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‘*On cross-border bank credit and the U.S. subprime crisis transmission to equity markets*’

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ABSTRACT

This paper examines the role played by cross-border equity, bond and bank credit flows versus international trade in the transmission of the U.S. subprime crisis to equity markets worldwide. We estimate vector autoregressive models with exogenous global factors using monthly data on 36 emerging and developed countries. The results from an eclectic methodology that includes causality tests, generalized impulse responses and forecast error variance decompositions indicate that the subprime crisis is mostly transmitted through bank credit rather than portfolio flows and international trade. The results are robust to altering the exogenous versus endogenous vectors of variables, to measuring equity prices in U.S. dollars or local currency, to averaging the data across countries versus averaging the parameters from individual country estimation, and to redefining the start date of the crisis. The findings endorse the use of banking regulation and capital controls as part of the policy toolkit to limit financial vulnerability.

Keywords: U.S. subprime crisis; Crisis transmission channels; Capital flows; Bank credit; International trade; Causality; Emerging markets.

JEL classification: E44; F20; F34; G1.

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"Much of the earlier literature focused on the fundamental question of whether contagion actually occurred during major crises …, still do not answer the fundamental question of why a negative shock is transmitted internationally and through what channels contagion occurs." (Kristin Forbes, 2013)

1. Introduction

Equity markets worldwide experienced a slump in the wake of the U.S. subprime crisis. By the end of 2008, most equity indices had dropped to at least 50% of their 2006 levels (Bartram and Bodnar, 2009). There was also an unprecedented reduction in international trade and capital flows (Milesi-Ferretti and Tille, 2011; Claessens et al., 2012). The objective of this paper is to shed light on the dynamics of those equity declines and the main fundamental channels involved such as portfolio and bank credit flows versus trade.

Understanding the mechanisms of the U.S. subprime crisis transmission is of interest to academics and policymakers as important lessons can be learned. Since 2009 many emerging markets such as Brazil, Taiwan, South Korea, Indonesia, and Thailand have implemented financial supervision and regulatory reforms. The IMF has not only relaxed its opposition to capital controls but rather advised them as one of various tools to limit financial vulnerability.[1] A good grasp of the role played by different crisis transmission channels is crucial for the design of appropriate policy responses, as stressed by Forbes (2013).

On the one hand, if the worldwide equity market slump was mainly channelled through cross-border capital flows (such as "fire-sells" by panicked international portfolio investors or temporary bank liquidity withdrawals) providing liquidity or financial assistance could potentially have eased the post-crisis adjustment. On the other hand, if the U.S. subprime crisis spread to other countries through a reduction of international trade – materializing as economic losses for trade-relevant firms and, in turn, as stock value declines – then capital mobility

[1] Various arguments in favour of using capital controls in addition to macroprudential measures are put forward by the IMF in the staff position note of Ostry et al. (2010). See also Rey (2013).

controls and liquidity injections would have been far less effective. A rather different scenario is where the U.S. subprime crisis transmission to worldwide equity markets might have been driven by a global meltdown in confidence (or pure contagion) in which case a greater emphasis should have been placed on structural reforms to restore confidence and on strengthening macroeconomic fundamentals to reduce vulnerabilities.[2] The transmission of the U.S. subprime crisis more realistically occurred through a mix of fundamental and pure contagion channels. In this paper, we compare the role of traditional fundamental *financial* (portfolio and bank credit flow) and *real economic* (international trade) channels.

Several aspects of our study differentiate it from extant research. First, we assess the relative importance of financial (equity, bond and bank credit) flows and international trade channels to exhaust all major fundamental channels. Second, we study the transmission role of capital flows and international trade in both *net* and *gross* terms since there is a strand of the literature which suggests that these two types of measures may convey different information regarding crisis transmission (Forbes and Warnock, 2012; Shin, 2012). Third, we take account of country heterogeneity in the degree of financial/economic development and global financial market integration of our large cross-section of 36 countries in two ways. The analysis is conducted at aggregate level using time-series data averaged across countries in five groups – Eurozone advanced economies (EU), other advanced economies (OAE), emerging markets (EM), Asia and Latin America. We conduct the analysis at country level by estimating the transmission parameters individually in order to allow for full heterogeneity.

As regards to the methodology, unlike previous work in this area such as Forbes (2013) and Kamin and DeMarco (2012) which is based on single-equation modelling approaches, we employ vector autoregressive (VAR) models together with generalized impulse response

[2] Following Bekaert et al. (2014) the term pure contagion is used here to refer to the transmission channels of crises that do not involve the direct or tangible real economic and financial (fundamental) channels.

functions (GIRF) that are immune to the VAR ordering. We extend the VAR framework adopted by Froot et al. (2001) and Bekaert et al. (2002) in order to include not only equity flows and domestic equity returns, but also bond flows, bank credit, and international trade. One merit of the VAR framework is that it accommodates reverse causality between capital flows and equity returns as not only capital flows can drive equity returns (price pressure or information hypothesis), but also equity returns can further attract flows (return-chasing or momentum investing hypothesis). Following Forbes and Rigobon (2002) and Forbes (2013), we include exogenous controls or *push* factors to account for global trends.[3] Finally, we obtain forecast error variance decompositions for equity returns from a recursive VAR model.

Due to the nature of our research question, we adopt a domestic country versus U.S. bilateral perspective for a large cross-section of 36 countries including both emerging and developed economies. The sample covers the long period from January 1988 to December 2012. We conservatively adopt January 2007 as the approximate start of the U.S. subprime crisis, and thus January 1988 to December 2006 is the 'control' or pre-crisis sample period.[4]

Among the different cross-border capital flows, we find that bank credit plays a crucial role in the transmission of the U.S. subprime crisis to equity markets. The finding is more neatly revealed in the multi-equation dynamic models based on *net* capital flows and trade as opposed to *gross* capital flows and trade. Cross-border bank credit plays a significant role in the U.S. subprime crisis transmission for all five country groups but the evidence is strongest (as consistently shown by the main VAR analysis and battery of robustness checks) for the EM

[3] Traditionally, analyses of international capital flows involving multiple economies use the term 'push' to refer to global factors affecting all countries such as the U.S. interest rate and 'pull' to refer to domestic or country-specific factors such as domestic equity returns (see, e.g. Bekaert et al., 2002; Forbes and Warnock, 2012).

[4] The first signs of the subprime crisis begin to show in February 8, 2007 when one of the world's largest banks, HSBC announces the provisioning of about $11billion as extra funds to cover losses from non-performing loans on subprime portfolios. By April 2007, over 50 mortgage companies had declared bankruptcy. The second landmark of the crisis occurs in September 7, 2008 when the U.S. government steps in to rescue Fannie Mae and Freddie Mac, two of the largest mortgage lenders in the U.S. market.

group. The coefficient estimates of the lagged effect of net bank credit on equity returns during the crisis period are particularly large for EMs which aligns well with the fact that the historical average of net bank credit during the pre-crisis period is large and positive for the EM group, exceeding that of other groups, and indicates large reliance on U.S. bank credit. The same applies to total capital flows, that is, the sum of equity, bond and bank credit, as they are dominated by the latter. The findings also reveal that, although the post-subprime crisis slump in equity markets was a pervasive phenomenon, for many countries the causality from fundamental capital flows and trade to equity returns is very tenuous and statistically insignificant. This suggests that other channels such as fundamental contagion in the form of "wake-up" calls, and pure contagion driven by market sentiments of panic and fear might have also contributed to the transmission of the U.S. subprime crisis to equities.

Our paper complements a prolific literature on the U.S. subprime crisis transmission. Claessens et al. (2010) and Blanchard et al. (2010) argue that countries more integrated with global financial markets have suffered greater output losses during the crisis. Broner et al. (2006) show that equity flows are an important factor in the propagation of financial shocks across countries. Milesi-Ferretti and Tille (2011) find a role in the recent crisis transmission for short-term debt in foreign currency. Cetorelli and Goldberg (2012a, b, c) show that global banking plays a key role in the crisis transmission since a shock to the banking system of a country reduces its supply of credit to other countries. Tong and Wei (2011) ascribe a role to global banking via a reduction in lending by domestic banks following cross-border shocks to their balance sheets. Brière et al. (2012) find that "flight-to-quality" prevails in crisis and that contagion (defined as the increase in cross-market linkages after a shock) is an artefact of globalization. It has also been shown that international trade can transmit crisis through import demand and export competition (Glick and Rose, 1999; Claessens et al., 2012).

By contrast, Rose and Spiegel (2010, 2011) find no evidence that international trade and

financial linkages with the U.S. were the main channels of the U.S. subprime crisis transmission. Kamin and DeMarco (2012) analyze industrial countries that held large amounts of U.S. mortgage-backed securities and find that neither foreign exposures to 'toxic' U.S. assets nor foreign vulnerability to dollar funding pressures can by themselves explain the crisis transmission. Bekaert et al. (2014) find instead that "wake-up calls" and domestic banking policies played an important role in the transmission of the U.S. subprime crisis.

Our paper relates to another strand of the literature that studies the dynamics of disaggregated capital flows, and/or considers gross and net flow measures. Distinct types of capital flows have distinct degrees of reversibility. Equity and bond flows have been historically more reversible than bank credit flows (Sarno and Taylor, 1999; Levchenko and Mauro, 2007; Tong and Wei, 2011). But the amount of "hot money" in cross-border bank credit and hence, degree of reversibility, notably increases post-1990s as shown by Fuertes et al. (2015). Also, even if a country's current account is relatively balanced, it may mask large gross inflows that are balanced by large gross outflows and so the country is still vulnerable to shocks (Gourinchas and Rey, 2007; Forbes and Warnock, 2012; Broner et al., 2013). The argument for cross-border bank credit is similar to that of portfolio flows (Shin, 2012).

Finally, in studying the U.S. subprime crisis transmission to equity markets worldwide, our paper adds to Bartram and Bodnar (2009), Tong and Wei (2011), Kamin and DeMarco (2012) and Forbes (2013). Others examine instead the transmission to the CDS market (e.g., Eichengreen et al. 2012; Kamin and DeMarco, 2012) but this is precluded in our paper as CDS data is not so widely available in cross-section and time span. Nonetheless, there is high dependence between CDS premia and stock prices particularly in crisis (e.g., Fei et al., 2013).

The remainder of the paper is organized as follows. Section 2 discusses the methodology and data. The main empirical results are discussed in Section 3, while and Section 4 provides a battery of robustness checks. Section 5 concludes with a summary and policy implications.

