International Investment Positions: A Cross-Sectional Analysis

Philip R. Lane
Department of Economics
Trinity College Dublin
Dublin 2
email: plane@tcd.ie

Abstract

We explore some empirical properties of gross international investment positions. In a cross-section of countries, we ...nd that more open countries with larger domestic ...nancial markets tend to hold greater quantities of foreign assets and liabilities. Keywords: international investment positions, international investment income ‡ows, asset trade.

Acknowledgements

Section I: Introduction

This paper empirically studies gross international investment positions. Although much research has focused on the determinants of net capital flows and external debt, gross holdings of foreign assets and liabilities are arguably a better indicator of the extent of international capital market activity. An interesting aspect of gross international investment positions is that, as shown in section 3 below, there is considerable cross-country heterogeneity in the level of cross-holdings of foreign assets and liabilities.[1] Our objective in this paper is to identify factors that explain this cross-sectional variation.

Understanding the sources of cross-country heterogeneity in ownership levels of foreign assets and liabilities is important for a number of reasons. First, the cross-section is one dimension along which theories of international investment behavior can be investigated. Second, positive gross international investment positions may affect macroeconomic outcomes by reducing vulnerability to shocks, via the provision of international investment income flows that are imperfectly correlated with domestic output fluctuations. Third, the scale of international asset trade may provide a volume based measure of financial openness, just as export/GDP and import/GDP ratios play this role with respect to openness to trade in goods and services. For this purpose, it is useful to identify the systemic component to financial openness, just as researchers adjust volume based measures of trade openness for factors such as population,

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[1] See also Golub (1990). Golub studied gross capital flows but, unlike this paper, he did not seek to explain the variation in foreign assets and liabilities across countries.

land area and proximity to major markets (Lee 1993, Frankel and Romer 1996).

One important role played by ownership of foreign assets and liabilities is to smooth income, by delinking GNP and GDP.[2] In this regard, we would expect that countries that have a greater need for income smoothing to hold greater quantities of foreign assets and liabilities. For instance, is it the case that those countries that face a more volatile environment tend to have larger gross international investment positions? Second, holding ...xed these potential gains, the costs of engaging in international asset trade also a¤ect the propensity to hold positive gross international investment positions. As is developed in section 2 below, such theoretical considerations guide the choice of regressors in our empirical analysis.

The rest of the paper is organized as follows. Section 2 discusses the factors that may help to explain cross-country variation in gross international investment positions. The empirical analysis begins in section 3, which considers the determinants of cross-country variation in the size of gross holdings of foreign assets and liabilities. Section 4 concludes.

Section II: Cross-Sectional Determinants

In this subsection, we discuss some potential determinants of variation across countries in the level of cross-holdings of international assets and liabilities, as a precursor to the empirical work in section 3. We focus on variables that may raise the desirability of income smoothing

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[2]See Svensson (1988), Obstfeld (1995) and Obstfeld and Rogo¤ (1996).

and/or reduce the barriers to international asset trade.[3]

Since our interest is in gross international investment positions, our index of cross-holdings is a simple average of foreign assets and liabilities, expressed as a ratio to GDP

$$BY_i = \frac{1}{2} \times \left(\frac{FA + FL}{Y} \right)_i \tag{1}$$

We consider a range of variables that may help to determine cross-country variation in BY_i. An interesting question is whether countries that are heavily engaged in the international trade of goods and services are also highly integrated in asset trade. A positive association between trade openness and international investment positions may arise for a number of reasons. First, trade openness may raise volatility and hence the desire for income smoothing.[4] Second, international trade in goods and services in itself generates parallel …nancial ‡ows (i.e., international payments and receipts) and …rms may wish to hedge the riskiness of these ‡ows in their investment and treasury strategies. Third, working in the opposite direction, the cross-holdings of assets and liabilities that are the results of FDI may in turn generate increased trade in goods and services.

Country size may also matter. One reason is that the establishment of domestic …nancial markets may entail …xed set-up costs and it

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[3] As suggested by Grilli (1989) and Feldstein (1994), shielding wealth from domestic tax authorities provides an additional motivation for holding foreign assets and liabilities. However, we do not have the data to empirically investigate this proposition.

