

VII. Geographical trade structure and patterns of international portfolio investment – the case of Australia

By Kevin Daly and Anil Mishra

Summary

This paper analyses the geography of Australia's international portfolio investment using the International Monetary Fund's coordinated Portfolio Investment Survey dataset. It provides some answers to the following questions: (a) why does the pattern of Australia's capital flows not match that of its trade flows; (b) which bilateral factors are responsible for explaining Australia's portfolio equity investment holdings; and (c) are cultural, informational factors important in explaining Australia's portfolio allocations; and (d) 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 among the major OECD countries. In 2001, approximately two thirds of Australia's total investments were invested in the United States of America and the United Kingdom of Great Britain and Northern Ireland. In contrast, Australia's trade share (exports plus imports as a percentage of Australia's total world trade) with these countries was approximately 20 per cent in 2001. The major determinants of Australia's geographical allocation of portfolio investment indicate a broad correspondence between stock market capitalization of destination countries and the allocation of Australian financial investments – although with some deviations from that baseline, where the deviations are correlated with Australian trade patterns. Australia's disproportionate investment in a few countries can be attributable to an extension of the home bias puzzle that has been observed by many researchers.

In general, the paper attempts to identify and quantify those determinants that drive Australia's overseas financial investments. In the aftermath of the recent global financial crisis it would appear that information related to those factors that influence investment decisions is now more urgent than at any time in the history of global funds management. More research into the determinants of a country's international investment position would therefore appear desirable, given that the number of relevant drivers appear to be highly volatile and of a country-specific nature.

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 liberalized, 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 recognize the advantages of international diversification.

In general, the benefits to individual investors from investing in international portfolios come about through the opportunities that local investors are offered to insulate their portfolios from a downturn in local asset prices via investing in global markets. From a country perspective, the benefits from international diversification may also be captured via diversification across trade and investment (debt and equity). For example, when a country's major trading partner experiences a decline in demand for traded goods, a corresponding upturn in the performance of that country's international investment position (IIP) may compensate for this situation.¹

Several recent papers have focused specifically on the patterns of bilateral equity investment. Davis and others (2001) developed a dynamic model for analyzing international trade in risky financial assets where there is incomplete information. Ahearne and others (2004) tested for home bias in United States equity holdings. Martin and Rey (2000) investigated the impact of financial integration on asset returns, risk diversification and breadth of financial markets. Portes and others (2001) tested 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, corporate culture, political events and current business conditions. Obstfeld and Rogoff (2001) presented a simple theoretical model that highlighted trade as an important potential determinant for holding a bilateral portfolio that includes equity and debt. In a two-country setting, they showed that the existence of frictions in product markets would naturally generate a home bias in equity positions, even if global financial markets were complete.

Lane and Milesi-Ferretti (2004) extended the two-country model of Obstfeld and Rogoff (2001) to N country generalization by incorporating informational and financial frictions. They found a strong link between bilateral trade in goods and services and bilateral equity holdings. They also found that large bilateral equity positions were associated with proxies for informational proximity. Absent is a study related to Australia's international investment patterns.

This paper examines the degree of correspondence between Australia's trade and IIP. Australia's equity portfolio investment patterns are examined, using the newly-released International Monetary Fund (IMF) Coordinated Portfolio Investment Survey (CPIS)² data.

The paper focuses on understanding the relationship between capital flows and trade flows based on data sourced from CPIS 1997 and 2001 data. To begin the investigation of the determinants of Australia's geographical allocation of portfolio investment a series of multivariate regressions have been employed. The broad relationships between capital flows and trade flows, financial market shares and shares in world gross national income are examined. Accordingly, variables are used for Australia's exports and imports as calculated from the IMF

¹ The international investment position 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 The purpose of CPIS is to improve statistics of holdings of portfolio investment assets viz. equity as well as long-term and short-term debt. CPIS collects comprehensive information, with geographical details on the country of residence of the issuer, the stock of cross-border equities, long-term bonds and notes, and short-term debt instruments related to international investment position.