2. Methodology and data

2.1 Multivariate time-series models

Our empirical analysis of the U.S. subprime crisis transmission to equity markets is framed within the vector autoregressive (VAR) modelling approach.[5] The VAR model of order one that we adopt to analyze the dynamics of monthly time-series can be compactly written as[6]

$$\boldsymbol{Y_{i,t}} = \boldsymbol{\mu} + \boldsymbol{A}\boldsymbol{Y_{i,t-1}} + \boldsymbol{B}\boldsymbol{X_t} + \boldsymbol{e_{i,t}}, \tag{1}$$

where bold font is used to unambiguously denote vectors and matrices; i=1,2,…,N are countries and t=1,2,…,T are months in the estimation sample. The vector $\boldsymbol{e_t}$ collects white noise errors with covariance matrix $E(\boldsymbol{e_{it}}\boldsymbol{e'_{i\tau}}) = \sum_{\boldsymbol{e}}$ for $t = \tau$ and $E(\boldsymbol{e_{it}}\boldsymbol{e'_{i\tau}}) = \boldsymbol{0}$ for $t \neq \tau$; namely, the errors have zero means, constant variances, and are non-autocorrelated but correlated across equations. The endogenous vector $\boldsymbol{Y_t}$ of dimension n=6 in the present context is defined in two distinct ways; hence, two VAR models are considered. In one model, the endogenous variables are the U.S. Federal funds rate (*ffr*), the country-specific gross equity flows (*gef*), gross bond flows (*gbf*), gross bank credit (*gbc*), gross international trade (*gt*), and equity returns (*ret*); thus $\boldsymbol{Y_{it}} \equiv (ffr_t, gef_{it},\ gbf_{it}, gbc_{it}, gt_{it}, ret_{it})'$. The second model is based on $\boldsymbol{Y_{it}} \equiv (ffr_t, nef_{it},\ nbf_{it}, nbc_{it}, nt_{it}, ret_{it})'$ where n denotes net terms.

In both models, following Forbes (2013) and others, we include as exogenous variables

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[5] A VAR model of order p, denoted VAR(p), consists of n equations that express each of the n endogenous variables as a linear function of its own p lags and the p lags of the remaining n-1 variables. This is called reduced-form VAR because it can be cast as a reduced form of a dynamic economic system involving n variables with uncorrelated structural shocks (structural VAR with diagonal covariance matrix $\sum_{\boldsymbol{\varepsilon}}$). The structural parameters can be obtained from the VAR parameters through the Choleski decomposition of $\sum_{\boldsymbol{e}}$ which amounts to formulating a recursive VAR by imposing contemporaneous restrictions. The ordering $\boldsymbol{Y_{it}} = (y_{1,it}, \dots, y_{n,it})'$ implies that $y_{1,t}$ is not contemporaneously affected by any other variables, $y_{2,it}$ is contemporaneously affected by shocks to the preceding variable $y_{1,t}$ but not any others, and so forth.

[6] We begin by considering the higher-order specification $\boldsymbol{Y_{i,t}} = \boldsymbol{\mu} + \boldsymbol{A}(L)\boldsymbol{Y_{i,t-1}} + \boldsymbol{B}(L)\boldsymbol{X_t} + \boldsymbol{e_{i,t}}$where $\boldsymbol{A}(L) = \boldsymbol{A_1} + \boldsymbol{A_2}L + \cdots + \boldsymbol{A_{k-1}}L^{k-1}$ and $\boldsymbol{B}(L) = \boldsymbol{B_1} + \boldsymbol{B_2}L + \cdots + \boldsymbol{B_{J-1}}L^{J-1}$ are lag polynomial matrices. The standard Ljung-Box test is employed to identify the number of lags k-1 needed to absorb all residual autocorrelation; the maximum lag order of the exogenous vector $j \leq k$, is chosen according to the Schwartz Bayesian Criterion (SBC). Allowing for lags up to 12 months, we mostly select k=j=1 in line with Dahlquist and Robertsson (2004) and others. Hence, a higher order VAR is not relevant to our purpose.

the VXO equity volatility index, the S&P-GSCI commodity (total return) index and the 10-year Treasury yield. VXO is a forward-looking measure of "economic uncertainty" or "risk" that captures both the riskiness of financial assets as well as global investor risk aversion. S&P-GSCI serves as broad indicator of economic conditions. The 10-year Treasury yield acts as proxy for long term global interest rates; [7] that is, $\boldsymbol{X}_t \equiv (VXO_t, GSCI_t, i_{t,10})'$.

The unknown parameters are the constants, the coefficients of the endogenous variables, and the coefficients of the exogenous factors which are collected, respectively, in the matrices

$$\boldsymbol{\mu} = \begin{bmatrix} \mu_1 \\ \vdots \\ \mu_6 \end{bmatrix}, \ \boldsymbol{A} = \begin{bmatrix} a_{11} & \cdots & a_{16} \\ \vdots & \ddots & \vdots \\ a_{61} & \cdots & a_{66} \end{bmatrix}, \boldsymbol{B} = \begin{bmatrix} b_{11} & \cdots & a_{13} \\ \vdots & \ddots & \vdots \\ a_{61} & \cdots & a_{63} \end{bmatrix} \tag{2}$$

and the (co)variances of the white noise disturbances which are gathered in the matrix

$$\sum_{\boldsymbol{e}} = \begin{bmatrix} var(e_{1,it}) & \cdots & cov(e_{1,it}, e_{6,it}) \\ \vdots & \ddots & \vdots \\ cov(e_{1,it}, e_{6,it}) & \cdots & var(e_{1,it}) \end{bmatrix} \tag{3}$$

Using aggregated monthly time-series across all countries (*N*=36) and across groups of countries, we obtain $\boldsymbol{\mu}$, $\boldsymbol{A}$, $\boldsymbol{B}$ and $\sum_{\boldsymbol{e}}$ by ordinary least squares (OLS) which provides consistent and asymptotically efficient estimators. We carry out individual country-by-country estimation of the VAR model parameters as one of several robustness checks below.

The inclusion of the U.S. Fed funds rate as one of the variables in the VAR system follows from Bekaert et al. (2002) and Rey (2013). It is important to control for the effects on capital flows, trade and equity markets of the monetary policy adopted by the U.S. in the aftermath of the crisis. There is evidence that ultra-expansive Fed policy tends to dampen investors' risk

[7] VXO and VIX are highly correlated measures of market expectations of stock market volatility (see Forbes and Warnock, 2012). VXO is an estimate of the at-the-money implied volatility on the S&P 100 equity index. VIX is an average of out-of-money option price volatility across all available strikes on the S&P 500 equity index. VXO is backdated to 1986 so it can be used in our control sample whereas VIX is only backdated to 1990. The total return S&P-GSCI measures the returns accrued from investing in fully collateralized nearby commodity futures. The commodity components qualify for inclusion in the index according to liquidity measures and are weighted in relation to their global production levels (see Rallis et al., 2013).

aversion and encourages hot money flows into emerging markets (Bruno and Shin, 2012; Bekaert et al., 2013; Rey, 2013; McKinnon, 2014). The theoretical impact of monetary policy on trade is less obvious. On the one hand, U.S. expansionary policy is likely to stimulate U.S. import demand which would worsen the U.S. trade balance. However, an ultra-low Fed rate may weaken the international value of the U.S. dollar, which may decrease imports and increase exports and improve the U.S. trade balance. We tentatively conceptualize the Fed rate as the first variable in the endogenous vector; however, in various robustness checks below we consider it as exogenously determined instead.

2.2 Data description and preliminary analysis

We employ data on 15 emerging economies, 21 advanced economies (and the U.S.) from January 1988 to December 2012 (N=36 countries; T=300 months with a few exceptions as detailed in Table I). The bilateral capital outflows and inflows are sourced from the U.S. Treasury International Capital (TIC) database. The bilateral trade data are obtained from the U.S. Census Bureau, and the U.S. International Trade Commission's Tariffs and Trade databases. Following most of the literature we scale capital flows and trade, expressed in current US$ million, by domestic GDP in current US$ billion. The equity returns, defined as logarithmic monthly changes in dividend-adjusted MSCI global equity indexes in US dollars, and the VXO, S&P GSCI and 10-year Treasury yield data are from Datastream.

Net capital flows for a given country are outflows from the US (inflows to the country) minus inflows to the US (outflows from the country). Thus, a positive net flow for a given country during a period means that money as a whole flowed into the country (on account of purchases of equity or bonds, or bank lending) from the U.S. or that the U.S. is financing the country. We use the traditional definition of net trade for a given country vis-à-vis the U.S. as exports from the U.S. (to the country) minus imports to the U.S. (from the country) so that a positive net trade – a trade surplus for the US and a trade deficit for the given country –

signifies that on the whole money is flowing out of the country to the U.S. on account of bilateral transactions of goods and services. *Gross* capital flows (or trade) are defined as the sum of capital outflows and inflows (or exports and imports).

First, we begin by estimating the two VAR models described above using aggregate time series across the entire cross-section (N=36 countries) using both equal-weights and standardized value-weights. The latter are constructed from equity market capitalization data for December 2012 from the World Bank database. Second, in order to investigate whether intrinsic country characteristics play a role in the nature of the transmission we estimate the VARs using data aggregated across five country groups which are explained next.

Using *income* as criteria and according to the IMF classifications of April 2012, we group the countries as Eurozone advanced countries (EU), other advanced economies (OAE), and emerging markets (EM) which include some of the most dynamic and fastest-growing economies in the world, such as China, India and Brazil. According to geographical location, we classify the countries as Asian and Latin American; see Table I for the composition of each group and the country name abbreviations used (for succinctness) in the exposition.

[Insert Table I around here]

Figure I plots the monthly dividend-adjusted MSCI equity prices in US$ for each of the 36 countries; Panels A, B and C pertain to EU, OAE and EM countries, respectively. Panel D plots the equal-weighted average equity market prices for these groups alongside those for the Asian and Latin American groups. The graphs show that the U.S. subprime crisis is felt by all equity markets at some point between the second half of 2007 and the end of 2008; this confirms that there is “no place to hide” from the crisis (Bartram and Bodnar, 2009).

[Insert Figure I around here]

However, the extent of the equity market collapse and subsequent recovery time varies from country to country. The U.S. equity market roughly went back to its early 2007 level before the

end of the sample period in 2012, some EMs earlier than that, but most EU countries are by 2012 still below their pre-crisis levels. Table II reports the "peak" and "trough" level of each of the 36 equity markets during the January 2007 to January 2010 period and the peak-to-trough percentage change which provides an indication of the extent of the slump.

