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# Do integrated economies grow faster? Evidence from domestic equity holdings

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## Abstract

This paper aims to investigate the impact of financial integration on economic growth. Home bias, which is the tendency of over-investing in domestic stock bourse, is proposed as a proxy of advanced financial integration. The persistence of home bias reflects the existence of international friction. A high degree of home bias reflects imperfect integration of the national stock market with world capital markets and suggests a slower pace of economic expansion. Home bias is utilised, through its own lags, to address the reverse causality implied by potential endogeneity between home bias and real GDP growth. A dynamic GMM approach is employed to address the endogeneity and serial correlation concern. The results indicate the lagged real GDP per capita growth, home bias, government consumption, and variability in real effective exchange rates are found to explain cross-country variation in growth.

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## 1. Introduction

There is an on-going interest in deepening financial integration. Financial integration refers to high capital mobility as well as to the removal of barriers with regards to international investment, such as transaction costs, information costs, and cultural bias. Similar-risk stocks should be priced correspondingly if equity markets are highly integrated (Bekaert et al., 2002). Integration enhances international risk sharing through a diminution in consumption volatility, which raises financial stability and leads to higher economic growth. Financial integration also augments domestic investment.

Traditional economic theories predict that, as countries become more integrated, variability in stock returns should get smaller, cross-border investment is expected to rise, and home bias should fall (Borensztein and Loungani, 2011). Greater financial integration is evidenced within the Eurozone. The establishment of a single currency and financial market results in integration of the money market and credit market. Market integration leads to sharp declines in transaction costs and information costs associated with the trade in financial assets.

In spite of the vast theoretical advantages of international integration, the financial integration-growth nexus is vague, in particular for developing countries (Eichengreen, 2001). Inconclusive empirical evidence arises due to different proxies used for market integration (Pungulescu, 2015). It is puzzling if stock markets that are more integrated into the world capital market experience faster rates of growth using home bias as a proxy of advanced market integration. If a stock market is fully integrated with the world capital market, home bias should disappear. The existence of home bias in a country reflects imperfect integration and suggests a slower pace of economic expansion. The use of the home bias measure to gauge the extent of integration is sensible because the greater the over-investment in the domestic stock market, the greater the influence of local factors and idiosyncratic risk on domestic stock returns.

The objective of this research is to identify the dynamic relationship between over-investment in home assets and economic progress. This study contributes to the extant literature by taking into account simultaneity bias between growth and home bias and tackling the endogeneity and autocorrelation issues in dynamic GMM. The paper proceeds as follow. Section 2 explicates methodology and sample, followed by a discussion of empirical evidence in Section 3. Section 4 offers a conclusion.

## 2. Data and Research Method

### 2.1 Measuring Home Bias

Home bias is the ratio of the portfolio equity assets invested domestically by country i, relative to the optimal portfolio weightages of country i. The formula is adapted from Beugelsdijk and Frijns (2010), which uses mutual funds data in the calculation of asset allocation bias. The difference between domestic shares in the aggregate equity portfolio and optimal portfolio weightages indicates the extent of home bias.

Weightage of domestic equities in the overall portfolio,

$$W_{ii} = \left(\frac{MC_i - FL_i}{FA_i + MC_i - FL_i}\right) \quad (1)$$

Weightage of the optimal portfolio for country i,

$$W_i^* = \left(\frac{MC_i}{\sum_{n=1}^{N} MC_n}\right) \quad (2)$$

$$HBIAS = \frac{W_{ii}}{W_i^*} \quad (3)$$

where subscripts of i and t denote country and time, respectively; FA= foreign portfolio equity assets; FL= foreign portfolio equity liabilities; MC= market capitalization of listed companies; $\sum_{n=1}^{N} MC_n$= total market capitalization of all the sample countries; HBIAS= home bias.

