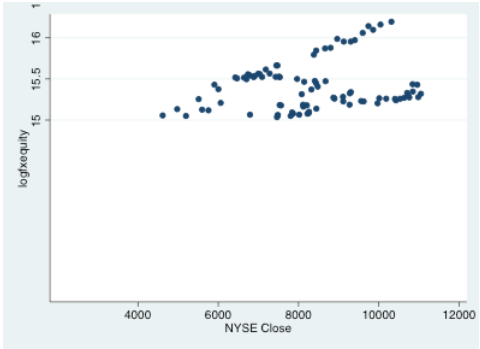
Before Big Bang:



After Big Bang, before GFC:

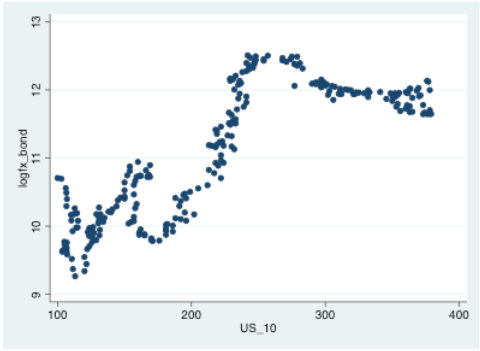


After GFC:

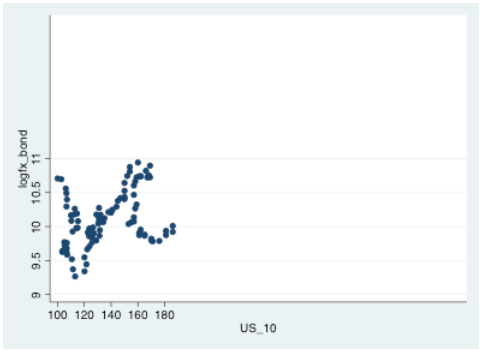


Appendix 12: Scatter plot of logged foreign bond holdings and bond index value

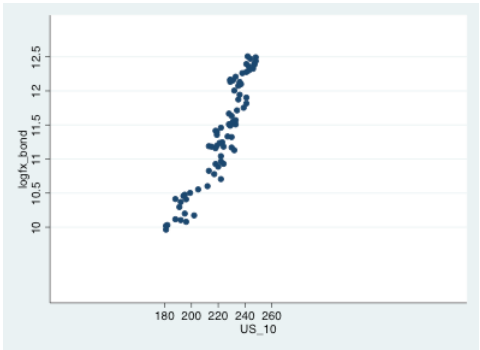
All three periods:



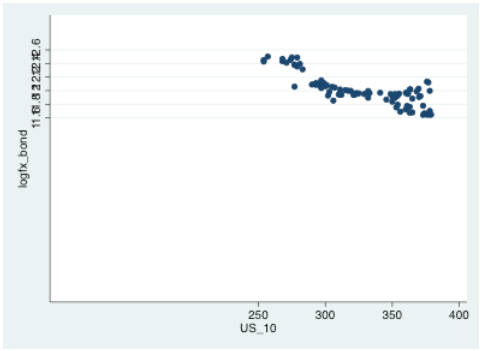
Before Big Bang:



After Big Bang, before GFC:



After GFC:



Appendix 13: Regression of holdings vs. price

Source	SS	df	MS		
Model	4.38159489	1	4.38159489	Number of obs =	265
Residual	22.2210163	263	.084490556	F(1, 263) =	51.86
Total	26.6026112	264	.100767467	Prob > F =	0.0000
				R-squared =	0.1647
				Adj R-squared =	0.1615
				Root MSE =	.29067

logjpyequity	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
topixclose	.0004349	.0000604	7.20	0.000	.000316	.0005538
_cons	15.49519	.0772701	200.53	0.000	15.34304	15.64733

Source	SS	df	MS		
Model	5.63037287	1	5.63037287	Number of obs =	100
Residual	4.89699846	98	.049969372	F(1, 98) =	112.68
Total	10.5273713	99	.106337084	Prob > F =	0.0000
				R-squared =	0.5348
				Adj R-squared =	0.5301
				Root MSE =	.22354

logjpyequity	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
topixclose	.0013708	.0001291	10.61	0.000	.0011145	.001627
_cons	13.88912	.1885383	73.67	0.000	13.51497	14.26327

Source	SS	df	MS		
Model	3.97759924	1	3.97759924	Number of obs =	76
Residual	.46396288	74	.006269769	F(1, 74) =	634.41
Total	4.44156212	75	.059220828	Prob > F =	0.0000
				R-squared =	0.8955
				Adj R-squared =	0.8941
				Root MSE =	.07918

logjpyequity	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
topixclose	.0007913	.0000314	25.19	0.000	.0007287	.0008539
_cons	15.19331	.0397557	382.17	0.000	15.1141	15.27253

Source	SS	df	MS	Number of obs =	89
				F(1, 87) =	401.29
Model	6.0336143	1	6.0336143	Prob > F =	0.0000
Residual	1.30808496	87	.015035459	R-squared =	0.8218
				Adj R-squared =	0.8198
Total	7.34169926	88	.083428401	Root MSE =	.12262

logjpyequity	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
topixclose	.0010637	.0000531	20.03	0.000	.0009582	.0011692
_cons	15.01323	.0559925	268.13	0.000	14.90194	15.12452

Source	SS	df	MS	Number of obs =	265
				F(1, 263) =	161.62
Model	12.2638327	1	12.2638327	Prob > F =	0.0000
Residual	19.9565013	263	.075880233	R-squared =	0.3806
				Adj R-squared =	0.3783
Total	32.2203339	264	.12204672	Root MSE =	.27546

logjpybond	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
jpn_10	-.0075455	.0005935	-12.71	0.000	-.0087142	-.0063768
_cons	17.74258	.0993112	178.66	0.000	17.54703	17.93812

Source	SS	df	MS	Number of obs =	100
				F(1, 98) =	41.81
Model	.612069444	1	.612069444	Prob > F =	0.0000
Residual	1.43465826	98	.01463937	R-squared =	0.2990
				Adj R-squared =	0.2919
Total	2.0467277	99	.020674017	Root MSE =	.12099

logjpybond	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
jpn_10	.0037905	.0005862	6.47	0.000	.0026272	.0049538
_cons	16.32735	.0802517	203.45	0.000	16.16809	16.4866

Source	SS	df	MS	Number of obs =	76
				F(1, 74) =	14.08
Model	1.29408767	1	1.29408767	Prob > F =	0.0003
Residual	6.79911375	74	.091879916	R-squared =	0.1599
				Adj R-squared =	0.1485
Total	8.09320142	75	.107909352	Root MSE =	.30312

logjpybond	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
jpn_10	-.0323903	.0086306	-3.75	0.000	-.0495872	-.0151934
_cons	21.93421	1.472481	14.90	0.000	19.00023	24.86819

Source	SS	df	MS	Number of obs =	89
				F(1, 87) =	70.32
Model	.599728764	1	.599728764	Prob > F =	0.0000
Residual	.741970486	87	.008528396	R-squared =	0.4470
				Adj R-squared =	0.4406
Total	1.34169925	88	.015246582	Root MSE =	.09235

logjpybond	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
jpn_10	.007612	.0009077	8.39	0.000	.0058078	.0094162
_cons	14.71954	.1756608	83.80	0.000	14.37039	15.06868