[Insert Table II around here]

The mean equity market fall is rather large and similar across the five country groups ranging from 60% (Latin America) to 68 % (EU); the dispersion across countries is small and also similar across groups ranging from 8% (OAE) to 13% (Latin America). EMs suffer a relatively large slump at over 63% from peak to trough. Table II also shows the percentage equity price change from July 2007 to January 2010. The recovery rates are different across regions, faster for Latin American countries followed by Asian countries and EMs.

To illustrate the different dynamics of net and grows flows, Figure II plots for Brazil and Philippines the net and gross trade alongside exports (from the U.S.) and imports (to the U.S.). Philippines ranks well ahead of Brazil in terms of gross trade but their positions reverse with net trade (see also Table I). In both countries, net trade experiences an upward trend in the run-up to the U.S. subprime crisis but gross trade trends downwards; the contrast is due to the fact that exports experience then a downward trend but imports too and more sharply so.

[Insert Figure II around here]

Finally, before we go any further we should emphasize the rationale for choosing January 2007 as the beginning of the U.S. sub-prime crisis. Since our question is how the U.S. subprime crisis transmits to the rest of the world, we cannot ignore the fact that banks started to show signs of distress already in January 2007, as noted in the Introduction. In adopting January 2007 (instead of going further into the year) as U.S. subprime crisis start, we take a conservative approach as it would be undesirable to contaminate the control period with crisis observations. Nevertheless, in order to empirically support our choice we conduct a Chow test based on an

F statistic for the significance of a '2007 dummy' variable (equal to 1 from January 2007 onwards and 0 elsewhere) in the two VAR models estimated on aggregate (equal-weighted and value-weighted) data over the entire cross-section of 36 countries. The null hypothesis is that the coefficient of the dummy is zero in all equations ($H_0: \mu_{ffr}^{2007} = \mu_{gef}^{2007} = \cdots = \mu_{ret}^{2007} = 0$) and likewise for the VAR model with net variables. The F statistic in the VAR model formulated with *gross* (*net*) variables with a value of is 40.32 (25.77) strongly rejects the null hypothesis of no-break versus the alternative that a break occurred in January 2007. Likewise, the F statistic for the VAR model estimated with value-weighted average data across all countries (at 47.96 and 14.66, respectively, for the *gross* and *net* terms models) confirms the presence of a structural break in early 2007.

3. Empirical results

We present results from various standard tools within the VAR framework that permit us to gauge from different angles the relative contributions of capital (equity, bond and bank credit) flows and international trade to the worldwide decline of equity returns post U.S. subprime crisis. Section 4.1 discusses the evidence from the VAR coefficient estimates and Granger causality tests. Section 4.2 discusses the findings from generalized impulse response functions and Section 4.3 discusses the forecast error variance decomposition.[8]

3.1 VAR model coefficients and Granger-causality tests

We begin by taking a look at the estimation results for the two VAR models, respectively, based on *gross* and *net* capital flows and trade variables. Table III reports the coefficient estimates for the market return equation which, given the purposes of our investigation, is the main equation of interest. Panels I and II pertain to the pre-crisis and crisis periods, respectively. Columns (1) and (2) report VAR estimation results based on monthly observations averaged

[8] The software package STATA v.12 is employed to conduct the empirical analysis.

across the entire cross-section of 36 countries using equal-weights and value-weights, respectively. Columns (3) to (7) report the corresponding results for equally-weighted average data across EU, OAE, EM, Asian and Latin American groups.

[Insert Table III around here]

On the basis of the VAR estimation results we analyze causality effects formalized à la Granger as whether the lags of one variable enter into the equation for another variable. In simple words, the notion of VAR-based Granger causality implies that current values of the *i*th endogenous variable $\{y_{i,t}\}$ help to forecast future values of the *j*th endogenous variable $\{y_{j,t+1}\}$. We consider four 'no Granger-causality' null hypotheses. The first hypothesis (H1) is that gross equity flows do not Granger-cause equity returns or that the coefficient of the lagged equity flows in the equity returns equation is zero, $H_0: a_{ret,gef} = 0$ in the VAR model, equation (1). The second null hypothesis (H2) is that gross bond flows do not Granger-cause equity returns ($H_0: a_{ret,gbf} = 0$). The third null hypothesis (H3) is that gross bank credit flows do not Granger-cause equity returns ($H_0: a_{ret,gbc} = 0$. The fourth hypothesis (H4) is that gross trade does not Granger-cause equity returns ($H_0: a_{ret,gt} = 0$). Likewise, for the VAR model formulated with *net* variables. We employ the exact *t*-statistic (or equivalently, the *F*-statistic in the context of the above single restriction hypotheses) because the effective sample in the crisis period comprises 71 months and hence, resorting to asymptotic tests is not fully justifiable. The corresponding test statistic for each hypothesis is shown in italics in Table III. It turns out that most of the rejections of the 'no Granger-causality (toward equity markets)' hypothesis in the *crisis* period pertain to the bank credit flows and this result is robust to using *gross* versus *net* capital flow/trade variables. We note, however, that the results from Wald test statistics and the corresponding asymptotic $\chi^2_{(1)}$ distribution are similar.

The most noticeable contrast between the pre-crisis and crisis period pertains to the coefficients of lagged gross bank credit on equity market returns. While no causality is detected

pre-crisis, the coefficient of lagged gross bank credit is significant and positive in many cases (country groupings) during the crisis period. This is plausible as it suggests that a decrease in gross bank credit during the crisis had an adverse impact on equity markets worldwide. This provides evidence that banks have played a dominant role in the U.S. subprime crisis transmission to the rest of the world. The coefficient of lagged gross bank credit is statistically significant and positive consistently for various country groupings; namely, in the VAR model estimated with equal-weighted time-series aggregated for all 36 countries, for EM countries and for EU countries. However, there is no evidence of Granger causality running from gross bank credit flows to equity market returns during the crisis according to the VAR estimated with data averaged across all 36 countries using value-weights and for the (equal-weights) OAE group estimation; in fact, the concurrence of results in these two cases is plausible given that the largest equity markets (by value) tend to be those of OAEs as documented in Table I. Likewise, there is no evidence of causality from gross bank credit to equity returns for the Asian and Latin American countries.

The coefficient estimates and Granger causality tests for the VAR model in *net* terms, shown in Panel B of Table III, confirm the dominant role played by bank credit versus other possible fundamental channels. We observe that while lagged net bank credit has a muted effect on equity market returns during the pre-crisis period, it has a significant effect during the crisis period and the effect of bank credit dominates that of other fundamental channels of crisis transmission such as equity flows, bond flows and trade. The effect of lagged *net* bank credit on equity returns is significant and negative in the VAR model estimated with equally-weighted average data for OAE, EM, Asian and Latin American countries; the effect is strongest for EMs and Latin American countries. However, the coefficient of lagged *net* bank credit on equity market returns is significant and positive in the VAR model estimated with equally-weighted average data for all 36 countries and for EU countries.

The contrasting sign may relate to whether the corresponding country group is dominated by countries that are on the whole financed by the U.S. according to the value of *net* bank credit (or total net capital flows since net bank credit belittles net equity and bond flows in absolute size) in which case a positive sign is plausible or instead dominated by countries that are financing the U.S. in which case a negative sign is more plausible. More specifically, as Table I shows, half of the countries in the EU group rank top by positive net bank credit (i.e., countries mostly financed by the US) and two biggest players among all 36 countries in terms of positive net bank credit are Switzerland and Finland which are precisely in the EU group for which a positive sign is found. On the other hand, the four biggest players among all 36 countries with negative net bank credit (i.e., outflows from the US are outweighed by inflows to the US; these are countries that are mostly financing the US) are Singapore, Taiwan, Hong Kong and UK which are precisely in the OAE group for which a negative sign is found.

Since the main influence of lagged capital flows on month t-1 to equity market returns on month t is detected for bank credit, it is pertinent to scrutinize the evolution of monthly bank credit over the sample period. Figure III plots in Panel A and Panel B the *gross* and *net* bank credit, respectively. The left-side of each panel plots aggregate bank credit (that is, summarized as an equal-weighted average) for EU, OAE, EM, Asian and Latin American countries. The right-side of each panel plots the bank credit for each of 6 representative countries, Switzerland (SW), Ireland (IR), Taiwan (TW), Singapore (SP), Hungary (HN) and the UK. SW and IR are chosen because they are both EU countries that rank top according to their net bank credit and total net capital flows (large positive values as Table I shows) and thus, on the whole they are being financed by the US. TW and SP are chosen because they rank bottom according to net bank credit and total net capital flows (negative values) so they are in essence financing the US. Finally, the UK and HN are chosen because they rank top and bottom, respectively, in terms of gross bank credit and total gross capital flows.

[Insert Figure III around here]

It turns out that during the crisis period the aggregate net bank credit of EU countries shows a stark contrast with that for other country groups. First, their level is overall higher suggesting that EU countries are largely reliant on bank credit outflows from the US. Second and related to the latter, although EU net bank credit increases even further in 2007 it suffers a very sharp and persistent decline thereafter. Similar dynamics are clearly observed in Switzerland which is the top ranked country over the entire cross-section of 36 countries in terms of net bank credit and Ireland also pertaining to the top net bank credit group (both EU countries). These insights help to rationalize the positive effect of lagged net bank credit on EU equity markets, namely, the net bank credit of EU countries fell sharply during the crisis period and their equity markets also fell. Such a sharp and persistent downward trend in net bank credit post-2007 is not observed for the other country groupings, in fact, net bank credit of OAE, EM, Asian and Latin American countries fluctuates around an underlying upward trend for from 2007 to 2012. However, their equity markets also fell sharply. This explains the negative effect of lagged net bank credit on equity returns for these country groups.

3.2 Generalised impulse response functions

Next we employ the framework of generalized impulse responses developed by Pesaran and Shin (1998) to analyze the effect of an unexpected one-standard-deviation shock to equity flows, bond flows, bank credit or trade on equity market returns. The GIRFs are constructed from an orthogonal set of innovations that is invariant to the ordering of variables in the VAR. Figure IV shows the cumulative impulse responses from the two VAR models with *gross* versus *net* capital flows and trade variables, respectively, estimated with aggregate (i.e., equal-weighted averaged) data across countries. The sample period for the estimation from is the crisis period defined conservatively to begin on January 2007 until December 2012.