The last step of the procedure involves transforming the home bias value to a natural logarithm. Following Busse and Hefeker (2007), to avoid the observations dropping after taking the logarithms, the negative and zero home bias values are log-transformed using the formula given below:

$$\ln(HBIAS) = \ln\left[\left(\frac{W_{ii}}{W_i^*}\right) + \sqrt{\left(\left(\frac{W_{ii}}{W_i^*}\right)^2 + 1\right)}\right] \quad (4)$$

## 2.2 Model Specification

Pungulescu (2015) proposed home bias as an effective measure of advanced stage financial integration. The ratio reflects a divergence from optimal portfolio equity holdings to domestic stocks, such that a higher degree of home bias indicates sub-optimal investment and, therefore, a less integrated stock market with the rest of the world. Capital control is incorporated into the model to examine the separate effect of de jure financial openness in the growth regression. Hence, the basic equation adapted from Ahlerup et al. (2009) and Levine et al. (2000) is extended to include home bias and capital control. To analyze the effect of home bias on per capita growth of output, the empirical specification of dynamic GMM may be written as:

$$RGDPG_{it} = \beta_0 + \beta_1 RGDPG_{it-1} + \beta_2 \ln(HBIAS)_{it} + \beta_3 HC_{it} + \beta_4 Pi_{it} + \beta_5 LABOR_{it} + \beta_6 GOVT_{it} + \beta_7 TO_{it} + \beta_8 WGI_{it} + \beta_9 RFLOW_{it} + \beta_{10} REERVOL_{it} + \varepsilon_{it} + \mu_i \quad (5)$$

where subscripts of i and t denote country and time; $\mu_i$= unobserved country-specific effect; $\varepsilon_{it}$= error term that is assumed to be normally distributed with mean 0 and variance $\sigma^2$; $RGDPG_{it-1}$= lagged annual growth rate in real GDP in $t-1$; ln(HBIAS)= log of home bias; HC= human capital; Pi= price level of investment; LABOR= labor force growth; GOVT= government consumption in GDP; TO= trade openness; WGI= average worldwide governance indicators; RFLOW = capital control index and REERVOL= real effective exchange rate volatility.

All coefficients except for β1, β2, β4, β6, and β10 are expected to carry a positive sign. The model is run by utilizing the annual frequency of estimation for the period 2001-2014 using a sample of 25 countries.

## 2.3 Research Methodology

The study uses the difference GMM estimator (xtabond2 command) for assessing the effect of home bias on economic growth. A panel regression with small between-dimensions, like the current study (25 countries), may result in reduced power from over-identification in the test and biased coefficients (Windmeijer, 2005; Bowsher, 2002); therefore, the endogenous variable, the lagged real GDP per capita growth and home bias, are restricted to three lags when constructing the GMM style instruments. This method is used to circumvent the problem of instrument proliferation, as per Roodman (2009).

To ensure the consistency of GMM estimates, two specification tests are used to examine the over-identification of all the instruments: the Sargan test and the Hansen test. The failure to reject the null hypothesis of both Sargan and Hansen tests suggests the instruments are jointly valid. For the Arellano-Bond serial correlation test, one should fail to reject the null of no first order serial correlation (AR1), but should not reject the null of zero second order autocorrelation in the error term of the difference (AR2).

## 2.4 Data and Sample Selection

The dependent variable, which is the growth in real GDP per capita, is obtained from Penn World Table 8.0 and 8.1. Table I provides the definition of all the independent variables employed and lists the data sources. Table II displays the sample countries used in modelling economic growth. The sample consists of 25 countries, spanning 14 years, from 2001 to 2014, yielding a total of 350 observations. After dropping missing values, the final sample comprises 275 observations.

**Table I: Variables and data sources**

| Variable | Definition | Source |
|---|---|---|
| ln(HBIAS) | Log of home bias | CPIS of IMF |
| HC | Human capital | Penn World Table 8.0 and 8.1 |
| Pi | Price level of investment | Penn World Table 8.0 and 8.1 |
| LABOR | Labor force growth | World Bank |
| GOVT | Share of government consumption | Penn World Table 8.0 and 8.1 |
| TO | Trade openness | World Development Indicators |
| WGI | Average worldwide governance indicators | World Bank |
| RFLOW | Capital control index | Economic Freedom Network (http://www.freetheworld.com) |
| REERVOL | Standard deviation of real effective exchange rate | Bank for International Settlements |

