Where Do Australians Invest?

Anil Mishra[1] and Kevin Daly[2]

School of Economics and Finance

University of Western Sydney

Abstract

In this paper, we analyse the geography of Australia's international portfolio investment using the newly released International Monetary Fund's Coordinated Portfolio Investment Survey dataset. The study provides answers to some of the following questions; why does the pattern of Australia's capital flows not match that of its trade flows, which bilateral factors are responsible for explaining Australia's portfolio equity investment holdings, are cultural, informational factors important in explaining Australia's portfolio allocations and how regulatory and legal variables affect equity portfolio holdings. Preliminary results suggest that Australia's external holdings of equity and debt as a percentage of national income almost doubled between 1997 and 2001. However Australia's international investment position as a percentage of national income is one of the lowest amongst the major OECD countries. In 2001 approximately two thirds of Australia's total investments were invested in the United States and the United Kingdom. By contrast Australia's trade share (exports plus imports as a percentage of Australia's total world trade) with these countries was approximately twenty percent in the same year. The major determinants of Australia's geographical allocation of portfolio investment indicate a broad correspondence between stock market capitalisation of destination countries and the allocation of Australian financial investments but with some deviations from that baseline, where the deviations are correlated with Australian trade patterns.

---

[1] Contact Information: avmishra@hotmail.com. Anil Mishra, School of Economics and Finance, University of Western Sydney

[2] Contact Information: k.daly@uws.edu.au. Kevin Daly, School of Economics and Finance, University of Western Sydney

I. Introduction

The rapid increase in international capital flows (foreign direct investment and portfolio investment) is one of the most significant developments in the global economy in recent decades. The Australian investment environment has been progressively liberalised beginning with the removal of foreign exchange controls in 1987, and the movement to a floating exchange rate regime; other milestones include the opening up of the banking sector to foreign competition. Compared to other countries Australia is quite outward looking in its investment behaviour, suggesting that Australian investors recognise the advantages of international diversification. Generally speaking the benefits to individual investors from investing in international portfolios come about through the opportunities local investors are offered to insulate their portfolios from a down turn in local asset prices via investing in global markets. From a country perspective benefits from international diversification may also be captured via diversification across trade and investment (debt and equity). For instance, when a country's major trading partner experiences a decline in demand for traded goods this may be compensated by a corresponding upturn in the performance of that country's international investment position (IIP)[3].

There are a number of recent papers focused specifically on the patterns of bilateral equity investment. Davis, Nalewaik and Willen (2001) developed a dynamic model to analyse international trade in risky financial assets under incomplete information. Ahearne *et al* (2004) test for home bias in US equity holdings. Martin and Rey (2000) investigate the impact of financial integration on asset returns, risk diversification and breadth of financial markets. Portes, Rey and Oh (2001) test the relevance of informational barriers by estimating gravity models for trade in different financial assets. Their results suggest that trading in equities and corporate bonds requires a deeper knowledge of the host countries accounting practices,

---

[3] The IIP is a central concept in international macroeconomics, since it lays out the international balance sheet of foreign assets and liabilities held by Australian residents.

2

corporate culture, political events, and current business conditions. In a two country setting, Obstfeld and Rogoff (2001) show that the existence of trading costs in the goods market naturally generates a home bias in equity positions, even if global financial markets are complete. Lane and Milesi Ferretti (2004) extend the two country model of Obstfeld and Rogoff (2001) to N country generalization and also incorporate informational and financial frictions. They find strong link between bilateral trade in goods and services and bilateral equity holdings. In addition, they find that large bilateral equity positions are also associated with proxies for informational proximity.

However, absent from these is a study related to Australia's international investment patterns. This paper examines the degree of correspondence between Australia's trade and international investment position. In this study, we examine Australia's equity portfolio investment patterns, using the newly released International Monetary Fund's (IMF's) Coordinated Portfolio Investment Survey (CPIS)[4] data.

I.I Overview

This paper focuses on understanding the relationship between Australia's portfolio equity investment and trade based on data sourced from the CPIS 1997 and 2001 data. To begin our investigation of the determinants of Australia's geographical allocation of portfolio investment we employ a series of multivariate regressions of Australia's destination country portfolio shares on the share of Australia's trade with each country, financial market shares and shares in world gross national income. Accordingly, we use variables for Australia's exports and imports as calculated from IMF's Direction of Trade Statistics; the value of bond and share trading are

---

[4]The purpose of the CPIS is to improve statistics of holdings of portfolio investment assets viz. equity, long term debt, and short term debt. CPIS collects comprehensive information, with geographical detail on the country of residence of the issuer, on the stock of cross border equities, long term bonds and notes, and short term debt instruments related to international investment position (IIP).

calculated from Federation Internationale des Bourses de Valeurs (FIBV) data; and Gross National Income is calculated from World Development Indicators.

