Preliminary: Do Not Quote

Capital Inflows to Developed Countries[1]

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1. Introduction

In their masterful book on international capital flows, Obstfeld and Taylor (2005) describe the era since 1980 as a period when international capital mobility returned to levels not seen since the collapse of the gold standard in 1914. Many studies, including Alfaro, Kalemli-Ozcan, and Volosovych (2005), Brennan and Kao (1997), Calderón, Loayza, and Servén (2003), Carlson and Hernández (2002), Chuhad, Claessens, and Mamingi (1998), Fleiss (2003), and Taylor and Sarno (1997) have focused on various aspects of this recent rise of capital flows. Virtually all, however, have concentrated their attention on flows to developing countries and/or emerging markets.[2] Yet, as Obstfeld and Taylor demonstrate, despite the large increase in international flows, the dominant flow of international capital continues to be North-North. Surprisingly little formal work has been directed at studying these flows, although there has been considerable attention paid in the press and in the financial blogs to certain aspects of these flows, especially in the large run up of international liabilities incurred by the United States in recent years.[3]

The purpose of this paper is to provide some insights into certain aspects of international capital flows into a set of developed countries over the period 1990-2005. We first report data using a measure that allows for easy comparison across countries and discuss the behavior of these data across our sample period. We then develop and estimate an empirical model of these flows to test a number of hypotheses about what factors contribute to their size and behavior. To preview several of our major findings, we show that global push factors, to have any role in determining these flows. Pull factors

[2] Exceptions are Alfaro, Kalemli-Ozcan, andVolosovych (hereafter AKV) who study the role that institutions have on capital inflows to both developed and developing countries, and Brennan and Cao who study U.S. portfolio equity purchases in four developed countries and sixteen emerging markets countries..

[3] See for instance Brad Setser's Blog, online at http://www.rgemonitor.com/blog/setser/.

such as own interest rates for bond flows and lagged equity market returns for equity flows do appear to be important.

The rest of the paper proceeds as follows. In section 2 we provide a description of the data used in our study. In section 3 we discuss our estimation procedure and detail our principal findings. Section 4 provides a brief set of conclusions.

2. Data description

This paper focuses on international capital inflows into seven major economies over the period 1990 through 2005. The countries are Australia, Canada, Finland, Japan, New Zealand, Spain, and the United Kingdom. We use quarterly data from the *International Financial Statistics* (IFS) published by the International Monetary Fund and some additional data taken from various sources.[4] These data and their sources are described in detail in the Data Appendix.

Various studies of international capital flows have focused on alternative measures of these flows. In this paper, we concentrate on capital inflows. In the balance of payments data found in the IFS, these flows include foreign direct investment (direct investment in the reporting country (line 78bed)), portfolio equity investment (equity security liabilities (line 78bmd)), debt (debt security liabilities (line 78bnd)), and other investment liabilities (line 78bid). All data are measured in U.S. dollars and reported as increases in liabilities net of any disinvestment or repayment; thus any element of these series can take on either sign. Positive values represent net inflows. To focus our analysis and to provide consistent measures across countries we combine foreign direct

[4] For a variety of reasons including German reunification and the adoption of the euro in much of Western Europe, there are significant amounts of missing data in the IFS for many major European economies. These missing data explain the choice of countries in our study.

investment and portfolio equity investment into a single equity inflow variable and measure it in constant U.S. dollars per capita (base year 2000).[5] Similarly we also combine debt security liabilities and other investment liabilities into a single constant dollar debt inflow per capita variable for each of the countries in our sample.

Table 1 provides some descriptive statistics on the individual data and Figures 1-8 provide time series plots of the broader data flows.[6] As the values in the Table demonstrate, foreign purchases of various asset types are, on average, quite similar across asset types, both in terms of size and relative magnitudes. With one exception, quarterly mean flows are positive, ranging from slightly -$42 to $1125, with the averages of most of the flows ranging between $100 and $250 per capita. Foreign purchases of portfolio equity tend to be a third to one half the size of foreign direct investment purchases. Foreign purchases of debt instruments tend to be several times larger on average than purchases of other types of liabilities.

In their study, AKV report very similar numbers to ours for equity flows using a somewhat larger sample of developed countries over the period 1991-2000.[7] They also document how per capita equity flows to developed countries rose dramatically in the 1990s, relative to the two previous decades. Based on their findings, the data in Table 1 suggest that equity flows appear to have stabilized at the 1990s levels in the 2000's. Our debt flow numbers are larger than those reported by AKV, owing to the rapid increase in those flows since the turn of the century.

[5] We follow AKV in using this approach to measure capital flows.
[6] Also included in both the table and in the figures is information on these flows for the United States. Since we treat U.S. economic conditions as push variables, we do not include the United States in our estimation. The U.S. data allow for additional comparison with the experiences of other industrial countries.
[7] The comparison is made after converting our quarterly averages to annual rates.

The Figures provide some additional stylized facts. First, both debt and equity inflows exhibit considerable variance across countries and across time. However, with the exception of Australia, debt flows tend to be considerably more volatile, and in most cases, volatility appears to have increased in the past decade. A simple measure of the volatility of a series is the ratio of the standard deviation to the mean. As Table 1 shows, for most series, this ratio ranges from 1 to 5, with the highest ratios typically found in the debt series.[8]

Over this same period, foreign purchases of debt instruments have also increased substantially, even as purchases of equity have remained relatively stable. Clearly, these increases have occurred for different reasons in different countries. The increase in foreign purchases of U.S. debt instruments in the past five years owes almost entirely to the accumulation of foreign reserves by foreign central banks. In the case of Spain, the increase in inflows owes primarily to an increase in private sector borrowing under better credit terms following the adoption of the euro.[9]

3. Modeling, Estimation, and Results

In the remainder of this paper, we seek to provide explanations for the behavior of these data. We develop separate empirical models to study foreign purchases of debt and equity in these countries. As discussed more fully below, we adopt an approach first developed by Calvo, Liederman, and Reinhart (1993) (hereafter CLR) that has been used frequently in empirical studies of capital flows. Namely, we include in our specifications

[8] AKV also report these ratios, however since they work with annual data it is not possible to make simple comparisons between their results and ours.

[9] For more on Spain, see Catalán, Escolano, and Lama (2006).

several factors that can be viewed as "pull" factors that attract capital inflows as well as at least one global "push" factor that can be viewed as encouraging capital outflows. We turn now to discuss the set up of our model and the technique used to estimate it.