Source	SS	df	MS	Number of obs =	265
				F(1, 263) =	436.09
Model	189.458894	1	189.458894	Prob > F =	0.0000
Residual	114.261073	263	.434452749	R-squared =	0.6238
				Adj R-squared =	0.6224
Total	303.719967	264	1.15045442	Root MSE =	.65913

logunadj_f~k	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nyseclose	.0003824	.0000183	20.88	0.000	.0003464	.0004185
_cons	12.50843	.1256886	99.52	0.000	12.26095	12.75592

Source	SS	df	MS	Number of obs =	100
				F(1, 98) =	0.16
Model	.005349115	1	.005349115	Prob > F =	0.6917
Residual	3.31445224	98	.033820941	R-squared =	0.0016
				Adj R-squared =	-0.0086
Total	3.31980135	99	.033533347	Root MSE =	.1839

logunadj_f~k	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nyseclose	4.46e-06	.0000112	0.40	0.692	-.0000178	.0000267
_cons	14.00468	.054518	256.88	0.000	13.89649	14.11287

Source	SS	df	MS	Number of obs =	76
				F(1, 74) =	979.07
Model	50.3645859	1	50.3645859	Prob > F =	0.0000
Residual	3.80666292	74	.051441391	R-squared =	0.9297
				Adj R-squared =	0.9288
Total	54.1712488	75	.722283318	Root MSE =	.22681

logunadj_f~k	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nyseclose	.0005996	.0000192	31.29	0.000	.0005615	.0006378
_cons	10.63073	.1349555	78.77	0.000	10.36183	10.89964

Source	SS	df	MS	Number of obs =	89
				F(1, 87) =	319.38
Model	3.3261673	1	3.3261673	Prob > F =	0.0000
Residual	.906053318	87	.010414406	R-squared =	0.7859
				Adj R-squared =	0.7835
Total	4.23222062	88	.048093416	Root MSE =	.10205

logunadj_f~k	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
nyseclose	.0001241	6.95e-06	17.87	0.000	.0001103	.0001379
_cons	15.23753	.0586654	259.74	0.000	15.12093	15.35414

Source	SS	df	MS		
Model	163.306948	1	163.306948		
Residual	76.2015923	263	.289739895		
Total	239.50854	264	.907229319		

Number of obs	=	265		
F(1, 263)	=	563.63		
Prob > F	=	0.0000		
R-squared	=	0.6818		
Adj R-squared	=	0.6806		
Root MSE	=	.53827		

logfx_bond	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
us_10	.0092236	.0003885	23.74	0.000	.0084587	.0099886
_cons	9.030971	.0935505	96.54	0.000	8.846767	9.215174

Source	SS	df	MS		
Model	2.4832	1	2.4832		
Residual	13.3798313	98	.136528891		
Total	15.8630313	99	.16023264		

Number of obs	=	100		
F(1, 98)	=	18.19		
Prob > F	=	0.0000		
R-squared	=	0.1565		
Adj R-squared	=	0.1479		
Root MSE	=	.3695		

logfx_bond	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
us_10	.0065907	.0015454	4.26	0.000	.0035239	.0096575
_cons	9.211759	.2141605	43.01	0.000	8.786765	9.636754

Source	SS	df	MS		
Model	37.4213251	1	37.4213251		
Residual	5.53333408	74	.074774785		
Total	42.9546591	75	.572728788		

Number of obs	=	76		
F(1, 74)	=	500.45		
Prob > F	=	0.0000		
R-squared	=	0.8712		
Adj R-squared	=	0.8694		
Root MSE	=	.27345		

logfx_bond	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
us_10	.0388733	.0017377	22.37	0.000	.0354109	.0423358
_cons	2.72526	.3876763	7.03	0.000	1.952798	3.497722

Source	SS	df	MS	Number of obs =	89
				F(1, 87) =	171.00
Model	2.89328828	1	2.89328828	Prob > F =	0.0000
Residual	1.47206261	87	.01692026	R-squared =	0.6628
				Adj R-squared =	0.6589
Total	4.36535089	88	.04960626	Root MSE =	.13008

logfx_bond	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
us_10	-.0049056	.0003751	-13.08	0.000	-.0056512	-.0041599
_cons	13.61246	.1236032	110.13	0.000	13.36678	13.85813

Appendix 14 Regression of Count vs. log of market cap

Source	SS	df	MS		
Model	93.3336832	1	93.3336832	Number of obs	45
Residual	53.5715	43	1.24584884	F(1, 43)	74.92
				Prob > F	0.0000
				R-squared	0.6353
				Adj R-squared	0.6269
Total	146.905183	44	3.33875416	Root MSE	1.1162

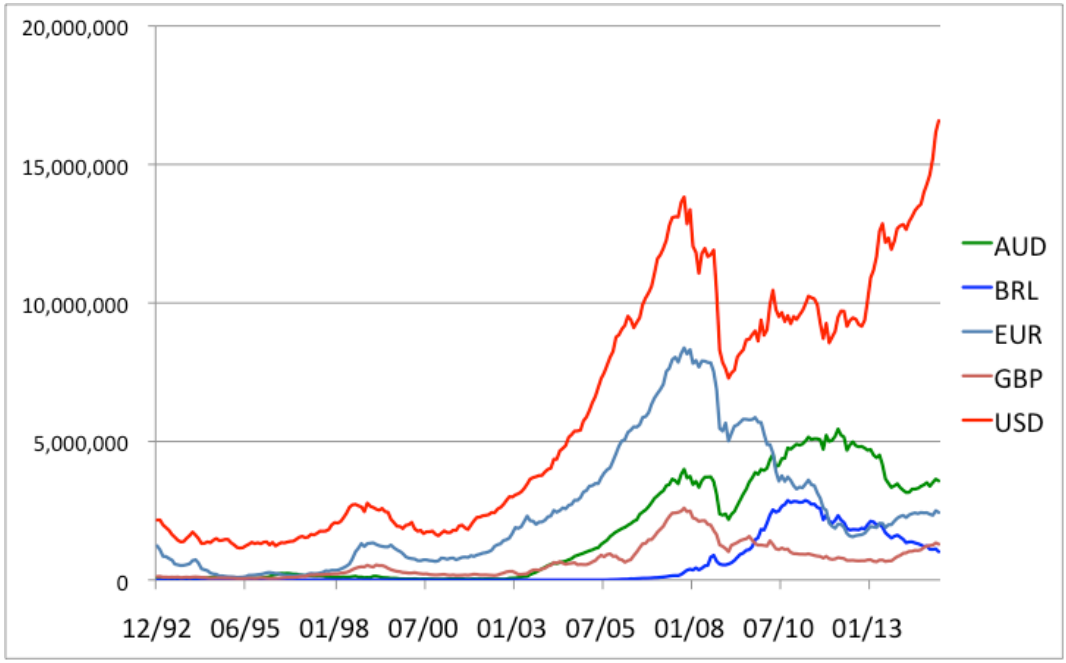
logcount	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logcap	.8637724	.0997959	8.66	0.000	.6625147	1.06503
_cons	-16.40811	2.62952	-6.24	0.000	-21.71105	-11.10518

Source	SS	df	MS		
Model	114.727104	1	114.727104	Number of obs	45
Residual	32.1780796	43	.748327433	F(1, 43)	153.31
				Prob > F	0.0000
				R-squared	0.7810
				Adj R-squared	0.7759
Total	146.905183	44	3.33875416	Root MSE	.86506