To further our understanding of Australia's international investment portfolio the paper follows a similar methodology to that employed by Obstfeld and Rogoff (2001) and Lane and Milesi Ferretti (2004), by developing an empirical model which takes into consideration a number of variables which influences Australia's international investment patterns. In particular, we include an array of gravity type variables to proxy information costs and quality of the regulatory environment in the host country *viz.* telephone cost, common language, rule of law, efficiency of judicial system, accounting standards and creditors rights variables.

The paper follows the following format. Section II provides a summary account of Australia's (including major OECD countries) external holdings of debt and equity. This section also provides information on Australia's portfolio (equity and long term debt) investment share, Australia's trade share, countries' world's financial market share and countries' world's GNI share. Section III of the paper develops empirical models and results for Australia's portfolio equity investment, and trade. This section also tries to explain the phenomenon of trade bias. Finally, section IV provides concluding remarks.

II. Data and Trends

Until recently, data on the level and the geographical pattern of international portfolio investment has been inadequate (see below). In recognition of this fact the International Monetary Fund (IMF) commenced in the mid nineties a pioneering comprehensive survey of the geographic structure of foreign portfolios (equity and long-term bonds). The data employed in this study comes from the IMF's Coordinated Portfolio Investment Survey (CPIS)[5] for 1997 and

---

[5]The purpose of the CPIS is to improve statistics of holdings of portfolio investment assets viz. equity, long term debt, and short term debt. CPIS collects comprehensive information, with geographical detail on the country of

2001. Previously the Balance of Payments data employed in economic modeling related to flows of assets not about valuation changes. The flow data provide little information about the determinants of international asset holdings (Lane (2000), Warnock (2001)). In 1993, the IMF Committee on Balance of Payments decided to undertake[6] an internationally coordinated benchmark survey of long term portfolio investment holdings to facilitate cross country comparisons, permit data exchanges, and encourage standardization and best practice. The CPIS was conducted at the end of December 1997 with 29 countries[7] participating and again in 2001 with 64 countries involved. The results for both these surveys were published by the IMF, with the publication of the 1997 results[8] appearing in 2000 with up to date survey results now been published regularly by the IMF[9].

II. I   Preliminary Findings

Tables 1 and 2 below provide an overall view of external holdings of foreign equity, long-term and short-term debt for Australia and a number of industrial countries. The countries are ranked in descending order in terms of foreign portfolio holdings, when measured as a proportion to Gross National Income (GNI). According to Table 1 Australia's external holdings of equity and debt was approximately 10.6 per cent of GNI in 1997, in contrast Table 2 shows that by 2001 the percentage of national income invested abroad had almost doubled to 20.59 per cent of GNI. However, it is noteworthy that Australia's international investment position as a percentage of national income is one of the lowest amongst the major OECD countries. In fact Australia's external investment position on the international ladder relative to other countries in the table had not changed by 2001. Australia's increased international investment position over 1997-

---

residence of the issuer, on the stock of cross border equities, long term bonds and notes, and short term debt instruments related to international investment position (IIP).

[6] In the 1992 an IMF Working Party on the Measurement of International Capital flows found that at the world level recorded portfolio liabilities far outweighed portfolio asserts by as much as $US400 billion.
[7] The countries were Argentina, Australia, Austria, Belgium, Bermuda, Canada, Chile, Denmark, Finland, France, Iceland, Indonesia, Ireland, Israel, Italy, Japan, Korea, Malaysia, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Thailand, the United Kingdom, the United States, and Venezuela.
[8] IMF, "Results of the 1997 Coordinated Portfolio Investment Survey," (Washington, 2000).
[9] IMF, "Portfolio Investment: Coordinated Portfolio Investment Survey (CPIS):Metadata," (2003)

2001 is almost entirely attributed to increased equity investment doubling from 8.7 percent of

GNI to 16.6 percent of GNI over five years.

Table 1 Aggregate External Portfolio – Industrial Countries 1997

	Equity		Long Term Debt		Short Term Debt		Total	
	US $ m	% GNI	US $ m	% GNI	US $ m	% GNI	US $ m	% GNI
UK	461553	36.4	483354	38.10	27080	1.82	971987	76.68
Netherlands	127314	30.1	115425	27.30	---	---	242739	57.43
Sweden	52367	2.23	16451	0.70	2739	1.15	71557	28.93
Singapore	16199	15.6	4527	4.30	2061	2.36	22787	21.89
Italy	75233	6.35	172239	14.50	10391	0.92	257863	21.77
United States	1197446	14.50	542898	6.60	---	---	1740344	21.14
Canada	105920	17.30	17491	2.90	4859	0.71	128270	20.99
Germany	235648	10.10	255333	10.90	---	---	490981	20.95
France	99604	6.60	205938	13.70	---	---	305542	20.31
Japan	158771	3.20	712161	14.40	31324	0.69	902256	18.27
Australia	**32870**	**8.70**	**7449**	**2.00**	**1217**	**0.32**	**41536**	**10.60**
New Zealand	5002	8.00	1448	2.00	---	---	6450	10.36
Spain	22308	3.70	24771	4.10	---	---	4707	7.77
Korea	976	0.19	8101	1.50	4428	0.99	13505	2.58
Hong Kong	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
Switzerland	---	---	---	---	---	---	---	---

Note: Data are for end 1997. --- Data unavailable. (c) Data not disclosed due to reasons of confidentiality. *Source:* International Monetary Fund (2000a). For Germany data is from International Monetary Fund (2000b). GNI data from World Bank (1997).