[Insert Figure IV around here]

A unit shock in *gross* bank credit leads to a relatively large reaction in equity market returns of EM, EU and Latin American countries as shown in Panel C. The positive association confirms our previous finding that, during the crisis period, the sharp falls in equity markets were largely driven by corresponding declines in gross bank credit flows. The response of equity market returns to gross bank credit is more muted for Asian and OAE countries which, interestingly, rank ahead of the other country groups in terms of the magnitude of gross trade (as shown in Figure III, top left graph). Across all country groups, the response of equity returns is smaller in magnitude when gross equity flows or gross bond flows are shocked instead. Also across all country groups, a positive (negative) shock in gross trade leads to a decrease (increase) in equity returns which does not support the notion that trade transmitted the U.S. subprime crisis to equity markets worldwide.

The lower half of Figure IV depicts the GIRFs based on *net* capital flows and trade. Once again, the reaction of equity market returns is relatively large in magnitude when the impulse pertains to the net bank credit. A positive shock to *net* bank credit has a largely persistent effect in the same direction on equity markets of EU countries and in the opposite direction on OAE, EM, Asian and Latin American countries. Irrespective of the sign, the effect is largest in magnitude for Latin American, EM and EU countries (see Panel G). This is plausible in the light of the net bank credit trend pre-crisis observed in the bottom left graph of Figure III; clearly, these three groups rank top in terms of the size of net bank credit (top reliant) which rationalizes their larger transmission effect. We find much smaller impacts of net portfolio (equity and bond) flows and international trade on local equity returns in the crisis period.

3.3. Forecast error variance decomposition

In this section, we assess the role of capital (equity, bond, bank credit) flows and international trade in transmitting the U.S. subprime crisis to equity markets through a forecast error variance decomposition. This innovation accounting approach differs from the GIRFs in that it is based

on the recursive re-formulation of the VAR model, with endogenous vector $\boldsymbol{Y}_{it} \equiv (ffr_t, nef_{it}, nbf_{it}, nbc_{it}, nt_{it}, ret_{it})'$ or $\boldsymbol{Y}_{it} \equiv (ffr_t, gef_{it}, gbf_{it}, gbc_{it}, gt_{it}, ret_{it})'$, via the Choleski decomposition to achieve orthogonal structural shocks.

Dropping the country subscript i for simplicity, let $E_t(ret_{t+n})$ denote the n-step-ahead forecast of the equity market return from the corresponding recursive VAR equation. It is possible to decompose the variance of the forecast error, $ret_{t+n} - E_t(ret_{t+n})$, as the sum of the proportions due to temporary one-unit-standard-deviation uncorrelated structural shocks $(\varepsilon_{ffr,t}\varepsilon_{gef,t},\ldots,\varepsilon_{ret,t})'$ where $\varepsilon_{ffr,t}$ is the first error term in the recursive VAR system. The Choleski decomposition constrains the contemporaneous links among the endogenous variables; namely, $E(\boldsymbol{e}_t\boldsymbol{e}_\tau') = \sum_{\boldsymbol{e}} = \boldsymbol{B}'\boldsymbol{B}$, and $\boldsymbol{\varepsilon}_t = \boldsymbol{B}^{-1}\boldsymbol{e}_t$ with $\boldsymbol{B}^{-1}$ an upper triangular 6×6 matrix so that $E(\boldsymbol{\varepsilon}_t\boldsymbol{\varepsilon}_\tau') = \sum_{\boldsymbol{\varepsilon}}$ is a diagonal matrix of constant error variances and $(e_{ffr,t}e_{gef,t},\ldots,e_{ret,t})'$ are the correlated shocks in the reduced-VAR system (1). Hence, in contrast with the Granger-causality tests and GIRFs, the variance decomposition is linked to the VAR ordering which imposes specific contemporaneous restrictions. The ordering adopted here implies that the Fed rate (first) variable is affected within the same month by its own shocks but not by shocks to any of the country-specific capital flows and trade variables, the equity flow (second) variable is contemporaneously affected by its own shocks and by shocks to the Fed rate, and so forth. However, we should note that since we are interested in the impact of the cross-border capital flows and trade shocks on equity market returns (which, by being ordered last in the system, can potentially respond to any of the other endogenous variables within the same month), how the preceding variables are ordered is immaterial to the forecast error variance decomposition of interest for the equity returns.

Table IV shows the percentage of the total forecast error variance of equity returns at horizons of $n = \{1, 6, 12\}$ months that can be ascribed to capital flows and trade shocks. In spite of the stronger share of the variance that is attributable to the own equity return shocks,

this variance decomposition is reminiscent of our previous results because it reveals a relatively tight link between equity market returns and cross-border bank credit.

[Insert Table IV around here]

The recursive VAR model formulated in *gross* terms clearly reveals for three country groupings – EU, EM and Asian countries – that among capital (equity, bond and bank credit) flows and trade, the largest share of the variance of equity market returns corresponds to gross bank credit shocks. To illustrate, for the EU advanced economies as a whole, 16% of the forecast error variance 12 months ahead can be ascribed to gross bank credit shocks, 3% to gross equity flows, 0.4% to gross bond flows and 4% to gross trade shocks; the remaining corresponds principally to own equity market shocks (74%) and less so to the Fed rate (2%).

The recursive VAR model in *net* terms yields even more persuasive evidence of the predominant role of cross-border bank credit in transmitting the U.S. subprime crisis to equity markets worldwide. The variance decomposition reveals almost uniformly across all five country groupings that net bank credit shocks are responsible for the largest share of the forecast error variance. Again to illustrate, for the EU advanced economies as a whole over 25% of the 12-month ahead forecast error variance is due to net bank credit shocks, while only 4% to net equity flows, 0.4% to net bond flows and 2% to gross trade shocks; the remaining variation is due to equity shocks (63%) and Fed rate shocks (5%).

As a whole, our examination of a large cross-section of 36 countries (and the U.S.) over the period January 1988 to December 2012 thus far reveals that cross-border bank credit is a major driving force of the slump in global equity markets that ensued the U.S. subprime crisis. The finding is more strongly revealed in the multi-equation dynamic models based on *net* capital flows and trade as opposed to *gross* capital flows and trade. A potential reason for the later might be as follows. The international claims of global banks from BIS reporting countries has grown tenfold over the last twenty years peaking at around $25 trillion in 2007 (Cetorelli

and Goldberg, 2012c). Apart from cross-border lending, banks have set up branches in foreign locations to serve their clients. When these global banks are faced with a funding shock, they apply basic corporate finance principles by activating capital markets internal to the organization, reallocating funds across locations in response to their relative needs. Cetorelli and Goldberg (2012c) confirm the existence of an active cross-border, internal capital market. In this internal funding allocation process, the parent bank is arguably most concerned with the *net* (as opposed to *gross*) bank credit flow positions at each specific location and their impact on the banking organisation as a whole.

4. Robustness tests

Seeking to add robustness to our main findings, we reformulate the VAR models. First, we consider more heavily parameterized model specifications where all six endogenous variables enter lagged one and two months. Second, we consider capital flows and trade data scaled by domestic equity market capitalization instead of GDP. Third, we add the TED spread (for which monthly data are obtained from Datastream) to the original vector of exogenous or global factors. Measured as the difference between 3-month LIBOR and the 3-month T-bill rate, the TED spread is a great indicator of interbank credit risk and the perceived health of the banking system; thus the exogenous vector comprises the VXO, GSCI changes, the 10 year U.S. government bond yield and the TED spread, $\boldsymbol{X}_t \equiv (VXO_t, GSCI_t, i_{t,10}, TED)'$.

As a fourth robustness check, the Fed rate is moved from the endogenous vector to the exogenous vector which thus becomes $\boldsymbol{X}_t \equiv (VXO_t, GSCI_t, i_{t,10}, Fed_t)'$. Fifth, we consider as exogenous vector $\boldsymbol{X}_t \equiv (VXO_t, GSCI_t, i_{t,10}, Fed_t, TED_t)'$. Finally, in line with the arguments of post-Keynesian horizontalists[9] and motivated by the empirical findings in Warnock and

[9] Post-Keynesian theorists are traditionally classified as horizontalists and structuralists. Horizontalists argue that the short-term interest rate is exogenously set by the central bank and influences long-term interest rates. Structuralists content that market-determined long-term interest rates determine short-term rates (Lavoie 2011).

Warnock (2009), we consider the long-term interest rate ($i_{t,10}$) as endogenous to the system and the Fed rate instead as exogenous. Warnock and Warnock (2009) find that large foreign inflows into U.S. bonds have depressed long-term U.S. interest rates and, in turn, spurred U.S. economic activity; in plain words, long-term U.S. interest rates have been lower than they would have been in a world of larger net bond flows.

For space constraints, we report a summary of the latest four robustness checks in Panels A to D of Table V, respectively. The table reports the results for the VAR model formulated with *net* variables but we note that, as in the main analysis, the role of bank credit is not as clearly revealed with *gross* variables. All unreported results are available from the authors upon request. The findings are robust to all the above model re-specifications.

[Insert Table V around here]

Next the endogenous variable of main interest for the present purposes, ret_{it}, is defined as the equity market returns in local currencies instead of common U.S. dollars. The results reported in Panel E provide interesting reading. Bank credit remains the predominant channel of U.S. subprime crisis transmission to equity markets. However, the relatively small transmission of the U.S. subprime crisis (towards equity markets) revealed by the VAR model with equity returns computed from US$ denominated indices further lessens when we consider local currency denominated equity indices. This suggests that our model may also be able to capture a part of the U.S. subprime crisis transmission through the FOREX markets.

Regarding the relative importance given to individual countries in each group (i.e., EU OAE, EM, Asian and Latin American countries) we re-estimate the VAR models using value-weighted averaged data for each group; that is, weights defined according to 2012:12 equity market capitalization figures appropriately normalized so that they sum to one for each group. Thus, for instance, while in the main analysis the VAR coefficients for the EU group are estimated using equal-weighted averaged data across countries, now France, Germany and

Spain receive a much larger weight (29.84%, 24.33% and 16.29%, respectively) by equity market capitalization. Clearly, bank credit dominates the causality effects towards equity market returns in the crisis period, reinforcing our main findings. Panel F of Table V shows the VAR coefficients based on value-weighted average data across countries in each group.

Then we estimate the VAR models individually country by country. Following Brun-Aguerre et al. (2012) and others, the individual country coefficients thus obtained are used to estimate panel coefficients and to deploy Granger causality tests following the Mean Group approach proposed by Pesaran and Smith (1995); the corresponding *t*-statistics are based on the standard deviation of the individual country estimates. In essence, this is a dynamic panel estimation approach that allows for full country heterogeneity. Panel G of Table V shows the Mean Group estimates and causality tests for the VAR in *net* terms. The results are reminiscent of our main finding (from the earlier VAR models estimated with average data across countries) of a predominant role for bank credit. The relevant coefficients of the equity returns equation obtained through country-by-country estimation are shown in Appendix A as a "heat map"; light (or dark) grey shade indicates significant Granger causality from the corresponding variable to equity market returns at the 5% (or stronger 1%) level. The number of countries where cross-border net bank credit significantly causes equity returns increases fourfold from the pre-crisis to the crisis period, and the average coefficient of lagged bank credit in the market returns equation increases substantially from -0.097 to -0.600 for EMs.