[4] Rodrik (1998) argues that more open economies face more volatile environments and hence desire larger government sectors as a social insurance mechanism. International asset cross-holdings are an alternative method by which income can be smoothed that is potentially more powerful since it involves cross-country transfers rather than just domestic transfers.

may make sense for a small country to "free ride" on the existence of deep
...nancial and capital markets in other, larger economies. For instance,
Grilli (1989) poses the scenario of Belgian ...rms and households perform-
ing all their ...nancial transactions in the London markets. Another good
example is Ireland, whose banks relied on London for inter-bank funds
until a domestic money market was established in 1972. Finally, a further
reason why size may be a relevant factor is that smaller countries may be
more specialized, with greater vulnerability to external shocks and hence
with more volatile national output levels.

If the formation of international ...nancial linkages similarly in-
volves ...xed set-up costs, the degree of international ...nancial integration
may also be positively related to a country's level of per capita output.
Alternatively, by analogy to Mulligan and Sala-i-Martin (1996), a pos-
itive relationship between gross international investment positions and
per capita output could be motivated by the existence of ...xed costs in
acquiring information about international ...nancial opportunities.

As has been suggested above, countries that face a more volatile
environment should be more anxious to smooth income by increasing
cross-holdings of foreign assets and liabilities. We consider indicators of
historical volatility in GDP, in the terms of trade and in in‡ation. Even
if GDP is stable, ‡uctuations in the terms of trade generate instability in
purchasing power.[5] We allow for in‡ation volatility since in‡ation a¤ects
the net incomes of holders of unindexed nominal assets and liabilities.[6]

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[5] Of course, if terms of trade movements o¤set shifts in GDP, the e¤ect is to stabilize
real income. However, there is no strong relationship between output and the terms of
trade in the data (Zimmermann, 1997).

[6] Bacchetta and van Wincoop (1997) and Neumeyer (1998) analyze nominal risk in

Finally, we ask whether countries with well developed domestic ...nancial markets are more likely to engage in international asset trade. A developed domestic ...nancial sector facilitates the sale of domestic assets to foreign investors. In addition, it is plausible that ...rms and households that are accustomed to domestic trade in assets may also be more attuned to the bene...ts of holding international investments in smoothing income.

Accordingly, the basic speci...cation for the regression analysis in section 3 is

$$BY_i = \alpha + \beta X_i + \gamma Z_i + \varepsilon_i \tag{2}$$

where X_i is the trade openness variable and Z_i is a set of the other po tential determinants discussed above.

Section III: Empirical Analysis

The data on foreign assets and liabilities are taken from the Inter-national Monetary Fund's International Financial Statistics CD-ROM.[7] Restricted by data availability, there are nineteen OECD countries in the sample, as listed in Table [1]. Table [2] reports some basic data for these countries over the period 1981-95. Column (1) shows the total interna-tional investment position, as de...ned in equation [2] above. For most countries, gross international investment positions are clearly rising over time. There are also considerable di¤erences in the sizes of gross interna-tional investment positions across countries (Figure 1 displays the data in

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international asset trade.

[7]Since April 1997, line 79 of the IFS has reported data on the composition of inter-national investment positions for a limited number of countries.

Table 1: Country List

Australia	AUS	1986-96	Japan	JAP	1980-96
Austria	AUT	1980-96	Netherlands	NET	1980-96
Belgium	BEL	1981-94	Norway	NOR	1988-93
Canada	CAN	1980-96	New Zealand	NZL	1990-96
Denmark	DEN	1991-95	Spain	ESP	1980-95
Finland	FIN	1975-96	Sweden	SWE	1982-96
France	FRA	1987-96	Switzerland	SWI	1984-95
Germany	GER	1980-95	United Kingdom	GBR	1980-96
Iceland	ICE	1988-95	United States	USA	1980-96
Italy	ITA	1972-96			

Data available on international investment positions in International Financial Statistics.

graphical form for 1991-95). Belgium, the Netherlands, Switzerland and the United Kingdom all have gross international investment positions in excess of 100 percent of GDP while, at the other extreme, Iceland, Italy, Japan, Norway and Spain have positions that are less than 50 percent of GDP.

