

THE DETERMINANTS OF HOME BIAS

Mouna Baccouri*, Hassouna Fedhila*

* ISCAE Manouba University, Tunisia

Abstract

Despite the well-known gains of the international diversification, investors have the tendency to overinvest in domestic equities. This irrational behavior is called home bias. It is considered by Obstfeld and Rogoff (2000) as one of the six major puzzles in the international macroeconomics. The present paper examines the different determinants to understand this major puzzle. Based on a sample of 564 observations (countries-years) that cover the period 2003 to 2013, we found that home bias is explained by the information asymmetry that exists between countries and their economic volatility (assessed by the growth rate of the gross domestic product). Furthermore, our findings indicate that home bias decreases among developed markets and countries characterized by a higher rule of law.

Keywords: Home Bias, Information Asymmetry, International Diversification

1. INTRODUCTION

Home bias is one of the six major puzzles in international macroeconomics. This phenomenon is defined as the tendency of investors to overinvest in domestic equities and forego gains from international diversification. This lack of international portfolio diversification, despite its well-known gains, has a negative effect on economic growth and international risk sharing (Pungulescu, 2013), firm and market value (Chan et al., 2009).

Recent evidence by Levis et al. (2015) demonstrates that this phenomenon persists until nowadays despite the effort of countries to open their financial market. Then, several explanations have been underlined to explain this phenomenon. Home bias was explained by the macroeconomic factors (Khurana and Michas, 2011), governance indicators (Daly and Vo, 2013), Equity Market characteristics (Baccouri and Fedhila, 2016), capital controls (Ahearne et al. 2004 and Solnik and Suo, 2014) and Information asymmetry (Beneish and Yohn, 2008, Ahearne et al., 2004).

There is wide literature on the determinants of home bias. Nevertheless, the present paper considers that the main ones are the information asymmetry and governance. There is a common explanation by prior research that the information asymmetry, due to barriers to information flows and different accounting standards, give rise to information costs that are supported by foreign investors. Moreover, the governance of a country is also considered as a key factor to explain home bias. In fact, Levis et al. (2015) predicts that country affects the availability of information in the FDI receiving country and makes investments in places of low country governance costly.

This paper examines the effect of others factors, which prior researches indicate that they affect the home bias, as the economic indicators, equity market characteristics and capital controls. The objective of this paper is to examine the

determinants of home bias. This paper considers that the major hindrance in research on the determinants of home bias is the measure used to assess the effect of the information asymmetry of a country. In the past, this variable was estimated using indirect measures as the geographical distance and the language (Portes and Rey, 2005; Vulpes and De Moor, 2013). Nevertheless, we estimate that these measures are time-invariant proxies. Then, we will follow the proxies used by Giofré (2009). We expect that these proxies would capture the information asymmetry with the notable advantage of being time varying. Focusing in countries included in the Coordinated Portfolio Investment Survey "CPIS" our sample is composed by 564 observations (country-year) that cover the period 2003 to 2013. The regression results indicate that the information asymmetry proxies, the rule of law, market classification and the economic stability are the most important and significant determinants of home bias.

This paper is organized as follows: Section 2 provides a brief review of the literature and states the relevant hypothesis. Section 3 specifies the research methodology. Section 4 discusses the results and Section 5 concludes.

2. LITERATURE REVIEW

Levy and Sarnat (1970), Solnik (1974) and Adler and Dumas (1983), based on the international version of the capital asset process model, predict that investors should diversify their portfolio internationally to minimize its overall risk. However, early research as Beneish and Yohn (2008) underline that investors do not exploit this opportunity. These investors' behavior is called home bias. To understand this irrational behavior, the present paper investigates the different determinants of home bias. Explanations in the literature for home bias are controversial. Therefore, we propose to

present a theoretical framework of home bias and then we would highlight its different explanations.