Table 2 Aggregate External Portfolio – Industrial Countries 2001

	Equity		Long Term Debt		Short Term Debt		Total	
	US$ million	% GNI	US$ m	% GNI	US $m	% GNI	US$ m	% GNI
Switzerland	247409	93.00	227602	85.56	15494	5.82	490505	184.39
Netherlands	235023	61.00	244746	63.56	5900	1.53	485669	126.12
Singapore	30020	34.40	42943	49.27	33584	38.53	106547	122.25
Hong Kong	94615	54.57	85877	49.53	25108	14.48	205600	118.58
UK	558379	37.50	667303	44.79	78362	5.26	1304044	87.53
Sweden	103989	43.71	38981	16.39	1526	0.64	144496	60.74
France	201752	14.50	462133	33.16	46445	3.33	710330	50.97
Italy	239472	21.29	307580	27.35	4970	0.44	552022	49.09
Germany	381184	19.70	401582	20.72	8850	0.46	791616	40.85
Canada	200674	29.40	17663	2.59	5132	0.75	223469	32.79
Spain	58698	10.00	103395	17.56	11050	1.88	173143	29.40
Japan	227351	5.00	1004878	22.02	57525	1.26	1289754	28.26
New Zealand	7618	14.80	4733	9.18	71	0.14	12422	24.10
United States	1612669	16.30	500541	5.06	135309	1.37	2248519	22.75
Australia	**64160**	**16.65**	**14396**	**3.73**	**796**	**0.21**	**79352**	**20.59**
Korea	1300	0.29	5284	1.18	1451	0.32	8035	1.79

Note: Data are for end 2001. *Source:* Coordinated Portfolio Investment Survey data for 2001. GNI data from World Bank (2001).

Turning to the geographical spread of Australia's international portfolio investment position the CPIS data shows that Australia's holdings are primarily concentrated in a handful of countries. Table 3 and 4 below lists the major destination countries for Australia's portfolio investment in 1997 and 2001 respectively. In 1997 over half (approximately 58%) of Australia's total investment was invested in the United States (44.31%) and the United Kingdom (14.15%), by 2001 the figure had climbed to 66%. By contrast Australia's trade share (exports plus imports as a percentage of Australia's total world trade) with the USA and UK combined was approximately 19.75 in 1997. By 2001 Australia's trade share with these countries remained approximately the same. Reflecting subdued investment conditions in Japan Australia's total equity investment position declined substantially from 10.7% percent of total investment in 1997 to 5.8 % in 2001. By contrast Australia' trade share with Japan remained constant over 1997 – 2001 at approximately 16 per cent.

The geographical spread of Australia's equity investment as a percentage of total portfolio investment overseas is approximately similar to the spread of total investment abroad as shown in Tables 3 and 4, however, debt is more concentrated in the US (50%) while the UK is the source of approximately 10% of Australia's debt. What factors explains why these few countries (US, UK and Japan) should be the destination for such a substantial proportion (approx 70% in 1997 and 72% in 2001) of Australia's overseas investment? Firstly, two of these countries (US and Japan) are Australia's most significant trading partners with approximately 15% and 16% of total trade conducted with each respectively as indicated by the 1997 and 2001 CPIS data, with trade links providing much useful information about economic prospects in these economies. Secondly, these countries are among the largest economies in the world with major shares of the world's share and bond markets. Thirdly, these countries have well developed accounting standards and legal environment.

Table 3 Australia's Foreign Investment: Major Destination Countries 1997

% Share	Australia's total investment (%)	Australia's equity investment (%)	Australia's debt* investment (%)	Australia's trade (%)	World's domestic equity and bond markets (%)	World GNI (%)
US	44.31	43.47	49.31	15.06	47.31	27.72
UK	14.15	15.45	9.95	4.69	8.20	4.27
Japan	9.49	10.69	5.40	16.58	6.80	16.63
Netherlands	1.84	2.22	0.46	0.87	1.29	1.42
France	3.63	4.11	2.08	1.70	4.40	5.07
Germany	5.08	4.04	10.44	3.53	7.90	7.89
Switzerland	2.69	3.40	(c)	0.80	1.49	1.05
Hong Kong	2.17	2.43	1.40	5.17	1.07	0.55
Italy	2.40	2.49	2.36	2.40	1.30	3.99
Canada	1.35	1.21	2.16	1.43	0.84	2.06
Spain	0.95	0.92	1.22	0.54	1.80	2.04
NZ	1.18	0.26	2.15	5.77	0.02	0.21
Korea	0.42	0.21	1.44	5.59	0.41	1.76
Singapore	0.46	0.58	(c)	3.75	0.18	0.35
Sweden	1.38	1.37	1.62	1.04	0.37	0.83