Columns (2)-(4) show data on three international investment subcategories: foreign direct investment, portfolio equity and portfolio debt positions. (The category "other investments" is not reported and is the diﬀerence between the total and the sum of these subcomponents. Other investments comprise the holdings of the monetary authority, the general government, reserves, the banking system and other sectors.) It is potentially important to separately consider these subcategories. One reason is that they may diﬀer in their risk-sharing properties. For instance, Milesi-Ferretti and Razin (1996) speculate that equity liabilities (FDI or

Table 2: Summary Data

		Total	FDI	Equity	Debt	INCP	INCM
Australia	1981-85						
	1986-90	0.493	0.193	0.052	0.029	0.01	0.045
	1991-95	0.594	0.228	0.087	0.047	0.011	0.046
Austria	1981-85	0.657	0.029	0.004	0.096	0.046	0.051
	1986-90	0.747	0.04	0.011	0.145	0.046	0.053
	1991-95	0.712	0.055	0.022	0.195	0.047	0.053
Belgium	1981-85	1.499	0.118	0.03	0.168	0.267	0.26
	1986-90	1.988	0.225	0.081	0.311	0.276	0.259
	1991-95	2.118	0.339	0.134	0.393	0.423	0.382
Canada	1981-85	0.553	0.153	0.03	0.117	0.015	0.051
	1986-90	0.583	0.168	0.036	0.161	0.016	0.054
	1991-95	0.682	0.189	0.053	0.229	0.017	0.051
Denmark	1981-85						
	1986-90						
	1991-95	0.928	0.121	0.045	0.276	0.133	0.163
Finland	1981-85	0.349	0.021		0.043	0.013	0.036
	1986-90	0.428	0.045	0.007	0.095	0.019	0.041
	1991-95	0.671	0.078	0.034	0.246	0.018	0.063
France	1981-85						
	1986-90	0.61	0.06	0.045	0.076	0.038	0.039
	1991-95	0.754	0.148	0.054	0.127	0.074	0.079

		Total	FDI	Equity	Debt	INCP	INCM
Germany	1981-85	0.38	0.042	0.018	0.052	0.025	0.021
	1986-90	0.509	0.051	0.036	0.095	0.031	0.023
	1991-95	0.656	0.067	0.053	0.147	0.044	0.038
Iceland	1981-85						
	1986-90	0.348	0.015			0.005	0.043
	1991-95	0.39	0.02	0.002	0.005	0.006	0.041
Italy	1981-85	0.299	0.027	0.004	0.007	0.012	0.022
	1986-90	0.334	0.048	0.009	0.022	0.011	0.021
	1991-95	0.483	0.066	0.014	0.12	0.025	0.041
Japan	1981-85	0.22	0.016			0.015	0.013
	1986-90	0.459	0.024			0.027	0.02
	1991-95	0.465	0.032	0.044	0.093	0.037	0.028
Netherlands	1981-85	1.021	0.226	0.098	0.074	0.085	0.081
	1986-90	1.271	0.293	0.159	0.133	0.084	0.08
	1991-95	1.466	0.364	0.227	0.18	0.086	0.084
New Zealand	1981-85						
	1986-90	0.511	0.131	0.012	0.129	0.014	0.063
	1991-95	0.647	0.242	0.017	0.151	0.007	0.068

		Total	FDI	Equity	Debt	INCP	INCM
Norway	1981-85						
	1986-90	0.504	0.028		0.125	0.035	0.057
	1991-95	0.452	0.038		0.122	0.023	0.047
Spain	1981-85	0.28	0.027	0.002	0.002	0.009	0.023
	1986-90	0.3	0.052	0.015	0.01	0.008	0.016
	1991-95	0.488	0.102	0.028	0.065	0.017	0.028
Sweden	1981-85	0.426	0.164	0.015	0.013	0.022	0.041
	1986-90	0.572	0.238	0.036	0.027	0.031	0.044
	1991-95	0.945	0.395	0.177	0.102	0.044	0.078
Switzerland	1981-85	1.851	0.187	0.272	0.348	0.121	0.053
	1986-90	2.03	0.229	0.316	0.401	0.115	0.05
	1991-95	2.191	0.301	0.41	0.41	0.106	0.049
UK	1981-85	1.451	0.153	0.073	0.096	0.15	0.143
	1986-90	1.747	0.202	0.155	0.2	0.129	0.121
	1991-95	1.977	0.223	0.218	0.302	0.122	0.116
US	1981-85	0.28	0.062	0.018	0.038	0.026	0.018
	1986-90	0.413	0.111	0.037	0.068	0.026	0.023
	1991-95	0.503	0.142	0.067	0.104	0.022	0.021

