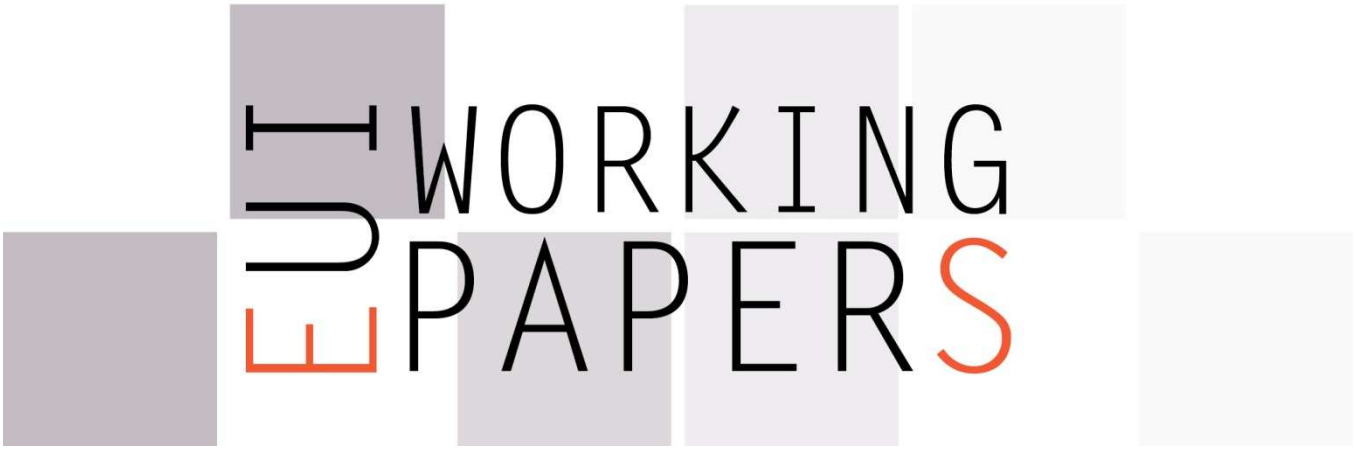

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Institutional Investors Flows and the Geography of Contagion

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Abstract

This paper explores the geography of portfolio flows emanating from institutional investors located in mature markets. We identify precise global and regional dynamics in equity and bond flows. Very few countries happen to receive (or lose) funding in isolation. We also find strong evidence of global contagion: although global waves originate in developed countries, emerging markets' funding is much more affected. We illustrate this finding by deriving "contagion maps" showing where contagion spreads and with what intensity. In general, our results suggest that "push" effects from advanced market investors affect massively developing countries.

Keywords: Capital flows, Institutional Investors, Mutual Funds, Contagion, Crises, Push-and-Pull factors.

JEL codes: F32, F36, G11, G15, G23.

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1 Introduction

Do institutional investors propagate shocks? and if yes, to who? Over the last decade, a growing literature has documented the ability of financial intermediaries to propagate shocks across borders, even in the absence of common fundamentals. Along with banks, the fund industry has attracted particular attention and is now recognized as an important vehicle of financial contagion[1]. To date, a number of empirical contributions have found compelling evidence of "contagious" portfolio rebalancing at the fund level, with adverse consequences for countries within the same portfolio.[2] Still, little is known about the geography of contagion. Where does contagion actually spread? Unfortunately, the existing literature has little to say about this issue. Recent research based on fund level data is usually restricted to a small set of investors, which makes it uneasy to derive general conclusions about contagion patterns.[3] In addition, most studies tend to focus on developing countries during crisis periods, leaving the impression that adverse phenomenons, such as sudden stops, surges or spillovers, are restricted to emerging markets in times of high financial stress. However, recent evidence has also pointed to fire sales (or purchases) from funds propagating shocks acrross mature markets, suggesting that such phenomena are in fact more general.[4] As a result, some important questions remain to be explored: How do "micro" patterns, such as contagious portfolio rebalancing or fire sales/purchases, translate at the macro level? Second, who is affected? Can we identify contagion patterns, or typical "spillovers" areas? Finally, what are the countries that are most sensitive to contagion?

This paper addresses these questions in three steps. As a starting point, we build on Jotikasthira, Lundblad and Ramadorai (2012) and use a novel dataset of weekly portfolio flows emanating from a vast number of equity and bond funds between 2001 and 2011. Unlike them however, we do not restrict our attention to global funds and use the full dataset (including hedge funds, ETFs and regional funds), thereby increasing

[1] For a discussion, see Gelos (2011).

[2] See in particular Kaminsky, Lyons and Schmukler (2004), Broner, Gelos, and Reinhart (2006), Boyer, Kumagai and Yuan (2006), Coval and Stafford (2007), Jotikasthira, Lundblad and Ramadorai (2012), Raddatz and Schmukler (2012).

[3] Kaminsky, Lyons and Schmukler (2004) study a sample of 13 Latin American funds, whereas Broner, Gelos, and Reinhart (2006) use data from 117 emerging market funds over 4 years.

[4] Hau and Luai (2013), Manconi, Massa and Yasuda (2012) both highlighted the role of equity and bond funds in propagating the great financial crisis.

significantly the industry and country coverage. As of 2011, the dataset was collecting information from more than 25,000 equity funds and 15,000 bond funds representing $15 trillion of assets invested in over 80 mature and emerging markets. When compared to CPIS data on year-end foreign portfolio investment holdings (equity and debt securities) at the country level, we find that these funds accounted altogether for, on average, 25% of total foreign portfolio investments. Second, to capture the complex dynamics of fund flows at the global level, we rely on large factor analysis and decompose the panels of bond and equity flows into world, regional and idiosyncratic components using a Bayesian dynamic latent factor model in the spirit of Kose, Otrok and Whiteman (2003). Coupled with an extensive dataset, this parametric decomposition allows us to identify the existence of both global or regional spillovers, as well as to derive a measure of sensitivity to different types spillovers (global or regional) for each country in our sample. Once on a map, such measures also generate an intuitive "contagion map" illustrating where contagion spreads and with what intensity. Finally, we build on these measures and investigate what determines, at the country level, such sensitivity to contagion. Building on different strands of literature, we consider a vast set of variables, ranging from typical macro variables (institutions quality, fiscal balance, sound money...) to corporate measures of transparency, and run a horse race between competing variables using two Bayesian averaging algorithms, namely the WALS methodology from Magnus, Powell and Prufer (2010) and the standard BMA popularized by Sala-i-Martin, Doppelhoffer and Miller (2004).

Our main findings are as follows. First, the model identifies very precise world and regional dynamics in equity and bond flows, with a substantial impact on all countries in our sample, including advanced markets. According to the variance decompositions, only a handful of countries happen to receive/lose funding in isolation. Second, we find strong evidence of both (i) regional contagion in bond flows and (ii) global contagion in both equity and bond flows. In the case of regional contagion, the model highlights the presence of a region grouping "all emerging markets", implying that emerging markets have a tendency to receive (or lose) funding at the same time, irrespective of their actual location or macroeconomic environment. This, in turn, is consistent with emerging market bonds being an asset class *per se,* in which investors herd when in search for yield, or retrench from when conditions deteriorate. In the case of global contagion, we find that, for both equity and bond flows, the global factor is driven by economic

news and financial stress conditions in developed countries, with periods of financial stress and poor macroeconomic outlooks in advanced markets being strongly associated with equity (or bond) outflows at the world level. However, although these global waves originate in developed countries, emerging markets' funding is much more affected by these changes than mature markets'. In the case of equity flows, we find that 75% of the variability of emerging markets funding is driven by these push factors originating in the domicile of funds. Using the "contagion maps" illustrates this finding nicely: we find that advanced countries are not substantially affected by global waves of inflows (or outflows) whereas almost all emerging markets at the periphery display very high sensitivity levels, both in relative and absolute terms. Third and finally, after investigating formally the determinants of such sensitivity to global contagion, we find that the level of political risk, as well as the distance between the location of the fund and the recipient country, are very robust correlates. In other words, when facing a shock at home, investors tend to cut (or increase) their exposure to risky countries to a greater extent. Our results suggest that distance and political risk act as the main "risk criteria" in the eyes of investors and managers, thereby exposing fragile emerging countries to sudden stops (or surges) from advanced market investors.

Taken together, our results are well connected to three different strands of the literature. First, we contribute to the empirical literature on international mutual funds. To date, most contributions had focused on finding evidence of destabilizing behaviour at the fund level, rather than on identifying contagion patterns.[5] Our results complement these studies by showing that such adverse behaviours at the micro level translate, in aggregate, into massive global and regional spillovers. To our knowledge, we are the first to map and quantify their impact on a global scale. Interestingly, we also find that extending the coverage in many dimensions (industry, time, space) does not necessarily invalidate the conclusions of studies based on micro level data. To the contrary, some findings, in particular from Raddatz and Shmukler (2012) and Jotikasthira *et al* (2013), seem to be at play the macro level: using data on global funds, both studies found that shocks originating at "home", *i.e* where funds are domiciled, translate into fire sales (and

[5] This includes overreaction (Kaminsky, Lyons and Schmukler (2004), Borensztein and Gelos (2003)), momentum trading (Grinblatt, Titman, and Wermers (1995), Froot, O'Connell, and Seasholes (2001)), herding (Wermers (1999), Choe, Kho, and Stulz (1999), Kim and Wei (2002), Hsieh *et al.* (2011)), fire sales (Coval and Stafford (2007), Jotikasthira *et al.* (2012)) or "contagious" portfolio rebalancing (Broner *et al.* (2006), Jotikasthira *et al.* (2012), Raddatz and Schmukler (2012)).

purchases) in countries within the same portfolio, in particular emerging markets. The high procyclicality of fund flows at the world level and the strength of global contagion in developing countries we observe in our sample strongly support such a transmission channel.

Second, the significance of political risk and geographic distance in scaling the sensitivity to contagion relates to a number of studies coming both from empirical finance and international macroeconomics. Until now, both strands had highlighted different variables to explain capital flows volatility.[6] Although we were unable to compare these studies directly, the horse race between all variables tend to reconcile both strands of literature. Better institutions, in the form a stable political environment, as well as lower information asymmetry, as captured by geographic distance, both seem to reduce the sensitivity of countries to sudden stops (or surges) from international investors. On the other hand, the significance of distance against other measures of transparency suggests that *soft* measures of information asymmetry might play a stronger role than *hard* measures of transparency at the level of fund managers.

Third and finally, our results have important implications for the so-called "push-vs-pull" factor debate[7]. Using variance decompositions, we found that (global or regional) push factors clearly dominate portfolio investments. This limited role for pull factors contrasts with existing studies, in particular Fratzscher (2012) who relied on the same dataset. We argue that the difference partly stems from the strength of regional dynamics in our model, a component that is missing in all push *vs* pull factor decompositions, including Fratzscher (2012). This, in turn, suggests that past studies probably overestimated the impact of pull factors. Overall, our results also downplay the relevance of the theoretical literature that has emphasized the role of purely domestic growth/productivity shocks in driving capital flows. To the contrary, our findings appear more in line with the most recent case studies that foundd little or no role for domestic macroeconomic conditions

[6] Broner and Rigobon (2005) showed that better institutions can help reducing capital flow volatility. Using fund level data, Gelos and Wei (2005) reported that during crises, funds tend to flow more from less transparent countries and that herding is more pronounced in less transparent markets. Ferreira and Matos (2008) also emphasized the importance of corporate transparency, showing that institutional investors reveal a preference for stocks of countries with strong disclosure standards.

[7] For early contributions on this debate see Calvo *et al* (1993, 1996), Chuhan *et al* (1998), Fernandez-Arias (1998), Kim (2000), Griffin, Nardari and Stulz (2004). See Forbes and Warnock (2012) for a thorough review and additional references.

in driving financial investments.[8]

The remainder of this paper is organized as follows. Section 2 presents the dataset and important stylized facts. Section 3 details the econometric framework and main results. Section 4 discusses the geography and determinants of contagion. Finally, Section 5 concludes.

2 Dataset and Stylized facts

2.1 EPFR Portfolio flows dataset

The portfolio investment dataset used in this paper is provided by the EPFR global, a private company tracking the performance and asset allocation of a vast number of equity and debt funds located in developed countries and offshore financial centers.[9] Funds covered include Mutual funds, Exchange-traded-funds (ETFs), Closed-end funds and Hedge funds. As of January 2013, the EPFR global was collecting information from more than 29,000 equity funds and 18,000 bond funds representing $19 trillion of assets invested in over 80 mature and emerging markets.[10] To help interpreting this magnitude, we used CPIS data on year-end foreign portfolio investment holdings (equity and debt securities) at the country level and compared them with the sum of assets covered by EPFR in each of these countries. As of 2011, we find that EPFR funds accounted for, on average, more than 25% of total foreign portfolio investments at the country level.[11]

The amount of information provided by the EPFR global is vast, ranging from individual fund performance ratios to geographic allocation of bond (or equity) portfolios. However, as our purpose is to understand the evolution of international funding at the country level, this paper uses only one data category - "net country flows" - which is

[8] See for instance Alper (2000) in the case of Turkey and Mexico, or Kim (2000) for Chile, Mexico, Korea and Malaysia.

[9] As of 2007, 46% of funds in the EPFR sample were domiciled in the US, 27% in Luxembourg, 9% in the UK and 4% in Ireland.

[10] Appendix A provides a decomposition of total assets under management (AUM) by fund group.

[11] This representativity varies significantly across countries and across assets. In particular, the coverage is higher (i) for equity investments and (ii) emerging countries. See Appendix A for a complete overview.

constructed as follows: for each period and for each fund, EPFR collects the amount of cash flowing in and out of the fund, as well as the share allocated to each country within the fund. Once aggregated across funds and sorted by recipient country, the sum of these flows determines the "net country flow", which provides the amount of capital lost (or received) by the country over the reference period, net of injections/redemptions, portfolio performance and currency fluctuations. Figures 1 and 2 below report the monthly country flows computed by the EPFR, distinguishing between equity and bond flows. Equity flows are available from 1996 to 2011 whereas bond flows are reported only from 2003 onwards. For simplicity, both types of flows are presented at the regional level.[12] Moreover, to facilitate the interpretation, net country flows are adjusted by the total level of Asset Under Management (AUM), which reports the stock of assets invested in the recipient country at the beginning of the month. Hence, a drop of 3% in country i at month t implies that country i "lost" 3% of the total funding that was invested at the end of the previous month, in $t-1$. Besides facilitating the interpretation, the level of AUM acts as an important scale variable which allows to control for the size of the economy as well as for changes in the sample of the funds covered.[13]

Before exploring further the geography of international portfolio flows, we emphasize the key strengths of the EPFR global dataset, in particular compared to other financial flows sources. First, flows are reported at a high frequency, which allows to better monitor investors and managers response to economic shocks.[14] Second, the EPFR global offers a wide industry and geographic coverage which goes a long way in addressing some of the shortcomings of the existing literature. On the one hand, using a vast range of investors offers a better assessment of institutional investors' impact at the global level. To date, evidence of destabilizing behaviour from international investors has been restricted to small samples of funds.[15] As a result, it is hard to know what the aggregate consequences

[12] Countries in the different regions are reported in Appendix A.