Note: Data are for 1997. * Long term securities (c) indicates that a non-zero datum was not disclosed for reasons of confidentiality. *Source:* Investment shares calculated from IMF survey data. Trade share calculated from IMF's Direction of Trade Statistics. GNI share calculated from World Bank 2001 data. World's domestic share and bond market data calculated from FIBV data on value of domestic share trading and value of domestic bond trading.

Table 4 Australia's Foreign Investment: Major Destination Countries 2001

% Share in	Australia's total investment (%)	Australia's equity investment (%)	Australia's debt* investment (%)	Australia's trade (%)	World's domestic share and bond markets (%)	World GNI (%)
US	56.01	58.26	48.28	14.13	53.61	31.29
UK	9.98	9.05	14.30	4.78	8.59	4.72
Japan	5.82	5.79	5.81	16.03	4.76	14.44
Netherlands	4.59	5.53	0.67	1.10	1.49**	1.22
France	3.66	3.99	2.37	1.61	4.90**	4.41
Germany	3.07	2.60	5.38	3.50	3.93	6.13
Switzerland	1.56	1.87	0.29	0.67	1.66	0.84
Hong Kong	2.75	2.17	5.49	7.50	0.61	0.55
Italy	1.26	1.10	2.05	2.37	5.90	3.56
Canada	1.12	0.96	1.51	1.47	1.19	2.16
Spain	0.80	0.81	0.78	0.65	2.30	1.86
NZ	1.03	0.09	3.67	4.87	0.02	0.16
Korea	0.54	0.63	0.15	5.81	1.01	1.42
Singapore	0.98	0.68	2.36	3.86	0.18^{t}	0.28
Sweden	0.52	0.54	0.44	0.75	0.78	0.75

Note: Data are for 2001. * Long term securities. ** Data for Netherlands and France has been estimated due to non-availability of data. Total stock and bond value has been taken for Singapore due to non-availability of domestic stock and bond value.

To further investigate the factors responsible for certain countries holding such a substantial proportion of Australia's overseas investments we next turn to an empirical investigation of Australia's international investment and trading position.

III. Empirical Modelling and Results

We begin the investigation of the determinants of Australia's geographical allocation of portfolio investment by performing a multivariate regression of Australia's destination country portfolio shares on the share of Australia's trade with each country, financial market share and share in world GNI respectively. Here we employ the following empirical specification in line with Honohan and Lane (2000).

$$S_{1997,2001} = \alpha + \alpha_1 T \qquad (1)$$
$$S_{1997,2001} = \alpha + \alpha_2 M \qquad (2)$$
$$S_{1997,2001} = \alpha + \alpha_1 T + \alpha_2 M \qquad (3)$$
$$S_{1997,2001} = \alpha + \alpha_1 T + \alpha_2 M + \alpha_3 G \qquad (4)$$

where,

S = Destination country's portfolio share in Australia (1997, 2001)

T = Share of Australia's trade with each country (1997, 2001)

M = Financial Market share of each country in World Financial Markets (1997, 2001). Financial Market share is the sum value of domestic share and bond trading.

G = Country's share in World GNI (1997, 2001)

Equation (1) indicates Australia's portfolio share of the destination country in terms of the share of Australia's trade with destination country. Equation (2) represents Australia's portfolio share of the destination country in terms of destination country's share of the world financial markets (capitalised value). Equation (3) considers the Australia's portfolio share of the destination country in terms of the share of Australia's trade with destination country and destination country's share of the world financial markets. Finally equation (4) represents the Australia's portfolio share of the destination country in terms of the share of Australia's trade with destination country; destination country's share of the world financial markets and destination country's GNP shares as explanatory variables.

Table 5 reports the multivariate regression[10] results for Australia's destination country portfolio shares on the share of Australia's trade with each country, financial market share and share in world GNI. Column 1 shows that when only trade share is included in the regression approximately 46 per cent of the cross-country variations in the share of Australia's investment portfolio can be explained by trade patterns alone. Column (2) indicates a broad correspondence between the stock market capitalisations of destination countries and the allocation of Australian investment. In particular the share of the destination country in terms of their share of the world financial markets (capitalised value) explain almost the entire (96%) of the geographic pattern of Australia' foreign portfolio investment. Column (3) combines the trade share and the world

---

[10] The results for individual equity and long-term components are quite similar and can be made available upon request from the authors. We just report the findings for overall portfolio shares.

financial markets share variable; together these two variables explain 97 per cent of portfolio investment patterns. Adding GNP shares in column (4) to the previous set of explanatory variables adds no further explanatory power to our results. Table 6 repeats the above exercise for 2001; the results show no appreciable difference over those for 1997.