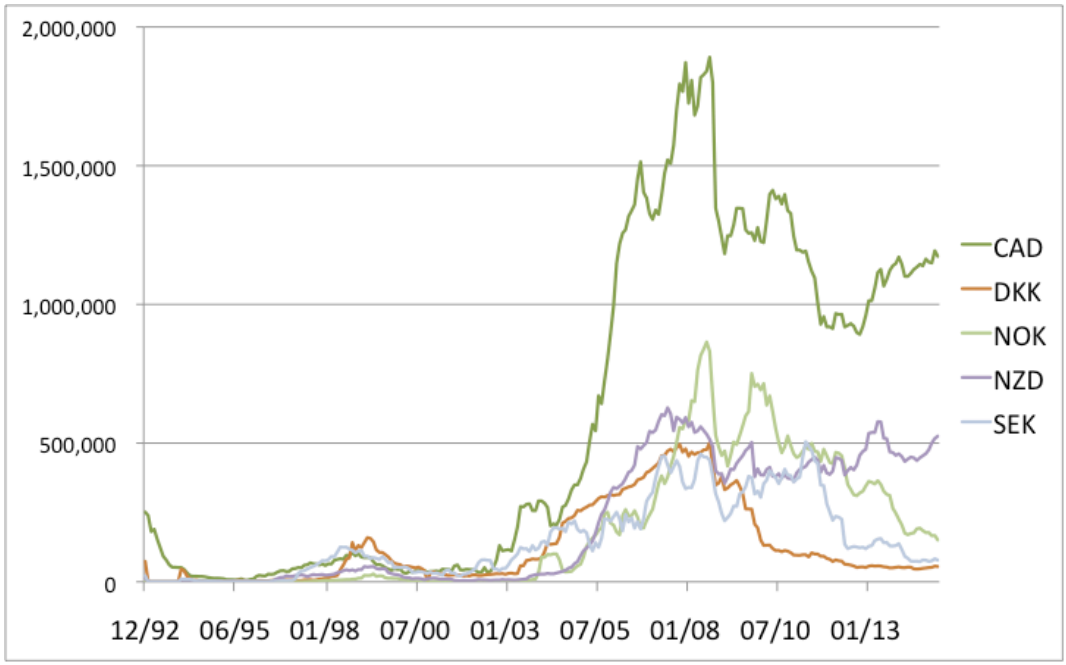
logcount	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logjit	.5258608	.0424701	12.38	0.000	.4402116	.61151
_cons	.9741747	.4494933	2.17	0.036	.0676851	1.880664

Appendix 15: Time series charts for the 25 most widely held currencies.

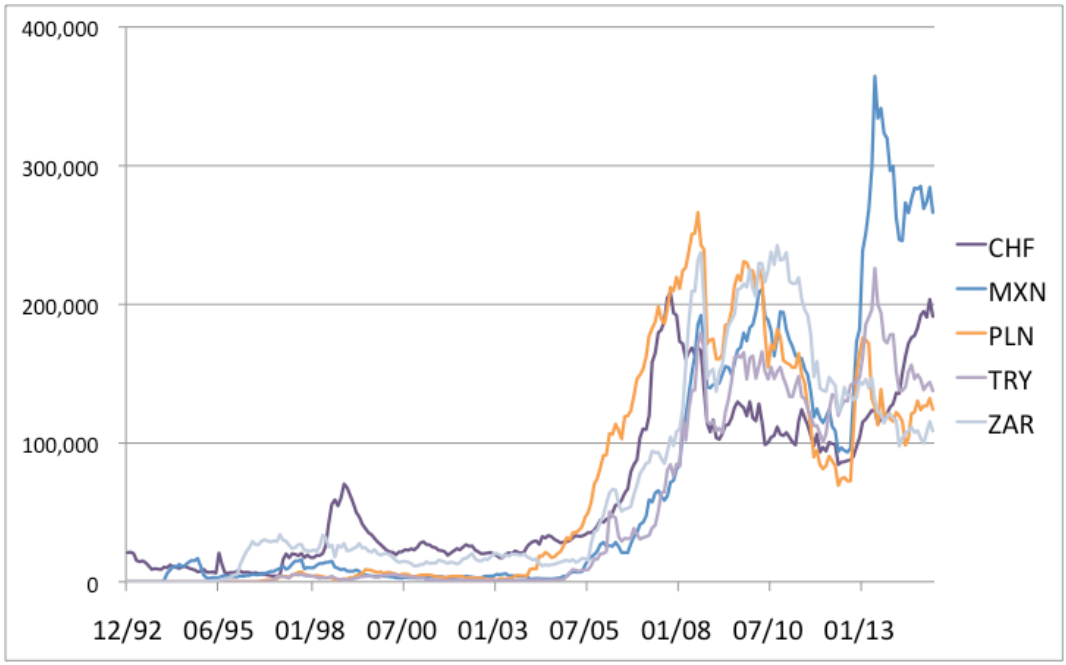
All figures in mm of JPY. All data from the Investment Trusts Association, Japan.
5 Largest, non-Asia