[13] EPFR gradually expanded its coverage to include more funds over time. Using the lagged level of assets invested allows us to control for this upward bias in the sample size. Therefore, in the remainder of the article and except when explicitly specified, inflows and outflows are always adjusted (%AUM).

[14] Traditional BOP data are available only at a quarterly frequency, whereas the Coordinated Portfolio Investment Survey provide only year-end data on portfolio investment holdings. Chan, Covrig and Ng (2005) and Hau and Rey (2008) use data on mutual fund holdings from Thomson Financial securities that are limited to semi-annual observations. Such frequencies are better suited for "stock" analysis, such as home bias, than flow analysis.

[15] Kaminsky, Lyons and Schmukler (2004) study a sample of 13 Latin American funds whereas Broner, Gelos, and Reinhart (2006) use data from 117 emerging market funds over 4 years. Jotikasthira *et al.*

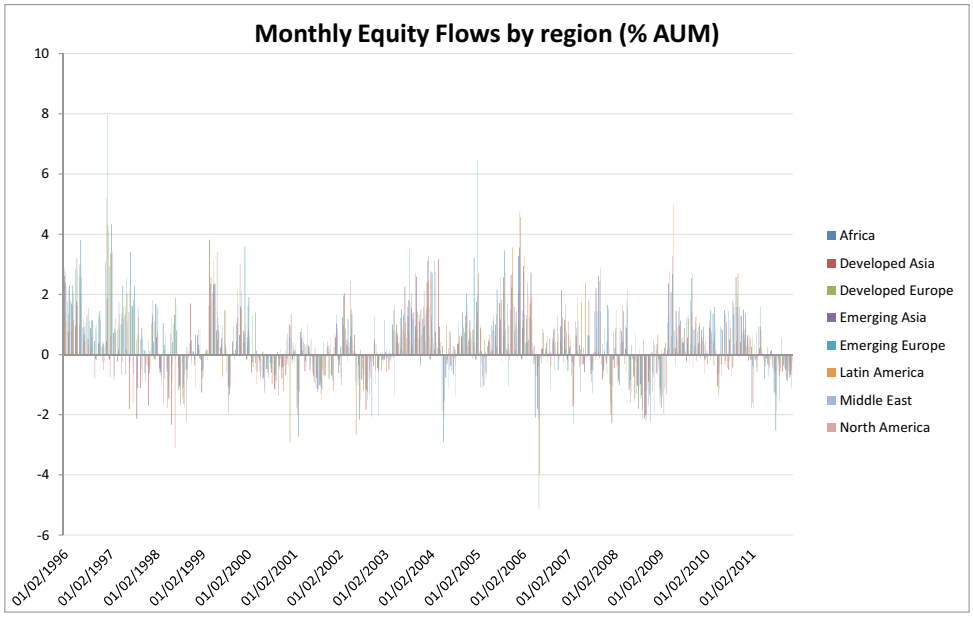


Figure 1: Portfolio Equity Flows 1996 - 2011

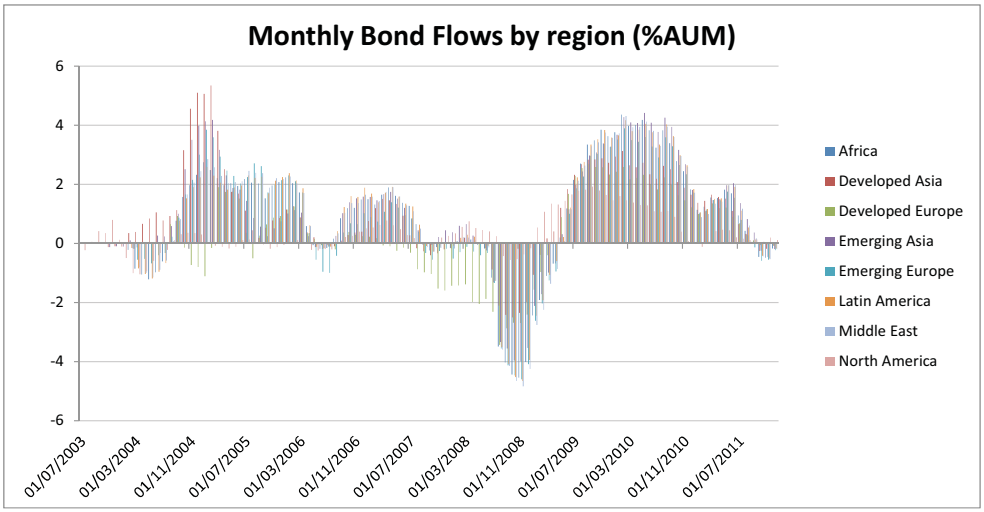


Figure 2: Portfolio Bond Flows 2003 - 2011

of these micro behaviours are and how they translate into adverse phenomenons, such as global waves or regional spillovers. In fact, it is even unclear whether contagion is robust to the inclusion of other types of traders, in particular those that are known to act contrarian to the market (such as hedge funds).[16] On the other hand, the vast country and time coverage permits the identification of spillovers (i) at the world level and (ii) during tranquil periods. To our knowledge, most empirical studies have focused on subsets of the world and/or crisis events, leaving the impression that contagion and spillovers affect exclusively emerging markets during episodes of high financial stress.[17] An important finding of this paper will be to show that the spillovers are in fact more general, insofar as they extend to advanced markets and to normal times.

2.2 Stylized facts: Cycles and Spillovers in Portfolio flows

Given the dimension of the dataset used in this paper, this section first summarizes the important properties of international portfolio flows emanating from institutional investors between 1996 and 2011. Two features, in particular, are highlighted for both equity and bond flows: (i) the cyclical behaviour of fund flows (ii) the strong degree of co-movement across countries. We provide more formal evidence supporting these two stylized facts and discuss their implications for the geography of international investors flows.

As a first step, we build on Bry and Boschan (1971) and apply the following filter to monthly equity and bond flows at the country level:

- Step 1: Months of inflows/outflows are first identified using a dummy variable which takes the value 1 if the flow is positive and -1 if the flow is negative. Formally, defining $y_{i,t}$ as the flow of asset (% AUM) to country i in month t, we create the indicator variable $D_{i,t}$ defined as:

(2012) consider a bigger set of funds, but restrict attention only to global funds.

[16] Massa, Simonov and Yan (2012).

[17] Broner *et al.* (2006) study the behaviour of equity funds only during emerging market crisis. Boyer, Kumagai and Yuan (2006) also find evidence of contagion contrasting the behavior of investable and non-investable indices during crises. See also Kim and Wei (2002)

$$D_{i,t} = 1 \quad if\ y_{i,t} \geq 0$$

$$D_{i,t} = -1 \quad if\ y_{i,t} < 0$$

- Step 2:
  - Periods of sustained inflows or outflows are respectively defined as a "*Surge* phase" or a "*Retrenchment* phase" if they last at least 2 consecutive months;
  - Alternatively, periods over which a month of inflows alternate with a month of outflow qualify as "*Undefined* phase"

- Step 3: Finally, we define $S_{i,t}$ a "phase" variable taking value 1 if country i at time t experienced a *Surge* phase, and 0 if it experienced a *Retrenchment* phase.

Using the variable $S_{i,t}$, we first compute summary statistics about phases characteristics at the regional level in tables 1 and 2. This includes the number of phases, the average duration of phases (in months) and the average gain (or loss) over each phase (in % of AUM). To study the co-movement properties of portfolio flows, we then compute a diffusion index as derived in Harding and Pagan (2002, 2006). Formally, the diffusion index measures the *share of countries,* in our sample, experiencing the same phase each month. For the case of retrenchments, the index is computed as follows:

$$Diff_t = \sum_1^N w_{i,t} F_{i,t}, \quad where \sum_1^N w_{i,t} = 1 \, and \, t = 1, ..., T$$

where $w_{i,t}$ is the weight assigned to *i-th* country at time t, $F_{i,t}$ is a binary variable taking the value 1 if the *i-th* country experiences a retrenchment and 0 otherwise, and N is the cross-sectional dimension. In what follows, we assume an equal weight of $1/N$ for all countries. The diffusion index for Surges is simply one minus the diffusion index for Retrenchments. Figures 3 and 4 report the diffusion index for both equity and bond datasets.

	Number of Months		Phase Analysis: Number of Phases		Duration (in months)			Average Cumulative loss/gain (%)	
	Inflows	Outflows	Surge	Retrenchment	Surge	Retrenchment	Assymetry	Surge	Retrenchment
	(1)	(2)	(3)	(4)	(6)	(7)	(8) (6)/(7)	(9)	(10)
Developed	**97.3**	**75.3**	**9.0**	**9.0**	**9.8**	**7.4**	**1.3**	**6.4**	**-5.1**
Asia	104	87	9	9	10.3	8.2	1.26	8.9	-7.9
Europe	120	71	9	8	12.6	7.4	1.70	7.5	-4.5
North-America*	68	68	9	10	6.6	6.5	1.01	2.9	-3.1
Emerging	**117.6**	**73.4**	**14.0**	**11.6**	**8.1**	**5.2**	**1.6**	**15.9**	**-9.8**
Africa	129	62	16	13	7.9	3.9	2.02	14.4	-9.3
Emerging Asia	116	75	14	11	7.6	4.8	1.59	15.1	-9.6
Emerging Europe	116	75	14	10	8.2	5.8	1.42	20.7	-10.5
Latin America	105	86	12	12	8.1	6.8	1.18	16.8	-10.0
Middle East	122	69	14	12	8.6	4.8	1.80	12.4	-9.7

*only 136 months

Table 1: Summary Statistics - Regional Equity Cycles

	Number of Months		Phase Analysis: Number of Phases		Duration (in months)			Average Cumulative loss/gain (%)	
	Inflows	Outflows	Surge	Retrenchment	Surge	Retrenchment	Assymetry	Surge	Retrenchment
	(1)	(2)	(3)	(4)	(6)	(7)	(8) (6)/(7)	(9)	(10)
Developed	**64.0**	**31.7**	**4.3**	**4.3**	**12.6**	**4.5**	**3.8**	**6.6**	**-5.3**
Asia	71	25	5	5	14.0	4.6	3.0	8.7	-5.1
Europe	51	36	5	5	9.8	7.0	1.4	8.2	-7.8
North-America	70	34	3	3	14.0	2.0	7.0	2.8	-3.1
Emerging	**66.2**	**27.4**	**4.2**	**4**	**15.4**	**5.2**	**3.0**	**8.9**	**-8.1**
Africa	67	26	4	4	16.5	5.5	3.0	8.3	-7.8
Emerging Asia	70	26	5	4	13.2	5.0	2.6	10.4	-6.7
Emerging Europe	59	34	4	4	14.3	6.5	2.2	8.9	-6.8
Latin America	67	26	4	4	16.5	4.5	3.7	8.5	-9.4
Middle East	68	25	4	4	16.5	4.5	3.7	8.5	-9.8