Total is average aggregate holdings of foreign assets and liabilities. FDI is foreign direct investment subcomponent; Equity is portfolio equity subcomponent; Debt is portfolio debt subcomponent. INCP and INCM are factor income inflows and outflows respectively. All variables are expressed as ratios to GDP. Source: International Financial Statistics CD-ROM.

portfolio equity) may have more attractive payout characteristics than non-contingent debt liabilities, since the yields on these liabilities may move in a procyclical fashion.[8]

There is a general positive trend in each of these subcategories in all countries. Figure 2 charts the 1991-95 data for foreign direct investment positions and shows a wide dispersion: seven countries have holdings below 10 percent of GDP; ...ve countries are between 10 and 20 percent; and another seven countries have holdings above 20 percent of GDP. Portfolio cross-holdings are aggregated across debt and equity subcomponents in Figure 3. With the exception of Belgium, the Netherlands, Switzerland and the United Kingdom, it appears that international portfolio investment positions are relatively more uniform across countries.

We turn now to analyzing the determinants of the cross-country heterogeneity in the levels of gross international investment positions. In what follows, we focus on the observations for the most recent cross-section 1991-95, which has the most complete availability of data. The 1990s period also has the merit that capital controls had been almost completely eliminated for this group of countries by the early 1990s.

Results are reported in Tables [3]-[7]. In Table [3], the dependent variable is based on the aggregate international investment position. The speci...cation in column (1) just includes trade openness as a regressor, which enters positively and signi...cantly.[9] The point estimate indicates that raising openness by one standard deviation from its mean (0.29 to

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[8] That said, the real return on nominal, unindexed debt will be sensitive to real exchange rate ‡uctuations and so may also be capable of providing a contingent return.

[9] Trade openness is the average of exports and imports as a ratio to GDP.

Table 3: International Investment Positions: Total

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
C	0.14 (.14)	-4.42 (1.2)	-8.04 (7.2)	-0.43 (.14)	0.76 (.53)	-3.4 (6.4)	1.2 (3.9)
OPEN	2.67 (.55)	3.76 (.39)	2.65 (.52)	3.64 (.48)	2.75 (.74)	2.26 (1.22)	2.39 (1.13)
SIZE		0.16 (.045)				-0.08 (.14)	-0.03 (.12)
YC			0.8 (.45)			0.58 (.62)	
FIN				2.51 (.76)		2.03 (.37)	2.09 (.45)
VTT					-1.9 (4.5)	-8.34 (4.67)	-9.4 (4.5)
VY					-32.2 (37.7)	-44.4 (44.0)	-32.5 (38.2)
VPI					3.3 (10.9)	38.4 (18.5)	34.2 (17.5)
R^2	0.353	0.49	0.381	0.645	0.438	0.828	0.819
SE	0.484	0.443	0.488	0.346	0.497	0.318	0.312
N	19	19	19	18	18	18	18

Dependent variable is total cross-holdings of foreign assets and liabilities, as de..ned in Table 2. Estimation is ordinary least squares, with Newey-West standard errors. OPEN is average of exports plus imports, expressed as a ratio to GDP, in 1991. SIZE is log of total GDP in international dollars in 1990. YC is log of GDP per capita in international dollars in 1990. FIN is turnover value of the trades of domestic shares on domestic exchanges over the year divided by the average value of domestic shares listed on domestic exchanges, averaged over 1976-93. VTT is standard deviation of the growth rate of the terms of trade; VY is standard deviation of the national GDP growth rate minus the world output growth rate; VPI is standard deviation of the national in‡ation rate minus the world in‡ation rate. Sources: OPEN, VTT and VY are constructed from the World Bank's World Development Indicators CD-ROM. SIZE and YC are from the Penn World Tables version 5.6. FIN is from Levine and Zervos (1998). In‡ation data are from the International Financial Statistics CD-ROM.