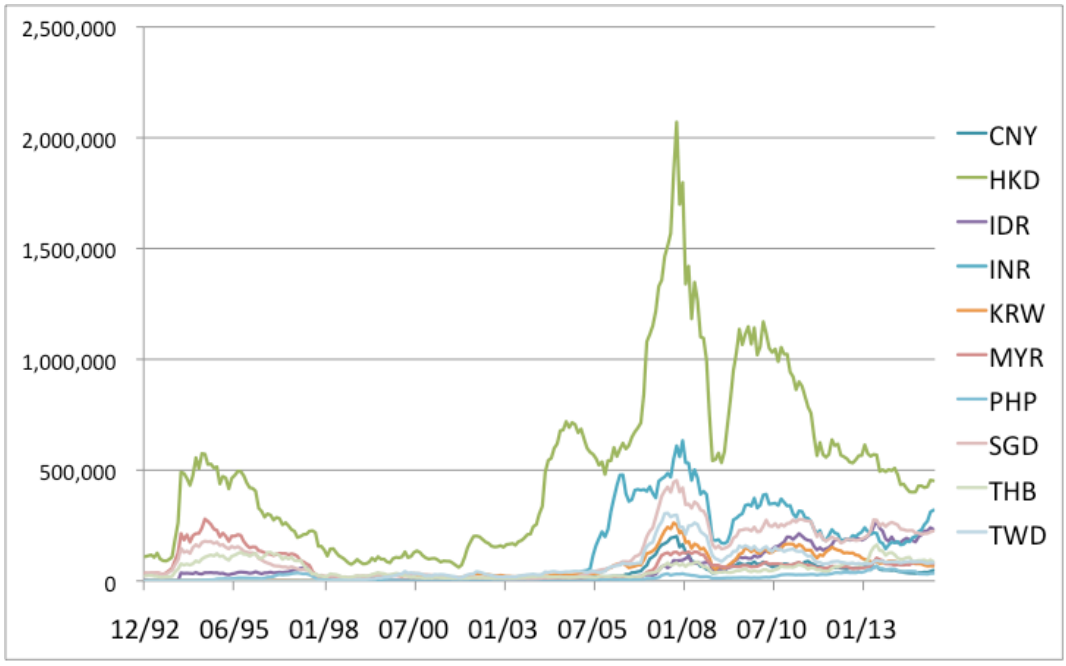
6-10 largest non-Asia



11-15 largest non-Asia



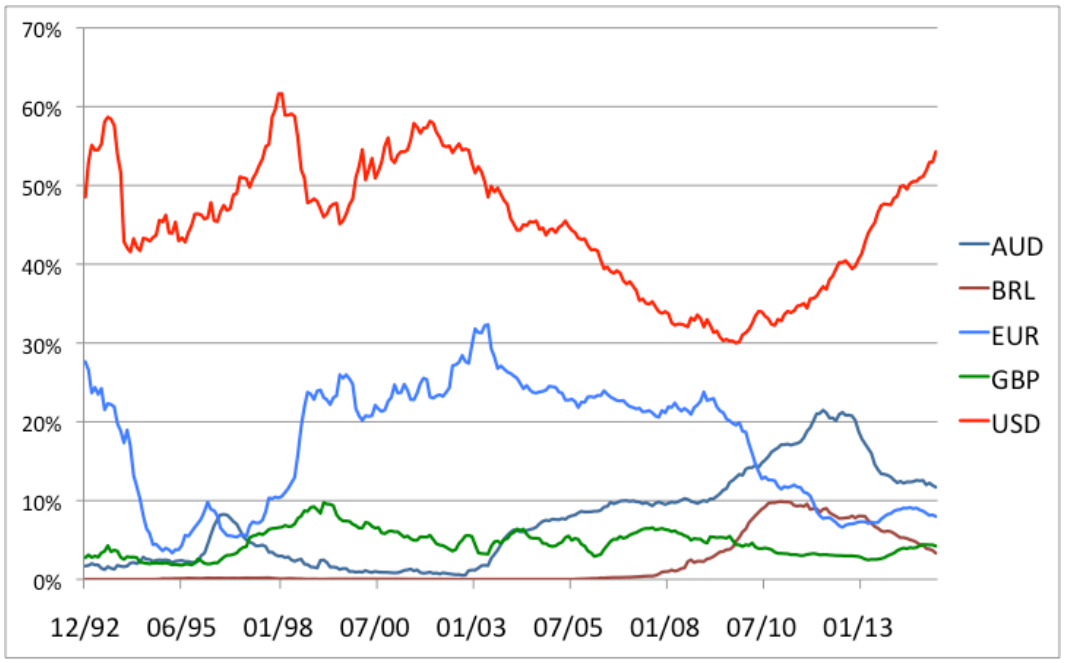
Asia



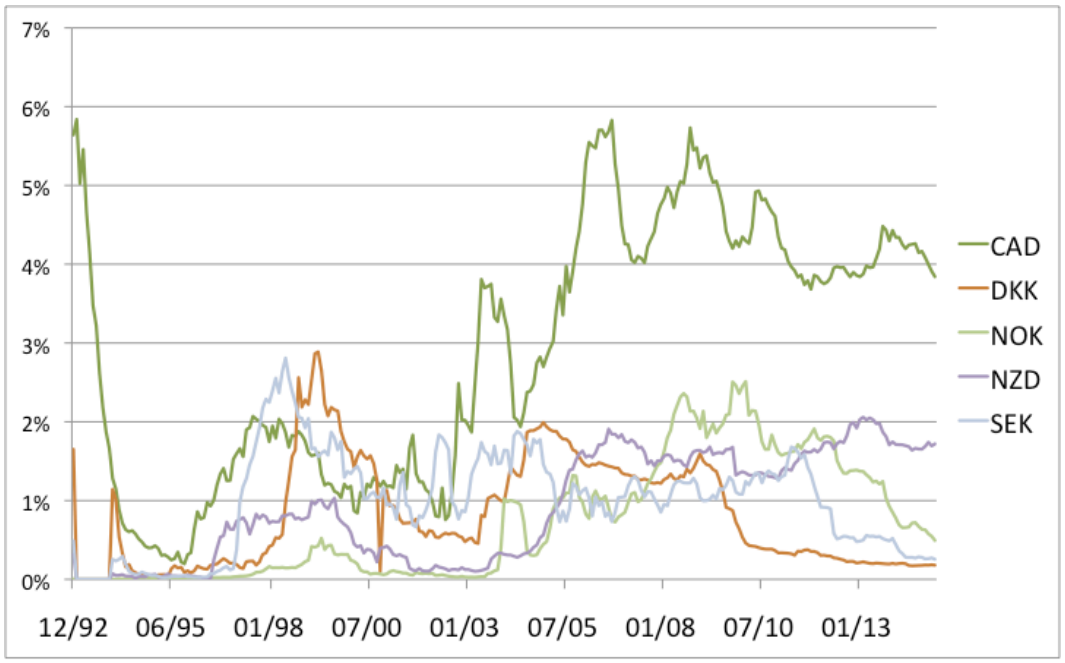
Appendix 16: Time series % charts for the 25 most widely held currencies.

All data from the Investment Trusts Association, Japan.