Table 2: Summary Statistics - Regional Bond Cycles

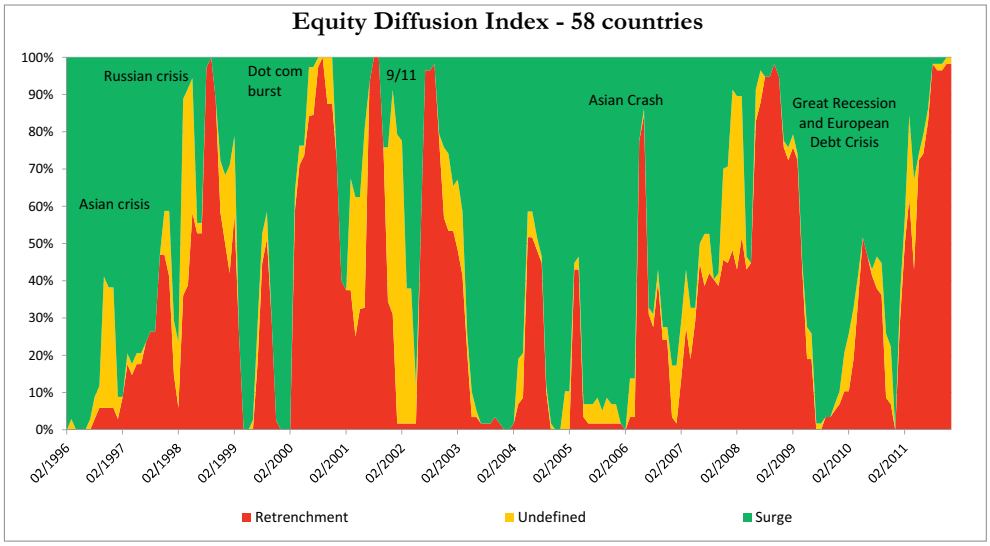


Figure 3: Cross Country Diffusion Index - Equity Flows

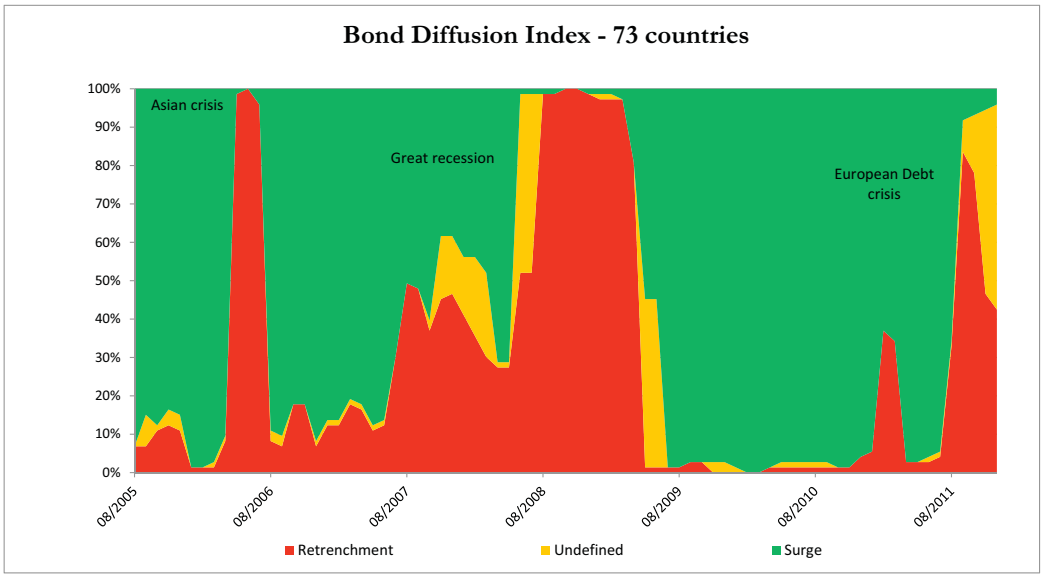


Figure 4: Cross Country Diffusion Index - Bond Flows

Table 1 highlights some important properties of equity flows between 1996 and 2011. First, the algorithm identifies a strong cyclical pattern, with on average 18 phases identified for developed regions and 25 phases for emerging regions, leaving only around 10% of the sample out of the "phase" identification framework.[18] Second, periods of "retrenchment" are significantly shorter, suggesting that investors leave countries faster than they enter. Third, developed regions tend to have fewer and more protracted phases than emerging markets. Fourth and finally, there is a stark difference in the amplitude of the phases across regions.[19] During surge phases, emerging regions tend to gain more than twice as much funding than developed economies. However, they also tend to lose twice as much during retrenchment phases. Taken together, these findings suggest that emerging regions experience higher "volatility" insofar as they experience more phases of shorter length and of greater amplitude. Looking at table 2, we find that most of the stylized facts highlighted above also characterize bond flows. In particular, we still observe (i) a strong cyclical pattern (ii) a sharp asymmetry in the duration of surge *vs* retrenchment phases, and (iii) a greater amplitude of phases in the case of developing regions. It is important to note however that the bond sample is significantly shorter than the one used for equity flows for some regional aggregates are only available from 2005 onwards.[20] More importantly, most of the sample covers the Global Financial Crisis (henceforth GFC), implying that the stylized facts are not easy to generalize. In fact, the behaviour of bond flows over these years might reflect more the peculiarity of the period than any structural difference in the behaviour of this asset class.

Figures 3 and 4 highlight the other important finding, namely the co-movement of flows at the country level. Note that by construction, a value close to 0 of the diffusion index indicates that countries all tend to experience phases of surges, whereas a value close to 1 suggests that all countries experience a retrenchment phase. Most notably, the index is often takes extreme values (close to 1 or 0), implying that most of the sample moves in the same direction, i.e either receiving/losing funding at the same time. This finding is true for both bond and equity flows. Not surprisingly, we also find that most periods of retrenchment are associated with notable financial events. Figures 3 and 4 allow us to

[18] More precisely, the number of months categorized as undefined accounts for only 10% of the sample for each region. Results available on request.

[19] We refer to "amplitude" loosely to designate the cumulative loss or gain over a phase.

[20] Although some regional flows are reported from 2003 (see Figure 2), all seven regions are in fact reported consistently only from 2005 onwards. Therefore, the stylized facts are computed using only data from 2005.

track the consequences of the major financial and economic shocks of the past 15 years on both equity and bond flows.

Taken together, these findings bring new evidence on the behaviour of international portfolio flows emanating from the fund industry. We find that they (i) exhibit a strong cyclical behaviour and (ii) they co-move substantially across countries. Moreover, emerging countries exhibit a high volatility insofar as they experience cycles with more phases, of shorter length and of greater amplitude. At the same time, they raise important questions as to the geography of fund flows. The strong level of synchronization of flows, in particular, suggests the presence of spillovers affecting some (if not all) countries in our sample. To further explore the dynamics and geography of portfolio investments, we build on large factor analysis and decompose bond and equity flows into world, regional and country-specific components.

3 Econometric Model

In this section, we build on Kose, Otrok and Whiteman (2003) and estimate the following latent factor model:

$$y_{i,t} = \beta_i^w f_t^w + \beta_i^r f_{j,t}^r + \varepsilon_{i,t} \qquad (1)$$

where $y_{i,t}$ is the (demeaned) flow of funds (equity or bond) in country i at time t at a monthly frequency, f_t^w is the (unobserved) world factor affecting all countries in our sample at time t, $f_{j,t}^r$ is the (unobserved) regional factor affecting all countries belonging to region j at time t, and β_i^w and β_i^r designate country-specific factor loadings measuring the responses of country i to the world and regional factors respectively. Finally, $\varepsilon_{i,t}$ is an unobserved country-specific factor. Note also that observations in the vector $y_{i,t}$ are measured as % of total AUM so that they report the loss (or gain) over month t with respect to the level of asset invested in the country in month $t-1$.

Because we allow factors to follow AR processes, the model in (1) is in fact a dynamic latent factor model. More precisely, we assume that the idiosyncratic factors follow an $AR(p)$ process:

$$\varepsilon_{i,t} = \rho_{i,1}\varepsilon_{i,t-1} + ... + \rho_{i,p}\varepsilon_{i,t-p} + u_{i,t} \qquad (2)$$

where $u_{i,t} \sim N(0, \sigma_i^2)$ and $E(u_{i,t}, u_{i,t-s}) = 0$ for $s \neq 0$ and world and regional factors follow the respective $AR(q)$ processes:

$$f_t^w = \rho_1^w f_{t-1}^w + ... + \rho_q^w f_{t-q}^w + u_t^w \qquad (3)$$

$$f_{j,t}^r = \rho_{j,1}^r f_{j,t-1}^r + ... + \rho_{j,q}^r f_{j,t-q}^r + u_{j,t}^r \qquad (4)$$

where $u_t^w \sim N(0, \sigma_w^2)$, $u_{j,t}^r \sim N(0, \sigma_{j,r}^2)$, $E(u_t^w, u_{t-s}^w) = E(u_{j,t}^r, u_{j,t-s}^r) = 0$ for $s \neq 0$. Finally, shocks in (2)-(4) are fully orthogonal to each other.

Because factors are unobservable, standard regression methods do not allow the estimation of the model. As a consequence, we rely on Bayesian techniques with data augmentation as in Kose, Otrok and Whiteman (2003) to perform the estimation. As a first step, we normalize the sign of the factor/loadings by (i) restricting the loading on the world factor for the first country in our sample to be positive and (ii) restricting the loadings on the regional factor for one country in each region to be positive. Second, to normalize the scales, we assume that each of the factor variances (σ_w^2 and $\sigma_{j,r}^2$) is equal to 1. Note that these normalizations do not affect the qualitative results and simply allow the identification of the model. In addition, we use Bayesian techniques with data augmentation to estimate the parameters and factors in (1)-(4). This implies simulating draws from complete posterior distribution for the model parameters and factors and successively drawing from a series of conditional distributions using a MCMC procedure. Posterior distribution properties for the model parameters and factors are based on 300.000 MCMC replications after 30.000 burn-in replications.

A key ingredient is the choice of the priors in the estimation. Once again we follow Kose, Otrok and Whiteman (2003) and use the following conjugate priors:

$$(\beta_i^w, \beta_i^r)' \sim N(0, I_2) \qquad (5)$$

$$(\rho_{i,1}, ..., \rho_{i,p})' \sim N(0, diag(1, 0.5, ..., 0.5^{p-1})) \qquad (6)$$

$$(\rho_1^w, ..., \rho_q^w)' \sim N(0, diag(1, 0.5, ..., 0.5^{q-1})) \qquad (7)$$

$$(\rho_{j,1}^r, ..., \rho_{j,q}^r)' \sim N(0, diag(1, 0.5, ..., 0.5^{q-1})) \qquad (8)$$

$$\sigma_i^2 \sim IG(6, 0.001) \qquad (9)$$

with $i = 1, ..., N$ and IG denoting the inverse Gamma distribution, implying a rather diffuse prior on the innovations variance. Finally, we assume that AR processes in (2)-(4) are stationary. In our implementation, we set the length of both the idiosyncratic and factor autoregressive polynomials to 2. However, other (non-zero) values for p and q were tried with no substantial differences in the results.

Before turning to the results, we mention that beside the estimation of the factors and loadings, we are interested in measuring the influence of the different factors on each country's level of international portfolio funding. Therefore, we will pay particular attention to the variance decompositions for each country in our sample. Given that factors are orthogonal to each other, we can compute θ_i^w as follows:

$$\theta_i^w = (\beta_i^w)^2 var(f_w^t)/var(y_{i,t}) \qquad (10)$$

$$\text{where } var(y_{i,t}) = (\beta_i^w)^2 var(f_w^t) + (\beta_i^r)^2 var(f_{j,t}^r) + var(\varepsilon_{i,t})$$

θ_i^w reports the proportion of total variability in country's i funding attributable to the world factor. θ_i^r and θ_i^c are defined similarly and measure the share of variance captured by the regional and country-specific factors, respectively. As we shall see, these variance decompositions provide a natural measure of a country's sensitivity to different types of spillovers.

3.1 Data and Regional Decomposition

Following Jotikasthira *et al.* (2012), we address potential data issues by we rearranging the "raw" country flows dataset in several standard ways. First, to avoid data errors, misreporting or outliers, country flows are considered only (i) for countries for which flows are consistently reported throughout the sample period (ii) for countries experiencing a change in AUM over one month strictly smaller than 50% in absolute value.[21] Second, funds for which no geographic allocation information is available, *i.e.* for which no sufficient information exists on the countries in which assets are invested, are also excluded. After this standard data cleaning, the equity sample ranges from 2001 until 2011 (121 months) and covers 58 countries for a total of 7018 observations. The bond model ranges only from 2005 until 2011 (77 months) and covers 73 countries, for a total of 5621 observations.

As a benchmark, equity and bond models are estimated using the 7 regions provided, by default, by the EPFR global, namely: (i) North America (ii) Latin America (iii) Developed Europe (iv) Emerging Europe (v) Africa and Middle East (vi) Developed Asia and (vii) Emerging Asia. It is important to note however that this regional decomposition is just one out many possible regional decompositions. In particular, one might think of many other potential classifications based on, *inter alia*, trade zones, currency zones, common language or risk profile. In an application of factor models to international business cycles, Kose *et al* (2003) used geographical regions because countries that are physically close to each other are likely to be highly connected through trade. In our framework, the case for geographical regions is not as straightforward. On the one hand, investors might still invest in (or exit) regions because they anticipate that geographical regions move together, supposedly because of trade or financial connections. Moreover, the presence of so-called "dedicated funds" that have restricted mandates to invest only in particular regions of the world also supports the use of geographical regions. On the other hand, many global funds or funds with a thematic focus - such as high-yield bond funds or sector-specific funds - are known to enter (or leave) subsets of countries with no clear geographic or economic links. If the latter were to dominate in our sample, then geographical regions could end up being a rather poor proxy of the true regional

[21] This minimizes the influence of potential outliers. Moreover, it discards countries with extremely low level of portfolio investment.

decomposition. Although evaluating the full set of competing regional breakdown is far beyond the scope of this paper, both models are also re-evaluated using two alternative regional groupings, each of them representing an extreme "paradigm": (i) a geographic decomposition and (ii) a development decomposition.[22] The performance of the models under these three regional decompositions are then compared using as a criteria (i) the increase in the share of variance accounted for by the regional factor (ii) the precision of (estimated) regional factors.

3.2 Results

3.2.1 World Factors and Factor Loadings

Estimated world factors for equity and bond flows are plotted respectively in Figures 5 and 6. For simplicity, country-specific world factor loadings for the full sample of countries are reported in Appendix B.

Both Figures 5 and 6 highlight important findings. First, we find that in both models the interval between the dashed lines - which delineate the 0.05 and 0.95 quantiles for the posterior distribution - and the solid line is very narrow, implying that the world factor is estimated precisely and that there is clear common driving force in international portfolio funding. Second, the cyclical behavior of the world factors is apparent in both figures, although the longer time series available for the equity model highlights this feature more clearly. To emphasize this cyclical behavior further, Figures 7 and 8 decompose the world factors in periods of global surges (in green) and global retrenchments (in red). Doing so, we see clearly that periods of global inflows and outflows tend to alternate, although the length of the cycles differs over time. Finally, a look at the factor loadings shows that, for both equity and bond flows: (i) all countries have a positive coefficient and (ii) emerging markets tend to have a higher coefficient. In other words, although all countries move in the same direction after a unit deviation in the world factor (either receiving/losing funding), the magnitude of the change is greater for developing or emerging markets.

[22] The geographic paradigm assumes 5 regions: (i) North America (ii) Latin America (iii) Europe (v) Africa and Middle East (vi) Asia. The development paradigm assumes only two regions, namely (i) developed countries and (ii) developing/emerging markets.

This, in turn, confirms the higher amplitude of both surge and retrenchment phases in emerging regions highlighted in Section 2.

What might cause all investors to invest - or liquidate their positions - at the international level? To gain some insight about what the world factor is capturing, we first plot the world factors against notable economic and financial events in Appendix B. This qualitative analysis reveals that waves tend to be generated by major financial stress events and/or changes in macroeconomic conditions in developed economies. In particular, the US recession of the early 2000, the accounting scandals or the Great Recession coincided with phases of massive global equity outflows. Similarly, interest rate hikes or unexpected changes in the economic outlook in major markets - such as the EU or the US - seem to have provoked global retrenchments in 2004, 2005 and 2006.[23] Conversely, declines in financial stress, low interest rates or good economic news triggered global waves of equity inflows. A very similar picture emerge for bonds flows although bond flows reacted only after Lehman's bankruptcy in September 2008.