Since the data involved in this study are likely to be non-stationary, we estimate our model with the dynamic seemingly unrelated regression (DSUR) estimator of Mark, Ogaki and Sul (2005) (hereafter MOS). This technique considers simultaneous estimation of multiple cointegrating relationships in panels. Heterogeneous cointegrating vectors are allowed across equations. This technique also tackles two important issues in the empirical literature. First, cross-section dependence is allowed, and endogeneity of the regressors is also taken into account by introducing leads and lags of the regressors. This is a systems estimation technique and explicitly deals with correlation in errors, hence it is efficient compared with least squares based approaches. The DSUR technique requires a small number of cross section units. In simulations conducted by MOS, any number below 10 gave good results. The asymptotics in their paper are carried away by assuming large number of time series observations. The simulations show that estimation and tests have good finite sample (time series) properties.

Before estimation of the multiple cointegrating vectors, some steps are needed. First, each variable in the system should be tested for unit roots. The panel unit root test is by Phillips and Sul (2003). This test also allows for cross-section dependence in errors. If we find each variable to be non-stationary, we then test for cointegration. This too is done by the Phillips-Sul unit root test on the residuals from the cointegrating regression. Finding a unit root in the residuals denotes no cointegration, and rejecting the null of a unit root is evidence for cointegration.

After these tests, if we find evidence for cointegration, we can also test for homogeneity of the cointegrating relationship with a standard Wald test as shown by MOS. This statistic tests the null hypothesis of common slopes across equations (countries in our data set). If we reject this null, then we can embark on estimation of heterogeneous cointegrating relations in our model with DSUR.

Now we provide the main cointegrating equation that we estimate for each country "i" (i th equation) at time period "t":

$$y_{it} = x_{it}'\beta_i + z_{pt}'\delta_{pi} + u_{it} \qquad (1)$$

for t = 1,2,…T, i = 1,2,…,n. In the above equation, to be cointegrated, y_{it} , x_{it} are non-stationary, whereas z_{pt} is stationary, and u_{it} is stationary, and $z_{pt} = (z_{p1t}', ..., z_{pnt}')$ and $z_{pit}' = (\Delta x_{i,t-p}, ..., \Delta x_{i,t+p})'$. To control for endogeneity, the variable "z" is introduced. This consists of leads and lags of first differenced regressors "x" from all equations. Furthermore the error term allows for serial correlation in time as well as cross-section dependence. A simple AR(l) process with a cross-section dependent component generates the error

$$u_{it} = \rho_i u_{i,t-1} + \sum_{i=1}^{l-1} \eta_{ij} \Delta u_{i,t-j} + w_{it} \qquad (2)$$

where w_{it} is stationary but cross-section dependent. Phillips-Sul unit root tests of the u_{it} provide a test of the null of no-cointegration.

If we reject the no-cointegration null, we then proceed to test for homogeneity of slopes. MOS provide a Wald test in MOS for this hypothesis. In this case we use the restricted DSUR estimator which is proposed in Proposition 3 in MOS. If we reject

coefficient homogeneity across the countries in our data set, we report DSUR estimate of the slopes, the $\hat{\beta}_i$, and the t-statistics for the significance test $H_0 : \beta_i = 0$.

As noted above, we follow CLR in identifying "push" and "pull" factors to include in our empirical model. We also follow standard portfolio balance modeling in our selection of variables. We study the behavior of four capital flow series: total debt (private debt flows plus other liabilities), private debt flows, total equity (foreign direct investment plus portfolio equity) and portfolio equity. We use quarterly data over the period 1990I-2005IV, and, as already noted, measure these flows in constant U.S. dollars per capita. For debt flows we assume that local pull factors are associated with high returns and low risk. We proxy these by including a measure of prevailing interest rates, a one quarter lag in the quarterly rate of economic growth, and a one quarter lag in the rate of return (in home currency) on the local equity market. We assume that all three variables should have positive effects on the level of per capita inflows to purchase local debt instruments.[10] We follow much of the earlier literature on capital flows and use alternative measures of economic conditions in the United States, the U.S. short term interest rate and the lagged rate of U.S. economic growth, as global push factors.[11]

For equities, we also include alternatively U.S. interest rates and lagged U.S. economic growth as our only push factor. For pull factors we follow the literature on international equity flows. In particular, Bohn and Tesar (1996) argue that equity flows should be related to dividend yields, rates of return in local equity markets. They find that there is a negative correlation between current dividend yields and U.S. purchases of

[10] That is, we assume that risk in debt markets falls during periods of strong economic growth and recent strong growth in equity markets. Note that in studies of developing country markets risk is measured using country credit ratings. The countries in our study have had constant high ratings across the sample period, and so we must rely on other proxies.

[11] See, for instance, Edison and Warnock, Chuhan, Claessens, and Mamingi, and Taylor and Sarno.

foreign equities, although their theory argues the opposite relationship. In our regressions, we include lagged dividend yields in order to try to match the timing and information issues that foreign investors face. Bohn and Tesar also find a strong and positive relationship between lagged equity market returns and current equity purchases. They identify this behavior as "returns chasing". We also include a measure of lagged equity returns to see if we can find similar evidence. Finally, as with the debt regressions, we include the rate of economic growth to proxy as a risk factor. We expect positive relationships between each of the three pull factors and equity flows and a negative relationship with the push factor, proxied by U.S. economic conditions.

In Table 2 we present the results of panel unit root tests on all of the data used in our study. For each series, the unit root test regressions include a constant and time trend as additional variables to control for cross section dependence. Lag lengths are chosen according to selection criterion presented in Phillips and Sul. The p value is taken from a statistic derived by the authors called the inverse chi-square test. The limit of the test is given in their equation (43) as a chi-square distribution with two times (n-1) degrees of freedom, where n is representing the number of countries. In our case we find unit roots in all variables at the 3% level.

Given that the data appear to be non-stationary, we now provide tests of slope homogeneity and cointegration. The results of these tests are found in Table 3. The homogeneity slope test is designed in such a way that the null is that all the slopes estimates for the right hand side variables across each country are the same. This is a Wald test, and MOS show that the limit is chi-square distribution with (n-1) degrees of freedom, where n represents the number of countries.