2.1. International diversification and home bias

The Markowitz portfolio theory or the mean-variance analysis, predicts that investors could reduce portfolio risk by holding assets that are perfectly uncorrelated. In other words, they can reduce their portfolio risk by holding a diversified portfolio of asset. Moreover, Sharpe (1964) and Lintner (1965) extend Markowitz theory and propose the capital asset pricing model "CAPM". This model underlines that the risk of a portfolio is composed by a systematic risk and an unsystematic risk. Unsystematic risk, known as diversifiable risk, could be reduced through diversification. Nevertheless, systematic risk, known as market risk, could not be reduced into one market with diversification (due to the stock's dependence on the market).

Levy and Sarnat (1970), Solnik (1974) and Adler and Dumas (1983), build on the work of Sharpe (1964) and Lintner (1965), introduce the international version of the CAPM. This model suggests that within an economy a strong tendency usually exists for economic phenomena to move more or less in unison giving rise to periods of relatively high or low general economic activity. Then investors could not reduce the total portfolio risk when they diversify their portfolio in one market. They also suggest the possibility that risk reduction might be reduced by diversifying securities portfolio internationally.

Nevertheless, in practice investors don't exploit this risk reduction opportunity. They prefer to overweight domestic assets. The term used to describe this irrational investors' behavior is home bias. It is defined as the tendency of investors to overinvest in domestic equities and forego gains from international diversification.

2.2. Determinants of Home bias

Prior researches have examined the determinants of home bias. However, results were controversial. We propose to distinguish five factors that might explain this phenomenon: the information asymmetry, countries economic indicators, countries governance indicators, equity market characteristics and capital control restrictions.

a. The information asymmetry

Based on Merton model (1987), Ahearne et al. (2004) state the important effect of the information asymmetry on home bias. They suggest that investors prefer to hold stock that they know. Then, it might be a key factor that affects investors' behavior. Moreover, Levis et al. (2015) predict that prior research (Jeske 2001, Portes and Rey 2005) attempted to explain the observed home bias effects mostly as a consequence of information asymmetry. These authors measured the information asymmetry with two proxies: international telephone minutes per capita and financial times (FT) circulation per capita. Nevertheless, they found conflicting results. The international telephone call variable was not significant. However, the FT circulation per capita was significant. In the same context, Bradshaw

(2004) did not support the fact that the information asymmetry is a key factor that explains home bias. Bradshaw et al. (2004) results indicate that the information asymmetry that affects home bias is multileveled, at least partially, due to reporting decisions made by the firm's managers. Then, they conclude that the information asymmetry don't affect significantly home bias.

Daly and Vo (2013) used two proxies to measure the information asymmetry. The distance and bilateral trade between Australia and the destination country. Using this two proxies these authors confirm the hypothesis that information asymmetry is an important determinant of home bias. In the same context, Baccouri and Fedhila (2016), using 512 observations (country -year) that cover the period from 2003 to 2015, found evidence that support information asymmetry as a key factor that explain this phenomenon of home bias.

Despite the contradiction in the prior researches' results investigating the relationship between information asymmetry and home bias, we predict the following:

H1: The information asymmetry affects positively home bias.

b. Economic indicators

Usually, investors take greater risks when macro-economic conditions are relatively stable. Then, positive macroeconomic conditions such as a high GDP growth, low inflation and low exchange rate volatility attracts foreign direct investment and might reduce home bias. Khurana and Michas (2011) predict that economic development of a country affects the percentage of foreign investment within it and consequently affects the home bias phenomenon.

Mishra (2011) and Mishra (2014) found that the real exchange rate volatility as an economic factor affects significantly the Australian financial integration in the global economy. It induces a bias towards domestic financial assets because it puts additional risk on holding foreign securities. This result confirms the findings of Fidora et al. (2007) that underline the role of the real exchange rate volatility as a driver of portfolio home bias. Nevertheless, Solnik (1974) demonstrated, in one hand, that exchange risk could be removed by buying a forward exchange contract (hedging the risk of exchange rate). In another hand, he showed that the risk of a portfolio unprotected is larger than a covered portfolio and smaller than a comparable undiversified portfolio. Accordingly, this author rejects that the exchange rate as an economic indicator explains home bias.