To confirm formally the importance of financial stress, interest rates and macroeconomic conditions in driving the direction of global portfolio flows, we regress the equity and bond world factors on a set of explanatory variables mapping these different dimensions. Table 3 and 4 report the results of a regression of world factors on (i) the Financial Stress Index computed by the Kansas City Fed (henceforth KCFSI)[24] (ii) the level of global interest rates measured as the unweighted average of long-term government bonds in the United States, Euro area and Japan and (iii) economic news shock series in the G10 countries measured by the Citi Index of Economic surprises.[25] Given the importance of inflation for bond investors, we also use a global inflation news shock series for the bond factor regression.[26] Both levels and differences of the variables are considered when relevant.

[23]The US Federal reserve hike by 25 basis point in early 2006 triggered massive equity outflows, in particular from Asian emerging markets. Between May and July 2006, Asia Pacific stock markets experienced their biggest decline since 2002.

[24]The Kansas City Fed is a monthly measure of stress in the US financial system based on 11 financial market variables and captures both liquidity conditions and risk appetite. For a review of the methodology, see Hakkio and Keaton (2009).

[25]The Citigroup Economic Surprises index are defined as a weighted historical standard deviation of data surprises. A positive reading of the index implies that economic releases have on balance been better than the market consensus.

[26]the global inflation news shock is computed as the unweighted average of the G10 and Emerging Markets Citi index of Inflation data surprises.

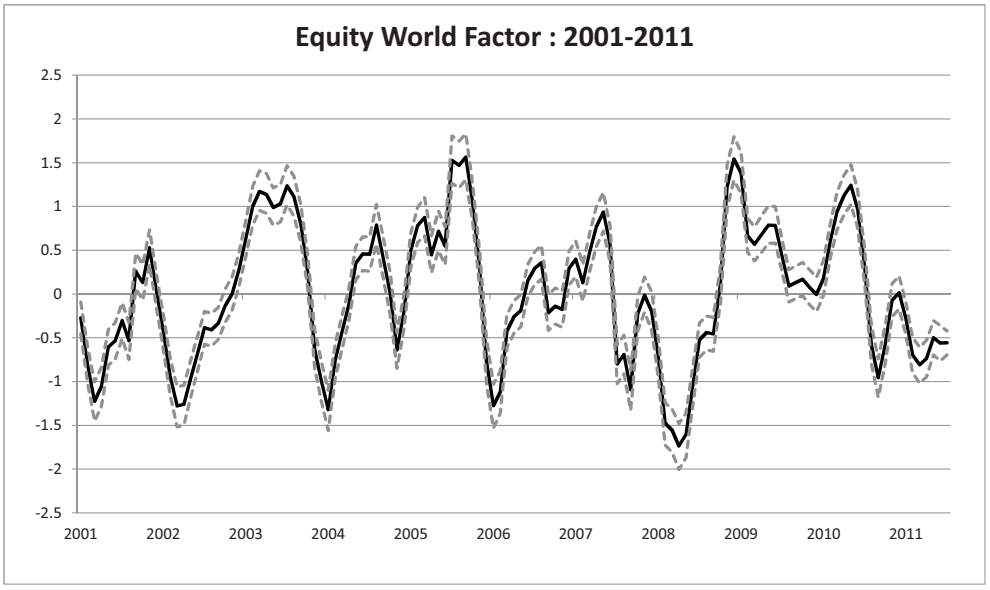


Figure 5: World Factor - Equity

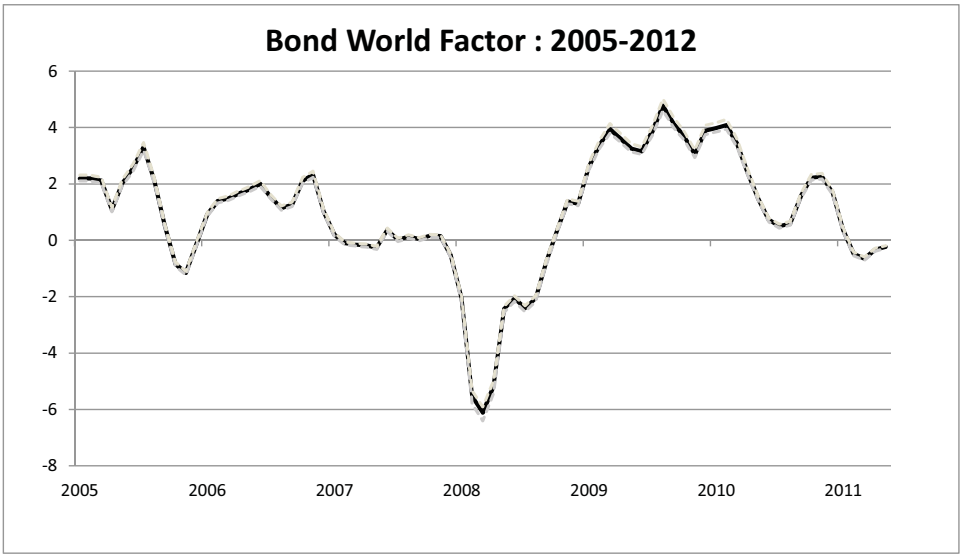


Figure 6: World Factor - Bond

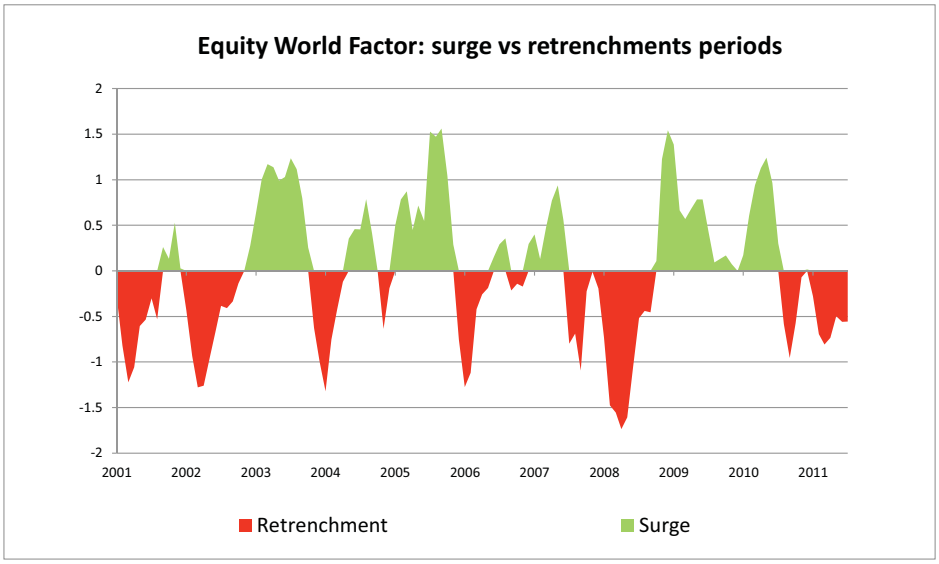


Figure 7: World Factor - Equity

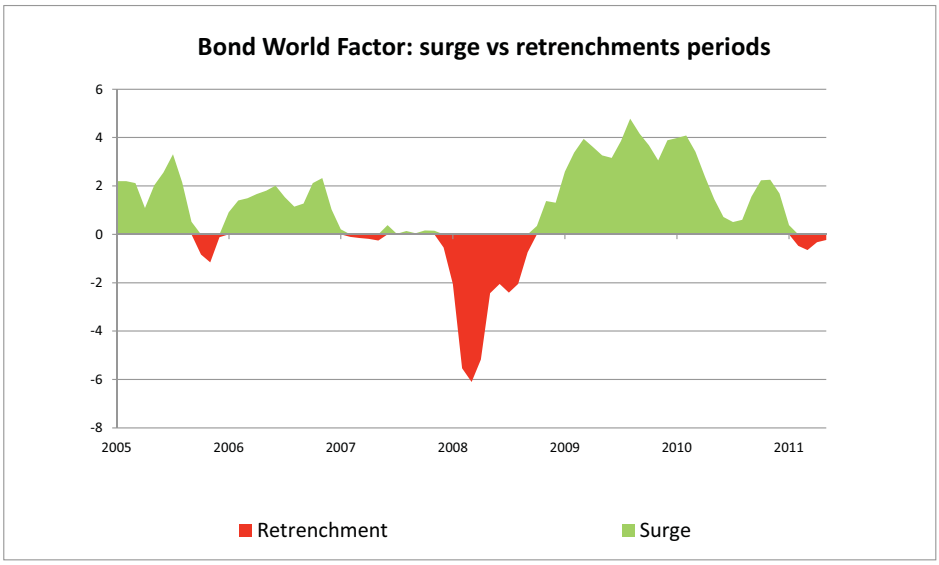


Figure 8: World Factor - Bond

Variables	Full Sample (2001-2011)	Sub-Sample 1 (2001-2007)	Sub-sample 2 (2007-2011)
KCFSI	-0.09*	**-0.5*** **	0.04
ΔKCFSI	**-0.46*** **	-0.29	**-0.53*** **
G10 Economic News	**0.007*** **	0.006*	**0.01*** **
Global Int. Rates	-0.33**	**-0.87*** **	-0.16
ΔGlobal Int. Rates	0.25	0.5	-0.17
constant	0.99**	2.7***	0.35
R-Square	0.26	0.38	0.37
N	126	73	53

*p-values are computed using heteroskedasticity-robust standard errors. *, ** and *** indicate respectively 10%, 5% and 1% significance thresholds.*

Table 3: Equity World Factor - Regression Results

Variables	Full Sample (2005-2011)	Sub sample (2007-2011)
KCFSI	-0.03	-0.03
ΔKCFSI	**-0.3*** **	**-0.29** **
G10 Economic News	**0.004***	**0.004***
Global Inflation	**-0.030*** **	**-0.035*** **
constant	0.07	0.08
R-Square	0.43	0.63
N	77	57

*p-values are computed using heteroskedasticity-robust standard errors. *, ** and *** indicate respectively 10%, 5% and 1% significance thresholds.*

Table 4: Bond World Factor - Regression Results

Looking at Tables 3 and 4, we find that all regressors help to explain the waves of portfolio flows, although some types of shock seem to matter more in crisis periods than during normal times. For the global equity factor, we find that, using the full sample, increases in financial stress and (unexpected) poor economic outlook in advanced markets are strongly associated with global outflows. Using only the sample before the GFC, the level of financial stress and the level of global LT interest rates become significant at the 1% level. Finally, changes in the level of financial stress and global economic news clearly dominate other regressors over the GFC period. One way to interpret these results is that during normal times, the level of financial stress as well as the level of global interest rate - which proxy for both liquidity conditions and the opportunity cost of holding equity over bonds - are guiding equity portfolio flows. On the other hand, in periods of high financial stress, *changes* in financial stress - rather than its level - and economic news in developed economies are more important "signals" for investors. Table 4 confirms this broad picture for the bond world factor for changes in financial stress and economic news remain significant.[27] Interestingly, table 6 also reveals the importance of inflation news in driving bond flows. In particular, unexpected increases in inflation are strongly associated to global bond outflows.

3.2.2 Regional factors

Appendix B reports estimated regional factors using the regional decomposition for which the share of regional variance and the precision of factors is higher. Two findings are noteworthy. First, we find that the neither the geographic paradigm nor the development paradigm substantially improve the performance of the equity model.[28] As a consequence, factors reported in Appendix B are based on the seven benchmark regions. Under this decomposition, we find that although the regional factors are quite precisely estimated for developed Europe, Emerging Europe and Middle East/African countries, the confidence intervals are larger for North America, Latin America and Emerging Asia. This suggests that there is still room to improve the fit of regional dynamics in equity flows. On the other hand, we find that regional bond flows dynamics seem to be better represented by the "development" paradigm. Under this specification, we find that de-

[27] For endogeneity reasons, we took the level of global interest rates out of the bond regression.
[28] Full results available on request.

spite a drop in the performance of the model for some advanced countries, the model (i) substantially increases the share of regional variance for almost all developing countries and (ii) yields a precise estimate of the bond flows dynamics in emerging markets. To see this, table 5 below reports the difference in the share of variance explained by the regional factor under the final development grouping and the "benchmark" specification. This finding suggests that although advanced markets are still better represented by the benchmark regional decomposition, emerging markets have a tendency to move altogether, i.e receiving (or losing) bond funding at the same time.

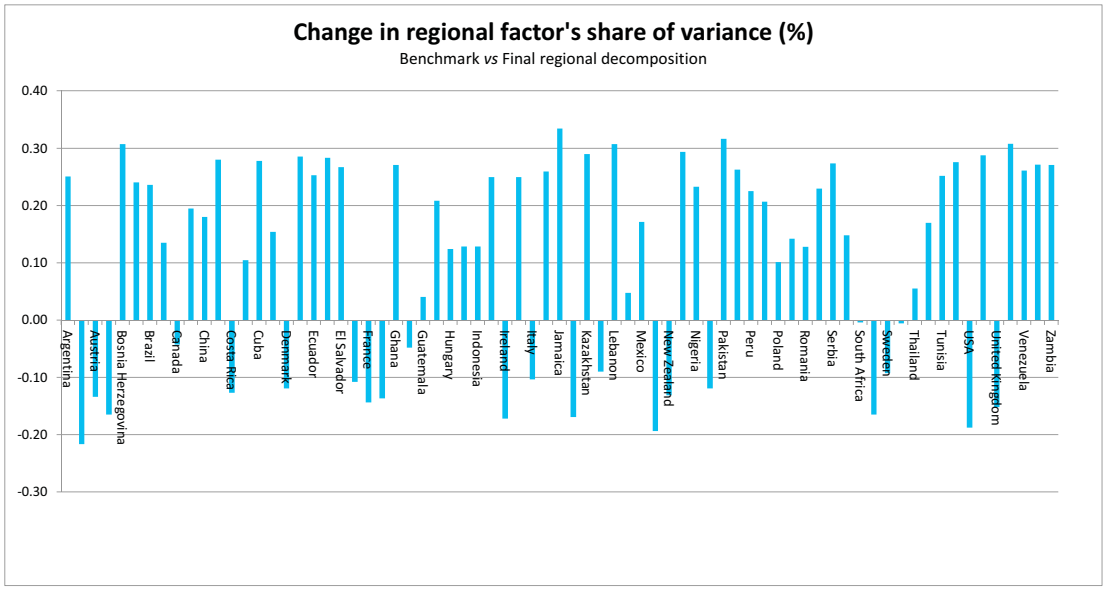


Table 5: Benchmark vs development regional decomposition - Bond Model

3.2.3 Variance decompositions

Building on the factor estimations derived above, we now assess the importance of each factor at the country level using equation (10).[29] Variance decompositions for the full

[29]Note that samples drawn from the Markov chain at each step are not necessarily uncorrelated due to sampling error. Following Kose et al. (2003), we make sure θ_i^w, θ_i^r and θ_i^c sum up to one by orthogonalizing the factors when computing the variance decompositions at each replication.

sample of countries are reported in Appendix B. For simplicity, tables 6 and 7 below report only world and regional averages.