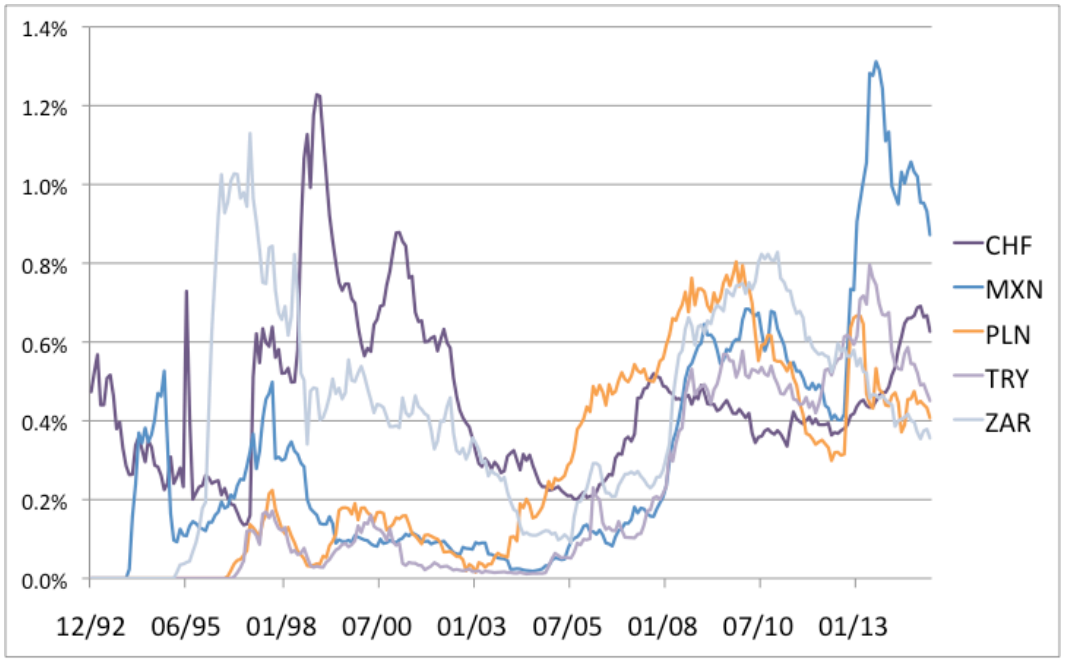
5 Largest, non-Asia



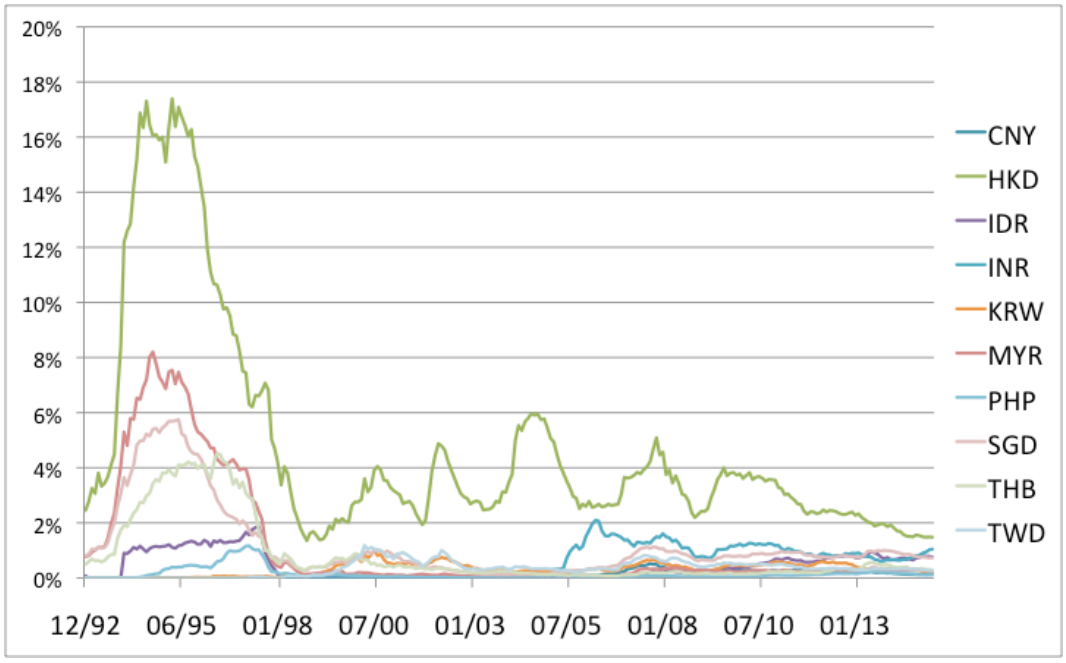
6-10 largest non-Asia



11-15 largest non-Asia



Asia



Appendix 17: Regression results 1-8

```
. regress logbias gdpgrowth
```

Source	SS	df	MS	Number of obs	=	45
				F(1, 43)	=	2.23
Model	8.35010642	1	8.35010642	Prob > F	=	0.1429
Residual	161.180515	43	3.74838407	R-squared	=	0.0493
				Adj R-squared	=	0.0271
Total	169.530622	44	3.85296867	Root MSE	=	1.9361

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
gdpgrowth	-.2197997	.1472662	-1.49	0.143	-.5167904	.0771909
_cons	-.9252881	.5651628	-1.64	0.109	-2.065048	.2144713

```
. regress logbias loggdpcap
```

Source	SS	df	MS	Number of obs	=	45
				F(1, 43)	=	5.24
Model	18.4283425	1	18.4283425	Prob > F	=	0.0270
Residual	151.102279	43	3.51400649	R-squared	=	0.1087
				Adj R-squared	=	0.0880
Total	169.530622	44	3.85296867	Root MSE	=	1.8746

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
loggdpcap	.5197941	.226981	2.29	0.027	.0620433	.9775448
_cons	-6.63001	2.192297	-3.02	0.004	-11.0512	-2.208823

```
. regress logbias logmktcap
```

Source	SS	df	MS	Number of obs	=	45
				F(1, 43)	=	8.84
Model	28.9012085	1	28.9012085	Prob > F	=	0.0048
Residual	140.629413	43	3.27045147	R-squared	=	0.1705
				Adj R-squared	=	0.1512
Total	169.530622	44	3.85296867	Root MSE	=	1.8084

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logmktcap	.4806602	.1616903	2.97	0.005	.1545806	.8067397
_cons	-14.29005	4.260374	-3.35	0.002	-22.88192	-5.698189

```
. regress logbias logturnover
```

Source	SS	df	MS	Number of obs	=	45
				F(1, 43)	=	12.46
Model	38.0894337	1	38.0894337	Prob > F	=	0.0010
Residual	131.441188	43	3.05677181	R-squared	=	0.2247
				Adj R-squared	=	0.2066
Total	169.530622	44	3.85296867	Root MSE	=	1.7484

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logturnover	.9727501	.2755691	3.53	0.001	.417012	1.528488
_cons	-5.191706	1.036479	-5.01	0.000	-7.281966	-3.101447

```
. regress logbias logexports
```

Source	SS	df	MS	Number of obs	=	45
				F(1, 43)	=	6.72
Model	22.9265595	1	22.9265595	Prob > F	=	0.0129
Residual	146.604062	43	3.40939679	R-squared	=	0.1352
				Adj R-squared	=	0.1151
Total	169.530622	44	3.85296867	Root MSE	=	1.8465

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logexports	.4552528	.1755585	2.59	0.013	.1012053	.8093003
_cons	-11.74061	3.90075	-3.01	0.004	-19.60723	-3.874003

```
. regress logbias logfdiv
```

Source	SS	df	MS	Number of obs	=	45
				F(1, 43)	=	26.75
Model	65.0139953	1	65.0139953	Prob > F	=	0.0000
Residual	104.516626	43	2.43061922	R-squared	=	0.3835
				Adj R-squared	=	0.3692
Total	169.530622	44	3.85296867	Root MSE	=	1.559

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logfdiv	.4648635	.0898836	5.17	0.000	.2835959	.646131
_cons	-7.02376	1.064617	-6.60	0.000	-9.170765	-4.876754

```
. regress logbias legal
```

Source	SS	df	MS	Number of obs	=	45
				F(1, 43)	=	22.17
Model	57.6682118	1	57.6682118	Prob > F	=	0.0000
Residual	111.86241	43	2.60145139	R-squared	=	0.3402
				Adj R-squared	=	0.3248
Total	169.530622	44	3.85296867	Root MSE	=	1.6129

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
legal	.3814449	.0810161	4.71	0.000	.2180603	.5448294
_cons	-3.810167	.5178877	-7.36	0.000	-4.854587	-2.765747

```
. regress logbias logdist
```

Source	SS	df	MS	Number of obs	=	45
				F(1, 43)	=	0.00
Model	.01290603	1	.01290603	Prob > F	=	0.9546
Residual	169.517716	43	3.94227245	R-squared	=	0.0001
				Adj R-squared	=	-0.0232
Total	169.530622	44	3.85296867	Root MSE	=	1.9855

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logdist	-.0293404	.5127938	-0.06	0.955	-1.063488	1.004807
_cons	-1.387965	4.598487	-0.30	0.764	-10.6617	7.885768

Appendix 18: Regression results 9-11

```
. regress logbias gdpgrowth loggdpcap
```

Source	SS	df	MS		
Model	19.6478995	2	9.82394977	Number of obs	45
Residual	149.882722	42	3.56863624	F(2, 42)	2.75
				Prob > F	0.0753
				R-squared	0.1159
				Adj R-squared	0.0738
Total	169.530622	44	3.85296867	Root MSE	1.8891

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
gdpgrowth	-.0936668	.160227	-0.58	0.562	-.4170181	.2296844
loggdpcap	.4538251	.2550603	1.78	0.082	-.0609074	.9685576
_cons	-5.688987	2.733511	-2.08	0.044	-11.20543	-.1725393

```
. regress logbias logmktcap logturnover
```

Source	SS	df	MS		
Model	40.1565668	2	20.0782834	Number of obs	45
Residual	129.374055	42	3.08033464	F(2, 42)	6.52
				Prob > F	0.0034
				R-squared	0.2369
				Adj R-squared	0.2005
Total	169.530622	44	3.85296867	Root MSE	1.7551