**Table II: Sample countries**

| Number | Country |
|---|---|
| 1 | Argentina |
| 2 | Austria |
| 3 | Belgium |
| 4 | Brazil |
| 5 | Canada |
| 6 | China P.R. Hong Kong |
| 7 | Cyprus |
| 8 | Czech Republic |
| 9 | Denmark |
| 10 | France |
| 11 | Germany |
| 12 | Greece |
| 13 | Hungary |
| 14 | Italy |
| 15 | Japan |
| 16 | South Korea |
| 17 | Malaysia |
| 18 | Norway |
| 19 | Netherlands |
| 20 | Portugal |
| 21 | Russia |
| 22 | Sweden |
| 23 | Switzerland |
| 24 | United Kingdom |
| 25 | United States |

## 3. Empirical Analysis

### 3.1 Diagnostic Tests

Table III provides a summary of diagnostic tests for the variables included in the economic growth model. The Doornik-Hansen test rejects the null of normality of the residuals. To address the non-normality concern, the highest and lowest values are removed using the Cox's extremes command in Stata software (see Cox, 2004). On the other hand, the residuals are serially correlated at the 1% level, as indicated by the Wooldridge test. Also, the Breusch-Pagan test suggests heteroscedasticity of the variance. Therefore, a robust variance estimator is used to correct for standard errors produced by the two-step GMM estimation.

**Table III: Diagnostic tests**

| Test | Test statistic |
|---|---|
| Doornik-Hansen $\chi 2$ statistic | $12924.00^{***}$ |
| Breusch-Pagan test for heteroskedasticity | $22.43^{***}$ |
| Wooldridge test for autocorrelation | $8.56^{***}$ |

Note: $^{***}$ indicates statistically significant at 1% level.

Table IV shows the correlation matrix. It can be seen from the table that the share of government consumption, exchange rate variability, and price level of investment are negatively correlated with real GDP per capita growth. Trade openness and labor growth are found to be positively associated with income growth. Capital control and trade openness are positively correlated with each other. As expected, capital control is negatively correlated with the home bias. Moreover, a higher impediment to international capital flows is associated with negative growth in labor force.

**Table IV: Correlation matrix**

| | RGDPG | ln(HBIAS) | HC | Pi | LABOR | GOVT | TO | WGI | RFLOW | REER-VOL |
|---|---|---|---|---|---|---|---|---|---|---|
| RGDPG | 1.00 | | | | | | | | | |
| ln(HBIAS) | 0.12 | 1.00 | | | | | | | | |
| HC | -0.11 | -0.30 | 1.00 | | | | | | | |
| Pi | -0.15 | -0.27 | 0.54 | 1.00 | | | | | | |
| LABOR | 0.27 | 0.11 | -0.26 | -0.28 | 1.00 | | | | | |
| GOVT | -0.14 | 0.25 | -0.06 | -0.05 | -0.27 | 1.00 | | | | |
| TO | 0.07 | 0.11 | -0.03 | -0.22 | 0.05 | -0.18 | 1.00 | | | |
| WGI | -0.25 | -0.23 | 0.47 | 0.64 | -0.15 | -0.17 | 0.21 | 1.00 | | |
| RFLOW | -0.22 | -0.22 | 0.18 | 0.24 | -0.24 | 0.01 | 0.08 | 0.42 | 1.00 | |
| REERVOL | -0.15 | 0.01 | -0.06 | -0.19 | 0.10 | -0.09 | -0.08 | -0.23 | -0.10 | 1.00 |

Notes: RGDPG is real GDP per capita growth; ln(HBIAS) is log of home bias; HC is human capital; Pi is price level of investment; LABOR is labor force growth; GOVT is share of government consumption; TO is trade openness; WGI is the average worldwide governance indicators; RFLOW is capital control and REERVOL is real effective exchange rate volatility.

### 3.2 Results and Discussion

First, this study estimates the effect of home bias on growth by employing a dynamic panel GMM technique, taking into account potential endogeneity of home bias. Table V reveals the results of two-step difference GMM estimation with and without bias-corrected standard errors. Model 1 and Model 2 in Table V include the full sample, while Model 3 and Model 4 exclude observations with extreme values in order to achieve normality of the residuals following Cox (2004). The main model is based on Model 4 using a bias-corrected robust estimator with reduced samples.