Using unweighted averages over the whole sample, we first find that the world factor, the regional factors and the country specific factors explain, respectively, 44 %, 35% and 22% of the overall variance of countries' equity funding and 72%, 18% and 10% of their bond funding. Although the impact of world conditions might be inflated by the presence of the GFC, in particular in the bond sample, these results clearly highlight the quantitative importance of global dynamics in driving portfolio investments. In addition, we also find that world averages conceal a great deal of the cross-country heterogeneity we observe in the full sample. In general, we find that (i) emerging countries display a great dependence on global factors and (ii) advanced economies are mainly impacted by regional dynamics. In the case of equity flows, more than two thirds of emerging markets cross the 50% threshold of variance accounted for by global factors, and half of them cross the 75% threshold. Some countries - such as Pakistan, Sri Lanka, Indonesia or even Brazil - are close to 90%, implying that 90% of the variability of their equity portfolio funding is due to the changes in the global trend. On the other hand, developed economies, such as Western European countries, are substantially affected by regional dynamics, probably as a result of the high level of trade and monetary integration within the European Union. In fact, only a handful of countries receive (or lose) funding as a result of idiosyncratic dynamics. In the case of equity flows, only 6 countries - Austria, Germany, the USA, Chile, Argentina and Greece - cross the 50% threshold of variance accounted for by country-specific factors, and only two - Switzerland and the USA - in the case of bond flows. In other words, countries with high idiosyncratic influence are either (i) developed countries that are typically regional economic leaders and/or reserve currencies (United States, Germany, Japan, Sweden) or (ii) countries that have experienced one (or more) financial crisis over the period (Argentina or Greece).

	World			Regional			Country		
Regional averages	**mean**	**0.05**	**0.95**	**mean**	**0.05**	**0.95**	**mean**	**0.05**	**0.95**
North America	14%	13%	15%	38%	14%	67%	48%	19%	72%
Latin America	55%	54%	57%	10%	7%	12%	35%	33%	38%
Western Europe	18%	37%	40%	43%	42%	45%	18%	18%	19%
Eastern Europe	50%	48%	52%	42%	40%	44%	8%	8%	9%
Middle East & Africa	51%	49%	52%	35%	34%	36%	14%	13%	15%
Developed Asia	52%	50%	54%	23%	21%	26%	25%	23%	26%
Emerging Asia	75%	73%	77%	6%	4%	7%	20%	18%	21%
Advanced	27%	26%	29%	46%	43%	50%	27%	23%	29%
Emerging	56%	55%	58%	26%	24%	28%	18%	17%	19%
World (unweighted)	44%	42%	46%	35%	32%	37%	22%	20%	23%

Table 6: Equity Variance Decomposition - Regional Averages

	World			Regional			Country		
Regional averages	**mean**	**0.05**	**0.95**	**mean**	**0.05**	**0.95**	**mean**	**0.05**	**0.95**
North America	50%	49%	51%	4%	4%	5%	46%	45%	46%
Latin America	76%	75%	78%	19%	17%	20%	5%	5%	5%
Western Europe	57%	55%	58%	29%	28%	31%	14%	14%	15%
Eastern Europe	65%	63%	66%	20%	19%	21%	15%	15%	16%
Middle East & Africa	79%	78%	80%	19%	17%	20%	3%	2%	3%
Developed Asia	82%	81%	83%	4%	3%	4%	14%	13%	15%
Emerging Asia	88%	87%	89%	5%	5%	6%	7%	6%	7%
Advanced	63%	62%	64%	20%	19%	21%	17%	16%	18%
Emerging	76%	75%	78%	17%	16%	18%	7%	6%	7%
World (unweighted)	72%	71%	73%	18%	17%	19%	10%	10%	10%

Table 7: Bond Variance Decomposition - Regional Averages

4 Contagion

4.1 The geography of contagion

Previous variance decompositions have clearly highlighted the extent of spillovers in institutional investor flows. To what extent are these co-movements likened to contagion? and who is affected?

Although there is no common definition of contagion,[30] we argue that some of the spillovers we identify reflect more contagion effects than simple interdependence. On the one hand, the existence of an "emerging market" region in the bond model implies that all emerging markets tend to lose (or gain) funding at the same time, irrespective of their actual location or macroeconomic environment. Although its quantitative importance seems to be dwarfed by the presence of the GFC in our sample, such an emerging market dynamic is in line with emerging market bonds being considered as an asset class *per se,* in which investors herd when in search for yield and retrench from when conditions deteriorate. Second, we find that almost all countries are in fact subject to global contagion. With the exception of developed markets, the evolution of the portfolio funding of most countries turns out to be driven by shocks originating in the domicile of funds, *i.e* in advanced countries. Developing countries, in particular, happen to be the substantially affected by these "push" effects coming from developed markets. To get a better picture of the geography and intensity of this global contagion, Figures 9 and 10 map the fraction of variance in Equity and Bond funding attributable to the world factor, θ_i^w. For both equity and bonds, the "heat maps" show that the domiciles of funds, i.e advanced countries, are not substantially affected by global waves of inflows (or outflows). On the other hand, emerging markets at the periphery display very high sensitivity levels, both in relative and absolute terms.

4.2 Country Characteristics and Global Contagion Sensitivity

The strength of global contagion in both equity and bond flows naturally raises the issue of the determinants of countries' sensitivity to global shocks. Why are some countries more sensitive to global contagion than others? In other words, what makes investors eager to enter (leave) a country when conditions improve (deteriorate) ? This section addresses this question by investigating the economic features that scale the impact of global conditions at the country level. To do so, we regress the fraction of variance attributable to the world factor, θ_i^w, on a set of 14 structural variables that we group into 6 categories covering a wide range of characteristics : (i) Rule of law and investor protection (ii) Political instability (ii) Transparency, Governance and Accountability

[30] See Claessens and Forbes (2001) for a review of the different definitions.

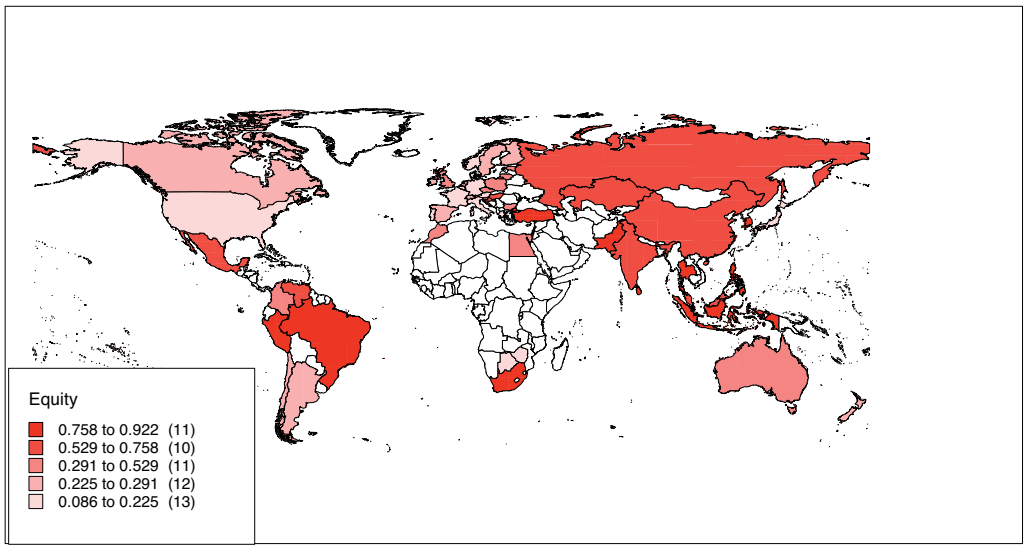
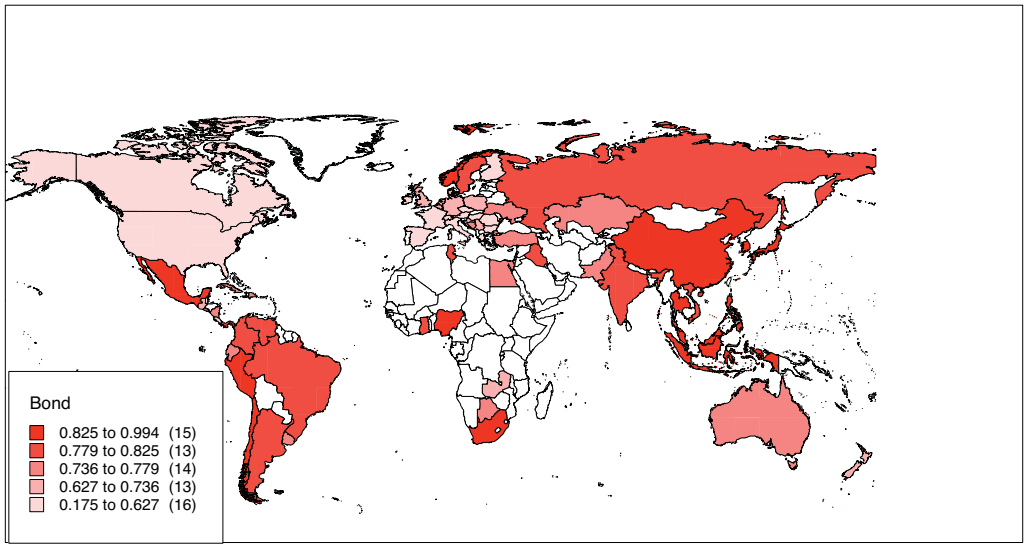


Figure 9: Sensitivity to Global Contagion - Equity flows



Note: values reported in the bottom left panel indicate the range of values for θ_i^w. Numbers in parenthesis indicate the number of countries in each range.

Figure 10: Sensitivity to Global Contagion - Bond flows

at the corporate level (iii) Sound money (iv) Economic risk (v) Public Finance (vi) Distance.

We measure the strength of rule of law, and more generally the strength of investor protection using two different variables: the *rule of law index* from the Economic Freedom of the World database[31] along with the strength of *investor protection* index provided by the International Financial Corporation. Political instability is proxied by the *political risk* rating, which is an index computed by ICRG and assesses the degree of government stability, likelihood of internal (and external) conflict and corruption. The transparency, governance and accountability of economic actors within the country are respectively measured by the *extent of disclosure* index, *extent of director liability* index and the *ease of shareholder suits* index. All of these indexes measure the strength of the outside investor protection against misuse of the corporate assets for personal gain.[32] The strength of money is proxied by the *standard deviation of annual inflation* and the average *real money growth* over the last five years, both proxying for the likelihood of inflation booms affecting asset values. The economic risk is proxied by (i) the past *output volatility* measured by the standard deviation of GDP growth between 1960-2006, (ii) the level of *trade openness* measured as the ratio of exports plus imports to GDP, and (iii) the *GDP per capita.* The level of financial risk is measured using the level *public debt* to GDP and the *budget balance* as % of GDP. Finally, to proxy for the general level of information asymmetry, we use the distance between the investors and the recipient countries. In fact, because an overwhelming majority of fund are located in the US and in Europe, the variable *distance* is an average of the distance between country i and the US (New York) and the distance between country i and Europe (London). Sources, units, and summary statistics are provided for all variables in Appendix A. Finally, qualitative indexes and risk ratings are computed such that a higher value of the variable implies a better assessment in the given dimension.

Although the range of potential variables affecting countries' sensitivity to shocks is

[31]This index combines indicators of judicial independence, contract enforcement, military interference in the rule of law and protection of property rights.

[32]The 3 indicators map different dimensions: transparency of related-party transactions (extent of disclosure index), liability for self-dealing (extent of director liability index) and shareholders' ability to sue officers and directors for misconduct (ease of shareholder suits index). The data come from a survey of corporate and securities lawyers and are based on securities regulations, company laws, civil procedure codes and court rules of evidence. The ranking on the strength of investor protection index is the simple average of the percentile rankings on its component indicators.

vast, we emphasize that these 14 variables span many of the channels that have been highlighted in the existing literature. For instance, Chari and Kehoe (2003) present a model in which countries suffer high capital flow volatility because investors fear expropriation. Alternatively, in the presence of agency frictions, changes in global conditions have been shown to increase the incentives of insiders to take advantage of outsiders, leading external investors to exit countries with lower disclosure and transparency standards. In this vein, Pasquariello (2007) develops a model in which lower information heterogeneity (i.e. more transparency) within a market improves inference about its liquidation values, thus making that market less vulnerable to external shocks. Such a channel would also be consistent with several empirical studies that emphasized the role of transparency as a determinant of fund flows.[33] Investigating the role of distance, seminal empirical finance papers have used gravity models to analyse the determinants of cross-border financial stocks and flows and found that information asymmetries are well captured by geographic distance[34]. As a consequence, one might expect that beside *hard* measure of information imperfection (such as transparency indices), *soft* measures, such as the distance between fund domiciles and the recipient country, might increase flows volatility. Finally, lower global economic growth might jeopardize the ability of agents to repay debtors. Therefore, one could expect countries that are financially fragile and/or historically more dependent on world demand to suffer from procyclical flows insofar as investors expect them to be more affected by the global cycle.

Although considering a wide set of variables enables us to run a "horse race" among these competing channels, the increase in the number of regressors comes at a price. In particular, the limited cross section at our disposal implies that classical regression methods are of limited use in sorting out robust correlates from irrelevant variables. To address this issue, we use two Bayesian model averaging techniques to test the robustness of competing variables: the WALS methodology developed by Magnus *et al* (2010) and the more standard BMA popularized by Sala-i-Martin, Doppelhoffer and Miller (2004) in the context of growth econometrics.[35] Intuitively, the objective of Model Averaging is

[33] Ferreira and Matos (2008) show that institutional investors reveal a preference for stocks of countries with strong disclosure standards. Gelos and Wei (2005) who also find that emerging market mutual funds (i) prefer to invest in more transparent countries and (ii) liquidate in priority assets invested in non transparent countries during crises.