In the present paper, we suppose that economic stability is a key factor that could affect the home bias. Then,

H2: economic indicators explain home bias

c. Country governance

Dahlquist et al. (2003) showed that there is a close relationship between investor protection, governance and the portfolios held by investors. Furthermore, Kho et al. (2009) stipulate that

governance affects home bias directly and indirectly. They suggest that, in one hand, poorer governance leads to a higher level of insider ownership, which limits portfolio holdings by foreign investors (direct effect). In another hand, poorer governance also implies higher ownership by domestic monitoring shareholders and, as the ownership of these investors' increases, domestic investors become more overweight in domestic stocks, further limiting the portfolio investment of foreigners. Using both country-level data on U.S. investors' foreign investment allocations and Korean firm-level data, they found empirical evidence supporting the governance as an important factor that explains home bias.

Finally, Daly and Vo (2013), Mishra (2014) and Levis et al (2015) also examined the effect of the worldwide governance indicators on home bias. They found that investors prefer to invest in countries where there is better governance. Then, we predict in the present paper that home bias is due to governance indicators. We suppose the following:

H3: countries' governance affects negatively home bias

d. Equity market characteristics

Equity market characteristics are considered as an important factor that influences foreign investors' decisions. Daly and Vo (2013) consider that the size and the liquidity of equity market affect negatively the home bias. Khurana and Michas (2011) found that equity market development attracts foreign investors and then affect the home bias phenomenon. These authors stipulate that investors tend to invest more in larger capital markets, increased market liquidity and non-emerging market. Finally, Kim et al. (2014) found that equity market development is a major variable that could influence this phenomenon. Based on twenty two developed countries over the period 2001-2011, they found that market performance factors (market return, volatility and liquidity) affect home bias more strongly than do economic development factors. Then, we suppose that:

H4: Equity market developments affect negatively home bias

e. Capital control restrictions

Capital flow liberalization is considered as a key factor that attracts foreign direct investment. However, to control their national sovereignty some countries use capital controls. Errunza and Losq (1985), based on a cross sectional analysis, consider these restrictions as a friction that affects investors' choice and lead them to invest in domestic market rather than internationally. Errunza and Losq (1989) extended their model to N countries. They proved that capital controls prevent investors from international diversification and force them to hold domestic equities. Furthermore, Daly and Vo (2013) considered that the capital restrictions are important in explaining home bias.

However, Ahearne et al. (2004) found that while capital controls affect the distributions of international portfolios in a statistical sense, it

couldn't be an important explanation of home bias. Moreover, Solnik and Zuo (2014) Stipulated that the home bias is explained by behavioral factors and couldn't be driven by institutional factors (capital controls). Finally, Baccouri and Fedhila (2016) found that the capital controls don't explain the home bias. To investigate this relationship, the present study hypothesizes the following:

H5: Capital controls affect positively the home bias

3. RESEARCH METHODOLOGY

3.1. Measurement of Variables

a. Home Bias Equity

The present paper adopted the measure used by Fidora et al. (2007), Schoenmaker and Bosch (2008), Chen and Yuan (2011) and Baccouri and Fedhila (2016) and obtained from the CPIS "Coordinated Portfolio Investment Survey". The equity home bias is measured as the difference between the relative weight of domestic equity in the portfolio of country i and the relative weight of country i in the total world market portfolio. Then, the home bias is equal to:

$$HB = w_i - w_i^*$$

w_i = country i 's domestic asset / country i 's market capitalization

w_i^* = country's market capitalization / world market capitalization

Knowing that the weight w_i is country i 's share of domestic assets to its domestic equity portfolio, while w_i^* denotes the world portfolio.

b. Information asymmetry

Ahearne et al. (2004), Giofré (2009) and Cao and Ward (2014) emphasized that there isn't direct measures of information asymmetries. There is a proxy for their reduction. The present paper would employ the six proxies used by Giofré (2009) and Baccouri and Fedhila (2016). The first three variables are labeled "size" and the others three variables are labeled "trade". These six proxies are:

- Logarithm of Gross Domestic Product per capita ($\log(GDP/POP)$) indicates the market efficiency.