Table 5 Regression Analysis for 1997

Explanatory variable: Destination country's share investment	Equation (1)	Equation (2)	Equation (3)	Equation (4)
Australia's trade	1.45 (2.17)**		0.22 (5.26)*	0.37 (1.96)***
World financial market		0.96 (28.41)*	0.87 (44.11)*	0.97 (9.57)*
World GNI				-0.24 (-1.00)
Adjusted R^2	0.46	0.96	0.97	0.97

Table 6 Regression Analysis for 2001

Explanatory variable: Destination country's share investment	Equation (1)	Equation (2)	Equation (3)	Equation (4)
Australia's trade	1.56 (1.66)		0.08 (1.98)***	0.21 (2.66)**
World financial market		1.03 (75.63)***	1.00 (50.51)*	1.11 (22.32)*
World GNI				-0.24 (-2.24)**
Adjusted R^2	0.35	0.98	0.98	0.98

Note: Dependent variable is portfolio share of each country. Ordinary least square regressions. White corrected t-statistics in parentheses. R^2 is percentage of total variation explained by independent variables. *,**,*** denote significance level at 1, 5 and 10 percent respectively.

Column 2 shows a very close correspondence between investment shares and the share of each destination in global market capitalization. Since this overwhelms everything else a more appropriate specification is to attempt to explain the deviation in investment shares from the

benchmark of shares in global market capitalization[11]. To represent the latter we use the following specification;

$$INVSHARE_i - CAPSHARE_i = \alpha + \beta X_i + \varepsilon \qquad (5)$$

where $INVSHARE_i - CAPSHARE_i = DEVIATION_i$

X_i includes Australia's trade share in destination countries', distance between the capital cities of Australia and destination countries', language, correlation of stock return, regulatory and accounting variables.

Table (7) shows the regression results from equation (5) for 2001, column (1) represents our trade share variable which appears positive (but not significant) implying that deviations from global market capitalisation shares is positively associated with trade shares. In column (2) we add a distance and language variable, here again the trade variable appears positive and significant, the distance variable is significantly negative while the language variable is significantly positive. We also include a stock return variable in column (3), which appears positive but insignificant. The legal and accounting standard variables (columns 4 and 5) are positive which indicate that Australian residents are willing to hold equity in countries which have efficient judicial system and well developed accounting standards.

---

[11]This formulation has been suggested by an AER referee.

Table 7: Deviation Regression analysis for 2001

	(1)	(2)	(3)	(4)	(5)
Trade	0.12	0.22**	0.20*	0.17	0.22**
	(1.70)	(2.81)	(1.84)	(1.51)	(2.48)
Distance		-0.40*	-0.77	-1.25	-1.51
		(-2.19)	(-1.72)	(-1.42)	(-1.47)
Language		1.46*	1.16	0.97	1.01
		(2.06)	(1.29)	(1.32)	(1.57)
Stock Markets			3.58		
			(1.10)		
Efficiency (Legal)				0.42	
				(1.06)	
Accounting Standards					0.06
					(1.21)
Adjusted R^2	0.14	0.43	0.45	0.47	0.44

Note: Dependent variable is the deviation in investment shares from the benchmark of shares in global market capitalisation. White corrected t-statistics in parentheses. *,** indicate the significance level at 0.1 and 0.05, respectively. **Countries:** Australia, US, UK, Japan, France, Germany, Switzerland, Hong Kong, Italy, Canada, Spain, New Zealand, Singapore, Sweden. *Sources:* Independent variable Trade is the ratio of sum of countries' Australian exports and imports to total sum of Australia's exports and imports. Trade data is from IMF's Direction of Trade Statistics. Stock Markets is the correlation of stock returns of Australia and other countries. Stock Markets is calculated from Morgan Stanley Capital International (MSCI) stock indices. Efficiency (Legal) is the efficiency of judicial system; Accounting Standards is accounting standards in countries. Efficiency (Legal) and Accounting Standards data is from La Porta et al. (1998). Distance is the distance between the capital cities of Australia and destination countries' as calculated from http://www.indo.com/distance/. Language is the common language dummy variable (dummy =1 if the official language in countries is English otherwise 0). Language is taken from http://www.cia.gov/cia/publications/factbook/.