[34] See Portes and Rey (2005), Coval and Moskowitz (1999, 2001)

[35] From a technical point of view, the BMA technique used here follows Fernandez, Ley, and Steel (2001), recently applied in Masanjala and Papageorgiou (2008).

to address the problem of model uncertainty by (i) running the maximum combination of models (16.000 in our case) and (ii) providing estimates and inference results that take into account the performance of the variable not only in the final "reported" model but over the whole set of specifications. In practice, these two steps boil down to estimate a parameter of interest conditional on each model in the model space and computing the unconditional estimate as a weighted average of the conditional estimates.[36] Tables 8 and 9 below report the results of Bayesian Averaging for both equity and bond regressions. Because we are not interested in the magnitude of the coefficient *per se* but in the sign and the robustness of each regressor, we report only the sign of the coefficients along with two Bayesian criteria: individual Post-Inclusion Probabilities (henceforth PIPs) for BMA and t-ratios for WALS. Magnus et al (2010) suggest a PIP threshold of 0.5 for inclusion of a variable whereas, in the case of WALS, a t-ratio with an absolute value of 1 or greater is typically recommended as a threshold for robustness.[37] Only variables that are identified as robust by both methods are considered as robust regressors. To help the interpretation of the results from the Bayesian analysis, Table 10 also reports the results of the regression of the Equity (Bond) factor using only the variables identified as "robust".

Using the Bayesian criteria, we find that three criteria - political risk, trade openness and distance - are robust in the equity specification, while only two - political risk and distance - are robust in the bond specification. Consistent with Raddatz and Schmukler (2012), we find that investors facing shocks at home tend to modify their exposure to a wide set of countries. However, they do all the more so in "risky" countries. Our results suggest that the level of *political risk* and the *distance* act as the main "risk criteria" in the eyes of fund managers. As a result, sudden surges/stops tend to strike fragile countries, *i.e* emerging markets with unstable political systems and poor connection to the main financial centers.

[36] See Magnus *et al* (2010) for an extensive review.

[37] For a discussion of these significance criteria see Magnus *et al* (2010).

Equity Sample	BMA		WALS	
Variables	Coeff.	PIP	Coeff	t-ratio
Rule of law	-	0.07	+	0.2
Investor protection	+	0.10	-	-0.73
Political risk	**-**	**1.00**	**-**	**-2.38**
Disclosure index	-	0.12	+	0.71
Manager liability (index)	+	0.14	+	0.76
Shareholder suits (index)	+	0.16	+	0.77
Inflation volatility	+	0.08	-	-0.26
Real money growth	+	0.08	+	0.35
Output volatility	+	0.11	+	0.27
Trade openness	+	**0.60**	+	**1.50**
GDP per capita	-	0.12	-	-0.94
Public debt	-	0.20	-	-0.97
Budget balance	-	0.07	-	-0.01
Distance	+	**0.97**	+	**2.60**

Table 8: Equity World Factor sensitivity: Country Characteristics

Bond sample	BMA		WALS	
Variables	Coeff.	PIP	Coeff	t-ratio
Rule of law	-	0.13	+	1.13
Investor protection	+	0.12	-	-0.73
Political risk	-	**0.77**	**-**	**-1.70**
Disclosure index	+	0.20	+	0.71
Manager liability (index)	+	0.08	+	0.76
Shareholder suits (index)	+	0.08	+	0.77
Inflation volatility	-	0.08	-	0.22
Real money growth	-	0.10	+	-1.08
Output volatility	+	0.11	+	0.27
Trade openness	+	0.14	+	0.85
GDP per capita	-	0.21	-	-1.08
Public debt	-	0.09	-	-0.97
Budget balance	-	0.27	+	1.20
Distance	+	**0.99**	+	**2.30**

Table 9: Bond World Factor sensitivity: Country Characteristics

Equity - Robust Variables	Coeff	P-value	Bond - Robust Variables	Coeff	P-value
Political risk	-0.012	0.00			
Trade openness	0.006	0.07	Political risk	-0.007	0.00
Distance	0.024	0.00	Distance	0.009	0.03
R-square	0.56		**R-square**	0.41	
Number of Observations	55		**Number of Observations**	70	

Table 10: Regression Output - Equity (left) and Bond (right)

5 Conclusion

Using an extensive dataset of fund flows to 81 developed and emerging markets, this paper explored the dynamics and geography of institutional investor flows between 2001 and 2011. Using a factor model in the spirit of Kose, Otrok and Whiteman (2003), we decomposed equity and bond flows into world, regional and idiosyncratic components and highlighted the importance of both global and regional spillovers in institutional investors flows. More importantly, we highlighted a number of "pathological" behaviours of the fund industry, ranging from procyclical lending at the world level to regional and global contagion, with a substantial impact on a vast number of emerging markets. Taken together, these results cast a new light on important empirical and theoretical issues surrounding institutional investors impact and, more generally, on capital flows dynamics.

We conclude by emphasizing that some the findings of this paper raises important additional issues that deserve further attention. First, the patterns of contagion we observe in our sample seem to reflect, to a certain extent, the structure of the financial industry itself. For instance, the intensity of the global contagion might be a sign of the growing importance of so-called global funds who invest both in advanced economies and in emerging markets (Sy and Ong (2013)). In addition, the fact that regional spillovers fit geographical regions in the equity model might be the result of the dominance of regional funds in the equity market, whereas the dichotomy between advanced and emerging markets in the bond model might reflect the dominance of funds with a mandate to invest in either *all* emerging markets or *all* advanced economies (e.g high-yield vs low-yield bond funds). This suggests, in turn, that management rules and portfolio restrictions probably

shape the form of contagion.[38] In that case, monitoring the portfolio of major investors could help predicting the way contagion is likely to spread and designing appropriate policy responses. Second, it seems that the rise of institutional investors is coming at a price, including pro-cyclical lending, contagion and spillovers. Our results, in particular, clearly support the view that institutional investors do not act as "deep-pocket" investors at the global level, thereby playing a stabilizing role (in particular buying assets at low prices in crisis times). We argue that this prescribes a better examination of the costs and benefits associated with the rise of the fund industry.

[38] Note that this issue has recently been touched by Pavlova and Rigobon (2008)

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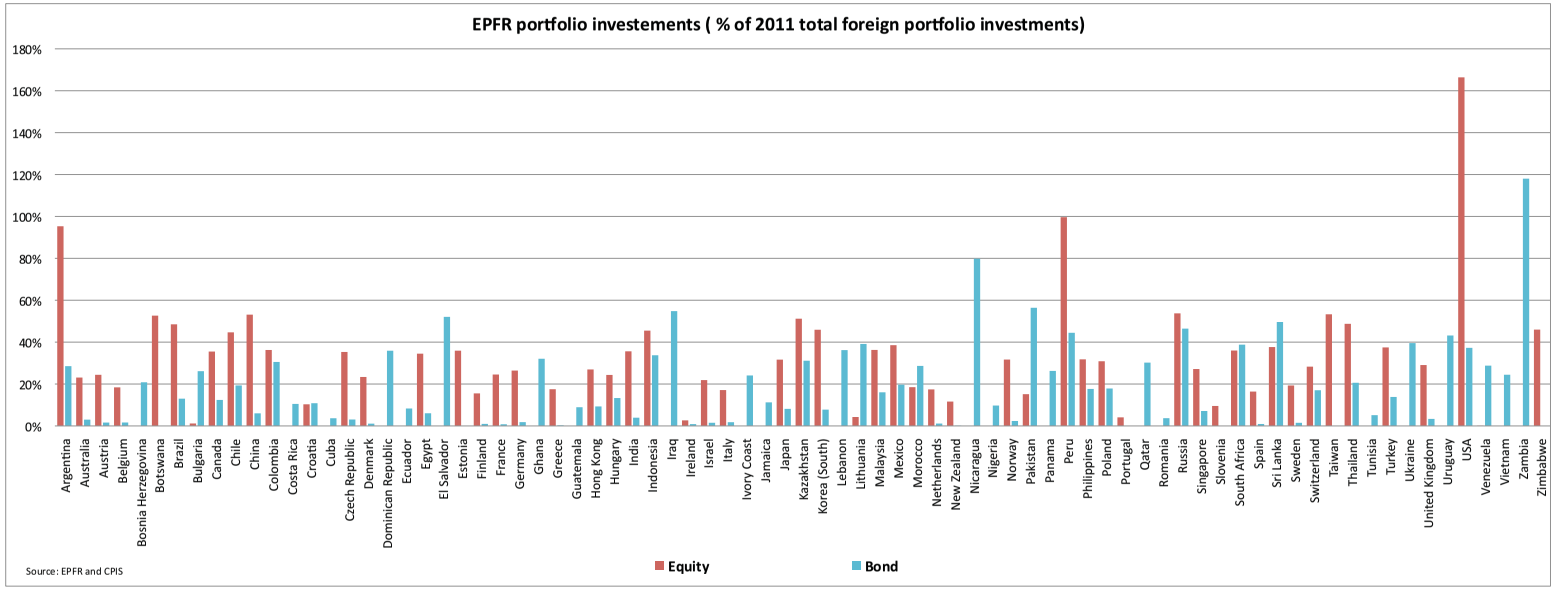
Appendix A - Data and Definitions

Equity Funds						
	Daily Report		Weekly Report		Monthly Report	
Fund Group	# of Funds	$US Billions	# of Funds	$US Billions	# of Funds	$US Billions
Asia ex-Japan	2 145	272,91	2 150	285,07	2 495	381,25
EMEA	688	45,71	689	46,84	776	55,15
GEM	1 613	436,17	1 621	444,24	1 948	594,53
Global	6 117	1 330,01	6 195	1 377,68	8 448	2 788,76
Japan	793	127,75	779	118,97	858	112,2
Latin America	432	44,71	434	46,11	447	59,67
Pacific	323	48,61	318	47,69	427	81,17
USA	8 057	2 575,99	8 345	2 861,40	10 169	5 312,75
Western Europe	3 876	644,32	3 883	654,82	4 421	822,96
TOTAL	**24 044**	**5 526,18**	**24 414**	**5 882,82**	**29 989**	**10 208,44**

Bond Funds						
	Daily Report		Weekly Report		Monthly Report	
Fund Group	# of Funds	$US Billions	# of Funds	$US Billions	# of Funds	$US Billions
Balanced	1 261	467,23	1 283	486,34	1 856	1 087,34
Emerging Markets	2 217	229,48	2 215	230,59	2 432	339,78
Global	3 997	736,86	4 015	741,61	4 915	1 261,56
High Yield	1 635	347,11	1 657	369,47	1 921	544,97
Money Market	2 274	3 189,95	2 303	3 223,44	2 525	3 479,38
USA	3 604	1 281,63	3 854	1 372,62	4 808	2 735,23
TOTAL	**14 988**	**6 252,26**	**15 327**	**6 424,07**	**18 457**	**9 448,26**

Table 11: EPFR fund coverage, by fund group - Q1 2013



Note that for some countries, the coverage exceeds 100%. This is explained by the presence of funds covered by the EPFR that (i) are located in a given country (ii) have investments in that same country. In this case, equity or bond holdings are not considered as foreign portfolio investments (by CPIS) but are still reported by EPFR. For instance, the presence of a vast number of US domiciled funds with substantial equity holdings within the US explains that the amount of equity portfolio investments covered by EPFR exceeds the amount of foreign equity holdings.

Table 12: EPFR portfolio investments representativity

North America	Latin America	Western Europe	Eastern Europe	MEA	Developed Asia	Emerging Asia
Canada	Argentina	Austria	Bosnia-Herz.	Botswana	Australia	China
United States	Brazil	Belgium	Bulgaria	Egypt	Hong Kong	India
	Chile	Denmark	Croatia	Ghana	Japan	Indonesia
	Colombia	Finland	Czech Republic	Iraq	Korea Rep.	Malaysia
	Costa Rica	France	Estonia	Israel	New Zealand	Philippines
	Cuba	Germany	Hungary	Ivory Coast	Singapore	Sri lanka
	Dominican Rep.	Greece	Lithuania	Kazakhstan	Taiwan	Thailand
	Ecuador	Ireland	Poland	Lebanon		Vietnam
	El Salvador	Italy	Romania	Mauritius		
	Guatemala	Netherlands	Russian Fed.	Morocco		
	Jamaica	Norway	Serbia	Nigeria		
	Mexico	Portugal	Slovenia	Pakistan		
	Nicaragua	Spain	Ukraine	Qatar		
	Panama	Sweden		South Africa		
	Peru	Switzerland		Tunisia		
	Uruguay	U.K		Turkey		
	Venezuela			Zambia		
				Zimbabwe		

Table 13: Compositions of Regions

Variable	Source and Date	Unit
Rule of law	Economic Freedom of the World dataset (2000-2005)	Qualitative index from 1 (poor) to 10 (strong)
Investor Protection	International Finance Corporation (World Bank)	Qualitative index from 0 (low) to 10 (high)
Political risk	International Country Risk Guide (ICRG)	Qualitative index from 0 (high risk) to 100 (low risk)
Extent of Disclosure	International Finance Corporation (World Bank)	Qualitative index from 0 (low) to 10 (high)
Extent of Director Liability	International Finance Corporation (World Bank)	Qualitative index from 0 (low) to 10 (high)
Ease of Shareholder suits	International Finance Corporation (World Bank)	Qualitative index from 0 (low) to 10 (high)
Inflation volatility	Economic Freedom of the World dataset (2000-2005)	Qualitative index from 0 (high volatility) to 10 (low volatility)
Real money growth	Economic Freedom of the World dataset (2000-2005)	Qualitative index from 0 (low growth) to 10 (high growth)
Output volatility	WDI	Std deviation of output growth - 1960-2008
Trade Openness	WDI	(Imports+Exports)/GDP
GDP per capita	WDI	in 2005 dollars (PPP Adjusted)
Public debt	WDI	Government debt/GDP
Budget Balance	WDI	Cash surplus/deficit as % GDP
Weighted Distance	Google Maps	Thousands of kilometers

Table 14: Country characteristics - Sources and Units

Note: To avoid any endogeneity issues, real and financial variables - such as real money growth, inflation volatility, public debt levels or trade openness - were introduced in the regression using pre-sample values (i.e using values as of 2001 for Equity regressions, and as of 2004 for bond regression). For qualitative ratings, we used pre-GFC levels (i.e 2005) but tested the robustness of the results using values in 2000 (when available). Results were unchanged.