**Table V: The impact of home bias on growth: Results of dynamic panel GMM regression**

| | (1)<br>Two-step Diff. GMM<br>(endo: home bias) | (2)<br>Two-step Diff. GMM<br>with Robust SE<br>(endo: home bias) | 3<br>Two-step Diff. GMM<br>(endo: home bias) | 4<br>Two-step Diff. GMM<br>with Robust SE<br>(endo: home bias) |
|---|---|---|---|---|
| RGDPGt-1 | 0.15*** | 0.15** | 0.19*** | 0.19** |
| | (0.04) | (0.06) | (0.07) | (0.08) |
| ln(HBIAS) | -0.23*** | -0.23** | -0.24*** | -0.24* |
| | (0.07) | (0.11) | (0.08) | (0.13) |
| HC | -2.29 | -2.29 | -5.86*** | -5.86** |
| | (2.83) | (4.00) | (1.91) | (2.74) |

| | | | | |
|---|---|---|---|---|
| Pi | -0.05 | -0.05 | 0.25 | 0.25 |
| | (2.36) | (2.95) | (2.09) | (2.59) |
| LABOR | 34.46** | 34.46** | 31.03** | 31.03 |
| | (14.72) | (17.09) | (15.30) | (20.16) |
| GOVT | -62.64*** | -62.64*** | -38.28*** | -38.28*** |
| | (10.64) | (12.78) | (8.31) | (9.04) |
| TO | 0.05** | 0.05 | 0.04* | 0.04* |
| | (0.02) | (0.03) | (0.02) | (0.02) |
| WGI | 2.18 | 2.18 | -1.35 | -1.35 |
| | (2.23) | (2.92) | (2.08) | (2.60) |
| RFLOW | -0.06 | -0.06 | -0.12 | -0.12 |
| | (0.12) | (0.15) | (0.12) | (0.18) |
| REERVOL | -0.32*** | -0.32 | -0.52*** | -0.52*** |
| | (0.05) | (0.07) | (0.10) | (0.12) |
| Sargan test | 2.76 | 2.76 | 2.40 | 2.40 |
| (p-value) | (0.60) | (0.60) | (0.66) | (0.66) |
| Hansen test | 2.66 | 2.66 | 2.21 | 2.21 |
| (p-value) | (0.62) | (0.62) | (0.70) | (0.70) |
| Autocorrelation of order 1 | -3.69 | -3.57 | -4.11 | -3.90 |
| (p-value) | (0.00) | (0.00) | (0.00) | (0.00) |
| Autocorrelation of order 2 | 0.09 | 0.09 | 0.91 | 0.90 |
| (p-value) | (0.93) | (0.93) | (0.36) | (0.37) |
| Number of instruments | 14 | 14 | 14 | 14 |
| observations | 275 | 275 | 259 | 259 |

Notes: The dependent variable is real GDP per capita growth, RGDPG. $RGDPG_{t-1}$ is real GDP per capita growth in t-1; ln(HBIAS) is log of home bias; HC is human capital; Pi is price level of investment; LABOR is labor force growth; GOVT is share of government consumption; TO is trade openness; WGI is the average worldwide governance indicators; RFLOW is capital control and REERVOL is real effective exchange rate volatility. Standard errors are in the parentheses. ***, **, * indicate significance level at 1%, 5% and 10%, respectively.

Overall, the results from the full sample (Models 1 and 2) and with omitted observations (Models 3 and 4) are broadly identical. Both the Sargan and Hansen test statistics conclude that over-identifying restrictions hold for the two-step estimators. In addition, the null hypothesis predicting an absence of first-order serial correlation between the residuals in the differenced equation is rejected, but the null hypothesis of no second-order serial correlation cannot be rejected. The presence of first auto-covariance is expected because $\Delta\mu_{it}$ and $\Delta\mu_{it-1}$ contain $\Delta\mu_{it-1}$. The lagged real GDP per capita growth is statistically significant, indicating the dynamic GMM estimator is appropriate for investigating economic growth. The coefficient on the autoregressive coefficient is far below unity, indicating the absence of the weak instrument problem in the dynamic GMM estimator (Blundell and Bond, 1998).