Finally, we redefine the crisis period for the VAR model estimation to commence on July 2007 which produces very similar evidence (if anything, stronger) on the key crisis transmission role of cross-border bank credit. The results are shown in Panel H of Table V. [10]

[10] As a by-product of our multi-equation VAR modelling approach, we find strong evidence that during the crisis period from January 2007 to December 2012 the coefficient of the lagged Fed rate in the net trade equation is significantly negative in the equally-weighted average data estimation for OAE, EM, Asian and Latin American countries; this evidence supports the "beggar-thy-neighbour" effect. The coefficients of lagged net equity, bond or capital flows in the net trade equation are mostly insignificant; only for the EM and Latin American groups the

Taken together, the main VAR estimation results reported in Table III together with the battery of robustness checks reported in Table V reveal that during the crisis period not only cross-border *net* bank credit plays a key role as driver of equity returns but there is also a consistent pattern in the relative magnitude of the effect of lagged bank credit on equity returns across groups. Generally, the largest coefficients of net bank credit pertain to the EM group followed by the Latin American countries (all five of which are also classified as EMs). The finding that the EM group stands out is aligned with recent studies that underline the impact of the recent financial crisis on EMs; see, e.g. Dooley and Hutchinson (2009) and Bartram and Bodnar (2009). Moreover, the finding is aligned with the fact that, as shown in Appendix B, both the total (cumulated) and average net bank credit flows over the January 1998 to December 2006 period that precedes the U.S. subprime crisis are largest (taking positive values) for EMs; a similar observation applies to total capital flows.

The correlation between the country VAR coefficient of lagged net bank credit in the equity market return equation (Appendix A) and the average net capital flows prior to the crisis (Appendix B) across all 36 countries is negative at -3.26%. This negative correlation tentatively suggests that capital outflows (i.e., positive net flows) in the pre-crisis period tend to be associated with large and negative coefficient estimates of net bank credit in the crisis period. We also observe that, precisely, for the EM group (and the Latin American subgroup) the average net bank credit experiences a reversal, that is, it switches sign from positive (outflows) in the pre-crisis sample period from January 1998 to December 2006 to negative (inflows) in the crisis period from January 2007 to December 2012. In fact, such switch from positive net bank credit to negative net bank credit for EMs is already observed in the last pre-crisis year (c.f. Panels I and II of Appendix B). The same observations apply to net capital flows as a

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coefficient is significant and negative which only mildly reveals a “credit constraint” effect during the crisis.

whole.[11] It is then plausible to find for the EM countries – whose long-run average of capital flows prior to the crisis suggest relatively large reliance on bank credit outflows from the U.S. – that their equity market returns are highly sensitive to the retrenchment of U.S. bank credit outflows in the aftermath of the subprime crisis.

5. Conclusions

This paper examines various plausible fundamental channels of transmission of the U.S. subprime crisis towards the equity markets of 36 countries using standard multi-equation time-series modelling techniques. Using data sampled monthly, we estimate vector autoregressive (VAR) models to capture the joint dynamics of a set of endogenous variables that comprise equity market returns, cross-border capital (equity, bond and bank credit) flows and international trade, while controlling for investor-fear risk, commodity market risk and U.S. long-term interest rates as exogenous or push factors. We test for the presence of causality from cross-border portfolio (equity and bond) flows, bank credit flows, and international trade towards worldwide equity market returns.

The analysis is conducted separately for capital flows and trade measured in *gross* and *net* terms. Moreover, the VAR coefficients are estimated using average data across countries – Eurozone advanced economies (EU), other advanced economies (OAE), emerging markets (EM), Asian and Latin American countries – and individual country data in order to obtain panel coefficient estimates that accommodate full heterogeneity across countries.

The results from an eclectic VAR-based methodology that includes Granger causality tests, generalized impulse response functions and forecast error variance decompositions indicate that cross-border bank credit did play a predominant role in the transmission of the US

[11] An ancillary observation that also differentiates the EM group (and Latin American subgroup) from the other groups is that the cross-section variation in net bank credit and total net capital flows, as measured by the standard deviation across countries, increases very little from the pre-crisis period to the crisis period, or even decreases when we compare the last year pre-crisis and the first year of the crisis period.

subprime crisis to worldwide equity markets. This finding is pervasive across country groups but the magnitude of the transmission effect from bank credit to equity market returns is stronger for EM countries. More clearcut evidence is obtained when we measure capital flows and trade in *net* rather than *gross* terms. A battery of robustness checks – redefining the exogenous vector of variables to comprise the Fed interest rate and/or the TED spread, measuring the equity indices in local currencies instead of US dollars, weighing the countries in each group according to equity market capitalization, and moving the start date of the U.S. subprime crisis period to July 2007 – yield results that do not challenge the main findings.

The paper adds to a recent literature arguing that a side effect of the banking globalization phenomena is that cross-border bank credit flows have become, both on account of their size and reversibility, relatively more worrisome to risk managers (e.g., Acharya and Merrouche, 2012; Cetorelli and Goldberg, 2012a,b,c; Fuertes et al., 2015). As regards to policy lessons, our findings endorse the efforts made by policymakers and international organizations to implement better surveillance of a market's external exposure to other markets, as well as improved prudential banking regulations together with capital controls.

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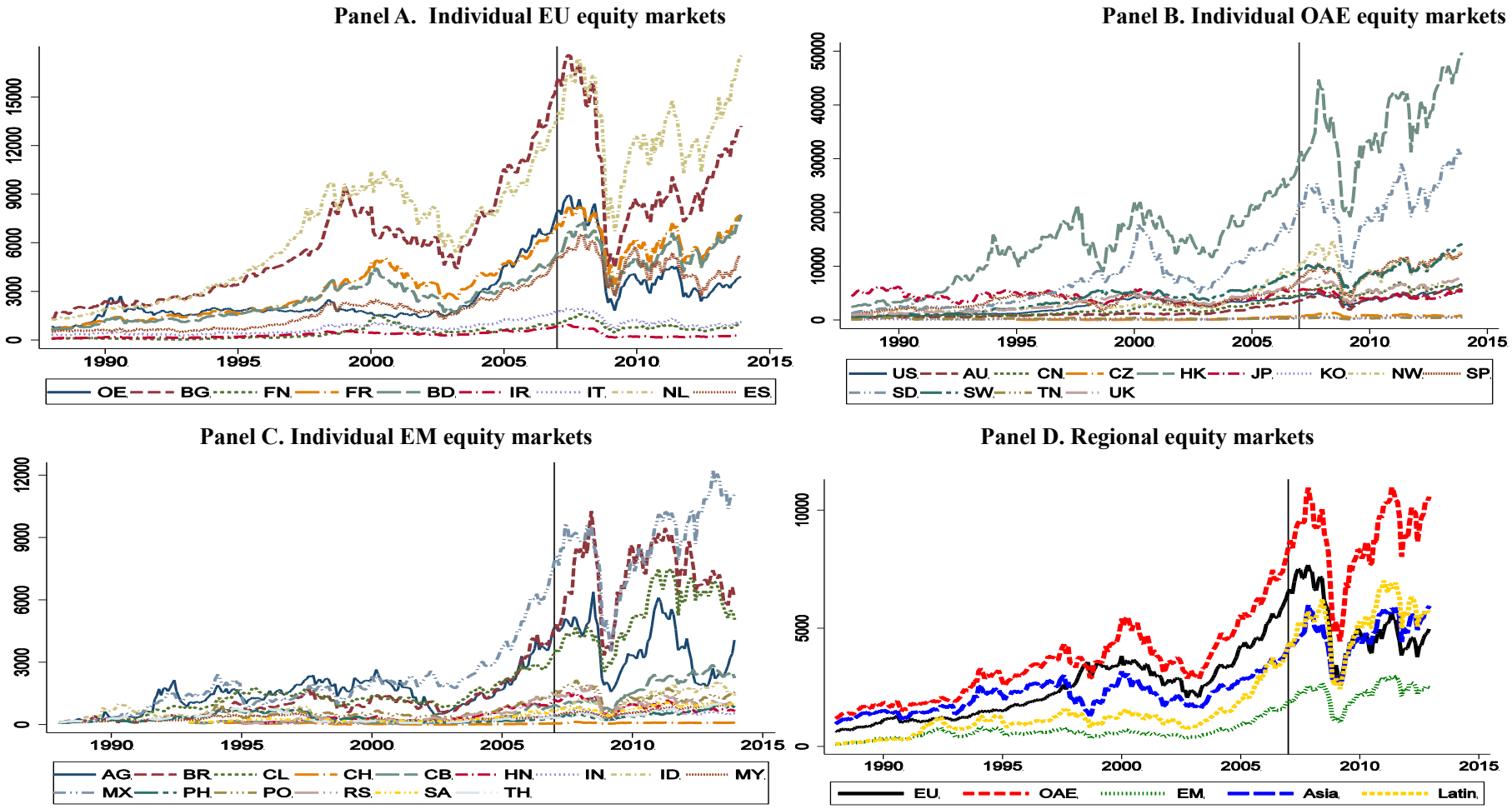
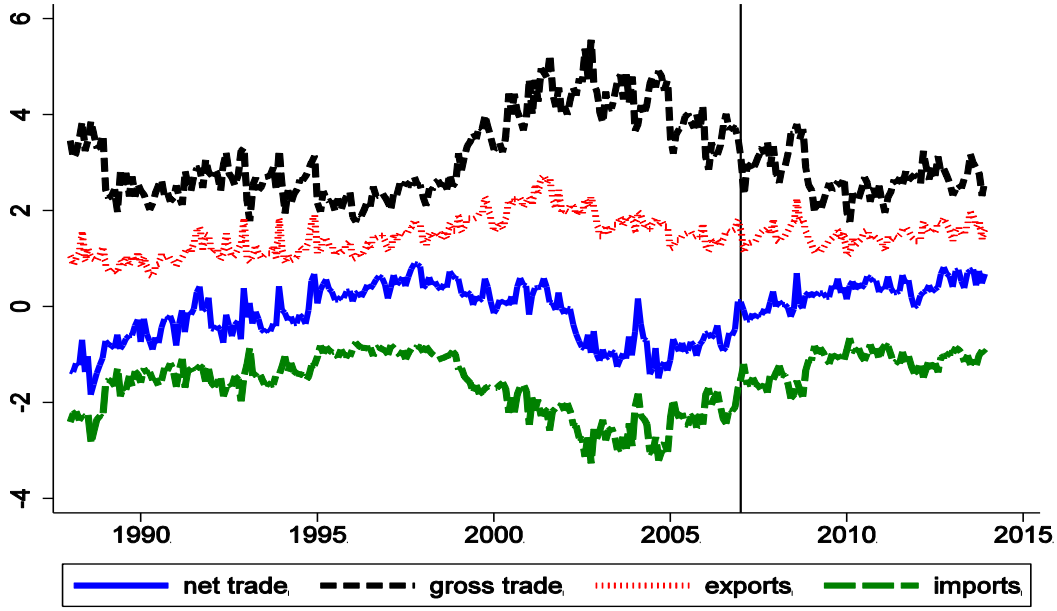


Figure I. Equity market prices. The figure plots in Panels A, B and C the dividend-adjusted MSCI equity prices in US$ for Eurozone advanced economies (EU), other advanced economies (OAE), and emerging markets (EM). The country names are listed in Table I. Panel D plots the equity market prices for five groups computed as the equal-weighted average of the individual MSCI equity prices. The sample period is from January 1988 to December 2012. The vertical line conservatively marks the start of the U.S. subprime crisis on January 2007.