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logmktcap	.1815403	.2216091	0.82	0.417	-.2656851	.6287656
logturnover	.7467707	.3906669	1.91	0.063	-.0416269	1.535168
_cons	-9.14287	4.934198	-1.85	0.071	-19.10049	.8147446

```
.
. regress logbias logexportsgdp logfdiv
```

Source	SS	df	MS		
Model	65.2806674	2	32.6403337	Number of obs	45
Residual	104.249954	42	2.48214176	F(2, 42)	13.15
				Prob > F	0.0000
				R-squared	0.3851
				Adj R-squared	0.3558
Total	169.530622	44	3.85296867	Root MSE	1.5755

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logexportsgdp	-.0651327	.1987118	-0.33	0.745	-.4661493	.3358838
logfdiv	.4710477	.0927701	5.08	0.000	.2838301	.6582654
_cons	-7.108097	1.106183	-6.43	0.000	-9.340465	-4.87573

Appendix 19: Regression results 12-15

```
. regress logbias logturnover legal
```

Source	SS	df	MS		
Model	84.0522836	2	42.0261418	Number of obs	45
Residual	85.478338	42	2.03519852	F(2, 42)	20.65
				Prob > F	0.0000
				R-squared	0.4958
				Adj R-squared	0.4718
Total	169.530622	44	3.85296867	Root MSE	1.4266

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logturnover	.8180403	.2271994	3.60	0.001	.3595333	1.276547
legal	.3440898	.0724055	4.75	0.000	.1979695	.49021
_cons	-6.576647	.8945345	-7.35	0.000	-8.381891	-4.771404

```
. regress logbias logturnover legal germanlaw
```

Source	SS	df	MS		
Model	94.0689876	3	31.3563292	Number of obs	45
Residual	75.461634	41	1.84052766	F(3, 41)	17.04
				Prob > F	0.0000
				R-squared	0.5549
				Adj R-squared	0.5223
Total	169.530622	44	3.85296867	Root MSE	1.3567

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logturnover	.9305244	.2213751	4.20	0.000	.4834484	1.3776
legal	.354613	.0690032	5.14	0.000	.2152582	.4939679
germanlaw	1.339922	.5743654	2.33	0.025	.1799675	2.499876
_cons	-7.254144	.8988836	-8.07	0.000	-9.069476	-5.438812

```
. regress logbias logturnover legal english
```

Source	SS	df	MS		
Model	87.3021772	3	29.1007257	Number of obs	45
				F(3, 41)	14.51
Residual	82.2284443	41	2.00557181	Prob > F	0.0000
				R-squared	0.5150
				Adj R-squared	0.4795
Total	169.530622	44	3.85296867	Root MSE	1.4162

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logturnover	.7308476	.2357113	3.10	0.003	.254819	1.206876
legal	.2965446	.0810017	3.66	0.001	.1329585	.4601308
english	.8823395	.6931389	1.27	0.210	-.5174829	2.282162
_cons	-6.127298	.9555882	-6.41	0.000	-8.057148	-4.197449

```
. regress logbias logturnover legal kanji
```

Source	SS	df	MS		
Model	85.0646393	3	28.3548798	Number of obs	45
				F(3, 41)	13.76
Residual	84.4659822	41	2.06014591	Prob > F	0.0000
				R-squared	0.5018
				Adj R-squared	0.4653
Total	169.530622	44	3.85296867	Root MSE	1.4353

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logturnover	.8680587	.2394652	3.62	0.001	.384449	1.351668
legal	.3430068	.0728643	4.71	0.000	.1958543	.4901593
kanji	-.4623451	.6595514	-0.70	0.487	-1.794336	.869646
_cons	-6.690956	.9146534	-7.32	0.000	-8.538136	-4.843776

Appendix 20: Regression results 16-22

```
. regress logbias hdi
```

Source	SS	df	MS		
Model	30.724968	1	30.724968	Number of obs	45
				F(1, 43)	9.52
Residual	138.805654	43	3.22803845	Prob > F	0.0036
				R-squared	0.1812
				Adj R-squared	0.1622
Total	169.530622	44	3.85296867	Root MSE	1.7967

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
hdi	7.229123	2.343199	3.09	0.004	2.503611	11.95463
_cons	-7.339174	1.863229	-3.94	0.000	-11.09673	-3.581614

```
. regress logbias logresrent
```

Source	SS	df	MS		
Model	13.1595411	1	13.1595411	Number of obs	44
				F(1, 42)	3.53
Residual	156.370901	42	3.7231167	Prob > F	0.0671
				R-squared	0.0776
				Adj R-squared	0.0557
Total	169.530442	43	3.94256843	Root MSE	1.9295

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logresrent	-.2263666	.1204052	-1.88	0.067	-.4693541	.016621
_cons	-1.430811	.3135477	-4.56	0.000	-2.063576	-.798046

```
. regress logbias logeneprod
```

Source	SS	df	MS		
Model	2.41000414	1	2.41000414	Number of obs	44
				F(1, 42)	0.61
Residual	167.120438	42	3.97905805	Prob > F	0.4408
				R-squared	0.0142
				Adj R-squared	-0.0093
Total	169.530442	43	3.94256843	Root MSE	1.9948

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logeneprod	.1149788	.1477403	0.78	0.441	-.1831732	.4131307
_cons	-2.910639	1.646468	-1.77	0.084	-6.233347	.4120684

```
. regress logbias rate
```

Source	SS	df	MS	Number of obs	=	45
				F(1, 43)	=	0.50
Model	1.95762902	1	1.95762902	Prob > F	=	0.4823
Residual	167.572993	43	3.89704634	R-squared	=	0.0115
				Adj R-squared	=	-0.0114
Total	169.530622	44	3.85296867	Root MSE	=	1.9741

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
rate	-.0776516	.1095602	-0.71	0.482	-.2986008	.1432977
_cons	-1.395383	.4649674	-3.00	0.004	-2.333079	-.4576871

```
. regress logbias rate sandp
```

Source	SS	df	MS	Number of obs	=	45
				F(2, 42)	=	4.62
Model	30.5932621	2	15.2966311	Prob > F	=	0.0153
Residual	138.937359	42	3.30803237	R-squared	=	0.1805
				Adj R-squared	=	0.1414
Total	169.530622	44	3.85296867	Root MSE	=	1.8188

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
rate	.1640546	.1301468	1.26	0.214	-.0985922	.4267014
sandp	.2165841	.0736136	2.94	0.005	.0680258	.3651424
_cons	-5.308389	1.397261	-3.80	0.000	-8.128176	-2.488601

```
. regress logbias logexppctgdp
```

Source	SS	df	MS	Number of obs	=	45
				F(1, 43)	=	3.29
Model	12.0652817	1	12.0652817	Prob > F	=	0.0765
Residual	157.46534	43	3.66198465	R-squared	=	0.0712
				Adj R-squared	=	0.0496
Total	169.530622	44	3.85296867	Root MSE	=	1.9136

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logexppctgdp	-.7659343	.4219695	-1.82	0.076	-1.616917	.0850483
_cons	1.133347	1.560001	0.73	0.471	-2.012695	4.279389

```
. regress logbias logexportsgdp
```

Source	SS	df	MS	Number of obs	=	45
				F(1, 43)	=	0.33
Model	1.28651092	1	1.28651092	Prob > F	=	0.5693
Residual	168.244111	43	3.91265374	R-squared	=	0.0076
				Adj R-squared	=	-0.0155
Total	169.530622	44	3.85296867	Root MSE	=	1.978