Direction of Trade Statistics; the value of bond and share trading are calculated from Federation Internationale des Bourses de Valeurs data; and gross national income (GNI) is calculated from World Development Indicators (World Bank, 1993 and 2003).

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

The paper is organized as follows. Section A provides a summary account of Australian and other major Organisation for Economic Co-operation and Development (OECD) member countries' external holdings of debt and equity compared to trade flows. It investigates a number of factors that may explain why so few countries provide a destination for a substantial holding of Australia's foreign investment flows. Section B develops an empirical model that examines factors which encourage/discourage portfolio and foreign direct investment, but not trade flows. It also explains the investment bias. Section C presents the conclusion.

A. Data and trends

Until recently, data on the level as well as geographical pattern of international portfolio investment have been inadequate (see below). In recognition of this fact, in the mid-1990s IMF commenced a pioneering comprehensive survey of the geographic structure of foreign portfolios (equity and long-term bonds). The data employed in this paper comes from the IMF CPIS for 1997 and 2001. Previously, the balance of payments data employed in economic modelling was related to flows of assets but not about valuation changes. The flow data provide little information about the determinants of international asset holdings (Lane and Milesi-Ferretti, 2004 and Warnock, 2002). In 1993, the IMF Committee on Balance of Payments decided to undertake³ an internationally coordinated benchmark survey of long-term portfolio investment holdings in order 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 participation by 29 countries⁴ and again in 2001 with the involvement of 64 countries. The results for both those surveys were published by IMF. The 1997 results were published in 2000 (International Monetary Fund, 2000a) and up-to-date survey results are now published regularly (International Monetary Fund, 2003).

Preliminary findings

Tables 1 and 2 provide an overall view of external holdings of foreign equity as well as 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 GNI. Table 1 shows that Australia's external holdings of equity and debt were

³ In 1992 an IMF Working Party on the Measurement of International Capital flows found that at the global level recorded portfolio liabilities outweighed portfolio assets by as much as US\$ 400 billion (International Monetary Fund, 1992).

⁴ Argentina, Australia, Austria, Belgium, Bermuda, Canada, Chile, Denmark, Finland, France, Iceland, Indonesia, Ireland, Israel, Italy, Japan, Republic of Korea, Malaysia, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Thailand, the United Kingdom, the United States and Venezuela.

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 among the major OECD countries. In fact, Australia's external investment position on the international ladder relative to other countries in table 2 had not changed by 2001 (Organisation for Economic Co-operation and Development, 2003). Australia's increased IIP from 1997 to 2001 was almost entirely attributable to increased equity investment doubling from 8.7 per cent to 16.6 per cent of GNI over five years.

Table 1. Aggregate external portfolio: Industrial countries, 1997

Country/area	Equity		Long-term debt		Short-term debt		Total	
	US\$ million	% GNI	US\$ million	% GNI	US\$ million	% GNI	US\$ million	% GNI
United Kingdom	461 553	36.4	483 354	38.10	27 080	1.82	971 987	76.68
Netherlands	127 314	30.1	115 425	27.30	--	--	242 739	57.43
Sweden	52 367	2.23	16 451	0.70	2 739	1.15	71 557	28.93
Singapore	16 199	15.6	4 527	4.30	2 061	2.36	22 787	21.89
Italy	75 233	6.35	172 239	14.50	10 391	0.92	257 863	21.77
United States	1 197 446	14.50	542 898	6.60	--	--	1 740 344	21.14
Canada	105 920	17.30	17 491	2.90	4 859	0.71	128 270	20.99
Germany	235 648	10.10	255 333	10.90	--	--	490 981	20.95
France	99 604	6.60	205 938	13.70	--	--	305 542	20.31
Japan	158 771	3.20	712 161	14.40	31 324	0.69	902 256	18.27
Australia	32 870	8.70	7 449	2.00	1 217	0.32	41 536	10.60
New Zealand	5 002	8.00	1 448	2.00	--	--	6 450	10.36
Spain	22 308	3.70	24 771	4.10	--	--	4 707	7.77
Republic of Korea	976	0.19	8 101	1.50	4 428	0.99	13 505	2.58
Hong Kong, China	(c)	(c)	(c)	(c)	(c)	(c)	(c)	(c)
Switzerland	--	--	--	--	--	--	--	--

Sources: International Monetary Fund, 2000a; data for Germany are from International Monetary Fund, 2000b; GNI data are from World Bank, 1997.