The cointegration test uses residuals that can be obtained after running DSUR in (1). Since in (2), the cross-section dependent factor w_{it} in equation (2), is stationary, we can test for cointegration by testing whether the residual is non-stationary (null of no cointegration) against the alternative of stationarity (alternative of panel cointegration). This is plausible because the coefficients of DSUR are consistent, and hence the asymptotic behavior of u_{it} in (1) will be the same as the residual from DSUR in the same equation, $\hat{u}_{it}$. Basically, this amounts to running the panel unit root test that is described in Table 2 for the residuals.

Table 3 presents a consistent set of results for both debt flow equations as well as equity flow equations. The uniformly small p-values in the table suggest rejections of the null hypothesis of each test. The rejection of the Wald test for homogeneity amounts to heterogenous slopes, and the rejection of the null of no cointegration amounts to cointegration, hence small p-values are evidence for the alternatives of heterogeneity and cointegration.

Given these findings, we now present heterogeneous slope estimates for the capital flows we focus on in this study. We note that our results appear to call into question some of the earlier panel studies of capital flows. In particular, Chuhan, Claessens, and Mamingi estimate several alternative panel data estimators, none of which are valid for non-stationary data and all of which assume homogeneous slopes. In contrast, Taylor and Sarno estimate individual panel error correction models for a set of eighteen developing countries. These models ignore possible cross section dependence in the data.

Our results are found in Tables 4-7. Consider first Table 4.[12] There we present estimates of our model for total debt inflows into seven different countries. Despite the fact that the data we are working with are highly aggregated and the empirical model somewhat ad hoc, the results are quite strong. Sixteen of the twenty eight estimated coefficients have the expected sign and ten of these are significant. The U.S. interest rate appears to work well as a push factor in these results, with four of seven coefficients having the expected sign, and these four estimates had the largest t values (in absolute value). Of these, the two significant coefficients suggest large responses (in excess of $57 per quarter per capita) to changes in U.S. interest rates. On a country by country basis, the most precise estimates we obtained were for the United Kingdom and Canada. All of the UK estimates were significant, with three of four having the expected sign. Again, these estimates suggest large responses to changes in both local and global economic conditions.[13].

Because of the aggregation of total debt we re-estimated the model using debt securities inflows as the dependent variable. Thus we omitted a large variety of debt securities, such as trade credits, that had been included in total debt dependent variable. The results from this exercise appear in Table 5. As the table shows, the improvement in our results was substantial. The number of significant and correctly signed coefficients rose from ten to twelve, and the number of correctly signed coefficients rose from sixteen to twenty two. Only two coefficients were significant with the incorrect sign. Of

[12] In this Table and in the next we use U.S. interest rates as the push factor. We experimented alternatively with lagged US economic growth as a push factor and the results were similar but somewhat less precisely estimated.

[13] Unfortunately, while the Canadian estimates were precise, three of four Canadian coefficients carried the wrong sign. And, as was the case with the United Kingdom, these estimates imply large responses to changes in both push and pull factors.

particular importance, as the estimates suggest, are interest rates in both the home market and the United States. Four of seven estimates in each of these columns were significant, with seven of eight having the correct sign.

The estimates in this table were particularly strong for Australia. All of the coefficients carried the correct sign, and three of four were significant. Again, these estimates imply large changes in the inflows of debt security funding in response to changes in push and pull factors. For instance, a one percent increase in Australian interest rates leads to an increase of $124 per quarter per capita foreign capital inflows to purchase Australian debt securities.

We turn now to our estimates of the determinants of equity inflows. Table 6 contains estimates for total equities (portfolio investment plus foreign direct investment). These results are not as strong as the results we reported debt flows. A large number of coefficients had the incorrect sign, although virtually all of the estimates are insignificant. In particular, all seven coefficients on lagged dividend yield have the wrong sign. This may be due to the fact that throughout the sample period dividend yields have been falling, especially in developed countries, even as equity flows have risen.[14] While this finding is inconsistent with underlying theory, it is perhaps not surprising. We remind the reader that Bohn and Tesar also find negative relationships between dividend yields and foreign equity purchases.

Because total equity flows contain foreign direct investment purchases that may be motivated by factors other than portfolio balancing behavior we also report estimates of our model using portfolio equity flows as the dependent variable. These are found in Table 7 and provide some interesting results. First we find large and several significant

[14] See, for instance, Carlson (2001) who discusses dividend yields on U.S. equities.

coefficients on lagged equity returns, suggesting that the returns chasing behavior reported by Bohn and Tesar is evident in our data as well. Especially Canada, Finland and USA have large significant positive responses (positive equity flows) to an increase in lagged equity returns. An interesting aspect is in Tables 5-7 we see that capital flows in Australia react negatively to an increase in Japanese interest rate, although this is statistically insignificant. This may be due to "carry-trade" activities. We also find consistently negative coefficients on lagged dividend yields, again conforming to the Bohn and Tesar findings.

4. Conclusions

In this paper we study foreign inflows into seven developed country financial markets over the period 1990-2005. We show that measured on a constant dollar per capita basis, flows into these countries are quite similar. We show that debt inflows have risen substantially since the turn of the century in a number of these countries as has the quarterly variance of these inflows. Mean equity inflows had risen in earlier decades, but in recent times the mean of these flows has remained roughly constant.

Following the lead of a number of other studies on international capital flows, we assume a variety of push and pull factors influence these flows, and we estimate models of this behavior for both equity and debt inflows. We use a relatively new panel estimation technique, DSUR, that allows for non-stationary data, heterogeneous slope estimates across the countries in the panel, and controls for both cross section dependence in the data and possible endogeneity of the right hand side regressors.

We summarize the main findings as follows. First, push factors, at least as proxied by the Japanese interest rate, appear to play no role in equity purchases in

developed country equity markets and may have a perverse role in debt purchases. These patterns contradict the findings of a number of studies that focus on flows to developing and/or emerging country markets.

Second, pull factors such as own interest rates on debt inflows and lagged equity returns on equity flows play large and significant roles in most developed country markets. Finally, using a much broader set of aggregate data of worldwide purchases of foreign equities, we find results similar to those reported for purchases by U.S. investors in foreign equity markets.