Table 4: International Investment Positions: FDI

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
C	0.052 (.041)	-0.68 (.43)	-3.5 (1.1)	-0.002 (.05)	0.1 (.13)	-3.8 (1.7)	-0.08 (1.1)
OPEN	0.4 (.15)	0.57 (.15)	0.39 (.13)	0.51 (.12)	0.4 (.25)	0.23 (.28)	0.34 (.28)
SIZE		0.025 (.015)				-0.032 (.034)	0.004 (.034)
YC			0.35 (.11)			0.46 (.18)	
FIN				0.23 (.15)		0.12 (.15)	0.17 (.13)
VTT					-0.28 (1.7)	-0.67 (1.8)	-1.5 (1.9)
VY					0.2 (8.6)	-9.3 (9.3)	0.2 (9.4)
VPI					-1.4 (2.3)	8.1 (3.8)	4.7 (4.4)
R^2	0.188	0.272	0.318	0.311	0.252	0.529	0.379
SE	0.111	0.108	0.105	0.104	0.117	0.105	0.115
N	19	19	19	18	19	18	18

Dependent variable is FDI component of cross-holdings of foreign assets and liabilities, as de..ned in Table 2. See note to Table 3.

Table 5: International Investment Positions: Portfolio

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
C	0.06	-1.3	-3.5	-0.16	0.23	-0.84	0.96
	(.04)	(.6)	(2.9)	(.07)	(.15)	(2.1)	(1.3)
OPEN	0.68	1.02	0.67	1.06	0.6	0.41	0.46
	(.17)	(.19)	(.17)	(.17)	(.21)	(.31)	(.28)
SIZE		0.05				-0.05	-0.03
		(.02)				(.04)	(.04)
YC			0.35			0.23	
			(.28)			(.16)	
FIN				0.98		0.98	1
				(.33)		(.16)	(.2)
VTT					-1.3	-3.4	-3.8
					(1.7)	(1.2)	(1.3)
VY					-1.7	-7.3	-2.6
					(12.9)	(11.7)	(10.5)
VPI					-1.3	8.8	7.2
					(3.4)	(4.4)	(4.0)
R^2	0.212	0.334	0.261	0.702	0.306	0.838	0.852
SE	0.176	0.167	0.176	0.109	0.182	0.094	0.094
N	19	19	19	18	19	18	18

Dependent variable is portfolio component of cross-holdings of foreign assets and liabilities. See note to Table 3.

Table 6 International Investment Positions: Equity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
C	0.01 (.03)	-0.52 (.33)	-2.2 (1.7)	-0.12 (.05)	0.08 (.09)	-1.2 (1.3)	0.74 (.68)
OPEN	0.28 (.13)	0.407 (.19)	0.28 (.14)	0.49 (.14)	0.27 (.17)	0.06 (.1)	0.11 (.14)
SIZE		0.019 (.011)				-0.045 (.021)	-0.025 (.022)
YC			0.22 (.16)			0.25 (.13)	
FIN				0.58 (.19)		0.58 (.1)	0.6 (.14)
VTT					-.29 (.87)	-1.5 (1.1)	-2.0 (1.4)
VY					-2.1 (7.9)	-9.2 (4.9)	-4.2 (5.0)
VPI					-.10 (1.8)	6.4 (2.5)	4.8 (3.1)
R^2	0.126	0.189	0.195	0.66	0.159	0.828	0.771
SE	0.101	0.10	0.10	0.065	0.11	0.058	0.064
N	18	18	18	17	18	17	17

Dependent variable is equity component of cross-holdings of foreign assets and liabilities, as de...ned in Table 2. See note to Table 3.

Table 7: International Investment Positions: Debt

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
C	0.04 (.03)	-0.7 (.5)	-1.4 (1.4)	-0.03 (.05)	0.12 (.09)	0.39 (1.6)	0.42 (1.2)
OPEN	0.45 (.13)	0.64 (.16)	0.45 (.13)	0.61 (.14)	0.37 (.17)	0.31 (.29)	0.31 (.28)
SIZE		0.026 (.016)				-0.013 (.04)	-0.013 (.04)
YC			0.14 (.14)			0.004 (.09)	
FIN				0.34 (.16)		0.39 (.08)	0.39 (.08)
VTT					-0.9 (.91)	-2.04 (.82)	-2.05 (.75)
VY					3.2 (6.9)	2.4 (10.7)	2.5 (10.4)
VPI					-2.2 (1.8)	1.9 (3.6)	1.9 (3.4)
R^2	0.285	0.39	0.31	0.56	0.449	0.684	0.684
SE	0.097	0.092	0.098	0.075	0.093	0.078	0.074
N	19	19	19	18	19	18	18

Dependent variable is debt component of cross-holdings of foreign assets and liabilities, as de..ned in Table 2. See note to Table 3.