Note: Data are for end-1997; -- = data unavailable; (c) = data not disclosed due to reasons of confidentiality.

Table 2. Aggregate external portfolio: Industrial countries, 2001

Country/area	Equity		Long-term debt		Short-term debt		Total	
	US\$ million	% GNI	US\$ million	% GNI	US\$ million	% GNI	US\$ million	% GNI
Switzerland	247 409	93.00	227 602	85.56	15 494	5.82	490 505	184.39
Netherlands	235 023	61.00	244 746	63.56	5 900	1.53	485 669	126.12
Singapore	30 020	34.40	42 943	49.27	33 584	38.53	106 547	122.25
Hong Kong, China	94 615	54.57	85 877	49.53	25 108	14.48	205 600	118.58
United Kingdom	558 379	37.50	667 303	44.79	78 362	5.26	1 304 044	87.53
Sweden	103 989	43.71	38 981	16.39	1 526	0.64	144 496	60.74
France	201 752	14.50	462 133	33.16	46 445	3.33	710 330	50.97
Italy	239 472	21.29	307 580	27.35	4 970	0.44	552 022	49.09
Germany	381 184	19.70	401 582	20.72	8 850	0.46	791 616	40.85
Canada	200 674	29.40	17 663	2.59	5 132	0.75	223 469	32.79
Spain	58 698	10.00	103 395	17.56	11 050	1.88	173 143	29.40
Japan	227 351	5.00	1 004 878	22.02	57 525	1.26	1 289 754	28.26
New Zealand	7 618	14.80	4 733	9.18	71	0.14	12 422	24.10
United States	1 612 669	16.30	500 541	5.06	135 309	1.37	2 248 519	22.75
Australia	64 160	16.65	14 396	3.73	796	0.21	79 352	20.59
Republic of Korea	1 300	0.29	5 284	1.18	1 451	0.32	8 035	1.79

Sources: Coordinated Portfolio Investment Survey data for 2001; GNI data from World Bank, 2001.

Note: Data are for end-2001.

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

The geographical spread of Australia's equity investment as a percentage of total portfolio investment overseas is somewhat similar to the spread of total investment abroad as shown in tables 3 and 4; however, debt is more concentrated in the United States (50 per cent) while the United Kingdom is the source of approximately 10 per cent of Australia's debt. What are the factors that explain why these few countries (the United Kingdom, the United States and Japan) should be the destination for such a substantial proportion (approx 70 per cent in 1997 and 72 per cent in 2001) of Australia's overseas investment? First, two of these countries (the United States and Japan) are Australia's most significant trading partners with approximately 15 per cent and 16 per cent, respectively, of total trade conducted with each country, as indicated by the 1997 and 2001 CPIS data. These countries are also the largest economies in the world, with major shares of the world's share and bond markets.

Table 3. Australia's foreign investment: Major destination countries, 1997

(Unit: Per cent)

Per cent share in:	Australia's total investment	Australia's equity investment	Australia's debt* investment	Australia's trade	World's domestic equity and bond markets	World GNI
United States	44.31	43.47	49.31	15.06	47.31	27.72
United Kingdom	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, China	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
New Zealand	1.18	0.26	2.15	5.77	0.02	0.21
Republic of 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

Sources: Investment shares calculated from IMF survey data; trade share calculated from IMF Direction of Trade Statistics, GNI share calculated from World Bank 2001 data, world domestic share and bond market data calculated from Federation Internationale des Bourses de Valeurs data on value of domestic share trading and value of domestic bond trading.

Note: Data are for 1997; * long-term securities; (c) indicates that a non-zero datum was not disclosed for reasons of confidentiality.