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Table 1
Data Description
1990I-2005IV
(Quarterly flows in year 2000 U.S. $ per capita)

Country	Variable	Mean	Std.	Minimum	Maximum
Australia	**equity sec.**	53.24	192.67	-1280.15	295.31
	fdi	106.14	353.21	-2078.01	1752.75
	debt sec.	216.89	249.46	-214.89	902.69
	other debt	73.02	144.50	-210.41	469.79
Canada	**equity sec.**	56.05	105.31	-166.66	513.59
	fdi	138.10	165.46	-171.12	1025.94
	debt sec.	113.11	182.00	-322.63	839.13
	other debt	20.98	215.13	-527.10	563.50
Finland	**equity sec.**	163.03	252.58	-150.72	1208.28
	fdi	170.50	302.58	-191.82	1864.19
	debt sec.	215.76	422.74	-698.42	1630.44
	other debt	136.74	664.75	-1782.39	2063.69
Japan	**equity sec.**	86.92	131.58	-258.88	519.91
	fdi	8.29	15.79	-55.24	61.61
	debt sec.	63.63	162.85	-387.87	395.32
	other debt	-41.75	335.73	-1138.29	490.29
N.Z.	**equity sec.**	7.56	52.48	-158.44	241.46
	fdi	160.76	141.22	-244.88	778.33
	debt sec.	56.66	251.64	-677.84	975.78
	other debt	82.73	335.60	-1162.02	1262.09
Spain	**equity sec.**	29.46	83.13	-212.29	340.45
	fdi	117.02	92.03	-27.84	546.94
	debt sec.	211.61	297.52	-374.32	1263.08
	other debt	196.15	196.79	-179.05	680.98
U.K.	**equity sec.**	136.46	387.06	-280.76	2290.28
	fdi	219.51	266.71	-141.32	1680.01
	debt sec.	262.08	339.83	-330.14	1520.95
	other debt	1125.69	1671.46	-1355.78	7407.97
U.S.	**equity sec.**	43.80	57.32	-32.03	237.10
	fdi	101.85	98.40	-9.96	529.05
	debt sec.	239.92	173.26	-55.52	671.27
	other debt	168.41	166.85	-226.03	732.98

Source: *2006 International Financial Statistics*, International Monetary Fund.

Table 2
Panel Unit Root Tests with Cross-Section Dependence

VARIABLES	**p-values, Full sample**
%Δ Real GDP	0.41
%Δ Equity Returns	0.03
Private Debt per capita	0.48
Total Debt per capita	0.54
Own Interest Rate	0.69
Private Equity per capita	0.60
Total Equity per capita	0.65
U.S. Interest Rate	0.67
U.S. %Δ Real GDP	0.07
Dividend Yield	0.27

Notes: The p-values are calculated from the limit of the unit root test developed by Phillips and Sul which is given in their equation (43) as a chi-square distribution with two times (n-1) degrees of freedom, where n is representing the number of countries. In each case we fit an intercept and time trend. The optimal lag selection is made as described in Phillips and Sul.

Table 3
Heterogeneity and Cointegration Tests

Dependent variable	p-value, Heterogeneity	p-value, Cointegration
Total debt inflows	0*	0*
Private debt inflows	0*	0*
Total equity inflows	0*	0*
Portfolio equity inflows	0*	0*

Notes: 0* denotes p-value is less than .00001. The null of the heterogeneity test is homogeneous slopes across countries. The null of the cointegration test is no cointegration.

Table 4
Total Debt Flows: 1990-2005
DSUR Estimates

	Own Interest Rate		%Δ Equities Lagged		%Δ Real GDP Lagged		US. Interest Rate	
	Coeff	t-test	Coeff	t-test	Coeff	t-test	Coeff	t-test
Australia	0.95	6.70*	6.91	0.74	111.12	3.67*	-0.57	-3.65*
Canada	-0.57	-4.45*	-5.56	-2.19*	-150.39	-4.60*	-0.18	-1.35
Finland	0.64	1.46	2.72	0.42	32.06	1.71	0.06	0.08
Japan	-0.48	-1.56	-12.95	-2.03*	259.02	3.28*	-0.46	-1.61
N.Z.	-0.05	-0.32	-0.31	-0.16	66.23	2.69*	0.03	0.16
Spain	1.02	4.16*	11.48	2.61*	-6.98	-0.16	0.12	0.39
UK	2.01	2.18*	65.29	3.95*	-711.06	-2.00*	-2.63	-2.85*

Notes: Each coefficient in the table should be interpreted as 100US$/capita. For instance, the own interest rate coefficient on Australia is 0.95. This means that a 1 percentage point increase in the interest rate of Australia, results in $95 US per capita of net debt flow into Australia. * indicates significance at 95% level.

Table 5
Debt Securities Inflows:1990-2005
DSUR Estimates

	Own Interest Rate		%Δ Equities Lagged		%Δ Real GDP Lagged		U.S. Interest Rate	
	Coeff	t-test	Coeff	t-test	Coeff	t-test	Coeff	t-test
Australia	1.24	8.03*	5.33	1.26	206.88	6.61*	-0.75	-4.32*
Canada	-0.09	-1.26	-2.55	-1.78	-77.67	-4.16*	-0.29	-3.56*
Finland	0.63	3.43*	3.65	1.33	-10.85	-1.37	-0.77	-2.61*
Japan	0.25	2.78*	5.21	2.74*	25.05	1.06	0.24	3.14*
N.Z.	-0.01	-0.02	4.23	3.53*	13.28	0.89	-0.39	-3.17*
Spain	1.13	5.67*	9.73	2.67*	64.29	1.83	-0.04	-0.21
UK	0.36	1.20	2.93	0.53	24.19	0.20	-0.59	-1.55

Notes: See the notes to Table 4.

Table 6
Total Equities Inflows: 1990-2005
DSUR Estimates

	%Δ U.S. Real GDP Lagged		%Δ Equities Lagged		%Δ Real GDP Lagged		Dividend Yield Lagged	
	Coeff	t-test	Coeff	t-test	Coeff	t-test	Coeff	t-test
Australia	7.44	0.07	-4.29	-0.74	21.42	0.49	-0.49	-0.47
Canada	-67.22	-0.68	9.10	2.60*	18.58	0.32	-0.32	-1.70
Finland	100.02	0.52	-2.18	-0.59	-15.17	-1.29	-1.29	-0.59
Japan	23.95	0.79	1.99	0.73	71.54	-0.58	-0.58	-0.55
N.Z.	-40.83	-0.79	2.02	1.84	-14.50	-1.02	-1.02	-0.42
Spain	-69.85	-1.27	-3.10	-1.62	-18.93	-1.15	-1.15	-0.03
UK	109.63	0.71	8.21	1.54	-390.69	-3.47*	-3.47	-2.20*

Notes: See Table 4.