To investigate the links between Australia's bilateral equity holdings and bilateral trade in goods and services we next study the relationship between Australia's bilateral equity holdings and proxies for quality of information and the regulatory environment. Following Obstfeld and Rogoff (2001) and Lane and Milesi Ferretti (2004), we employ the following model for Australia's bilateral equity holdings,

$$\log(x_{ij}) = \phi_j + \beta X_i + \sigma \log(IMP_{ij}) + \gamma F_{ij} + \varepsilon_i \qquad (6a)$$

where x_{ij} is the source country $j's$ (Australia's) share of equity holdings in host countries i; ϕ_j denotes aggregate financial frictions that apply at the level of the source country j; X_i is a set

of host countries' characteristics; IMP_{ij} is the volume of source country's imports from the host countries; F_{ij} denotes a set of factors that generate financial frictions at the bilateral level.

Table 8 illustrates the regression results of bilateral portfolio equity holdings wherein Australia is the source country. The dependent variable is log (1+ portfolio equity) of source country (Australia) in the host country. In column (1), we include the imports of goods by source country (Australia) from host countries. This variable is positive and significant implying a strong link between bilateral imports and bilateral investment holdings. In column (2) we add information cost proxies viz. telephone cost and common language dummy. The telephone cost variable is significantly negative while the common language variable is significantly positive. The former result can be explained by the fact that higher telephone costs are associated with time and distance which inturn have a negative impact on international equity holdings while speaking a common language has a positive impact on equity holdings. Overall the adjusted R^2 significance increases from 0.26 to 0.55. In column (3), we add a proxy for the efficiency of the judicial system. This variable appears with a positive and significant coefficient implying that source country residents are willing to hold equity portfolios in host countries where the judicial system is recognised as efficient. In column (4), we add a legal variable to represent the rule of law. This variable is also positive and significant implying that source country residents are willing to hold international shares in their portfolios if the judicial systems in the host countries are seen to uphold the enforcement of the rule of law. An accounting standard variable also appears positive and significant in column (5) implying that the residents of source countries are willing to hold equity in host countries which have well developed accounting standards. Finally, in column (6), we introduce a variable, Average, that capture's the combined effects of efficiency of judicial system, rule of law and accounting standards on the portfolio equity investment. This variable is the average of the La Porta's host country variables viz. efficiency of judicial system, rule of law and accounting standards. This variable is positive and significant

14

implying that Australians appear to invest in countries that have an efficient judicial system, high tradition of law and order and high accounting standards.

Table 8: Portfolio Equity Investment Held by Australians (2001)

	(1)	(2)	(3)	(4)	(5)	(6)
Import	3.05	2.00	2.04	1.84	1.31	1.87
	(4.40)*	(2.60)**	(3.04)*	(2.32)**	(1.59)	(2.69)**
Telephone cost		-6.09	-4.31	-3.53	-5.66	-5.55
		(-5.58)*	(-2.88)*	(-2.29)**	(-5.48)*	(-4.95)*
Language		2.36	1.49	1.88	0.87	1.94
		(2.49)**	(1.53)	(1.82)***	(1.09)	(2.10)**
Efficiency of judicial system			0.63			
			(2.46)**			
Rule of law				0.64		
				(2.34)**		
Accounting standards					0.13	
					(3.42)*	
Average						0.15
						(2.24)**
Constant	-21.40	-8.54	-14.66	-13.34	-10.90	-11.24
	(-3.59)*	(-1.24)	(-2.12)**	(-1.68)	(-1.54)	(-1.59)
Adjusted R^2	0.26	0.55	0.71	0.68	0.69	0.68

Note: Dependent variable is log(1+portfolio equity) of source country (Australia) in host countries. *,**,*** indicate significance level at 1%,5% and 10%. **Source Country:** Australia. **Host Countries:** Austria, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Greece, Hong Kong, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Korea, Malaysia, Mexico, Netherlands, New Zealand, Norway, Peru, Philippines, Poland, Portugal, Russian Federation, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, United Kingdom, US. *Data Sources:* Independent variable Import is the imports of goods by source country (Australia) from host countries. Import data is from IMF's Direction of Trade Statistics. Telephone cost is the five minute telephone charges between capital cities of host and source countries. Telephone cost data is from http://www.phone-rate-calculator.com/. Language is the common language dummy variable (dummy =1 if the official language in countries is English otherwise 0). Language is taken from http://www.cia.gov/cia/publications/factbook/. Efficiency of judicial system, rule of law and accounting standards are the host country variables (La Porta et. al. (1998)). Average is the average of the La Porta et al. (1998) variables viz. Efficiency of judicial system, rule of law and accounting standards.

We also employ the following model for Australia's bilateral equity holdings,

$$\log\left(x_{ij}\right) = \phi_i + \beta X_j + \sigma \log\left(IMP_{ij}\right) + \gamma F_{ij} + \varepsilon_j \qquad (6b)$$

where x_{ij} is the host countries i share of equity holdings in source country j (Australia); ϕ_i denotes aggregate financial frictions that apply at the level of the host countries; X_j is a set of source country characteristics; IMP_{ij} is the volume of source country's imports from the host countries; F_{ij} denotes a set of factors that generate financial frictions at the bilateral level.