- M2 monetary aggregate over GDP: ($M2/GDP$) captures the financial sector development.

- The market capitalization over GDP ($MCAP/GDP$) associates the size of stock market capitalization to efficiency.

- The openness measures ($(IMP+EXP)/GDP$) captures the information factors.

- The export over GDP (EXP/GDP).

- The import over GDP (IMP/GDP).

It should be noted that the variables labeled "size" and "trade" would be assessed by doing a principal component analysis of these six proxies.

c. Economic indicators

Three variables are used to capture countries' economic stability. The present paper assumes that the economic stability of a country affects cross

border equity investment. The three variables are: (1) the inflation rate measured by the consumer price index, (2) real exchange rate volatility and (3) the growth rate of the gross domestic product.

d. Governance indicators

To measure this variable we employed the instrument developed by Kaufmann et al. (2011) and used by Daly and Vo (2011), Mishra (2014) and Baccouri and Fedhila (2016). The governance indicator includes six dimensions: (1) Voice and accountability, (2) Political Stability and absence of violence, (3) Government effectiveness, (4) Regulatory quality, (5) Rule of law, and (6) Control of corruption. This variable is expected to have a negative effect on home bias. In the present paper, we used the principal component analysis of these six governance indicators given the higher correlation between them.

e. Equity market characteristics

The equity market characteristics of a country influence the home bias. The present research supposes that more the equity market in a country is developed less is the home bias. To capture the equity market characteristics, three variables are used: (1) the equity market liquidity, (2) the stock

market index (annual % change) and (3) stock market classification.

f. Capital controls

Despite the fact that capital controls is reduced in many countries, many others countries still have restrictions on international capital flows. The present paper considers that investors prefer to invest in countries with fewer restrictions. To measure these restrictions imposed by countries on capital flows, we would follow Ferreira and Miguel (2011) and we will use the index created by the Economic Freedom Network. This index is calculated based on the international capital controls reported by the International Monetary Fund. High (low) values in this index indicate less (more) restrictions.

3.2. Sample

To operationalize our theoretical framework, we empirically tested it via countries included in the Coordinated Portfolio Investment Survey "CPIS". At the beginning, we started with 55 countries whose data are available during the period from 2003 to 2013. Nevertheless, it should be noted that the data linked to some variables wasn't available for some countries. Then, our sample consists of 564 observations (country-years). The countries included in our sample are:

Table 1. Countries included in our sample

Argentina	Colombia	Greece	Lebanon	Poland
Australia	Costa Rica	Hungary	Malaysia	Portugal
Austria	Cyprus	Iceland	Malta	Romania
Barbados	Czech Republic	Indonesia	Mauritius	Russian Federation
Belgium	Denmark	Israel	Mexico	Singapore
Brazil	Egypt	Italy	Netherlands	Slovak Republic
Bulgaria	Estonia	Japan	New Zealand	South Africa
Canada	Finland	Kazakhstan	Norway	Spain
Chile	France	Korea Republic	Pakistan	Sweden
Hong Kong	Germany	Kuwait	Philippines	Switzerland
Thailand	Turkey	Ukraine	United Kingdom	United States

3.3. Model specification

To operationalize our hypothesis, we estimate the following model:

$$HB_{it} = \alpha_1 + \alpha_2 IAR_{it} + \alpha_3 EI_{it} + \alpha_4 GI_{it} + \alpha_5 MC_{it} + \alpha_6 CC_{it} + \varepsilon_{it}$$

Where, HB is a measure of the home bias; IAR is composed by the different trade and size variables; GI indicate the six governance indicators; MC include the different proxies used to assess the equity market characteristics and the CC is a measure of capital controls imposed by countries.