0.42) increases the aggregate international investment position from its mean of 90 percent of GDP to 125 percent, an economically large effect. Figure 4 displays the scatter plot of total cross-holdings of foreign assets and liabilities against trade openness and a strong positive relationship is clearly evident in the raw data.

In columns (2)-(4), country size, output per capita and a measure of domestic financial sophistication are individually added to the basic specification. Country size is measured as the log of total GDP in 1990; output as the log of GDP per capita in 1990; and domestic financial sophistication as the turnover value of the trades of domestic shares on domestic exchanges divided by the average value of the domestic shares listed on domestic exchanges.[10] In each case, the significance of the trade openness variable is unaffected. In addition, country size and financial sophistication each enter positively and significantly but output per capita is insignificant. The positive impact of country size is at odds with the theoretical predictions discussed above: however, size is not significant in the broader specifications in columns (6)-(7). The positive association between domestic financial sophistication and the extent of international cross-holdings of assets and liabilities is line with our theoretical discussion and remains robust in columns (6)-(7). Figure 5 displays the scatter plot of the aggregate international investment position against the financial sophistication measure. The figure shows that the partial relationship is

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[10] GDP is measured in international dollars from the Penn World Tables version 5.6 The financial development variable is from Levine and Zervos (1998) and is averaged over 1976-93. The population data are from the World Bank's World Development Indicators CD-ROM.

quite robust in the data.[11]

The regression reported in column (5) adds the volatility measures for the terms of trade, output and inflation to the baseline specification.[12] Again, the trade openness variable remains significant. In this specification, the volatility measures are individually and jointly insignificant.[13] Columns (6)-(7) report broader specifications: all the regressors are included in column (6) and output per capita (which is never significant) is excluded in column (7). As indicated, trade openness and financial sophistication remain robustly significant. Inflation volatility is now significantly positive and terms of trade volatility is significantly negative. This latter result can be rationalized if terms of term volatility is associated with exchange rate volatility, making foreign currency income streams more unstable in terms of domestic currency.

In Table [4], we repeat the analysis for international cross-holdings of foreign direct investment positions. As before, trade openness is significant in columns (1)-(5) but its explains less of the cross-country variation in foreign direct investment positions and its individual effect weakens in the crowded specifications in columns (6)-(7). Country size is again in-

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[11]It is possible that the gross international investment positions of financial centres are mismeasured since an activity of these centres is to intermediate trade between non-resident entities. In results not reported, we attempted to address this concern by excluding the assets and liabilities of the banking sector – as the sector most involved in intermediation – and obtained very similar results.

[12]The volatility of the terms of trade is measured as the standard deviation of the log change in the terms of trade. The volatility of output and inflation are constructed as the standard deviation of the differential between domestic and world growth rates in output and the price level respectively. All the volatility measures are based on data over 1970-90. These data are from the International Financial Statistics CD-ROM.

[13]The p-value from a Wald test of the joint significance of the three volatility measures is 0.12.

signi…cant but output per capita is signi…cantly positive in both columns (3) and (4). This positive e¤ect of output per capita on the size of gross foreign direct investment positions plausibly re‡ects the greater propensity of …rms in the most advanced countries to establish foreign a¢ liates and, conversely, the relative attractiveness of these countries as host locations for foreign direct investment. Domestic …nancial sophistication is not a signi…cant indicator of foreign direct investment activity and there is not much evidence that the volatility measures have a bearing on foreign direct investment positions: only in column (4) is in‡ation volatility signi…cant and the size of the e¤ect is much smaller than in Table [3].

We turn to international portfolio investment positions in Table [5]. The results are very similar to those for the aggregate investment positions reported in Table [3]. In Tables [6] and [7], we decompose portfolio positions into holdings of equity and debt respectively. In broad terms, the results do not vary much for these subcomponents. However, trade openness is more powerful in explaining international debt holdings than equity positions. In addition, there is some evidence in column (4) of Table [6] that smaller countries have larger cross-holdings of foreign equity assets and liabilities and in‡ation volatility appears to increase international equity positions but not international debt positions.