Since home bias and real GDP growth rate are suspected to be endogenously determined, the home bias covariate is instrumented by its own lags in dynamic GMM specification. A significant and negative coefficient of home bias implies that a country that is less financially integrated with the world has slower economic growth, corroborating the evidence of Pungulescu (2015). Home bias (lnHBIAS) shows a different aspect, or a more advanced phase of financial market integration. By reducing overinvestment by domestic investors in

local bourse, opening up capital market for foreign investors, and allowing local investors to invest freely overseas, the domestic economy will be more integrated with the world. This effect reduces the systematic risk of holding a domestic portfolio, promoting international risk sharing and accelerated output growth. The analysis reveals how, when home bias rises by 1%, per capita income growth falls by 0.0024%.

A government's share of consumption (GOVT) is a negative and statistically significant determinant of economic performance. A 1% increases in the share of government consumption will shrink real income growth by 0.3828%. The findings conform to results from Dearmon and Grier (2011). The negative coefficient of government size might be due to the inefficiency of a government in capital allocation resulting in a negative effect on growth. For countries with higher real GDP and high current spending on public services, a further expansion of government spending inhibits economic growth. Most of the countries in the sample are advanced countries with higher GDP per capita, which could possibly explain these results.

Trade openness is found to be one of the crucial stimuli to economic growth, through knowledge transfer, capitalization of comparative advantage, and access to direct investment, supporting previous evidence (Petrakos et al., 2007; Leitão and Rasekhi, 2013). Additionally, exchange rate variability is found to have a disruptive effect on growth, shown by a negative coefficient of exchange rate volatility (REERVOL). Higher exchange rate volatility reduces the international competitiveness of a country, leading to lower economic performance – a finding consistent with Musyoki et al. (2012).

Nonetheless, the coefficients of RFLOW, WGI, and growth in labor are insignificant in Model 4. The human capital index (HC) is significant but has the wrong sign in Model 4. The result for human capital is incongruent with Islam (1995), and Čadil et al. (2014). A plausible explanation for the conflict is that human capital investment is channelled to unproductive activities which are not used for economic development as advocated in Pritchett (2001). Additionally, the use of school education only captures one aspect of human capital (see Engelbrecht, 1997), but perhaps a qualitative measure of human capital investment, such as including on-the-job training and experience, should be employed (see Van Leeuwen, 2007).

Generally, higher costs of investment goods make the per capita income growth in a country fall; however, the sign of the investment price is found to be positive in Model 4. Although the price of investment goods is typically higher in countries with a higher GDP, they are similar across countries (see Kravis and Lipsey, 1988); therefore, small variations in the price of investment goods could explain its insignificance in determining economic growth.

### 3.3 Robustness analyses

#### 3.3.1 Treating Home Bias as Exogeneous

Table VI manifests the possibility of endogeneity between home bias and economic growth is ruled out. Overall, the significance levels and signs of all the coefficients are similar to the baseline model presented in Table V, with the exception of home bias and trade openness covariates. After exogeneity of home bias is assumed, the home bias variable is a positive entry for two-step robust GMM estimation, contradictory to the baseline results. Moreover, trade openness becomes insignificant.

**Table VI: Robustness test: Exogeneity of home bias**

| | (1) Two-step Diff. GMM (exo: home bias) | (2) Two-step Diff. GMM with Robust SE (exo: home bias) |
|---|---|---|
| RGDPGt-1 | 0.17** | 0.17* |
| | (0.07) | (0.09) |
| ln(HBIAS) | 0.11*** | 0.11*** |
| | (0.02) | (0.03) |
| HC | -4.04* | -4.04 |
| | (2.36) | (2.83) |
| Pi | 0.28 | 0.28 |
| | (2.19) | (2.56) |
| LABOR | 20.75 | 20.75 |
| | (18.07) | (22.12) |
| GOVT | -42.42*** | -42.42*** |
| | (10.45) | (10.82) |
| TO | 0.04 | 0.04 |
| | (0.02) | (0.03) |
| WGI | -0.19 | -0.19 |
| | (2.27) | (2.60) |
| RFLOW | -0.14 | -0.14 |
| | (0.14) | (0.18) |
| REERVOL | -0.52*** | -0.52*** |
| | (0.10) | (0.12) |
| Sargan test | 1.79 | 1.79 |
| (p-value) | (0.41) | (0.41) |
| Hansen test | 1.87 | 1.87 |
| (p-value) | (0.39) | (0.39) |
| Autocorrelation of order 1 | -4.20 | -4.00 |
| (p-value) | (0.00) | (0.00) |
| Autocorrelation of order 2 | 0.77 | 0.76 |
| (p-value) | (0.44) | (0.45) |
| Number of instruments | 12 | 12 |
| observations | 259 | 259 |