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logexportsgdp	.1400697	.2442717	0.57	0.569	-.3525512	.6326906
_cons	-1.622882	.2987851	-5.43	0.000	-2.22544	-1.020325

Appendix 21: Regression results 23-26

```
. regress logbias logturnover legal hdi rate logtechexpgdp logexppctgdp
```

Source	SS	df	MS		
Model	101.09969	6	16.8499484	Number of obs	44
Residual	68.4307521	37	1.84947979	F(6, 37)	9.11
				Prob > F	0.0000
				R-squared	0.5964
				Adj R-squared	0.5309
Total	169.530442	43	3.94256843	Root MSE	1.36

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logturnover	.0947232	.3295498	0.29	0.775	-.5730081	.7624544
legal	.2548068	.0807334	3.16	0.003	.0912254	.4183882
hdi	8.393103	3.31307	2.53	0.016	1.680186	15.10602
rate	.2944641	.1309669	2.25	0.031	.0290999	.5598283
logtechexpgdp	.4215869	.2179501	1.93	0.061	-.020022	.8631957
logexppctgdp	-.5247648	.3256656	-1.61	0.116	-1.184626	.1350963
_cons	-9.955616	2.665448	-3.74	0.001	-15.35633	-4.554905

```
. regress logbias logturnover legal hdi rate logtechexpgdp logexppctgdp border
```

Source	SS	df	MS		
Model	118.860409	7	16.9800584	Number of obs	44
Residual	50.6700337	36	1.40750094	F(7, 36)	12.06
				Prob > F	0.0000
				R-squared	0.7011
				Adj R-squared	0.6430
Total	169.530442	43	3.94256843	Root MSE	1.1864

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logturnover	.4152615	.3013171	1.38	0.177	-.1958378	1.026361
legal	.2064068	.071735	2.88	0.007	.0609214	.3518922
hdi	7.080328	2.913746	2.43	0.020	1.170977	12.98968
rate	.2651203	.1145496	2.31	0.026	.032803	.4974376
logtechexpgdp	.4810707	.1908686	2.52	0.016	.0939713	.8681701
logexppctgdp	-.6097396	.2851054	-2.14	0.039	-1.18796	-.031519
border	-2.837509	.7987877	-3.55	0.001	-4.457526	-1.217493
_cons	-9.337179	2.331759	-4.00	0.000	-14.06621	-4.608152

```
. regress logbias logturnover legal border
```

Source	SS	df	MS	Number of obs =	45
				F(3, 41) =	17.19
Model	94.4419989	3	31.4806663	Prob > F =	0.0000
Residual	75.0886227	41	1.83142982	R-squared =	0.5571
				Adj R-squared =	0.5247
Total	169.530622	44	3.85296867	Root MSE =	1.3533

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logturnover	1.006483	.2295884	4.38	0.000	.5428194	1.470146
legal	.3095714	.0701975	4.41	0.000	.1678046	.4513382
border	-1.818799	.7636212	-2.38	0.022	-3.360963	-.2766345
_cons	-6.905544	.8597342	-8.03	0.000	-8.641812	-5.169276

```
. regress logbias logturnover legal germanlaw border
```

Source	SS	df	MS	Number of obs =	45
				F(4, 40) =	15.44
Model	102.903978	4	25.7259946	Prob > F =	0.0000
Residual	66.6266433	40	1.66566608	R-squared =	0.6070
				Adj R-squared =	0.5677
Total	169.530622	44	3.85296867	Root MSE =	1.2906

logbias	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
logturnover	1.096147	.2225365	4.93	0.000	.6463837	1.54591
legal	.3218551	.0671669	4.79	0.000	.1861058	.4576044
germanlaw	1.235764	.5482689	2.25	0.030	.1276714	2.343857
border	-1.682939	.7307341	-2.30	0.027	-3.159808	-.2060706
_cons	-7.505808	.8620719	-8.71	0.000	-9.248121	-5.763496

```
. xtreg logbias gdpgrowth, robust

Random-effects GLS regression                   Number of obs      =       729
Group variable: countrycode                     Number of groups   =        45

R-sq:  within  = 0.0000                         Obs per group: min =         4
       between = 0.1314                                        avg =      16.2
       overall = 0.0193                                        max =        23

                                                Wald chi2(1)       =      0.07
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.7967

                          (Std. Err. adjusted for 45 clusters in countrycode)
------------------------------------------------------------------------------
             |               Robust
     logbias |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   gdpgrowth |  -.0044714    .017356    -0.26   0.797    -.0384886    .0295457
       _cons |  -1.671086   .2750593    -6.08   0.000    -2.210193   -1.13198
-------------+----------------------------------------------------------------
     sigma_u |  1.6134783
     sigma_e |  1.1167571
         rho |   .67610444   (fraction of variance due to u_i)
------------------------------------------------------------------------------

. xtreg logbias loggdpcap, robust

Random-effects GLS regression                   Number of obs      =       729
Group variable: countrycode                     Number of groups   =        45

R-sq:  within  = 0.0978                         Obs per group: min =         4
       between = 0.0413                                        avg =      16.2
       overall = 0.0728                                        max =        23

                                                Wald chi2(1)       =     11.26
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0008

                          (Std. Err. adjusted for 45 clusters in countrycode)
------------------------------------------------------------------------------
             |               Robust
     logbias |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
   loggdpcap |   .7712098   .2298522     3.36   0.001     .3207079    1.221712
       _cons |  -8.753154   2.130589    -4.11   0.000    -12.92903   -4.577277
-------------+----------------------------------------------------------------
     sigma_u |  1.7014603
     sigma_e |   1.060753
         rho |   .72011169   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Appendix 22: Regression results panel

```
. xtreg logbias logexports, robust

Random-effects GLS regression                   Number of obs      =       729
Group variable: countrycode                     Number of groups   =        45

R-sq:  within  = 0.0849                         Obs per group: min =         4
       between = 0.1297                                        avg =      16.2
       overall = 0.0752                                        max =        23

                                                Wald chi2(1)       =     14.35
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0002

                          (Std. Err. adjusted for 45 clusters in countrycode)
```

logbias	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
logexports	.7458956	.1969009	3.79	0.000	.359977	1.131814
_cons	-18.18803	4.369186	-4.16	0.000	-26.75148	-9.624583
sigma_u	1.617936					
sigma_e	1.0683273					
rho	.69637908	(fraction of variance due to u_i)				

```
. xtreg logbias legal, robust

Random-effects GLS regression                   Number of obs      =       729
Group variable: countrycode                     Number of groups   =        45

R-sq:  within  = 0.0057                         Obs per group: min =         4
       between = 0.2977                                        avg =      16.2
       overall = 0.1965                                        max =        23

                                                Wald chi2(1)       =     11.47
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0007

                          (Std. Err. adjusted for 45 clusters in countrycode)
```

logbias	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
legal	.1791904	.0529148	3.39	0.001	.0754792	.2829015
_cons	-2.784822	.3531618	-7.89	0.000	-3.477007	-2.092638
sigma_u	1.4440662					
sigma_e	1.1135817					
rho	.62709226	(fraction of variance due to u_i)				

```
. xtreg logbias logdist, robust

Random-effects GLS regression                   Number of obs      =       729
Group variable: countrycode                     Number of groups   =        45