Variable	Obs	Mean	Std. Dev	Min	Max
Rule of law	76	6.1	2.4	0	9.6
Investor protection	79	5.4	1.6	1.7	9.7
Political risk	78	71.4	12.7	35.5	93.5
Extent of Disclosure	79	5.8	2.75	0	10
Extent of Director Liability	79	4.4	2.47	0	9
Ease of Shareholder suits	79	6.0	2.03	1	10
Inflation volatility	76	7.4	3.23	0	9.9
Real money growth	76	7.7	2.75	0	10
Output volatility	80	4.9	3.9	1.5	24.9
Trade Openness	78	84	53	20	360
GDP per capita	78	16246	14011	1125	74163
Public debt	78	52.88	32	4.6	191
Budget balance	65	-1.19	3.4	-8.3	16.4
Weighted Distance	81	6.9	3.5	2.9	17

Table 15: Country characteristics - Summary statistics

Appendix B - Supplementary Figures and Tables

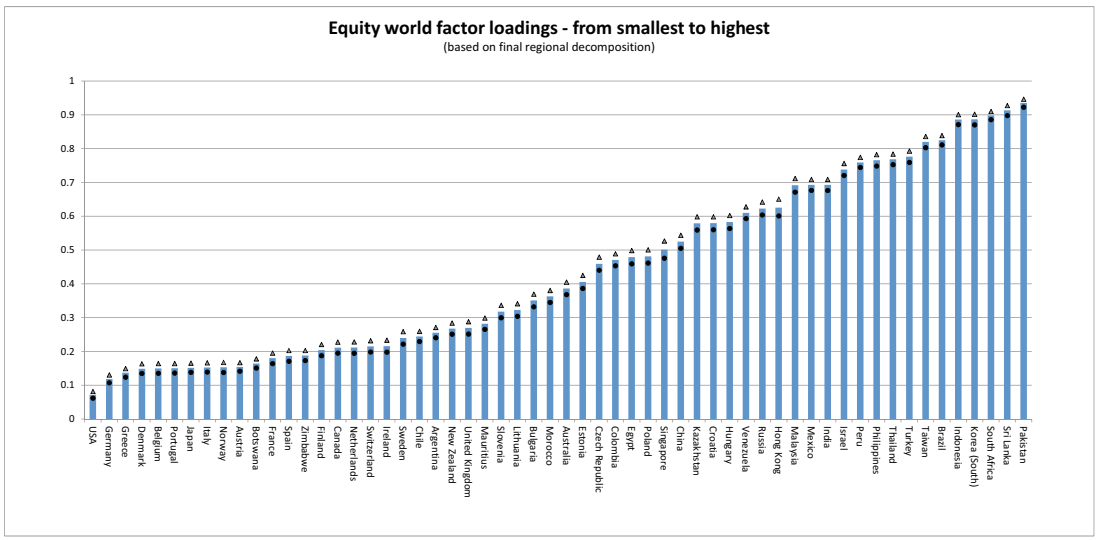


Figure 11: World Factor loadings - Equity model

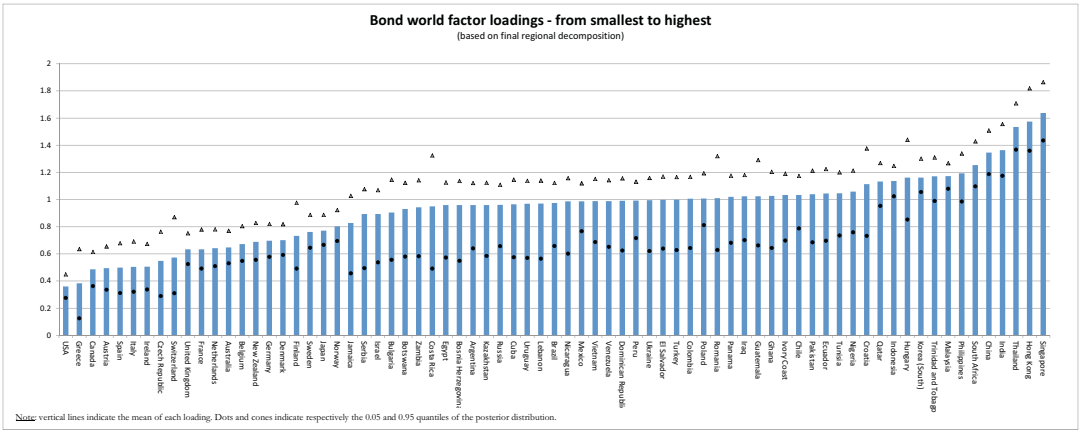


Figure 12: World Factor loadings - Bond model

NB: vertical lines indicate the magnitude of the factor loading. Dots and cones represent respectively the 0.05 and 0.95 quantiles of the posterior distribution.