Table 9 illustrates the regression results of bilateral portfolio equity holdings wherein Australia is the host country. The dependent variable is log (1+ portfolio equity) of source country in the host country (Australia). In column (1), we include the imports of goods by source countries from the host country (Australia). In line with the previous results, this variable is positive and significant implying a strong link between bilateral imports and bilateral investment holdings. In column (2), we introduce proxies for information cost viz. telephone cost and common language dummies. Again, in line with the previous results, the telephone cost variable is significantly negative while the common language variable is significantly positive. The adjusted R^2 significance increases from 0.30 to 0.51.

Table 9: Australia's Portfolio Equity Investment Held by Other Countries (2001)

	(1)	(2)
Import	0.74	0.70
	(4.25)*	(4.69)*
Telephone cost		-1.26
		(-4.81)*
Language		0.21
		(0.62)
Constant	1.77	2.86
	(1.22)	(2.30)**
Adjusted R^2	0.30	0.51

Note: Dependent variable is log(1+portfolio equity) of source country in host country (Australia). *,**,*** indicate significance level at 1%,5% and 10%. **Host Country:** Australia **Source Countries:** Austria, Brazil, Canada, Chile, China, Czech Republic, Denmark, Finland, France, Germany, Greece, Hong Kong, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Korea, Malaysia, Mexico, Netherlands, New Zealand, Norway, Peru, Philippines, Poland, Portugal, Russian Federation, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, United Kingdom, US. *Data Sources:* Independent variable Import is the imports of goods by source country from host country (Australia). Import data is from IMF's Direction of Trade Statistics. Telephone cost is the five minute telephone charges between capital cities of host and source countries. Telephone cost data is from http://www.phone-rate-calculator.com/. Language is the common language dummy variable (dummy =1 if the official language in countries is English otherwise 0). Language is taken from http://www.cia.gov/cia/publications/factbook/.

III.I   Explaining the Investment Bias

One possible explanation relates to the costs of information acquisition. In contrast to textbook assumptions that perfect information is freely available, learning about international investment opportunities is a costly activity in the real world. Perhaps Australia's disproportionate investment in countries which hold the majority of the world's stock market capitalisation and which we are familiar with through trading and other links (culture) can be attributable to lower costs of acquiring information about investment opportunities in those countries.[12] However this should not be overemphasised when it comes to explaining the bias in portfolio investment. The costs of holding a geographically 'neutral' world portfolio can be greatly reduced through the use of global index funds marketed by international financial intermediaries.

---

[12] See Ghosh and Wolf (1998) and Portes and Rey (1999) regarding the importance of informational variables.

The bias towards investing in three of the worlds developed capital markets namely the US, UK and Japan with some deviations from that baseline with countries due to Australian trading patterns may be interpreted as an extension of the home bias puzzle that has been observed by many researchers. As pointed out by French and Porteba (1991) and others, the home bias puzzle is the phenomenon that the disproportionate bulk of investment portfolios consist of domestic equities and bonds, despite the observable gains to international diversification. Huberman (1997) work on geographical distribution of shareholders in US telephone companies indicates familiarity bias even within countries. A propensity to invest in familiar locations may reflect psychological factors in determining investment decisions.[13]

Finally the lack of a significant correspondence between investment and trade flows associated with Australia and Asian markets (except Japan) requires some comment. One area to consider here is that many financial markets in Asia including China's are not well developed. This lack of development is reflected in the low weights for the region in the global market indices which drive so much of the allocation of portfolio investment in the world i.e. Asia's account in the Morgan Stanley MSCI global equity index for less than 4% and is even smaller for the global bond market indices. The shares are very much smaller than the region's 25% share in world GDP. The share of Australia's outward portfolio investment going to Asia accounts for only 10.9% of the total portfolio investment in 2002 (Reserve Bank of Australia Bulletin, November 2003).

IV.   Concluding Remarks

In this paper we take a preliminary examination of Australia's data for the period 1997 and 2001 reported in the International Monetary Fund's Coordinated Portfolio Investment Survey by providing an analysis of the geography of international portfolio investment (equity and long-term bonds).

---

[13] See Shleifer (2000) regarding the study of behavioural finance.

The study provides answers to some of the following questions; are there linkages between Australia's portfolio equity investment patterns and trade patterns, which bilateral factors are responsible for explaining Australia's portfolio equity investment holdings, are cultural, informational factors important in explaining Australia's portfolio allocations and how regulatory and legal variables affect equity portfolio holdings do. Answers to these questions are important for several discipline fields including economics, international trade, international finance, portfolio analysis and behavioural finance.