4. INTERPRETATION OF RESULTS

Table 2 shows the different results of our regressions. Given the high collinearity between the different proxies of the information asymmetry (trade and size variables), we have made a principal component analysis. The table shows the regression results of home bias on trade and size variables,

governance indicators, economic indicators market characteristics and capital controls.

As expected, the trade and size proxies used to assess the information asymmetry reduction have a negative and significant effect on home bias. Then, we can validate our first hypothesis. Concerning, the second hypothesis it supposes that the economic indicators explain the home bias. In particular, we have assessed the effect of the inflation real exchange rate volatility, the growth rate of the gross domestic product on home bias. The results presented in the different column of table 2 show that only the growth rate of the gross domestic product affects positively home bias. This result confirms our expectations and the findings of Khurana and Michas (2011) that predict that this variable captures the overall economic volatility in a country and then implies a decrease of foreign investors and an increase of home bias.

The third hypothesis predicts that governance indicators reduce home bias. At the beginning, given the high collinearity between the six variables a principal component analysis was made.

Nevertheless, the results show that this variable (labelled GOV) doesn't affect the home bias despite the negative sign that we found. Thus, we decided to examine the effect of each indicator separately. As indicated in column 6, only the rule of law variable affects significantly the home bias. This variable captures as indicated by Kaufman et al. (2011) the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the tendency of crime and violence.

Concerning the equity market characteristics, in one hand, regression results show that foreign investors are attracted by developed market. This result stipulates that the risk decreases in developed market and consequently the home bias will decrease in the presence of such market. In another hand, we notice that the liquidity has a positive effect on home bias. Consequently, this result contradicts our expectations and the findings of Daly and Vo (2013), but confirms the results of Hamberg et al. (2013) that indicate that investors are encouraged to invest in small and transparent firms despite their illiquidity. Finally, the present paper rejects the fifth hypothesis that predicts that higher capital controls will increase home bias. Indeed, it should be noted that this variable was inversely measured. This variable is ranging from 0 (countries with higher restrictions) to 10 (countries with less restrictions). Then, it expects that the sign should be negative.

5. CONCLUSION

This paper examines the different determinants of home bias. Focusing on countries included in the Coordinated Portfolio Investment Survey "CPIS", our sample is composed by 564 observations (country-year) that cover the period 2003 to 2013. This paper communicates the evidence that home bias is driven by the information asymmetry that exists between countries and their economic volatility (assessed by the growth rate of the gross domestic product). Furthermore, our findings indicate that home bias decreases on developed market and in countries characterized by a higher rule of law.

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Appendix 1. Descriptive analysis