Table 7
Portfolio Equity Inflows: 1990-2005
DSUR Estimates

	%Δ U.S. Real GDP Lagged		%Δ Equities Lagged		%Δ Real GDP		Dividend Yield Lagged	
	Coeff	t-test	Coeff	t-test	Coeff	t-test	Coeff	t-test
Australia	-25.50	-0.43	-2.08	-0.67	38.40	1.71	-0.43	-1.74
Canada	84.20	2.07*	2.48	1.68	-20.54	-0.84	0.71	1.95
Finland	24.18	0.20	0.83	0.34	-14.45	-1.87	-0.58	-1.68
Japan	18.37	0.60	1.87	0.73	72.82	3.65*	-0.04	-0.04
N.Z.	-12.61	-0.97	0.14	0.52	3.17	0.85	-0.08	-1.49
Spain	-25.98	-0.85	0.24	0.25	-7.51	-0.86	-0.31	-2.57*
UK	27.31	0.18	1.36	0.26	-248.26	-2.15*	-1.71	-2.23*

Notes: See Table 4.

Figure 1
Australian Capital Inflows

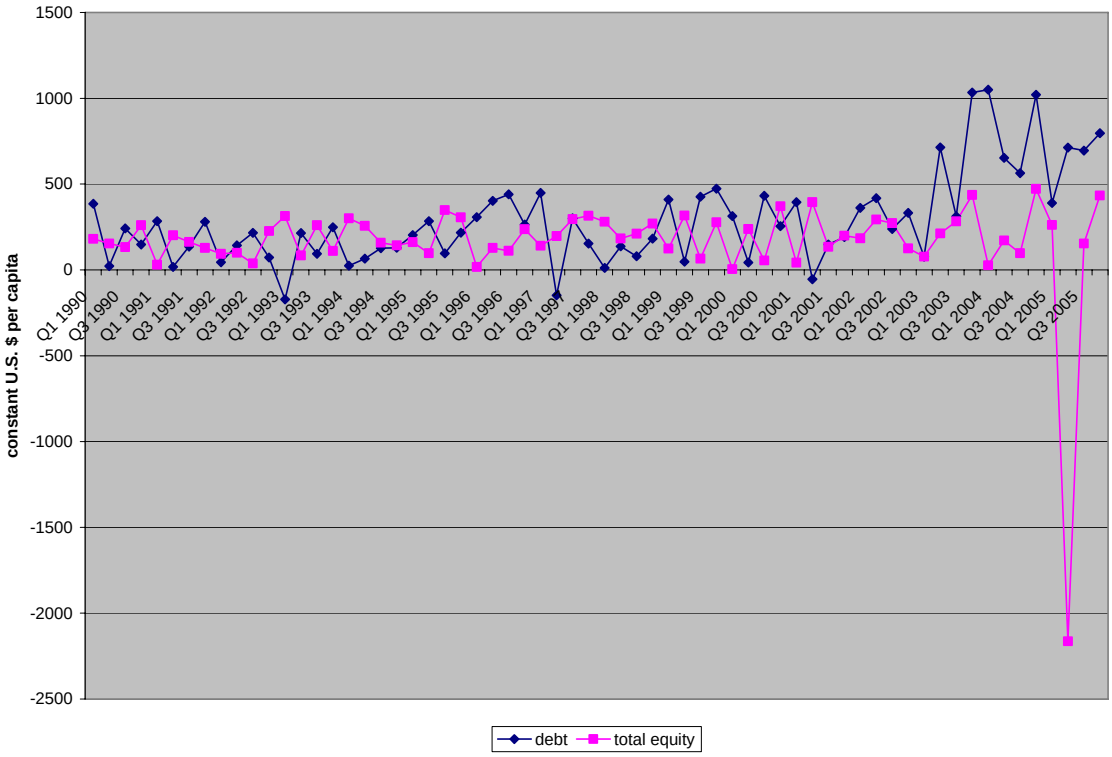


Figure 2
Canadian Capital Inflows

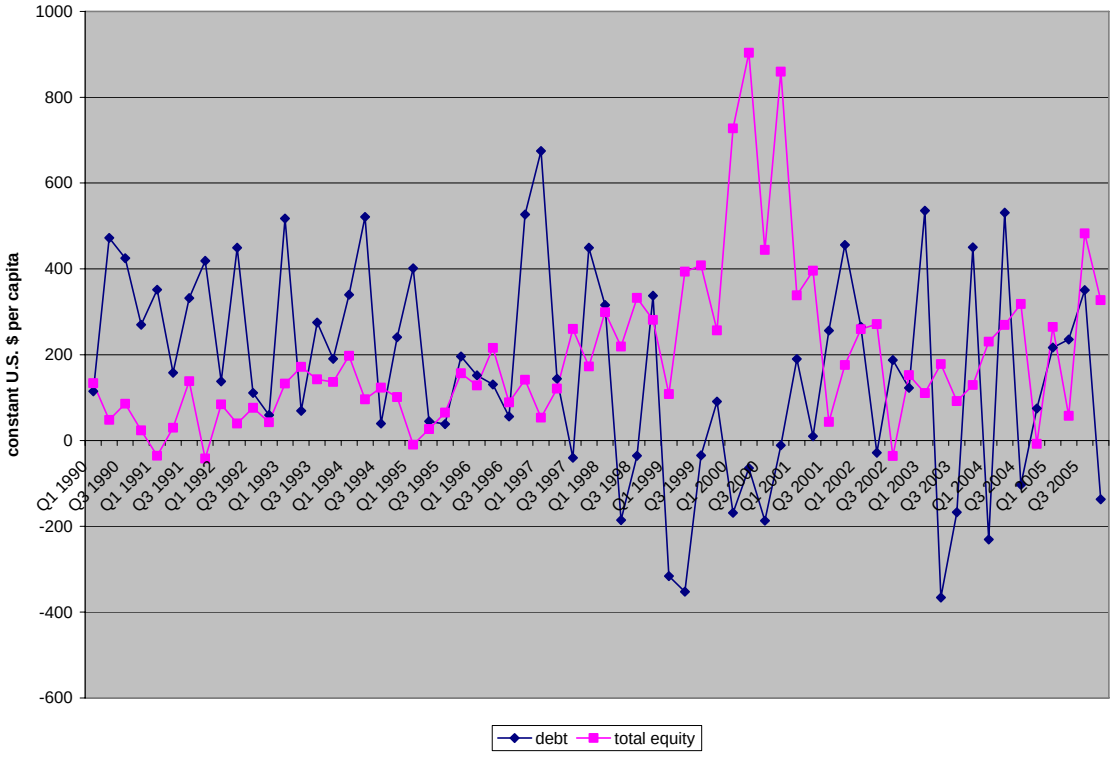


Figure 3
Finnish Capital Inflows

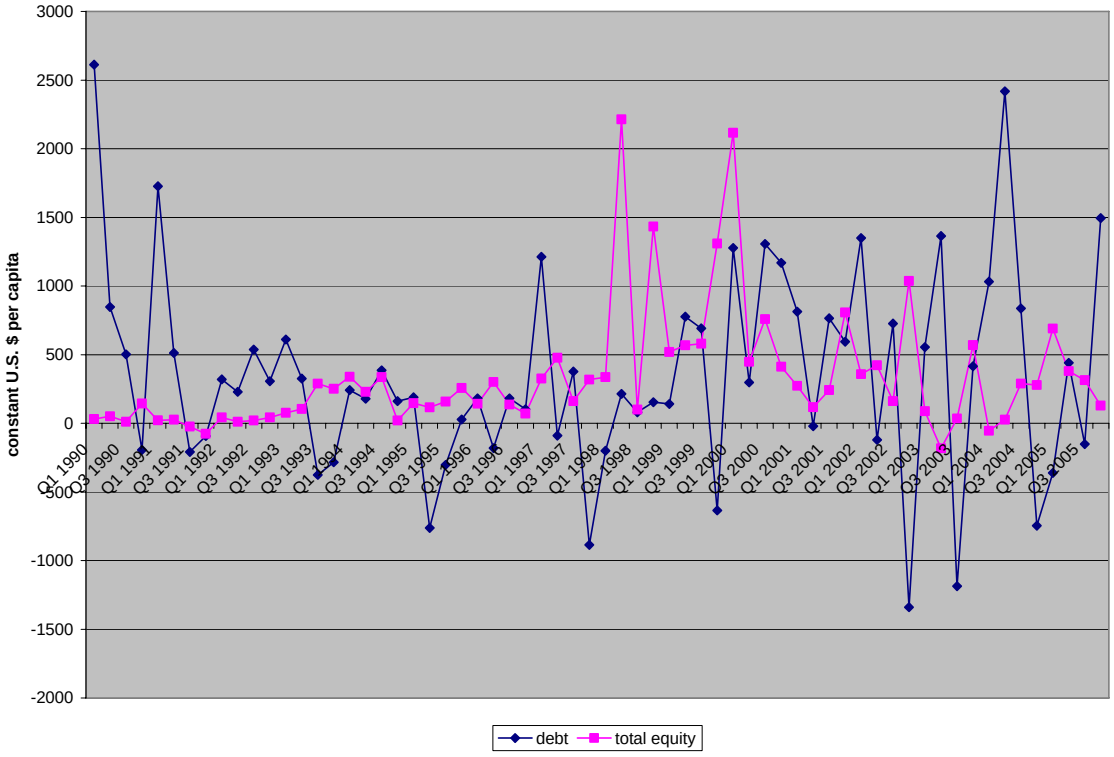


Figure 4
Japanese Capital Inflows

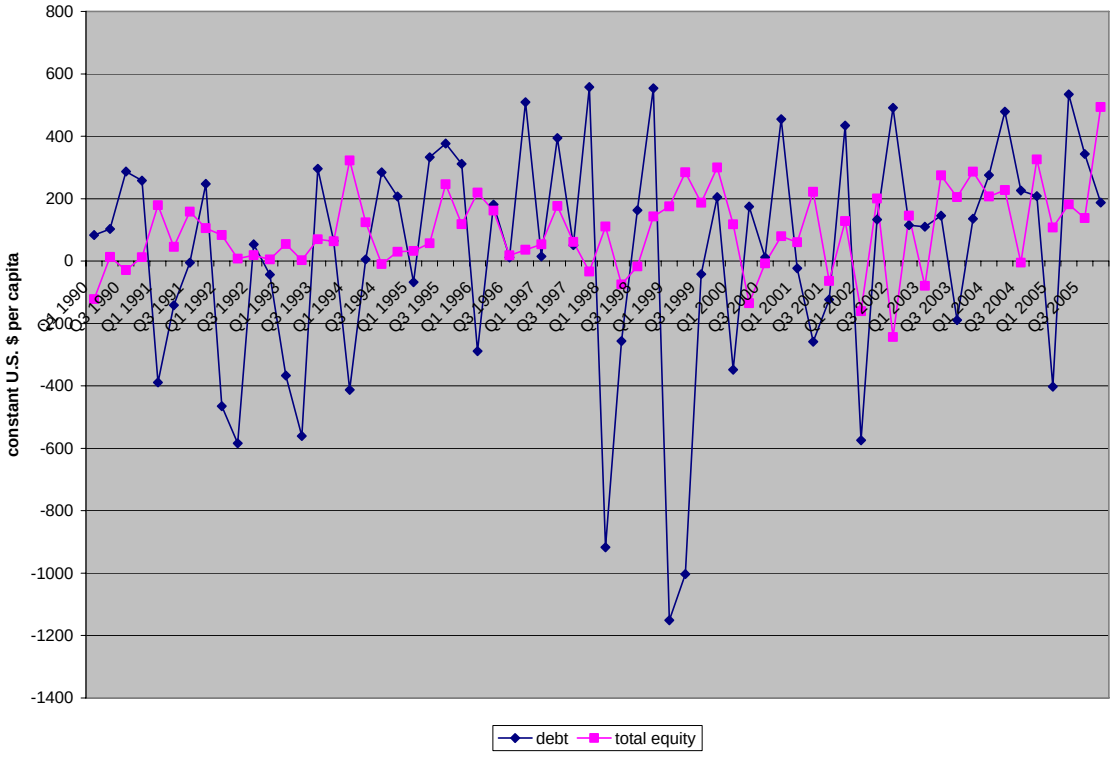


Figure 5
New Zealand Capital Inflows

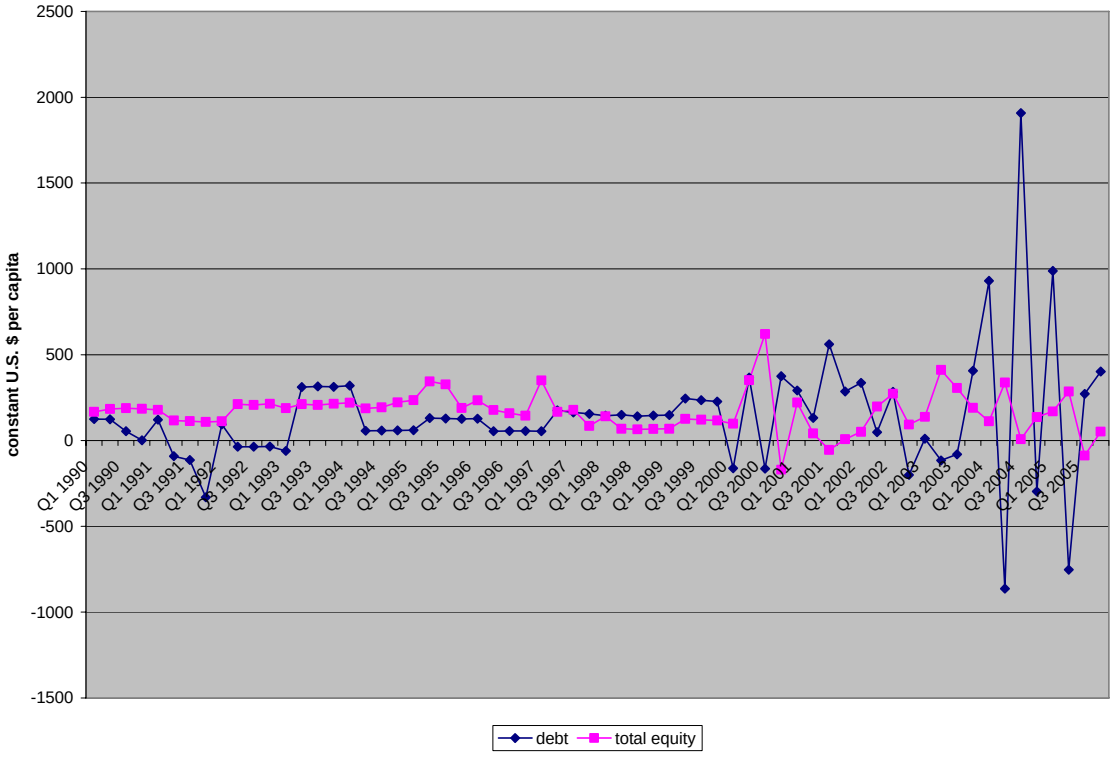