Table 4. Australia's foreign investment: Major destination countries, 2001

(Unit: Per cent)

Per cent 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
United States	56.01	58.26	48.28	14.13	53.61	31.29
United Kingdom	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, China	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
New Zealand	1.03	0.09	3.67	4.87	0.02	0.16
Republic of Korea	0.54	0.63	0.15	5.81	1.01	1.42
Singapore	0.98	0.68	2.36	3.86	0.18 ^l	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 have 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, an empirical investigation of Australia's international investment and trading position is detailed below.

B. Empirical modelling and results

Investigation of the determinants of Australia's geographical allocation of portfolio investment starts 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. The following empirical specification is employed in line with Honohan and Lane (2000):

$$S_{1997,2001} = \alpha + \alpha_1 T \tag{1}$$

$$S_{1997,2001} = \alpha + \alpha_2 M \tag{2}$$

$$S_{1997,2001} = \alpha + \alpha_1 T + \alpha_2 M \tag{3}$$

$$S_{1997,2001} = \alpha + \alpha_1 T + \alpha_2 M + \alpha_3 G \tag{4}$$

where S = destination country's portfolio share in Australia (1997, 2001), T = share of Australia's trade with each country (1997 and 2001) and M = financial market share of each country in world financial markets (1997 and 2001). (Financial market share is the sum value of domestic share and bond trading.) G = country's share in world GNI (1997 and 2001).

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

Table 5 reports the multivariate regression results⁵ 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 capitalizations of destination countries and the allocation of Australian investment. In particular, the share of the destination country in terms of share of the world financial markets (capitalized value) explains almost the entire (96 per cent) geographic

⁵ The results for individual equity and long-term components are similar and can be made available upon request from the authors, who have only reported the findings for overall portfolio shares in this paper.

pattern of Australia' foreign portfolio investment. Column 3 combines the trade share and the global 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 provides no further explanatory power to the 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 are in parentheses; R² is percentage of total variation explained by independent variables. Significance level: * 1 per cent; ** 5 per cent; and *** 10 per cent.

Column 2 of tables 5 and 6 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.⁶ To represent the latter, the following specification is used:

$$INVSHARE_i - CAPSHARE_i = \alpha + \beta X_i + \varepsilon \quad (6)$$

⁶ This formulation was suggested by an anonymous referee.

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, growth, stock return, and regulatory and accounting variables.

Table 7 shows the regression results. Column (1) represents the trade share variable, which appears positive (but not significant), implying that deviations from global market capitalization shares are positively associated with trade shares. In column (2) a distance and language variable is added; here, the trade variable appears positive and significant, the distance variable is significantly negative while the language variable is significantly positive. In addition, a stock return variable is included in column (3), which appears positive and significant, indicating that stock returns have an important influence on bilateral equity investment. In line with previous results, the legal and accounting standard variables in columns (4) and (5) are also positively related to bilateral equity investment.

Table 7. Deviation regression analysis for 2001

	(1)	(2)	(3)	(4)	(5)
Trade	0.12 (1.70)	0.22** (2.81)	0.16 (1.40)	0.17 (1.51)	0.22** (2.48)
DIST		-0.40* (-2.19)	-0.68 (-1.75)	-1.25 (-1.42)	-1.51 (-1.47)
LAN		1.46* (2.06)	2.02 (1.67)	0.97 (1.32)	1.01 (1.57)
Stock markets			5.41 (1.13)		
EFFI (legal)				0.42 (1.06)	
ACC standards					0.06
Adjusted R ²	0.14	0.43	0.44	0.47	0.44

Sources: The independent variable, Trade, is the ratio of the sum of Australian exports and imports by countries to the total sum of Australia's exports and imports. Trade – data from the IMF Direction of Trade Statistics. Stock markets – the correlation of stock returns of Australia and other countries calculated from Morgan Stanley Capital International (MSCI) stock indices. EFFI – the efficiency of the judicial system. ACC – accounting standards in countries as reported by La Porta and others (1998). DIST – the distance calculated from www.indo.com/distance/. LAN is the common language dummy variable (dummy = 1 if the official language in countries is English, otherwise 0). LAN – taken from www.cia.gov/cia/publications/factbook/.