Table 2. Regression results

Variables	(1)hb	(2)hb	(3)hb	(4)hb	(5)hb	(6)hb	(7)hb
trade	-0.0361*** (0.0108)	-0.0381*** (0.0109)	-0.0379*** (0.0110)	-0.0349*** (0.0108)	-0.0381*** (0.0110)	-0.0348*** (0.0107)	-0.0362*** (0.0108)
size	-0.0883*** (0.0139)	-0.0895*** (0.0139)	-0.0909*** (0.0137)	-0.0897*** (0.0136)	-0.0909*** (0.0139)	-0.0835*** (0.0140)	-0.0904*** (0.0137)
icp	-0.00222 (0.00182)	-0.00203 (0.00182)	-0.00209 (0.00181)	-0.00236 (0.00183)	-0.00209 (0.00182)	-0.00240 (0.00182)	-0.00215 (0.00183)
reervol	0.000339 (0.000615)	0.000338 (0.000614)	0.000332 (0.000615)	0.000363 (0.000615)	0.000346 (0.000613)	0.000316 (0.000614)	0.000356 (0.000616)
gdpgrowth	0.00695*** (0.00136)	0.00686*** (0.00136)	0.00683*** (0.00135)	0.00692*** (0.00136)	0.00682*** (0.00136)	0.00687*** (0.00135)	0.00689*** (0.00137)
indibrsier	4.85e-05 (0.000115)	4.72e-05 (0.000115)	4.34e-05 (0.000115)	5.34e-05 (0.000115)	4.27e-05 (0.000115)	4.70e-05 (0.000115)	5.30e-05 (0.000116)
liquidity	0.000625*** (0.000111)	0.000619*** (0.000112)	0.000627*** (0.000110)	0.000636*** (0.000111)	0.000627*** (0.000110)	0.000611*** (0.000111)	0.000629*** (0.000111)
capctrol	0.0101*** (0.00329)	0.00970*** (0.00324)	0.00949*** (0.00320)	0.0104*** (0.00334)	0.00956*** (0.00329)	0.0107*** (0.00327)	0.00955*** (0.00324)
1.mc	-0.112*** (0.0384)	-0.120*** (0.0369)	-0.123*** (0.0362)	-0.112*** (0.0377)	-0.124*** (0.0373)	-0.0957** (0.0383)	-0.122*** (0.0375)
2.mc	-0.0386 (0.0373)	-0.0346 (0.0373)	-0.0320 (0.0374)	-0.0409 (0.0374)	-0.0331 (0.0378)	-0.0421 (0.0371)	-0.0380 (0.0377)
gov	-0.0107 (0.0108)						
va		-0.0157 (0.0272)					
psnv			-0.00413 (0.0162)				
ge				-0.0309 (0.0260)			
rq					-0.00374 (0.0275)		
rl						-0.0561** (0.0273)	
cc							-0.00988 (0.0207)
Constant	0.685*** (0.0358)	0.700*** (0.0364)	0.693*** (0.0351)	0.711*** (0.0367)	0.695*** (0.0386)	0.719*** (0.0360)	0.699*** (0.0351)
Observations	564	564	564	564	564	564	564
Number of country	53	53	53	53	53	53	53

Legend : Standard errors in parentheses; *** p<0.01; ** p<0.05; * p<0.1 ; hb : Home Bias (the dependent variable ; trade: the trade variable; size: the size variable ; gi: governance indicators; icp : inflation, consumer price; reervol : real exchange rate volatility; gdpgrowth : the growth rate of the gross domestic product; indibrsier : the stock market index; liquidity (annual %change); the equity market liquidity; capctrol : capital control ; 1.mc : this variable takes 1 if the market equity is classified by S&P as a developed market, 0 otherwise and 2.mc : this variable takes 1 if the market equity is classified by S&P as a frontier market, 0 otherwise; va :Voice and accountability; psnv :Political Stability and absence of violence; ge : Government effectiveness; rq : Regulatory quality; rl: Rule of law, and cc: Control of corruption.