Notes: The dependent variable is real GDP per capita growth, RGDPG. $RGDPG_{t-1}$ is real GDP per capita growth in t-1; ln(HBIAS) is log of home bias; HC is human capital; Pi is price level of investment; LABOR is labor force growth; GOVT is share of government consumption; TO is trade openness; WGI is the average worldwide governance indicators; RFLOW is capital control and REERVOL is real effective exchange rate volatility. Standard errors are in the parentheses. ***, **, * indicate significance level at 1%, 5% and 10%, respectively.

### 3.3.2 Including alternative proxies for integration and institution

Following Levine and Zervos (1998) and Hooy and Goh (2007), this study uses the pricing error in the ICAPM as an alternative proxy for equity market integration. The ICAPM integration index is included in the base specification of Equation (5) as a robustness check. The absolute value of pricing errors rises with the extent of market integration. If stock

markets are perfectly integrated with no cross-border investment barriers, all financial assets priced identically with the same beta factors and pricing errors should become zero.

CAPM (Sharpe, 1964; Lintner, 1965), which is broadly applicable in finance, was first applied in the international context by Solnik (1974) and is stated in the specification as follows:

$$R_{it} - R_{ft} = \alpha_i + \beta_i(R_{wt} - R_{ft}) + \varepsilon_{it} \quad (6)$$

Market return, world return, and beta are calculated based on a historical series of monthly data covering five years. After this stage, Equation (6) is run for each country in the sample to obtain a series of pricing errors,$\alpha_i$, which is the intercept in the ICAPM. The return on individual country's price index supplied by Morgan Stanley Capital International (MSCI) is deployed as a proxy for market returns, while the return on the MSCI All Country World Index is used as a measure of world returns. Cyprus is deleted from the sample when computing time-varying market integration measure due to data unavailability, leaving a final sample of 24 countries for the period of 2001- 2014 used for robustness testing.

In Table VII, the time-varying integration measure based on the ICAPM is included alongside capital control and home bias variables in Models 1 and 2. All three variables (lnHBIAS, RFLOW, and α) that gauge stock market integration have a calculated pairwise correlation of not more than 0.3 as shown in Table IV. A significant negative coefficient of home bias remains when the ICAPM integration index is included in Models 1 and 2. The influence of home bias is not affected by the inclusion of the time-varying integration measure, although the latter has an insignificant impact on economic performance.

**Table VII: Robustness test: Inclusion of alternative proxies**

| | **Inclusion of ICAPM integration index** | | **Inclusion of alternative proxy for institution** | |
|---|---|---|---|---|
| | **(1)** **Two-step Diff. GMM** | **(2)** **Two-step Diff. GMM with Robust SE** | **(3)** **Two-step Diff. GMM** | **(4)** **Two-step Diff. GMM with Robust SE** |
| RGDPGt-1 | 0.19*** | 0.19** | 0.18*** | 0.18** |
| | (0.06) | (0.08) | (0.07) | (0.09) |
| ln(HBIAS) | -0.25*** | -0.25* | -0.25*** | -0.25* |
| | (0.08) | (0.14) | (0.08) | (0.13) |
| HC | -5.04** | -5.04 | -6.35*** | -6.35*** |
| | (2.39) | (3.06) | (1.91) | (2.37) |
| Pi | 0.15 | 0.15 | -0.03 | -0.03 |
| | (2.04) | (2.46) | (2.05) | (2.58) |
| LABOR | 27.59* | 27.59 | 34.34** | 34.34 |
| | (16.00) | (20.85) | (15.90) | (21.02) |
| GOVT | -42.14*** | -42.14*** | -36.38*** | -36.38*** |
| | (9.88) | (11.96) | (8.06) | (9.98) |
| TO | 0.04* | 0.04 | 0.04* | 0.04 |
| | (0.02) | (0.03) | (0.02) | (0.03) |