Note: White corrected t-statistics are in parentheses. Significance level: * 0.1 and ** 0.05.

Countries/area: Canada; France; Germany; Hong Kong, China; Italy; Japan; New Zealand, Singapore; Spain; Sweden; Switzerland; United Kingdom; and United States;. Dependent variable is the deviation in investment shares from the benchmark of shares in global market capitalization, as in equation 6.

Next, the links between Australia's bilateral equity holdings and bilateral trade in goods and services, the relationship between Australia's bilateral equity holdings and proxies for quality of information and the regulatory environment are investigated. Following Obstfeld and Rogoff (2001) and Lane and Milesi-Ferretti (2004), the following model is employed for Australia's bilateral equity holdings:

$$\log(x_{ij}) = \phi_i + \phi_j + \sigma \log(IMP_{ij}) + \gamma F_{ij} + \varepsilon_{ij} \quad (5)$$

where x_{ij} is the country's j share of equity holdings in country i ; ϕ_i and ϕ_j denote aggregate financial frictions that apply at the level of the source and host countries; IMP_{ij} is the volume of

imports to country j from country i ; 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 $\log(1 + \text{portfolio equity})$ of source country (Australia) in the host country. Included in column (1) are the imports of goods by source country (Australia) from host country. This variable is positive and significant, implying a strong link between bilateral imports and bilateral investment holdings. In column (2) information cost proxies, i.e., telephone cost and common language dummy, are added. 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, in turn, 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 0.10 to 0.54. In column (3), a proxy is added 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 countries where the judicial system is recognized as efficient. In column (4), a legal variable is added 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 system there is seen to uphold enforcement of the rule of law. Finally, 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 countries which have well developed accounting standards.

Table 8. Portfolio equity investment held by Australians, 2001

	(1)	(2)	(3)	(4)	(5)
Imports	0.61 (8.32)*	1.06 (9.42)*	0.58 (1.92)***	0.54 (1.75)*	0.05 (0.15)
Telephone cost		-6.69 (-6.38)*	-5.52 (-4.19)*	-4.84 (-3.63)*	-6.36 (-7.18)*
Language		2.82 (3.53)*	2.17 (2.63)**	2.43 (2.71)**	1.44 (2.09)**
Efficiency of judicial system			0.50 (2.13)**		
Rule of law				0.50 (1.95)*	
Accounting standards					0.14 (3.36)*
Adjusted R^2	0.10	0.54	0.67	0.65	0.67

Source country: Australia.

Host countries/areas: Austria; Brazil; Canada; Chile; China; Czech Republic; Denmark; Finland; France; Germany; Greece; Hong Kong, China; Hungary; India; Indonesia; Ireland; Israel; Italy; Japan; Republic of Korea; Malaysia; Mexico; Netherlands; New Zealand; Norway; Peru; Philippines; Poland; Portugal; Russian Federation; Singapore; South Africa; Spain; Sweden; Switzerland; Thailand; Turkey; the United Kingdom; and the United States.

Note: Dependent variable is $\log(1 + \text{portfolio equity})$ of source country (Australia) in host country. Portfolio equity investments issued by host country residents and held by source country (Australia) residents. Independent variable import is the imports of goods by source country (Australia) from host countries. Efficiency of judicial system, rule of law, accounting standards and creditors rights are the host country variables (La Porta and others, 1998). Significance level: * 1 per cent; ** 5 per cent; and *** 10 per cent.

Table 9 illustrates the regression results of bilateral portfolio equity holdings wherein Australia is the host country. The dependent variable is $\log(1 + \text{portfolio equity})$ of source

country (others) in the host country. In line with the previous results, the import variable is positive and significant throughout, the telephone cost variable is negative and significant throughout and the language variable is positive. Furthermore, the effects of accounting standards, rule of law and efficiency of judiciary system all have positive and significant effects on equity holdings by overseas investors. Again, these results imply that source countries equity holdings will improve if the host country has internationally recognized accounting standards as well as an efficient and enforceable judicial system.