Preliminary results suggest that Australia's external holdings of equity and debt as a percentage of national income almost doubled between 1997 and 2001. This increase is almost entirely attributed to increased equity investment However, it is noteworthy that Australia's international investment position as a percentage of national income is one of the lowest amongst the major OECD countries. In 1997 over half of Australia's total investments were invested in the United States and the United Kingdom (combined) this fraction climbing to approximately two thirds by 2001. By contrast Australia's trade share (exports plus imports as a percentage of Australia's total world trade) with the USA and UK (combined) was approximately twenty percent in 1997 and 2001 respectively. Reflecting subdued investment conditions in Japan Australia's total equity investment position declined substantially from 1997 to 2001. By contrast Australia' trade share with Japan remained constant over 1997 – 2001.

We began our investigation into the determinants of Australia's geographical allocation of portfolio investment by performing a series of regression tests to determine the factors driving Australia's investment patterns. Major findings indicate a broad correspondence between the stock market capitalisations of destination countries and the allocation of Australian investment but with some deviations from that baseline, where the deviations are correlated with Australian trade patterns.

To shed more light factors responsible for Australia's bilateral equity holdings we next developed a model of the relationship between Australia's bilateral equity holdings and proxies for quality of information and the regulatory environment. Results here suggest that source country residents are willing to hold equity portfolios in countries where the judicial system is recognised as efficient and appears to uphold enforcement of the rule of law. Finally, an accounting standard variable also appears positive and significant implying that residents of source countries are willing to hold equity in countries which have well developed accounting standards.

The bias towards investing in three of the worlds developed capital markets namely the US, UK and Japan with some deviations from that baseline with countries due to Australian trading patterns may be interpreted as an extension of the home bias puzzle that has been observed by many researchers.

Finally the lack of a significant correspondence between investment and trade flows between Australia and Asian markets (except Japan) requires some comment. One area to consider here is that many financial markets in Asia including China's are not well developed.

References

Ahearne, Alan B., William Griever and Frank Warnock (2004), "Information Costs and the Home Bias," Journal of International Economics 62, 313-336.

Mimeo

Davis, Steven, Jeremy, Nalewaik and Paul Willen (2001), "On the Gains to International Trade in Risky Financial Assets," mimeo, Chicago Graduate School of Business.

French, Kenneth and James Poterba (1991), "Investor Diversification and International Equity Markets", American Economic Review, 81 (May), 222-6.

Mimeo

Ghosh, Swati and Holger Wolf (1998),"The Geography of International Capital Flows," mimeo, The World Bank.

Honohan, Patrick, and Philip R. Lane, (2000), "Where Do the Irish Invest," Irish Banking Review, Autumn, pp. 12-23

Huberman, Guy (1997), "Familiarity Breeds Investment," Paine Webber Working Paper Series in Money, Economics and Finance No. PW-97-04, Columbia Business School.

International Monetary Fund , (1992), "Report on the Measurement of International Capital Flows", Washington, DC: International Monetary Fund.

International Monetary Fund, (2000), "Results of the 1997 Comprehensive Portfolio Investment Survey," Washington, DC: International Monetary Fund.

International Monetary Fund (2000), "International Financial Statistics," Washington, DC: International Monetary Fund.

International Monetary Fund, (2003), "Portfolio Investment: Coordinated Portfolio Investment Survey (CPIS): Metadata", Washington, DC: International Monetary Fund.

La Porta, Florencio Lopez-de-Silanes, Andrei Shleifer, and Robert Vishney, (1998), "Law and Finance," Journal of Political Economy, Vol. 106 (December), pp. 1113-55.

Working Paper

Lane, Philip R. and Gian Maria Milesi-Ferreti (2004), "International Investment Patterns", IMF Working Paper No.04/134.

Martin, Philippe and Helene Rey (2000), "Financial Integration and Asset Returns," European Economic Review 44, 1327-1350.

Reserve Bank of Australia Bulletin

Macfarlane, I.J (2003), Asia's Role in Australia's Economic Future, Reserve Bank of Australia Bulletin .

Obstfeld, Maurice and Kenneth Rogoff (2001), "The Six Major Puzzles in International Macroeconomics. Is There a Common Cause?," NBER Macroeconomics Annual 15, 339-390.

Portes, Richard and Helene Rey (1999), "The Determinants of Cross Border Equity Flows," CEPR Discussion Paper No. 2225

Portes, Richard, Helene Rey, and Yonghyup Oh (2001), "Information and Capital Flows: The Determinants of Transactions in Financial Assets," European Economic Review 45, May, 783-96.

Shleifer, Andrei (2000), Inefficient Markets: An Introduction to Behavioural Finance, Clarendon Lectures, Oxford: Oxford University Press.

Warnock, Francis E. (2002), "Home Bias and High Turnover Reconsidered, Journal of International Money and Finance", Vol. 21(6), p.795-805

CD-ROM

World Bank (1999), World Development Indicators, CD-ROM, Washington DC: The World Bank.

World Bank (2003), World Development Indicators, CD-ROM, Washington DC: The World Bank.