Figure 6
Spanish Capital Inflows

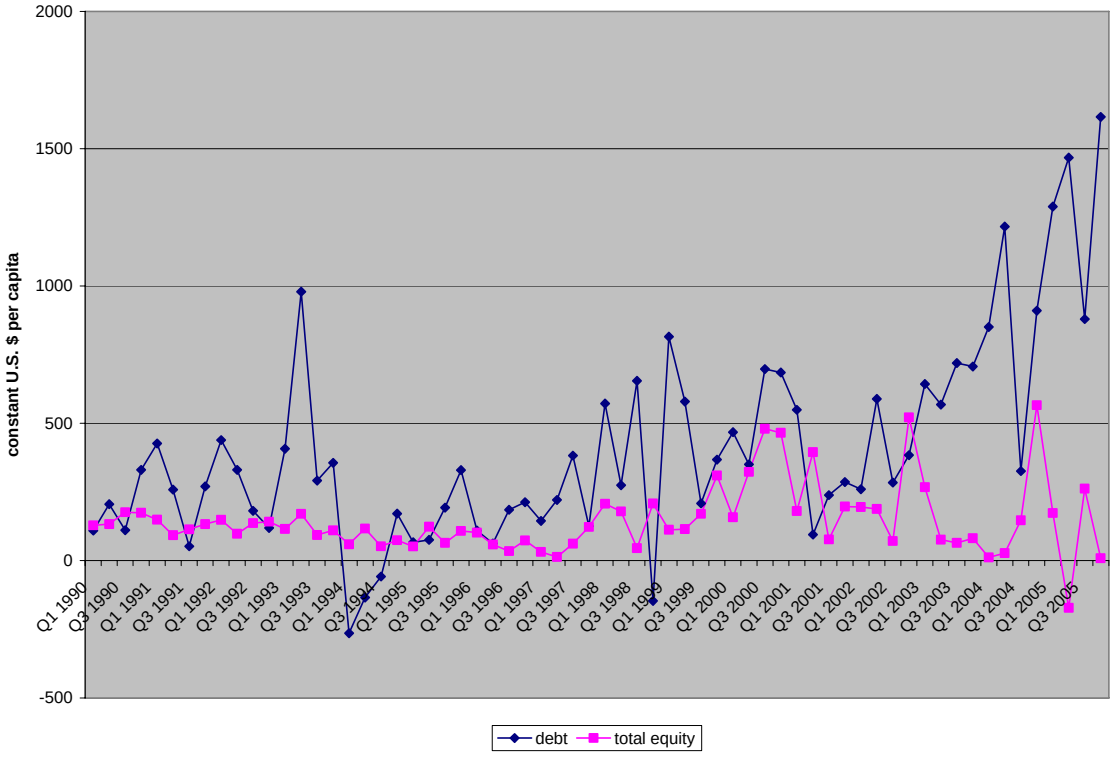


Figure 7
United Kingdom Capital Inflows

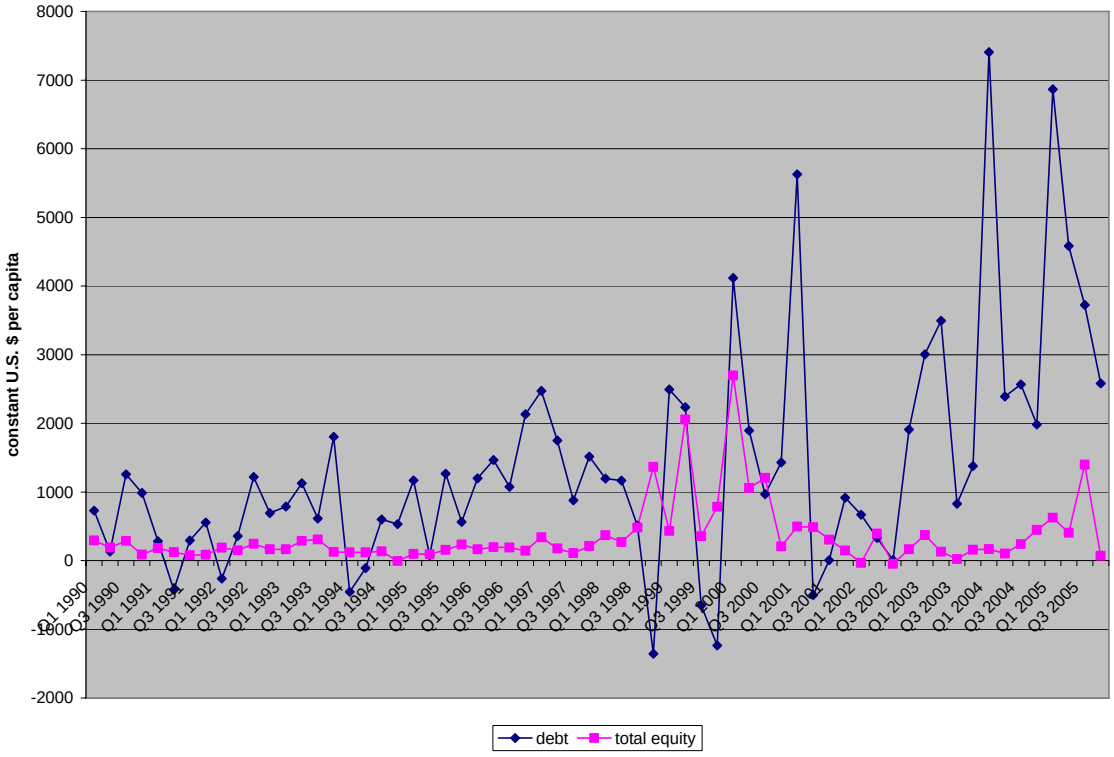
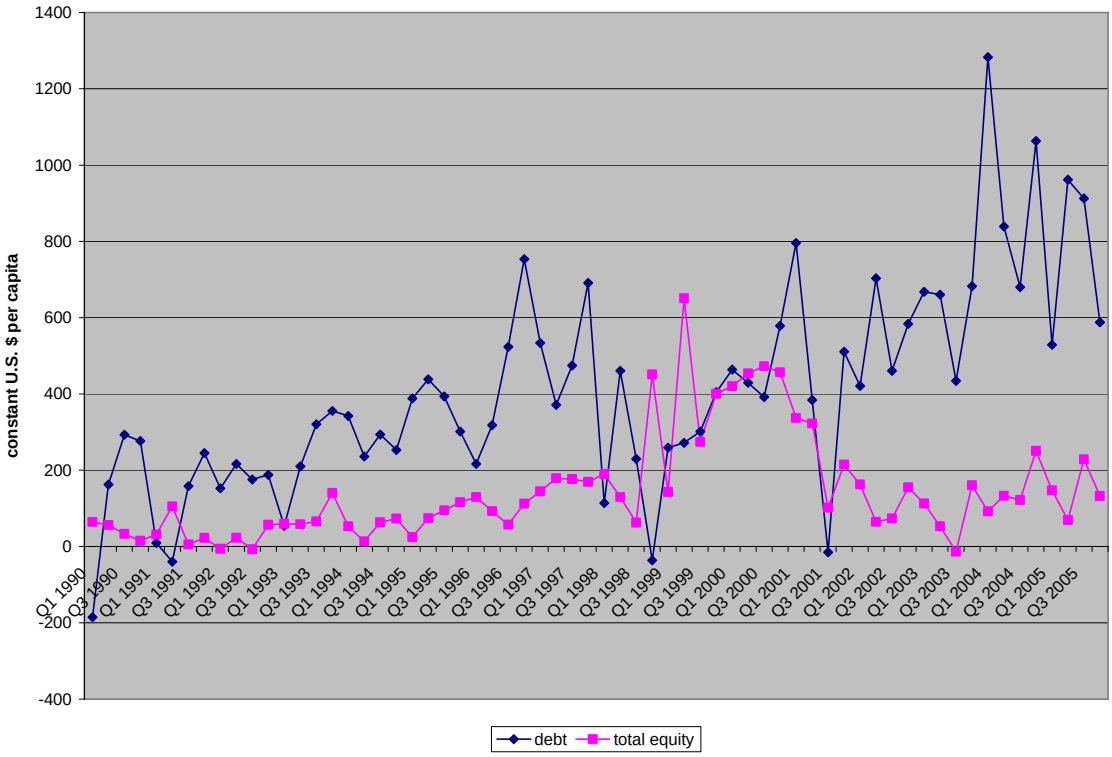


Figure 8
United States Capital Inflows



Data Appendix

Debt securities liabilities (IFS line 78bnd) include flows of bonds, debentures, notes issued by monetary authorities, general government, banks, and other sectors measured in current U.S. dollars.

Other investment liabilities (IFS line 78bid) include flows of a variety of financial transactions such as trade credits, loans, transactions in currency and deposits, and other liabilities by monetary authorities, general government, and banks measured in current U.S. dollars.

Total debt equals the sum of debt securities liabilities and other investment liabilities.