Table 3. Numeric variables

Variable		Mean	Std. Dev.	Min	Max	Observations
Hb	overall	.721362	.2553944	0	1	N = 605
	between		.2333	-.0118182	1	n = 55
	within		.1081598	.0731802	1.128635	T = 11
Icp	overall	4.025737	3.479542	-2.5	25.29637	N = 605
	between		2.667401	-.0422978	10.22641	n = 55
	within		2.260528	-6.108534	19.39962	T = 11
Reervol	overall	5.463784	9.4718	.0049356	84.41906	N = 605
	between		5.861715	.7137931	26.50658	n = 55
	within		7.478246	-17.75356	70.29032	T = 11
Gdpgrowth	overall	3.010255	3.574675	-14.8	17.32	N = 605
	between		1.833881	-.8513931	7.136364	n = 55
	within		3.077476	-15.14662	14.6841	T = 11
Indibrsier	overall	17.47379	36.59847	-82.18989	189.23	N = 605
	between		8.884267	-2.774238	38.32101	n = 55
	Within		35.52217	-97.9334	179.099	T = 11
Liquidity	overall	53.70213	86.63824	.0224556	954.4281	N = 605
	between		77.6843	.3533553	500.1136	n = 55
	within		39.63898	-277.0504	508.0166	T = 11
Capctrol	overall	4.545802	2.660118	0	10	N = 605
	between		2.368786	0	9.16007	n = 55
	within		1.24819	-1.395387	9.227899	T = 11
Va	overall	.6879638	.7836858	-1.263728	1.82637	N = 605
	between		.7841056	-1.1107	1.643019	n = 55
	within		.0975756	.2714173	1.229105	T = 11
Psnv	Overall	.2926459	.9288634	-2.81208	1.664182	N = 605
	Between		.9121059	-2.302889	1.473787	n = 55
	Within		.2112439	-.67899	1.268986	T = 11
Ge	Overall	.8891951	.8528724	-.8742824	2.429651	N = 605
	Between		.8515525	-.6546519	2.172505	n = 55
	Within		.1193957	.4725941	1.626564	T = 11
Rq	Overall	.8602986	.7501599	-.9840401	-.9840401	N = 605
	Between		.7462817	-.7585509	1.91994	n = 55
	Within		.1225736	.3414672	1.264228	T = 11
Rl	Overall	.7570187	.9162838	-1.053395	1.99964	N = 605
	Between		.9189735	-.8556756	1.947305	n = 55
	Within		.0951092	.3293719	1.120933	T = 11
Cc	Overall	.7532786	1.051537	-1.095664	2.552692	N = 605
	Between		1.051126	-.9470351	2.454624	n = 55
	Within		.1384128	.1575243	1.304961	T = 11
Logppc	Overall	9.616959	1.083437	6.3	11.54	N = 605
	Between		1.052665	6.798182	11.27182	n = 55
	Within		.2899645	8.29605	10.74059	T = 11
M ² gdp	Overall	103.628	61.09618	21.07	335.26	N = 605
	Between		59.55743	28.69	298.8082	n = 55
	Within		15.63273	34.48068	155.1961	T = 11
Mcapgdp	Overall	81.49458	127.0971	2.770278	1254.465	N = 605
	Between		120.3109	5.310281	877.6416	n = 55
	Within		43.80202	-353.3553	458.3183	T = 11
Mgdp	Overall	46.71509	33.71636	10.21754	227.3453	N = 605
	Between		33.45952	12.56782	197.4521	n = 55
	Within		5.982389	8.297	76.60825	T = 11
Xgdp	Overall	47.96119	36.96409	9.037519	230.269	N = 605
	Between		36.70866	11.58068	209.2815	n = 55
	Within		6.413108	11.24501	71.04517	T = 11
Mxgdp	Overall	94.67629	70.12365	22.0903	455.2767	N = 605
	between		69.67752	25.7715	402.2996	n = 55
	within		11.94781	19.54201	147.6534	T = 11

Table 4. Categorical variables

mc	Overall		Between		Within
	Freq.	Percent	Freq.	Percent	Percent
0	194	34.40	19	35.85	93.30
1	270	47.87	27	50.94	90.91
2	100	17.73	13	24.53	82.52
Total	564	100.00	59	111.32	89.83

(n = 53)

Appendix 2. Bivariate analysis

Table 5. Correlation between governance indicators

	va	Psnv	Ge	Rq	Rl	Cc
va	1.0000					
Psnv	0.7386	1.0000				
Ge	0.7922	0.7309	1.0000			
Rq	0.8149	0.7393	0.9301	1.0000		
Rl	0.8289	0.7904	0.9549	0.9381	1.0000	
Cc	0.8075	0.7496	0.9554	0.9166	0.9603	1.0000

Table 6. Correlation between information asymmetry reduction variables

	logppc	m2gdp	mcapgdp	mgdp	xgdp	mxgdp
logppc	1.0000					
m2gdp	0.4512	1.0000				
mcapgdp	0.1903	0.4591	1.0000			
mgdp	0.0974	0.4068	0.6075	1.0000		
xgdp	0.1598	0.3643	0.6075	0.9685	1.0000	
mxgdp	0.1311	0.3876	0.6123	0.9914	0.9928	1.0000