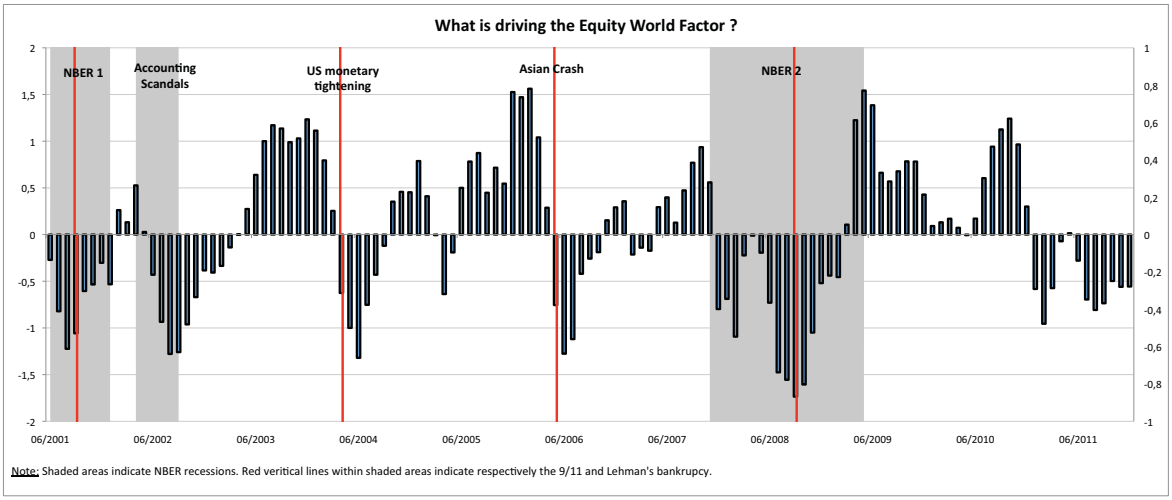


Figure 13: Equity World factor and Financial events

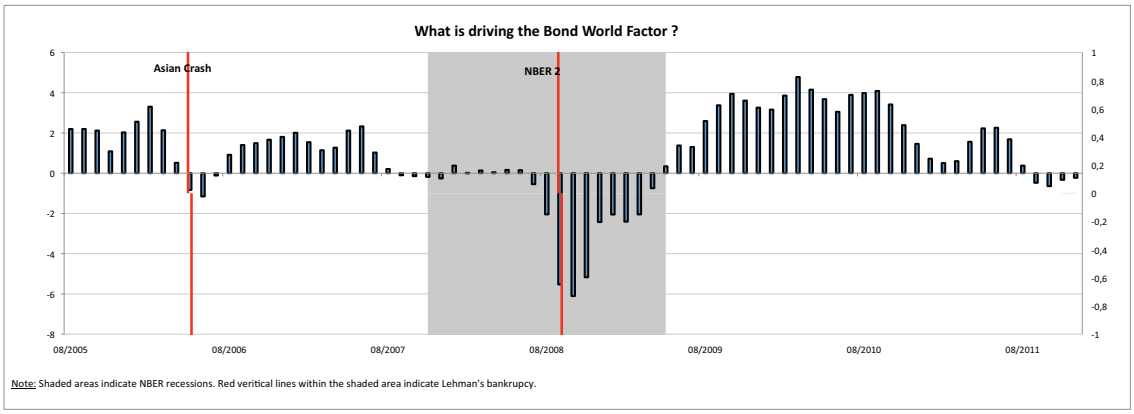


Figure 14: Bond World Factor and Financial Events

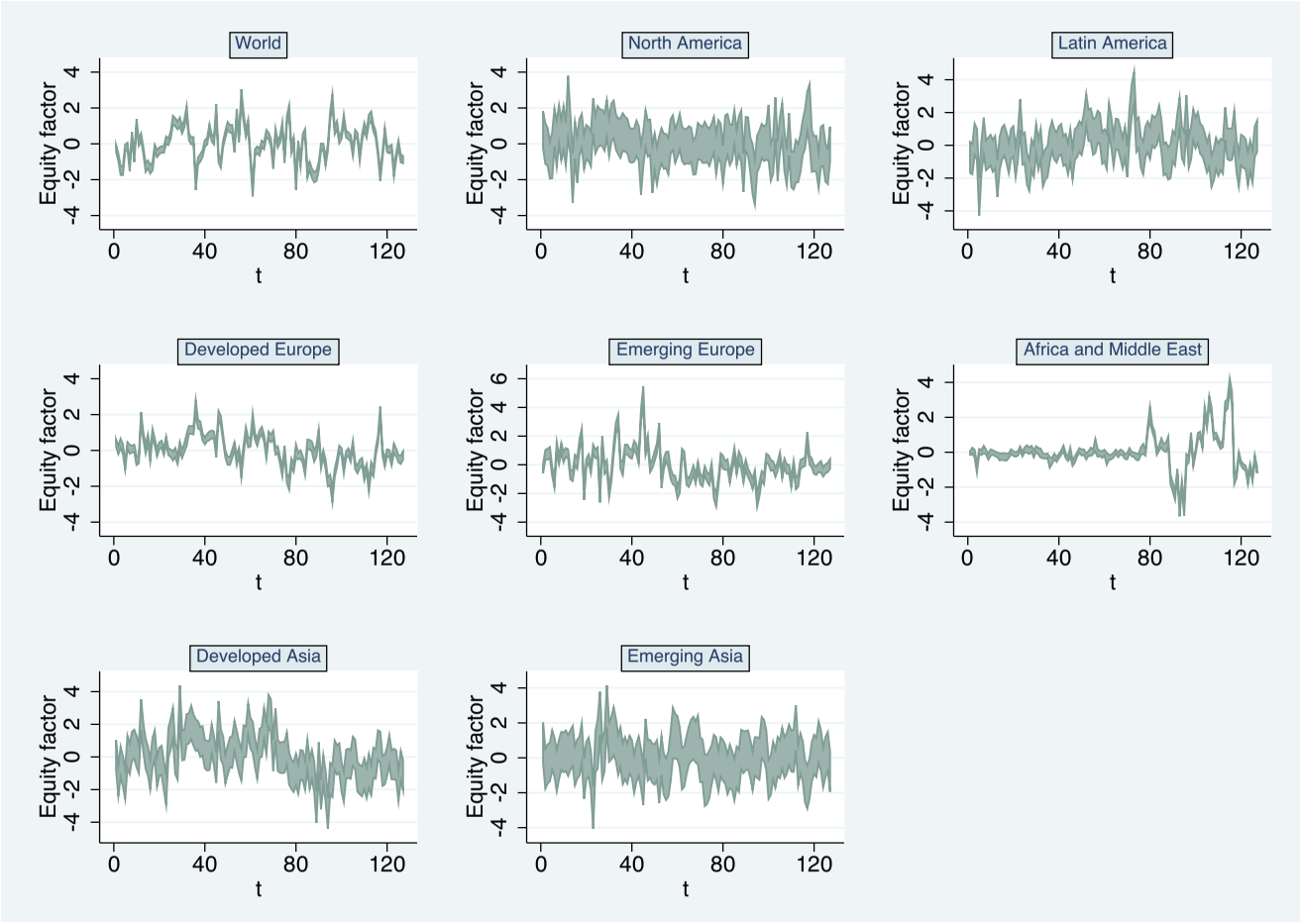


Figure 15: Equity Model: Regional specification

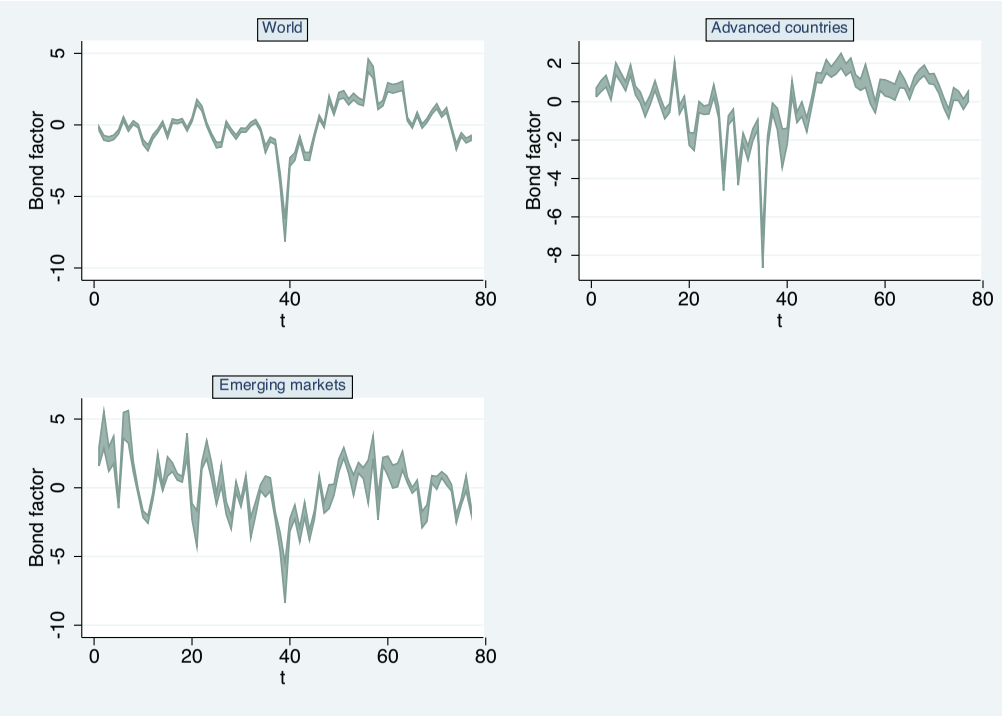


Figure 16: Bond Model: Regional specification

		World			Regional			Country		
Region	**Country**	**mean**	**0.05**	**0.95**	**mean**	**0.05**	**0.95**	**mean**	**0.05**	**0.95**
North America	Canada	0.21	0.19	0.23	0.50	0.16	0.76	0.29	0.03	0.63
	USA	0.07	0.06	0.08	0.26	0.12	0.58	0.67	0.35	0.80
Latin America	Brazil	0.83	0.81	0.84	0.10	0.08	0.12	0.07	0.06	0.09
	Argentina	0.26	0.24	0.27	0.01	0.00	0.02	0.74	0.72	0.75
	Chile	0.24	0.23	0.26	0.02	0.00	0.05	0.73	0.71	0.75
	Colombia	0.47	0.45	0.49	0.12	0.08	0.16	0.41	0.37	0.44
	Mexico	0.69	0.68	0.71	0.13	0.10	0.16	0.18	0.16	0.20
	Peru	0.76	0.74	0.77	0.12	0.09	0.14	0.13	0.10	0.15
	Venezuela	0.61	0.59	0.63	0.18	0.14	0.22	0.21	0.17	0.25
Western Europe	Austria	0.15	0.14	0.17	0.24	0.23	0.25	0.61	0.60	0.62
	Belgium	0.15	0.14	0.16	0.68	0.66	0.70	0.17	0.16	0.18
	Denmark	0.15	0.13	0.16	0.50	0.49	0.52	0.35	0.34	0.36
	Finland	0.20	0.19	0.22	0.75	0.73	0.77	0.05	0.04	0.05
	France	0.18	0.16	0.20	0.77	0.76	0.79	0.05	0.04	0.05
	Germany	0.12	0.11	0.13	0.22	0.21	0.24	0.66	0.65	0.67
	Greece	0.14	0.12	0.15	0.22	0.20	0.23	0.65	0.64	0.66
	Ireland	0.22	0.20	0.23	0.78	0.76	0.79	0.01	0.01	0.01
	Italy	0.15	0.14	0.17	0.59	0.57	0.61	0.26	0.25	0.26
	Netherlands	0.21	0.19	0.23	0.73	0.71	0.75	0.06	0.05	0.06
	Norway	0.15	0.14	0.17	0.75	0.73	0.76	0.10	0.09	0.11
	Portugal	0.15	0.14	0.16	0.57	0.56	0.59	0.28	0.27	0.29
	Spain	0.19	0.17	0.20	0.74	0.72	0.76	0.07	0.07	0.08
	Sweden	0.24	0.22	0.26	0.70	0.68	0.72	0.06	0.06	0.07
	Switzerland	0.21	0.20	0.23	0.36	0.34	0.38	0.42	0.42	0.43
	United Kingdom	0.27	0.25	0.29	0.58	0.56	0.60	0.15	0.14	0.15
Eastern Europe	Bulgaria	0.35	0.33	0.37	0.47	0.45	0.49	0.18	0.17	0.18
	Croatia	0.58	0.56	0.60	0.33	0.32	0.35	0.09	0.08	0.09
	Czech Republic	0.46	0.44	0.48	0.52	0.50	0.54	0.02	0.02	0.03
	Estonia	0.41	0.39	0.43	0.52	0.50	0.54	0.07	0.07	0.08
	Hungary	0.58	0.56	0.60	0.41	0.39	0.43	0.01	0.01	0.01
	Lithuania	0.32	0.30	0.34	0.64	0.62	0.66	0.03	0.03	0.04
	Poland	0.48	0.46	0.50	0.51	0.49	0.53	0.01	0.01	0.01
	Russia	0.62	0.60	0.64	0.24	0.22	0.26	0.14	0.13	0.14
	Slovenia	0.32	0.30	0.34	0.63	0.61	0.65	0.06	0.05	0.06
	Kazakhstan	0.58	0.56	0.60	0.20	0.19	0.22	0.22	0.21	0.23
	Turkey	0.78	0.76	0.79	0.12	0.11	0.14	0.10	0.09	0.11
MEA	Botswana	0.16	0.15	0.18	0.82	0.81	0.83	0.02	0.01	0.02
	Egypt	0.48	0.46	0.50	0.10	0.09	0.11	0.42	0.41	0.44
	Israel	0.74	0.72	0.76	0.01	0.01	0.02	0.25	0.23	0.27
	Mauritius	0.28	0.27	0.30	0.70	0.69	0.72	0.01	0.01	0.02
	Morocco	0.36	0.35	0.38	0.37	0.35	0.38	0.27	0.26	0.28
	Pakistan	0.94	0.92	0.95	0.00	0.00	0.00	0.06	0.05	0.08
	South Africa	0.90	0.89	0.91	0.00	0.00	0.01	0.10	0.09	0.11
	Zimbabwe	0.19	0.17	0.20	0.80	0.79	0.82	0.01	0.00	0.01
Developed Asia	Hong Kong	0.63	0.60	0.65	0.29	0.25	0.32	0.09	0.06	0.11
	Korea (South)	0.89	0.87	0.90	0.04	0.02	0.05	0.08	0.07	0.09
	Singapore	0.50	0.48	0.53	0.35	0.30	0.39	0.15	0.12	0.18
	Taiwan	0.82	0.80	0.84	0.06	0.05	0.08	0.12	0.11	0.13
	Australia	0.39	0.37	0.41	0.26	0.24	0.27	0.36	0.35	0.37
	Japan	0.15	0.14	0.17	0.46	0.44	0.47	0.39	0.38	0.40
	New Zealand	0.27	0.25	0.28	0.18	0.17	0.20	0.55	0.54	0.56
Emerging Asia	China	0.52	0.51	0.54	0.15	0.11	0.19	0.33	0.30	0.35
	India	0.69	0.68	0.71	0.05	0.03	0.07	0.26	0.24	0.27
	Indonesia	0.89	0.87	0.90	0.02	0.01	0.03	0.09	0.08	0.10
	Malaysia	0.69	0.67	0.71	0.11	0.08	0.14	0.20	0.18	0.22
	Philippines	0.77	0.75	0.78	0.03	0.02	0.05	0.20	0.19	0.21
	Sri Lanka	0.91	0.90	0.93	0.02	0.01	0.04	0.06	0.06	0.07
	Thailand	0.77	0.75	0.78	0.01	0.00	0.02	0.22	0.21	0.24

Table 16: Equity Variance Decompositions - Full Sample

		World			Regional			Country		
Region	**Country**	**mean**	**0.05**	**0.95**	**mean**	**0.05**	**0.95**	**mean**	**0.05**	**0.95**
North America	Canada	0.55	0.54	0.56	0.08	0.07	0.10	0.36	0.36	0.37
	USA	0.45	0.44	0.46	0.00	0.00	0.00	0.55	0.54	0.56
Western Europe	Austria	0.49	0.47	0.50	0.47	0.45	0.48	0.04	0.04	0.05
	Belgium	0.68	0.67	0.70	0.28	0.26	0.29	0.04	0.04	0.04
	Denmark	0.74	0.72	0.75	0.07	0.06	0.08	0.19	0.19	0.20
	Finland	0.48	0.46	0.49	0.42	0.41	0.44	0.10	0.09	0.11
	France	0.60	0.58	0.61	0.38	0.36	0.39	0.02	0.02	0.03
	Germany	0.73	0.72	0.74	0.17	0.16	0.19	0.09	0.09	0.10
	Greece	0.30	0.28	0.31	0.52	0.51	0.54	0.18	0.17	0.19
	Ireland	0.46	0.44	0.47	0.51	0.50	0.53	0.03	0.02	0.03
	Italy	0.45	0.43	0.46	0.54	0.52	0.55	0.02	0.01	0.02
	Netherlands	0.63	0.61	0.64	0.35	0.34	0.37	0.02	0.01	0.02
	Norway	0.85	0.84	0.86	0.05	0.04	0.06	0.10	0.09	0.10
	Spain	0.43	0.42	0.44	0.43	0.41	0.44	0.14	0.13	0.15
	Sweden	0.79	0.78	0.80	0.04	0.03	0.05	0.17	0.16	0.18
	Switzerland	0.18	0.17	0.19	0.03	0.02	0.03	0.80	0.79	0.81
	United Kingdom	0.70	0.69	0.71	0.11	0.10	0.13	0.19	0.18	0.19
Developed Asia	Australia	0.74	0.73	0.75	0.05	0.04	0.06	0.21	0.20	0.22
	Hong Kong	0.82	0.81	0.83	0.03	0.03	0.04	0.15	0.14	0.16
	Japan	0.84	0.83	0.86	0.05	0.04	0.06	0.10	0.10	0.11
	Korea (South)	0.99	0.99	1.00	0.00	0.00	0.00	0.00	0.00	0.01
	New Zealand	0.65	0.64	0.67	0.07	0.06	0.08	0.28	0.27	0.29
	Singapore	0.89	0.88	0.89	0.01	0.01	0.02	0.10	0.09	0.11
Latin America	Argentina	0.78	0.77	0.79	0.20	0.18	0.21	0.02	0.02	0.02
	Brazil	0.80	0.79	0.81	0.20	0.18	0.21	0.00	0.00	0.00
	Chile	0.84	0.83	0.85	0.15	0.14	0.16	0.01	0.01	0.01
	Colombia	0.79	0.78	0.80	0.21	0.20	0.22	0.00	0.00	0.00
	Costa Rica	0.44	0.43	0.45	0.11	0.10	0.12	0.45	0.45	0.46
	Cuba	0.76	0.75	0.77	0.21	0.19	0.22	0.04	0.03	0.04
	Dominican Republic	0.78	0.76	0.79	0.22	0.20	0.23	0.00	0.00	0.00
	Ecuador	0.77	0.76	0.78	0.19	0.18	0.21	0.03	0.03	0.04
	El Salvador	0.78	0.77	0.80	0.20	0.19	0.22	0.01	0.01	0.01
	Guatemala	0.65	0.64	0.66	0.13	0.12	0.15	0.22	0.22	0.22
	Jamaica	0.66	0.64	0.67	0.26	0.25	0.27	0.09	0.08	0.09
	Mexico	0.85	0.84	0.86	0.14	0.13	0.15	0.01	0.01	0.01
	Nicaragua	0.76	0.75	0.78	0.23	0.21	0.24	0.01	0.01	0.01
	Panama	0.80	0.79	0.82	0.20	0.18	0.21	0.00	0.00	0.00
	Peru	0.83	0.81	0.84	0.17	0.16	0.19	0.00	0.00	0.00
	Trinidad and Tobago	0.88	0.87	0.89	0.10	0.09	0.11	0.02	0.02	0.02
	Uruguay	0.77	0.75	0.78	0.23	0.22	0.25	0.00	0.00	0.00
	Venezuela	0.79	0.78	0.81	0.21	0.19	0.22	0.00	0.00	0.00
Eastern Europe	Bosnia Herzegovina	0.75	0.74	0.76	0.24	0.23	0.25	0.01	0.01	0.01
	Bulgaria	0.59	0.58	0.61	0.23	0.21	0.24	0.18	0.18	0.18
	Croatia	0.63	0.61	0.64	0.23	0.22	0.25	0.14	0.14	0.14
	Czech Republic	0.38	0.37	0.39	0.19	0.18	0.21	0.42	0.42	0.43
	Hungary	0.60	0.59	0.61	0.12	0.11	0.14	0.28	0.28	0.28
	Poland	0.70	0.68	0.71	0.10	0.10	0.12	0.20	0.20	0.20
	Romania	0.51	0.49	0.52	0.22	0.21	0.24	0.27	0.27	0.28
	Russia	0.80	0.79	0.81	0.19	0.18	0.20	0.01	0.01	0.01
	Serbia	0.73	0.71	0.74	0.24	0.23	0.26	0.03	0.03	0.03
	Ukraine	0.77	0.76	0.79	0.23	0.21	0.24	0.00	0.00	0.00
Middle East and Africa	Botswana	0.75	0.74	0.77	0.18	0.17	0.19	0.07	0.07	0.07
	Egypt	0.76	0.75	0.78	0.23	0.21	0.24	0.01	0.01	0.01
	Ghana	0.79	0.77	0.80	0.20	0.18	0.21	0.02	0.02	0.02
	Iraq	0.80	0.78	0.81	0.20	0.18	0.21	0.01	0.01	0.01
	Israel	0.73	0.71	0.74	0.24	0.22	0.25	0.04	0.03	0.04
	Ivory Coast	0.80	0.79	0.82	0.19	0.18	0.21	0.00	0.00	0.00
	Kazakhstan	0.76	0.75	0.78	0.23	0.22	0.24	0.00	0.00	0.01
	Lebanon	0.76	0.75	0.77	0.24	0.22	0.25	0.00	0.00	0.00
	Nigeria	0.83	0.81	0.84	0.17	0.16	0.18	0.01	0.01	0.01
	Pakistan	0.78	0.76	0.79	0.21	0.19	0.22	0.02	0.02	0.02
	Qatar	0.87	0.86	0.88	0.10	0.09	0.11	0.02	0.02	0.02
	South Africa	0.87	0.86	0.88	0.02	0.01	0.02	0.11	0.11	0.12
	Tunisia	0.82	0.80	0.83	0.18	0.17	0.19	0.00	0.00	0.00
	Turkey	0.78	0.76	0.79	0.22	0.20	0.23	0.01	0.01	0.01
	Zambia	0.73	0.72	0.74	0.20	0.19	0.21	0.07	0.07	0.07
Emerging Asia	China	0.87	0.86	0.88	0.02	0.02	0.03	0.11	0.10	0.11
	India	0.82	0.81	0.83	0.00	0.00	0.00	0.18	0.17	0.18
	Indonesia	0.94	0.93	0.95	0.05	0.05	0.06	0.01	0.01	0.01
	Malaysia	0.97	0.96	0.97	0.01	0.01	0.02	0.02	0.02	0.02
	Philippines	0.88	0.87	0.89	0.10	0.09	0.11	0.02	0.02	0.02
	Thailand	0.90	0.89	0.91	0.00	0.00	0.00	0.10	0.09	0.11
	Vietnam	0.79	0.77	0.80	0.18	0.17	0.20	0.03	0.03	0.03

Table 17: Bond Variance Decompositions - Full Sample


European
University
Institute
European University Press