Panel A. Monthly trade for Brazil



Panel B. Monthly trade for Philippines

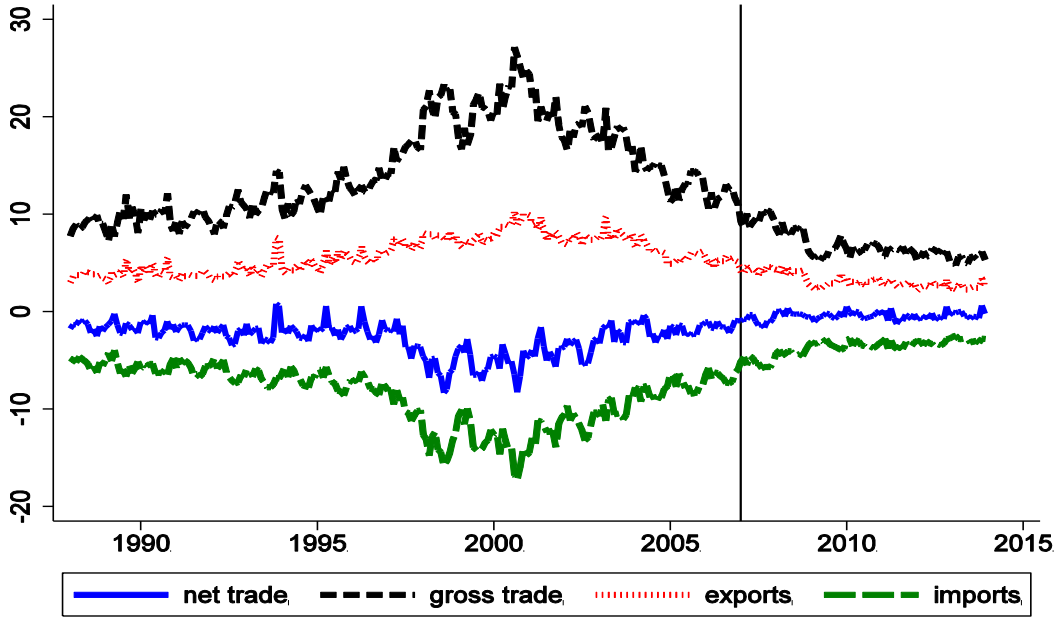
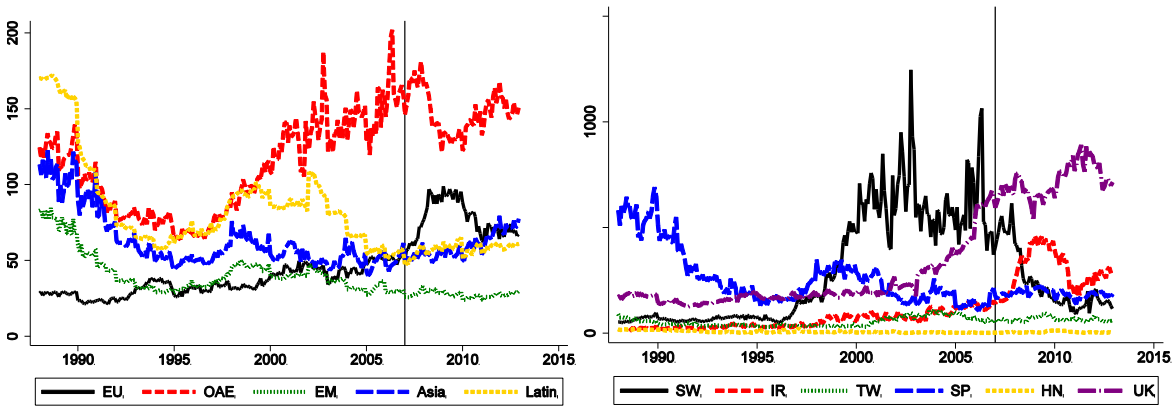


Figure II. Bilateral trade with US of Brazil and Philippines. The figure plots monthly net grade (*exports* - *imports*), gross trade (*exports* + *imports*), *exports* and *imports* for Brazil and Philippines in current US$ million scaled by domestic GDP in current US$ billion from January 1988 to December 2012. Exports denote the scaled amount flowing from the given country to the U.S. on account of purchases of U.S. goods and services (exports from the U.S. to Brazil and Philippines). The negative imports plotted denote the scaled amount flowing from the U.S. to the given country on account of U.S. purchases of goods and services (imports to the U.S.). The vertical line conservatively marks the start of the U.S. subprime crisis on January 2007.

Panel A. Gross bank credit



Panel B. Net bank credit

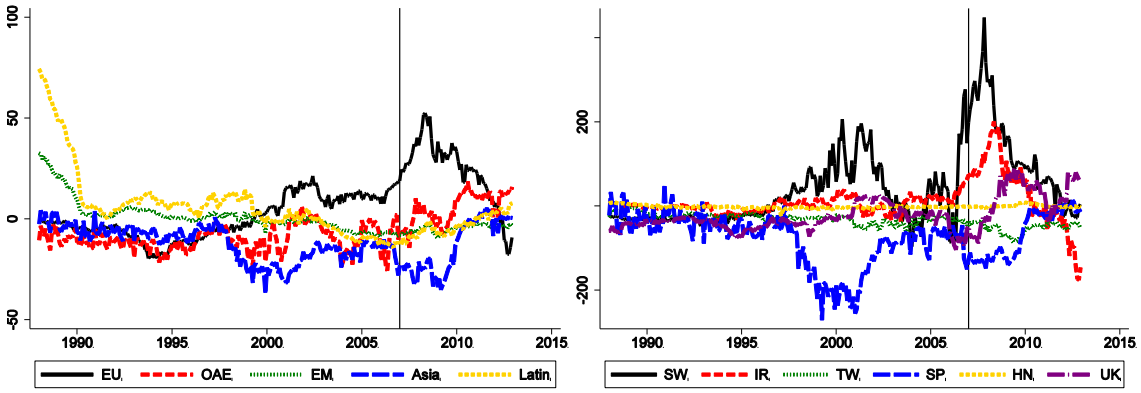


Figure III. Cross-border bank credit flows. The figure shows monthly cross-border *gross* and *net* bank credit for various country groupings and for six individual countries (Switzerland, Ireland, Taiwan, Singapore, Hungary and the UK) in current US$ million scaled by domestic GDP in current US$ billion. The sample period is January 1988 to December 2012. The vertical line conservatively marks the start of the U.S. subprime crisis on January 2007.

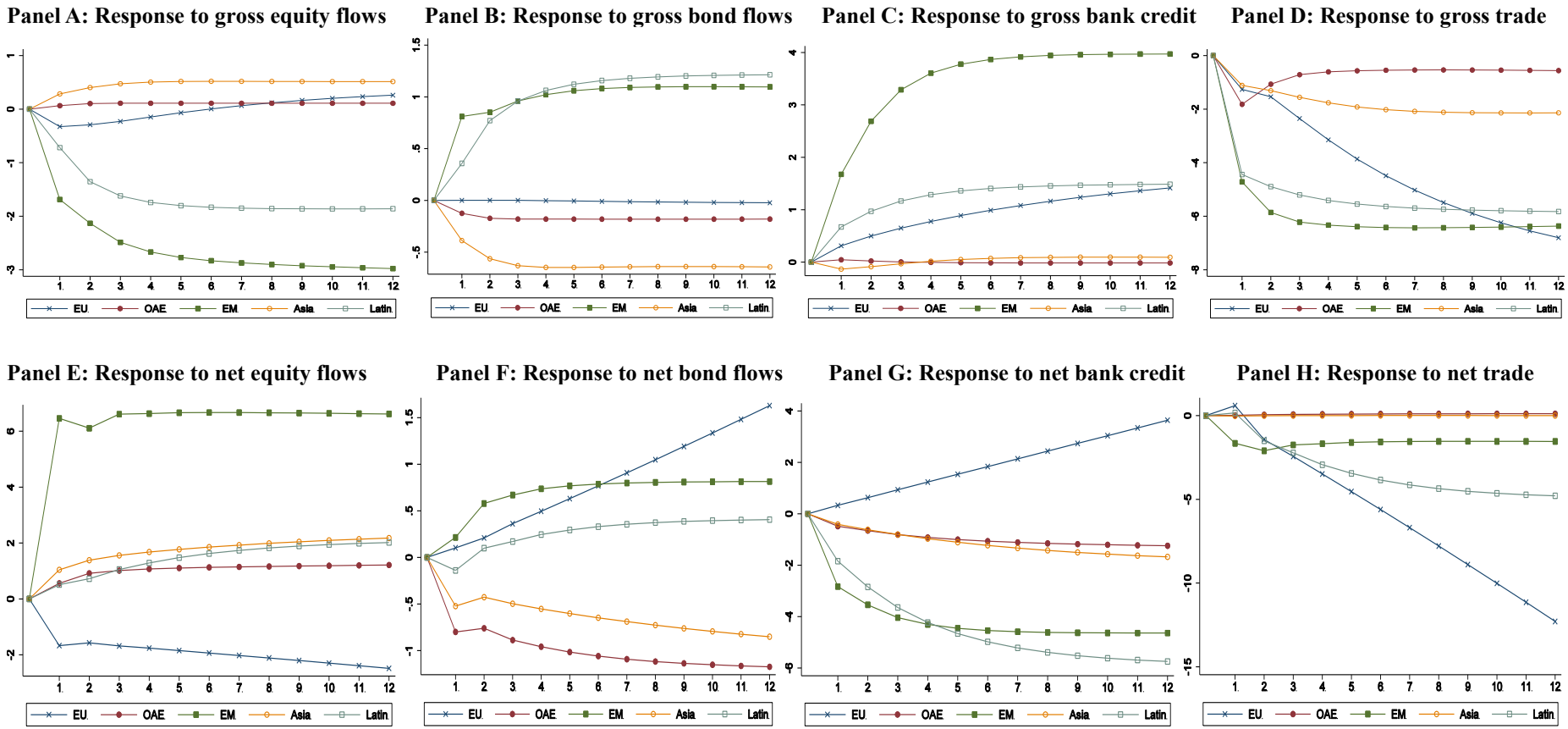


Figure IV. Generalized impulse response functions of equity returns. The figure plots cumulative generalized impulse response functions (GIRF) of equity returns to one-unit standard deviation shocks to either bilateral equity flows, bond flows, bank credit flows or international trade with the U.S. defined in *gross* and *net* terms. The GIRFs are computed from the VAR coefficients reported in Table II over the crisis period. EU denotes Eurozone advanced economies, OAE are other advanced economies, EM are emerging markets. The vertical axis is returns in percentages and the horizontal axis is months. The sample period is January 2007 to December 2012.