In summary, according to the results of this section, countries that trade a lot and have sophisticated domestic …nancial markets also have large gross international investment positions. To the extent that trade openness is associated with greater volatility, this …nding supports the notion that more volatile countries should hold greater quantities of

foreign assets and liabilities. However, this relationship can be alterna-
tively interpreted as simply saying that open countries tend to trade a lot
in assets as well as in goods and services. Similarly, well-developed domes-
tic ...nancial markets plausibly reduce transactions costs, broadly de..ned,
and hence further promote international trade in assets. In terms of the
direct volatility measures, there is partial evidence supporting a positive
relationship between in‡ation volatility and the size of gross international
investment positions but the direction is reversed for terms of trade volatil-
ity. Finally, the evidence on foreign direct investment positions suggests
that foreign direct investment activity is driven by structural factors that
are correlated with the level of development, as measured by output per
capita.

Section IV : Conclusions

The evidence presented in this paper suggests that, in a cross-
section of countries, gross international investment positions are positively
associated with trade openness and a large domestic ...nancial market. Al-
though the openness result could be rationalized as providing a link be-
tween volatility and the propensity to hold foreign assets and liabilities,
more direct explanations are that those factors that stimulate trade in
goods also stimulate trade in assets and, moreover, trade in goods and
in assets are complementary activities. A trade based explanation is also
supported by the positive relationship between the size of the domestic
...nancial sector and the size of gross international investment positions
since a sophisticated domestic ...nancial market almost surely reduces the

transactions costs incurred in international asset trade. Mixed results were obtained on the relationship between cross-holdings of foreign assets and liabilities and various volatility indicators. That said, the role of in‡ation volatility perhaps warrants further exploration. Finally, it is worth noting that the evidence of Tesar and Werner (1995) that the pattern of international portfolio investment is in‡uenced by geographical proximity and common language ties similarly suggests that asset trade is not too dissimilar to trade in goods.

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Fig. 1: Total cross-holdings of foreign assets and liabilities as a ratio to GDP, 1991-95.
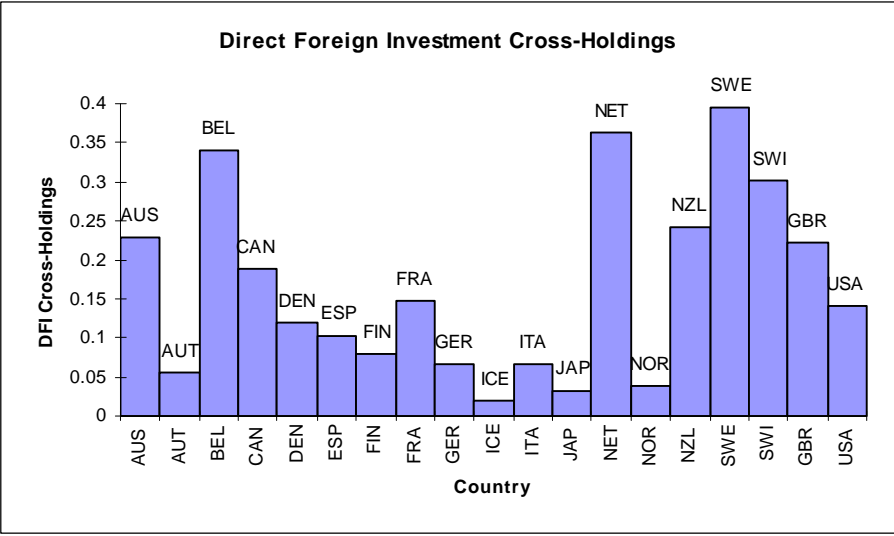

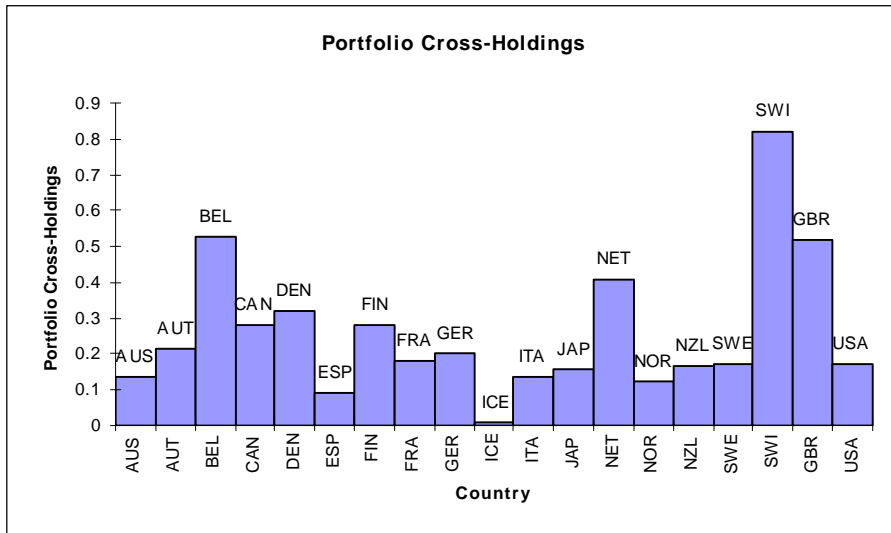Fig. 2: Cross-holdings of Foreign Direct Investment Assets and Liabilities as a ratio to GDP, 1991-95.