Table 9. Australia's portfolio equity investment held by other countries, 2001

	(1)	(2)	(3)	(4)	(5)
Imports	0.95 (59.16)*	1.04 (34.48)*	0.70 (4.69)*	0.70 (4.69)*	0.70 (4.69)*
Telephone cost		-1.19 (-4.30)*	-1.26 (-4.81)*	-1.26 (-4.81)*	-1.26 (-4.81)*
Language		0.03 (0.08)	0.21 (0.62)	0.21 (0.62)	0.21 (0.62)
Efficiency of judicial system			0.28 (2.30)**		
Rule of law				0.28 (2.30)**	
Accounting standards					0.03 (2.30)**
Adjusted R ²	0.29	0.46	0.51	0.51	0.51

Host country: Australia.

Source countries/area: Austria; Brazil; Canada; Chile; China; Czech Republic; Denmark; Finland; France; Germany; Greece, Hong Kong, China; Hungary; India; Indonesia; Ireland; Israel; Italy; Japan; Republic of Korea; Malaysia; Mexico; the Netherlands; New Zealand; Norway; Peru; the Philippines; Poland; Portugal; Russian Federation; Singapore; South Africa; Spain; Sweden; Switzerland; Thailand; Turkey; the United Kingdom; and the United States.

Note: Dependent variable is $\log(1+\text{portfolio equity})$ of source country in host country (Australia). Independent variable import is the import of goods by source country from host country (Australia). Efficiency of judicial system, rule of law, accounting standards and creditors rights are the host country variables (La Porta and others, 1998). Significance level: * 1 per cent; ** 5 per cent; and *** 10 per cent. Australia: Reported portfolio investment assets by economy of non-resident, issuer: Equity Securities.

Explaining the investment bias

One possible explanation is related 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 that hold the majority of the world's stock market capitalization and with which we are familiar through trading and other links (culture) can be attributable to lower costs of acquiring information about investment opportunities in those countries.⁷ However, this should not be overemphasized 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.

⁷ See Ghosh and Wolf (1998) and Portes and Rey (1999) regarding the importance of informational variables.

The bias towards investing in three of the world's developed capital markets (the United States, United Kingdom 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 Poterba (1991) and others, the home bias puzzle is the phenomenon that the disproportionate bulk of investment portfolios comprise domestic equities and bonds, despite the observable gains to international diversification. Huberman's (1997) work on geographical distribution of shareholders in United States telephone companies indicates familiarity bias even within countries. A propensity to invest in familiar locations may reflect psychological factors in determining investment decisions.⁸

Finally, the lack of a significant relationship 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 that of China, are not well developed. This lack of development is reflected in the low weights for the region in the global market indices that drive so much of the allocation of portfolio investment in the world, i.e., Asia accounts for less than 4 per cent of the MSCI global equity index and is even smaller for that of the global bond market indices. The shares are very much smaller than the region's 25 per cent share in world GDP. The share of Australia's outward portfolio investment going to Asia accounted for only 10.9 per cent of the total portfolio investment in 2002.⁹

C. Conclusion

This paper makes a preliminary examination of Australia's data for 1997 and 2001 reported in the IMF CPIS by providing an analysis of the geography of international portfolio investment (equity and long-term bonds).

The paper provides some answers to the following questions: (a) why the pattern of Australia's capital flows does not match that of its trade flows; (b) which bilateral factors are responsible for explaining Australia's portfolio equity investment holdings; (c) whether cultural, informational factors are important in explaining Australia's portfolio allocations; and (d) how do regulatory and legal variables affect equity portfolio holdings. Answers to these questions are important for several disciplines 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 IIP as a percentage of national income is one of the lowest among the major OECD countries. In 1997, more than half of Australia's total investments were invested in the United Kingdom and United States (combined), with this proportion climbing to approximately two thirds by 2001. In contrast, Australia's trade share (exports plus imports as a percentage of Australia's total world trade) with the United Kingdom and the United States (combined) was approximately 20 per cent 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's trade share with Japan remained constant during 1997-2001.