R-sq:  within  = 0.0000                         Obs per group: min =         4
       between = 0.0201                                        avg =      16.2
       overall = 0.0109                                        max =        23

                                                Wald chi2(1)       =      1.56
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.2115

                          (Std. Err. adjusted for 45 clusters in countrycode)
------------------------------------------------------------------------------
             |               Robust
     logbias |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
     logdist |   -.4207368   .3367435    -1.25   0.212    -1.080742    .2392684
       _cons |    2.071848   3.003055     0.69   0.490    -3.814033    7.957728
-------------+----------------------------------------------------------------
     sigma_u |   1.7177797
     sigma_e |   1.1159424
         rho |    .7032175   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Appendix 23: Panel regression results 42, 42a, 42b, 42c

```
Random-effects GLS regression                   Number of obs      =       666
Group variable: countrycode                     Number of groups   =        43

R-sq:  within  = 0.1652                         Obs per group: min =         3
       between = 0.4921                                        avg =      15.5
       overall = 0.3241                                        max =        23

                                                Wald chi2(10)      =    100.06
corr(u_i, X)   = 0 (assumed)                    Prob > chi2        =    0.0000

                                (Std. Err. adjusted for 43 clusters in countrycode)
```

logbias	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
loggdpcap	.5044856	.2497201	2.02	0.043	.0150432	.993928
logturnover	.3682455	.1931718	1.91	0.057	-.0103644	.7468553
logexports	.4551138	.1876015	2.43	0.015	.0874216	.8228059
legal	.1123608	.0470194	2.39	0.017	.0202044	.2045172
logdist	-.8016746	.4570976	-1.75	0.079	-1.697569	.0942202
cpi	.0488522	.0208879	2.34	0.019	.0079128	.0897916
fitch	.0361039	.0886571	0.41	0.684	-.1376609	.2098686
logtechexppct	.2179555	.191555	1.14	0.255	-.1574854	.5933965
logexppctgdp	-.6521968	.3780055	-1.73	0.084	-1.393074	.0886804
border	-3.940287	.6424488	-6.13	0.000	-5.199463	-2.68111
_cons	-9.764473	7.479857	-1.31	0.192	-24.42472	4.895779
sigma_u	1.2084082					
sigma_e	.99147452					
rho	.59766181	(fraction of variance due to u_i)				

Random-effects GLS regression — Number of obs = 187
Group variable: **countrycode** — Number of groups = 27

R-sq: within = **0.0910** — Obs per group: min = 1
between = **0.2521** — avg = 6.9
overall = **0.2148** — max = 9

Wald chi2(**10**) = **154.30**
corr(u_i, X) = **0** (assumed) — Prob > chi2 = **0.0000**

(Std. Err. adjusted for **27** clusters in countrycode)

logbias	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
loggdpcap	**-.1167116**	**.3256336**	**-0.36**	**0.720**	**-.7549418**	**.5215185**
logturnover	**.4639625**	**.2994546**	**1.55**	**0.121**	**-.1229577**	**1.050883**
logexports	**.2381093**	**.3016369**	**0.79**	**0.430**	**-.3530883**	**.8293068**
legal	**.0319013**	**.1707674**	**0.19**	**0.852**	**-.3027967**	**.3665993**
logdist	**-.0509212**	**.6396244**	**-0.08**	**0.937**	**-1.304562**	**1.20272**
cpi	**.0655576**	**.0224576**	**2.92**	**0.004**	**.0215415**	**.1095737**
fitch	**.0157417**	**.0605334**	**0.26**	**0.795**	**-.1029016**	**.1343849**
logtechexppct	**.3756606**	**.4062681**	**0.92**	**0.355**	**-.4206102**	**1.171931**
logexppctgdp	**.6954883**	**.5417132**	**1.28**	**0.199**	**-.36625**	**1.757227**
border	**-2.336151**	**1.213057**	**-1.93**	**0.054**	**-4.713699**	**.0413969**
_cons	**-10.43367**	**10.81088**	**-0.97**	**0.334**	**-31.6226**	**10.75526**
sigma_u	**1.3165621**					
sigma_e	**.94274987**					
rho	**.66104538**	(fraction of variance due to u_i)				

Random-effects GLS regression — Number of obs = 176
Group variable: **countrycode** — Number of groups = 37

R-sq: within = **0.3598**
between = **0.5679**
overall = **0.4562**

Obs per group: min = 1
avg = 4.8
max = 6

Wald chi2(**10**) = **77.28**
corr(u_i, X) = **0** (assumed) — Prob > chi2 = **0.0000**

(Std. Err. adjusted for **37** clusters in countrycode)

logbias	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
loggdpcap	**1.119253**	**.3539777**	**3.16**	**0.002**	**.4254693**	**1.813036**
logturnover	**.255034**	**.3708068**	**0.69**	**0.492**	**-.471734**	**.9818021**
logexports	**.6886823**	**.3095806**	**2.22**	**0.026**	**.0819155**	**1.295449**
legal	**-.0390227**	**.1215836**	**-0.32**	**0.748**	**-.2773221**	**.1992768**
logdist	**-1.307613**	**.685197**	**-1.91**	**0.056**	**-2.650575**	**.0353481**
cpi	**-.0650182**	**.0922826**	**-0.70**	**0.481**	**-.2458888**	**.1158525**
fitch	**-.0203912**	**.1108241**	**-0.18**	**0.854**	**-.2376025**	**.1968201**
logtechexppct	**-.6966343**	**.3938721**	**-1.77**	**0.077**	**-1.468609**	**.0753408**
logexppctgdp	**.1118**	**.5144489**	**0.22**	**0.828**	**-.8965013**	**1.120101**
border	**-4.375598**	**.8267364**	**-5.29**	**0.000**	**-5.995971**	**-2.755224**
_cons	**-13.982**	**9.729049**	**-1.44**	**0.151**	**-33.05059**	**5.086581**
sigma_u	**1.4024164**					
sigma_e	**.86266577**					
rho	**.72548798**	(fraction of variance due to u_i)				

Random-effects GLS regression — Number of obs = 277
Group variable: **countrycode** — Number of groups = 43

R-sq: within = **0.1892**
between = **0.4860**
overall = **0.4423**

Obs per group: min = 2
avg = 6.4
max = 7

Wald chi2(**10**) = **70.63**
corr(u_i, X) = **0** (assumed) — Prob > chi2 = **0.0000**

(Std. Err. adjusted for **43** clusters in countrycode)

logbias	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf.	Interval]
loggdpcap	.5128402	.2918202	1.76	0.079	-.0591168	1.084797
logturnover	.2272595	.2691567	0.84	0.398	-.300278	.754797
logexports	.5102898	.1476244	3.46	0.001	.2209513	.7996284
legal	.0288396	.0298757	0.97	0.334	-.0297158	.0873949
logdist	-.100808	.4907865	-0.21	0.837	-1.062732	.8611158
cpi	.037717	.0181147	2.08	0.037	.0022129	.073221
fitch	-.0121217	.0985171	-0.12	0.902	-.2052117	.1809682
logtechexppct	.3831663	.1318085	2.91	0.004	.1248265	.6415062
logexppctgdp	-.7256514	.3525964	-2.06	0.040	-1.416728	-.0345752
border	-3.463152	.712231	-4.86	0.000	-4.859099	-2.067204
_cons	-15.61677	7.587119	-2.06	0.040	-30.48725	-.7462871
sigma_u	1.3529073					
sigma_e	.49460186					
rho	.88210493	(fraction of variance due to u_i)				