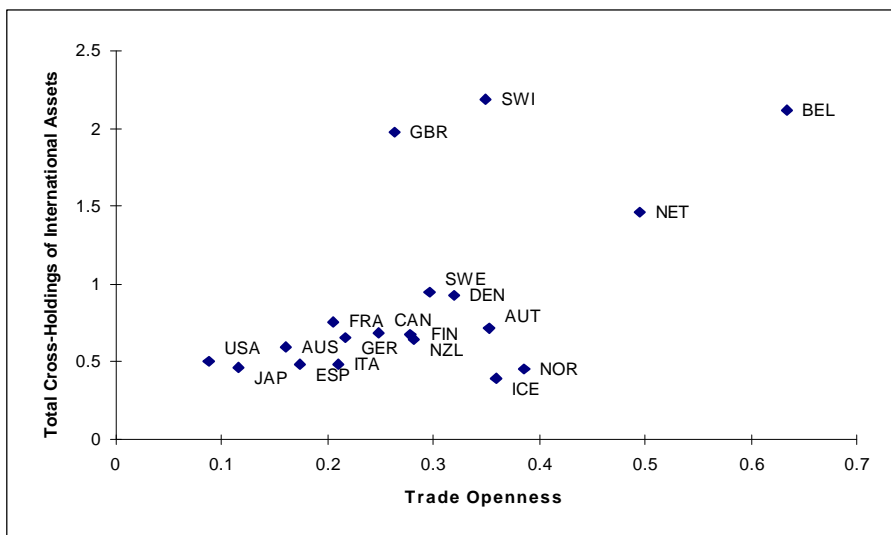**Fig 3: Cross-holdings of portfolio assets and liabilities as a ratio to GDP, 1991-95.**

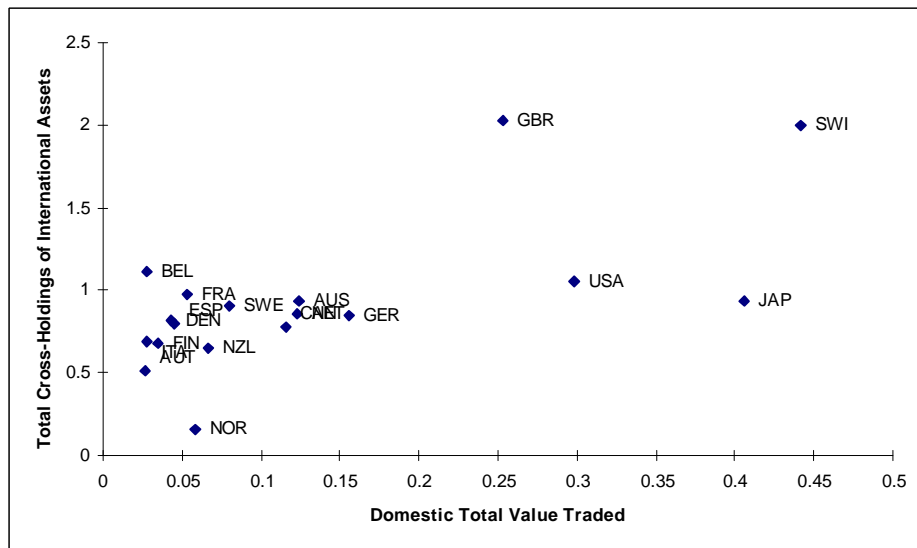**Fig 4: Scatter of total cross-holdings against trade openness.**

Fig. 5: Partial relationship between ...nancial sophistication and total cross-holdings, controlling for trade openness.