⁸ See Shleifer (2000) regarding the study of behavioural finance.

⁹ *Reserve Bank of Australia Bulletin*, November 2003.

Next, in order to shed more light on the factors responsible for Australia's bilateral equity holdings, a model is developed of the relationship between Australia's bilateral equity holdings and proxies for quality of information and the regulatory environment. The results suggest that source country residents are willing to hold equity portfolios in countries where the judicial system is recognized as efficient and appears to uphold enforcement of the rule of law. An accounting standard variable also appears positive and significant, implying that residents of source countries are willing to hold equity in countries that have well developed accounting standards.

The bias towards investing in three of the world's developed capital markets (Japan, the United Kingdom and the United States), 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. However, in the light of the recent global financial crisis, which exposed significant loopholes in large financial corporations' governance structures and risk compliance, it is critical for policy makers to be updated on current research into those factors that appeared to be the drivers of global investment practices.

Finally, the lack of a significant relationship between investment and trade flows for Australia and its Asian neighbours (except Japan) requires further research. One area to consider here is investigating the relevant strengths and weakness of Asia's financial markets relative to developed markets as destinations for international portfolio investments.

References

- Ahearne, A. B., W. Grier and F. Warnock (2004). "Information costs and the home bias," *Journal of International Economics*, vol. 62, No. 2; pp. 313-336.
- Davis, S., J., Nalewaik and P Willen (2001). "On the gains to international trade in risky financial assets," mimeograph, Chicago Graduate School of Business.
- French, K. and J. Poterba (1991). "Investor diversification and international equity markets", *American Economic Review*, vol. 81, No. 2; pp. 222-226.
- Ghosh, S. and H. Wolf (1998). "The geography of international capital flows," mimeograph, World Bank, Washington, D.C.
- Honohan, P. and P. R. Lane (2000). "Where do the Irish invest?" *Irish Banking Review*, (autumn); pp. 12-23.
- Huberman, G. (1997). "Familiarity breeds investment," Paine Webber Working Paper Series in Money, Economics and Finance, No. PW-97-04, Columbia Business School, New York, United States.
- International Monetary Fund (2003). "Portfolio investment: Coordinated Portfolio Investment Survey (CPIS): Metadata", Washington, D.C.
- (2000a). "Results of the 1997 Comprehensive Portfolio Investment Survey," Washington, D.C.
- (2000b). "International financial statistics," Washington, D.C.
- (1992). "Report on the Measurement of International Capital Flows", Washington, D.C.
- La Porta, R., F. Lopez-de-Silanes, A. Shleifer and R. Vishney (1998). "Law and finance," *Journal of Political Economy*, vol. 106 (December); pp. 1113-1155. University of Chicago Press, United States.
- Lane, P. R. and G. M. Milesi-Ferreti (2004). "International investment patterns", IMF Working Paper No.04/134. International Monetary Fund, Washington, D.C.
- Martin, P. and H. Rey (2000). "Financial integration and asset returns," *European Economic Review*, vol. 44, No. 7; pp. 1327-1350.
- Obstfeld, M. and K. Rogoff (2001). "The six major puzzles in international macroeconomics. Is there a common cause?" *Macroeconomics Annual 15*, pp. 339-390. National Bureau of Economic Research, Cambridge, MA, United States.
- Organisation for Economic Co-operation and Development (2003). *International Direct Investment Statistics Yearbook (1991-2002)*, Paris.
- Portes, R., H. Rey and Yonghyup Oh (2001). "Information and capital flows: The determinants of transactions in financial assets," *European Economic Review*, vol. 45 (May), pp. 783-796.
- Shleifer, A. (2000). *Inefficient Markets: An Introduction to Behavioural Finance*, Clarendon Lectures, Oxford. Oxford University Press.
- Warnock, F. E. (2002). "Home bias and high turnover reconsidered", *Journal of International Money and Finance*, vol. 21, No. 6; pp.795-805.
- World Bank (2003). World Development Indicators (CD-ROM), Washington, D.C.
- (1999). World Development Indicators (CD-ROM), Washington, D.C.