Table I. Sample description. The value-weights expressed in percentages are standardized equity market capitalization figures for 2012:12. EU are Eurozone advanced economies, OAE are advanced economies, EM are emerging markets. TOP and BOTTOM are country rankings according to average equity flows, bond flows, bank credit flows, total capital flows and trade in current US$ million scaled by domestic GDP in current US$ billion (reported in parenthesis). The sample period for each country refers to the longest time span for which data are available on all the country-specific capital flows, trade and market return variables.

All countries				Income			Geography		TOP ranked by *gross* capital flows/trade					BOTTOM ranked by *gross* capital flows/trade					TOP ranked by *net* capital flows/trade					BOTTOM ranked by *net* capital flows/trade				
Name		Sample period	Value-weight	EU	OAE	EM	Asia	Latin America	equity flows	bond flows	bank credit	capital flows	trade	equity flows	bond flows	bank credit	capital flows	trade	equity flows	bond flows	bank credit	capital flows	trade	equity flows	bond flows	bank credit	capital flows	trade
Argentina	AG	Jan88-Dec12	0.11			AG		AG			AG (76)				AG (9)			AG (3)					AG (0)			AG (-9)	AG (-9)	
Australia	AU	Jan88-Dec12	4.07		AU				AU (11)										AU (0.1)	AU (0.2)	AU (3)	AU (3)	AU (1)					
Germany	BD	Jan88-Dec12	4.64	BD											BD (9)									BD (-0.1)		BD (-4)	BD (-5)	
Belgium	BG	Jan01-Dec12	0.94	BG					BG (11)	BG (23)	BG (75)	BG (109)								BG (5.2)			BG (2)	BG (-0.2)		BG (-13)	BG (-8)	
Brazil	BR	Jan88-Dec12	3.83			BR		BR											BR (0.3)		BR (13)	BR (13)	BR (-0)					
Colombia	CB	Jan93-Dec12	0.82			CB		CB			CB (68)		CB (8)	CB (2.2)						CB (-0.2)								
China	CH	Jan93-Dec12	11.54			CH	CH							CH (0.4)		CH (9)	CH (19)								CH (-1.5)		CH (-5)	CH (-4)
Chile	CL	Jan88-Dec12	0.96			CL		CL			CL (134)	CL (160)	CL (7)								CL (25)	CL (24)	CL (1)		CL (-0.8)			
Canada	CN	Jan88-Dec12	6.44		CN				CN (37)	CN (90)	CN (87)	CN (214)	CN (34)								CN (17)	CN (16)		CN (-0.2)	CN (-0.6)			CN (-3)
Czech Rep	CZ	Jan95-Dec12	0.12		CZ					CZ (23)				CZ (1.7)		CZ (7)	CZ (32)	CZ (2)						CZ (-0.1)	CZ (-0.5)			
Spain	ES	Jan88-Dec12	3.11	ES											ES (10)	ES (18)	ES (30)	ES (1)					ES (0)					
Finland	FN	Jan88-Dec12	0.49	FN											FN (10)			FN (2)		FN (0.1)	FN (37)	FN (37)						
France	FR	Jan88-Dec12	5.69	FR					FR (32)	FR (66)		FR (146)						FR (2)			FR (8)	FR (8)		FR (-0.1)				
Hong Kong	HK	Jan88-Dec12	3.45		HK		HK		HK (110)	HK (104)	HK (201)	HK (416)	HK (13)						HK (0.3)				HK (2)		HK (-8.0)	HK (-33)	HK (-41)	
Hungary	HN	Jan95-Dec12	0.07			HN								HN (1.0)	HN (6)	HN (7)	HN (14)	HN (3)		HN (0.2)								
Indonesia	ID	Jan88-Dec12	1.24			ID	ID							ID (1.1)	ID (4)	ID (15)	ID (21)		ID (0.1)	ID (-0.0)								ID (-2)
India	IN	Jan93-Dec12	3.94			IN	IN							IN (1.1)	IN (1)	IN (8)	IN (10)	IN (2)	IN (0.1)	IN (-0.0)								
Ireland	IR	Jan95-Dec12	0.34	IR					IR (46)	IR (249)	IR (124)	IR (419)	IR (13)							IR (-0.1)	IR (9)	IR (8)		IR (-0.7)				IR (-5)
Italy	IT	Jan88-Dec12	1.50	IT											IT (4)	IT (13)	IT (21)	IT (2)		IT (-0.2)								
Japan	JP	Jan88-Dec12	11.44		JP		JP			JP (26)									JP (0.1)		JP (8)	JP (7)			JP (-1.2)			JP (-1)
South Korea	KO	Jan89-Dec12	3.68		KO		KO						KO (8)						KO (0.2)		KO (14)	KO (14)			KO (-0.6)			KO (-1)
Mexico	MX	Jan88-Dec12	1.65			MX		MX			MX (74)	MX (89)	MX (25)															MX (-3)
Malaysia	MY	Jan88-Dec12	1.49			MY	MY						MY (21)			MY (21)			MY (0.2)							MY (-7)	MY (-8)	MY (-8)
Netherlands	NL	Jan88-Dec12	2.03	NL					NL (18)	NL (26)		NL (94)								NL (0.1)	NL (9)	NL (9)	NL (2)	NL (-0.4)				
Norway	NW	Jan88-Dec12	0.79		NW					NW (68)		NW (130)						NW (2)						NW (-0.6)	NW (-1.1)	NW (-7)	NW (-9)	
Austria	OE	Jan88-Dec12	0.33	OE										OE (2.6)	OE (7)	OE (16)	OE (26)	OE (2)										
Philippines	PH	Jan88-Dec12	0.82			PH	PH						PH (12)	PH (2.1)					PH (0.1)	PH (-0.1)						PH (-4)		PH (-2)
Poland	PO	Jan93-Dec12	0.55			PO								PO (0.3)	PO (6)	PO (13)	PO (20)	PO (1)					PO (0)			PO (-4)	PO (-5)	
Russia	RS	Jan95-Dec12	2.72			RS								RS (0.5)	RS (6)	RS (13)	RS (20)	RS (2)								RS (-5)	RS (-5)	
South Africa	SA	Jan93-Dec12	1.90			SA								SA (1.9)	SA (2)	SA (11)	SA (15)		SA (0.1)	SA (0.2)								
Sweden	SD	Jan88-Dec12	1.75		SD				SD (16)												SD (12)	SD (12)		SD (-0.2)				SD (-1)
Singapore	SP	Jan88-Dec12	1.34		SP		SP		SP (59)	SP (172)	SP (246)	SP (477)	SP (28)										SP (-0)	SP (-1.4)	SP (-4.4)	SP (-76)	SP (-82)	
Switzerland	SW	Jan88-Dec12	3.37		SW				SW (42)	SW (27)	SW (281)	SW (350)									SW (42)	SW (41)	SW (-0)	SW (-0.4)	SW (-1.2)			
Thailand	TH	Jan88-Dec12	1.20			TH	TH						TH (10)	TH (2.0)			TH (36)		TH (0.1)									TH (-4)
Taiwan	TW	Jan91-Dec12	2.29		TW		TW		TW (9)		TW (57)		TW (15)						TW (0.5)						TW (-2.2)	TW (-34)	TW (-35)	TW (-4)
UK	UK	Jan88-Dec12	9.46		UK				UK (101)	UK (357)	UK (357)	UK (816)											UK (-0)	UK (-0.4)	UK (-5.7)	UK (-21)	UK (-27)	

Table II. Descriptive statistics for equity markets. The table reports in column 2 for each of the five country groupings – EU, OAE, EM, Asia and Latin American – the value-weight of each country component or equity market capitalization as of December 2012 appropriately standardized so that it sums to unity. The columns labelled Peak and Trough report the date (and equity price in US$) pertaining to the highest and lowest points, respectively, over the January 2007 to January 2010 period and the corresponding percentage change (Δ%; column 5). The last three columns report the equity market level on January 2007 and January 2010, and the corresponding percentage change.