Foreign direct investment in reporting economy, n.i.e. (IFS line 78bed) represents the flows of direct investment capital into the reporting economy. Direct investment includes equity capital, reinvested earnings, other capital, and financial derivatives associated with various intercompany transactions between affiliated enterprises measured in current U.S. dollars.

Equity securities liabilities (IFS line 78bmd) include flows of shares, stock participations, and similar documents that denote ownership of equity measured in current U.S. dollars. (The IMF classifies direct investment as involving ownership of at least 10 percent of the local firm's equity. Other equity purchases are included in this category.)

Total equity equals the sum of foreign direct investment and equity securities.

Money market interest rate (IFS line 60b) is the rate on short term lending between financial institutions.

Share prices (IFS line 62) generally relate to common shares of companies traded on national or foreign stock exchanges. For the United Kingdom, we used data on the FTSE 100 taken from the Yahoo finance web site at http://finance.yahoo.com/q?s=%5Eftse.

U.S. consumer price level (IFS line 64).

GDP (IFS lines 99bvp) are GDP volume indices that are presented on a standard 2000 reference year and are derived from the GDP volume series reported by national compilers.

Dividend yield For the United States, quarterly interpolated data taken from annual data on S&P 500 dividend yields reported by Professor Aswath Damodaran on his website at http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/spearn.htm. For the other countries, quarterly interpolated data taken from annual data on dividend yields of representative portfolios of national stocks reported by Professor Kenneth French at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html#International.

Population (IFS line 99z) Quarterly interpolation of data provided by the Population Division of the Department of Economic and Social Affairs of the United Nations.