| | | | | |
|---|---|---|---|---|
| WGI | -1.14 | -1.14 | | |
| | (2.12) | (2.61) | | |
| POLITIC | | | -0.03 | -0.03 |
| | | | (0.07) | (0.08) |
| RFLOW | -0.10 | -0.10 | -0.12 | -0.12 |
| | (0.12) | (0.18) | (0.12) | (-0.16) |
| REERVOL | -0.53*** | -0.53*** | -0.50*** | -0.50*** |
| | (0.10) | (0.12) | (0.10) | (0.12) |
| α | 0.11 | 0.11 | | |
| | (0.20) | (0.21) | | |
| Sargan test | 2.12 | 2.12 | 2.91 | 2.91 |
| Hansen test | 2.10 | 2.10 | 3.42 | 3.42 |
| (p-value) | (0.72) | (0.72) | (0.49) | (0.49) |
| Autocorrelation of order 1 | -4.07 | -3.87 | -4.16 | -3.89 |
| (p-value) | (0.00) | (0.00) | (0.00) | (0.00) |
| Autocorrelation of order 2 | 0.93 | 0.92 | 0.85 | 0.84 |
| (p-value) | (0.35) | (0.36) | (0.39) | (0.40) |
| Number of instruments | 15 | 15 | 14 | 14 |
| observations | 259 | 259 | 259 | 259 |

Notes: The dependent variable is real GDP per capita growth, RGDPG. $RGDPG_{t-1}$ is real GDP per capita growth in t-1; ln(HBIAS) is log of home bias; HC is human capital; Pi is price level of investment; LABOR is labor force growth; GOVT is share of government consumption; TO is trade openness; WGI is the average worldwide governance indicators; POLITIC is political risk rating; RFLOW is capital control; REERVOL is real effective exchange rate volatility and α is CAPM integration index. Standard errors are in the parentheses. ***, **, * indicate significance level at 1%, 5% and 10%, respectively.

Another robustness test involves replacing average WGI with ICRG's political risk rating in the base specification. Home bias retains significance when institutional strength is proxied by political risk rating. The direction and significance of all the regressions are statistically similar with the baseline model.

## 4. Concluding Remarks

Investors should have identical portfolios of assets when an economy is fully integrated with no market frictions; however, the onset of the financial crisis in 2008 has led various countries to cast doubt on the advantages of financial integration and liberalization. This research uses both qualitative and quantitative measures of financial integration in explaining cross-country variation in growth. In addition to capital controls, the home bias variable is constructed based on the CAPM theory. Using the dynamic GMM approach, this variable is treated as endogenous. Home bias is found to be significantly negative, substantiating the integration-growth nexus. Economies that are more integrated into world markets, measured by the degree of home bias, grow more rapidly.

There is a tendency, since the financial crisis, to engage lightly in foreign portfolio investment and to magnify the importance of foreign direct investment. Foreign portfolio investment does indeed enhance capital inflows beyond a country's domestic savings and stimulates economic growth. Lower home bias (thus, higher foreign investment) facilitates financial integration and prompts values income growth. From the results showing the effects

of home bias on growth, policy makers should enact policies to discourage over-investment in home assets, which is sub-optimal. Financial integration can be achieved by liberalizing controls on international trade. Openness in trade is evidenced to be growth-enhancing. Overall, it is discovered that home bias, variability in real exchange rates, and government consumption can robustly explain economic growth.

## References


Ahlerup, P., Olsson, O., & Yanagizawa, D. (2009) "Social capital vs institutions in the growth process" *European Journal of Political Economy* **25**(1), 1-14.

Bekaert, G., Harvey, C. R., & Lumsdaine, R. L. (2002) "Dating the integration of world equity markets" *Journal of Financial Economics* **65**(2), 203-247.

Beugelsdijk, S., & Frijns, B. (2010) "A cultural explanation of the foreign bias in international asset allocation" *Journal of Banking and Finance* **34**(9), 2121-2131.

Blundell, R., & Bond, S. (1998) "Initial conditions and moment restrictions in dynamic panel data models" *Journal of Econometrics* **87**(1), 115-143.

Borensztein, M. E., & Loungani, M. P. (2011) "Asian financial integration: Trends and interruptions" International Monetary Fund number 11-14.

Bowsher, C. G. (2002) "On testing overidentifying restrictions in dynamic panel data models" *Economics Letters* **77**(2), 211-220.

Busse, M., & Hefeker, C. (2007) "Political risk, institutions and foreign direct investment" *European Journal of Political Economy* **23**(2), 397-415.

Čadil, J., Petkovová, L., & Blatná, D. (2014) "Human capital, economic structure and growth" *Procedia Economics and Finance* **12**, 85-92.

Cox, N. J. (2004) "EXTREMES: Stata module to list extreme values of a variable" *Statistical Software Components.*

Dearmon, J., & Grier, R. (2011) "Trust and the accumulation of physical and human capital" *European Journal of Political Economy* **27**(3), 507-519.

Eichengreen, B. (2001) "Capital account liberalization: What do cross-country studies tell us?" *World Bank Economic Review* **15**(3), 341-365.

Engelbrecht, H. J. (1997) "International R&D spillovers, human capital and productivity in OECD economies: An empirical investigation" *European Economic Review* **41**(8), 1479-1488.

Hooy, C. W., & Goh, K. L. (2007, March) "The Determinants of Stock Market Integration: A Panel Data Investigation" *in Proceedings of the 15th Annual Conference on Pacific Basin Finance, Economics, Accounting and Management*, 1-32.

Islam, N. (1995) “Growth empirics: A panel data approach” *The Quarterly Journal of Economics* **110**(4), 1127-1170.

Kravis, I., & Lipsey, R. E. (1988) “National price levels and the prices of tradables and nontradables” NBER working paper number 2536.

Leitão, N. C., & Rasekhi, S. (2013) “The impact of foreign direct investment on economic growth: The Portuguese experience” *Theoretical and Applied Economics*, 51-62.

Levine, R., Loayza, N., & Beck, T. (2000) “Financial intermediation and growth: Causality and causes” *Journal of monetary Economics* **46**(1), 31-77.

Levine, R., & Zervos, S. (1998) “Stock markets, banks, and economic growth” *American Economic Review*, 537-558.

Lintner, J. (1965) “The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets” *The Review of Economics and Statistics*, 13-37.

Musyoki, D., Pokhariyal, G. P., & Pundo, M. (2012) “The impact of real exchange rate volatility on economic growth: Kenyan evidence” *Business & Economic Horizons* **7**(1), 59-75.

Petrakos, G., Arvanitidis, P., & Pavleas, S. (2007) “Determinants of economic growth: the experts’ view” *University of Thessaly Discussion Paper Series* **13**(10), 245-276.

Pritchett, L. (2001) “Where has all the education gone?” *The World Bank Economic Review* **15**(3), 367-391.

Pungulescu, C. (2015) “Real effects of financial market integration: Does lower home bias lead to welfare benefits?” *The European Journal of Finance* **21**(10-11), 893-911.

Roodman, D. (2009) “A note on the theme of too many instruments” *Oxford Bulletin of Economics and statistics* **71**(1), 135-158.

Sharpe, W. F. (1964) “Capital asset prices: A theory of market equilibrium under conditions of risk” *The Journal of Finance* **19**(3), 425-442.

Solnik, B. H. (1974) “An equilibrium model of the international capital market” *Journal of Economic Theory* **8**(4), 500-524.

Van Leeuwen, B. (2007) “Human capital and economic growth in India, Indonesia, and Japan: A quantitative analysis” 1890-2000. Box Press shop.

Windmeijer, F. (2005) “A finite sample correction for the variance of linear efficient two-step GMM estimators” *Journal of Econometrics* **126**(1), 25-51.