Group/ country	value-weight %	Equity market price from January 2007 to January 2010					
		Peak	Trough	Δ%	Jan07	Jan10	Δ%
Advanced Eurozone countries (EU)							
OE	**1.74**	Jun07 (8937)	Sep09 (1801)	-79.85	7913	3738	-52.76
BG	**4.91**	Jun07 (17595)	Sep09 (4468)	-74.61	15992	8425	-47.32
FN	**2.59**	Nov07 (1595)	Sep09 (446)	-72.04	1013	776	-23.33
FR	**29.84**	Nov07 (8192)	Sep09 (3427)	-58.16	7124	6202	-12.95
BD	**24.33**	Jan08 (7287)	Sep09 (2766)	-62.04	5361	5026	-6.24
IR	**1.78**	Jun07 (943)	Sep09 (151)	-84.03	873	224	-74.35
IT	**7.86**	May07 (1925)	Sep09 (668)	-65.30	1777	1239	-30.26
NL	**10.65**	Nov07 (17356)	Sep09 (6736)	-61.19	13896	12549	-9.69
ES	**16.29**	Dec07 (6516)	Sep09 (2720)	-58.25	5072	5499	8.42
	Average			*-68.39*			*-27.61*
	StDev			*9.60*			*26.27*
Other advanced economies (OAE)							
AU	**8.45**	Nov07 (5304)	Sep09 (1900)	-64.17	3645	4185	14.81
CN	**13.36**	Jun08 (6635)	Sep09 (2759)	-58.42	4701	5285	12.41
CZ	**0.24**	Jul08 (1318)	Sep09 (465)	-64.76	753	859	14.07
HK	**7.16**	Oct07 (44651)	Sep09 (19219)	-56.96	30373	33512	10.33
JP	**23.74**	Mar07 (5813)	Sep09 (2987)	-48.62	5548	4011	-27.71
KO	**7.64**	Nov07 (673)	Sep09 (201)	-70.15	455	467	2.50
NW	**1.64**	Jun08 (14847)	Dec08 (4244)	-71.41	10314	9299	-9.84
SP	**2.77**	Nov07 (10601)	Sep09 (4133)	-61.02	7646	8994	17.63
SD	**3.63**	Dec07 (25345)	Sep09 (8980)	-64.57	21586	18471	-14.43
SW	**6.99**	Jun07 (10184)	Sep09 (5095)	-49.98	9289	8744	-5.87
TW	**4.76**	Nov07 (452)	Mar09 (195)	-61.24	367	391	6.46
UK	**19.62**	Nov07 (8100)	Sep09 (3140)	-75.26	7003	5623	-19.69
	Average			*-62.21*			*0.06*
	StDev			*8.05*			*15.17*

(*Cont.*)

Group/ country	value-weight %	Equity market price from January 2007 to January 2010					
		Peak	Trough	Δ%	Jan07	Jan10	Δ%
Emerging markets (EM)							
AG	**0.33**	Nov07 (6379)	Sep09 (1578)	-75.26	4682	3357	-28.30
BR	**11.67**	Jul08 (10257)	Sep09 (3346)	-67.38	4701	8501	80.82
CL	**2.94**	Jun08 (4728)	Dec08 (2552)	-46.02	3428	5117	49.25
CH	**35.16**	Nov07 (145)	Dec08 (50)	-65.71	71	95	32.94
CB	**2.49**	Nov07 (1296)	Sep09 (686)	-47.05	956	1518	58.78
HN	**0.20**	Jun08 (1530)	Sep09 (332)	-78.28	1205	962	-20.19
IN	**12.01**	Jul07 (858)	Sep09 (254)	-70.44	495	615	24.17
ID	**3.77**	Jan08 (1213)	Sep09 (411)	-66.11	764	1181	54.56
MY	**4.52**	Mar08 (635)	Dec08 (344)	-45.92	435	568	30.59
MX	**5.01**	Jan08 (9672)	Dec08 (3532)	-63.48	7848	7867	0.24
PH	**2.51**	Jun07 (497)	Sep09 (231)	-53.66	349	400	14.54
PO	**1.69**	Nov07 (2146)	Sep09 (519)	-75.82	1537	1269	-17.39
RS	**8.27**	Nov07 (1924)	Sep09 (404)	-79.03	1468	983	-33.07
SA	**5.79**	Jun08 (873)	Sep09 (386)	-55.78	671	776	15.79
TH	**3.64**	Nov07 (504)	Sep09 (208)	-58.76	326	438	34.49
	Average			*-63.25*			*19.81*
	StDev			*11.61*			*34.18*
Asian countries							
CH	**28.74**	Nov07 (145)	Dec08 (50)	-65.71	71	95	32.94
HK	**8.59**	Oct07 (44651)	Sep09 (19219)	-56.96	30373	33512	10.33
ID	**3.08**	Jan08 (1213)	Sep09 (411)	-66.11	764	1181	54.56
IN	**9.82**	Jul07 (858)	Sep09 (254)	-70.44	495	615	24.17
JP	**28.49**	Mar07 (5813)	Sep09 (2987)	-48.62	5548	4011	-27.71
KO	**3.50**	Nov07 (673)	Sep09 (201)	-70.15	455	467	2.50
MY	**3.70**	Mar08 (635)	Dec08 (344)	-45.92	435	568	30.59
PH	**2.05**	Jun07 (497)	Sep09 (231)	-53.66	349	400	14.54
SP	**3.33**	Nov07 (10601)	Sep09 (4133)	-61.02	7646	8994	17.63
TH	**2.98**	Nov07 (504)	Sep09 (208)	-58.76	326	438	34.49
TW	**5.71**	Nov07 (452)	Mar09 (195)	-61.24	367	391	6.46
	Average			*-59.87*			*18.23*
	StDev			*8.15*			*21.36*
Latin American countries							
AG	**1.45**	Nov07 (6379)	Sep09 (1578)	-75.26	4682	3357	-28.30
BR	**52.00**	Jul08 (10257)	Sep09 (3346)	-67.38	4701	8501	80.82
CB	**11.11**	Nov07 (1296)	Sep09 (686)	-47.05	956	1518	58.78
CL	**13.10**	Jun08 (4728)	Dec08 (2552)	-46.02	3428	5117	49.25
MX	**22.35**	Jan08 (9672)	Dec08 (3532)	-63.48	7848	7867	0.24
	Average			*-59.84*			*32.16*
	StDev			*12.87*			*44.84*

Table III. VAR coefficients and Granger-causality tests. The table reports coefficients estimates of the equity returns (*ret*) equation corresponding to one-month lagged gross or net equity flow (*gef* or *nef*), gross or net bond flow (*gbf/ nef*), gross or net bank credit (*gbc/nbc)*, and gross or net trade (*gt/nt*). The numbers in the second row (in italics) are *t*-statistics for the null hypothesis of 'no Granger-causality' from capital flows or trade to equity returns or that the corresponding coefficient of lagged capital flow or trade is zero. The VAR coefficients and covariance matrix are estimated by OLS. ** and *** in the shaded area indicate that the null hypothesis of no Granger-causality is rejected at the 5% and 1% levels, respectively, using the exact Student *t* distribution with *T-k* degrees of freedom where *k*=10 is the number of parameters in each equation. The left (right) panel reports the results of the model for *gross* (*net*) capital flows and trade variables. Panel I pertains to the pre-crisis period 1988:01-2006:12 and Panel II to the crisis period 2007:01-2012:12.

Panel A. *Gross* capital flows and trade variables								Panel B. *Net* capital flows and trade variables							
	All countries		*Income*			*Geographical location*			*All countries*		*Income*			*Geographical location*	
	equal-weight	value-weight	EU	OAE	EM	Asia	Latin America		equal-weight	value-weight	EU	OAE	EM	Asia	Latin America
I. Pre-crisis period (January 1988 to December 2006)															
Equity flows	0.06	-0.16	0.13	0.08	0.60	0.16	0.39	**Equity flows**	-0.50	0.64	-0.93	-0.16	**10.45** ***	-0.48	**6.68** ***
H1: *gef* → *ret*	*0.18*	*-0.31*	*0.40*	*1.23*	*0.49*	*1.51*	*0.71*	H1: *nef* → *ret*	*-0.53*	*0.24*	*-0.99*	*-0.59*	*2.97*	*-1.43*	*3.57*
Bond flows	-0.04	0.21	-0.01	-0.02	0.09	0.01	0.14	**Bond flows**	-0.41	-0.77	-0.16	-0.21	-0.70	-0.36	0.27
H2: *gbf* → *ret*	*-0.35*	*1.14*	*-0.17*	*-0.83*	*0.32*	*0.16*	*0.87*	H2: *nbf* → *ret*	*-0.64*	*-0.61*	*-0.28*	*-1.11*	*-1.12*	*-1.63*	*0.64*
Bank credit	0.15	0.17	-0.15	-0.01	0.06	-0.04	-0.03	**Bank credit**	0.16	-0.30	-0.06	0.00	-0.07	-0.14	-0.14
H3: *gbc* → *ret*	*1.52*	*0.98*	*-0.86*	*-0.34*	*0.32*	*-0.41*	*-0.34*	H3: *nbc* → *ret*	*1.68*	*-0.70*	*-0.29*	*-0.08*	*-0.18*	*-1.66*	*-0.75*
Trade	0.71	-0.08	2.41	0.35	-0.02	0.17	0.18	**Trade**	0.59	-6.56	0.00	-0.00	-0.00	-0.00	0.00
H4: *gt* → *ret*	*0.63*	*-0.03*	*1.26*	*0.62*	*-0.03*	*0.36*	*0.23*	H4: *nt* → *ret*	*0.58*	*-1.34*	*-0.67*	*-0.78*	*-0.06*	*-0.16*	*0.89*
II. Crisis period (January 2007 to December 2012)															
Equity flows	0.04	0.12	-0.33	0.06	-1.69	0.28	-0.72	**Equity flows**	2.90	4.01	-1.67	0.49	6.46	**1.05** **	0.51
H1: *gef* → *ret*	*0.10*	*0.27*	*-1.10*	*0.46*	*-0.83*	*1.53*	*-0.85*	H1: *nef* → *ret*	*1.82*	1.31	*-1.19*	*1.00*	*1.39*	*2.33*	*0.26*
Bond flows	-0.15	**-0.30** **	0.00	-0.12	0.81	**-0.39** **	0.36	**Bond flows**	-0.75	-0.15	0.10	**-0.82** **	0.21	-0.50	-0.14
H2: *gbf* → *ret*	*-1.36*	*-2.01*	*0.02*	*-1.78*	*1.15*	*-2.16*	*1.15*	H2: *nbf* → *ret*	-0.88	*-0.12*	*0.18*	*-2.39*	*0.22*	*-1.54*	*-0.24*
Bank credit	**0.71** **	0.18	**0.31** **	0.05	**1.68** ***	-0.13	0.67	**Bank credit**	**0.82** ***	-0.05	**0.33** **	**-0.51** ***	**-2.83** ***	**-0.38** ***	**-1.84** ***
H3: *gbc* → *ret*	*2.44*	*0.71*	*2.08*	*0.44*	*2.55*	*-0.62*	*1.82*	H3: *nbc* → *ret*	*2.60*	*-0.09*	*2.42*	*-3.76*	*-3.82*	*-3.84*	*-4.58*
Trade	**-5.22** **	-3.32	-1.26	-1.82	-4.72	-1.11	**-4.44** ***	**Trade**	**-6.80** ***	6.31	0.60	1.09	-1.65	-0.71	0.16
H4: *gt* → *ret*	*-2.07*	*-0.76*	*-0.39*	*-0.91*	*-1.78*	*-0.68*	*-2.68*	H4: *nt* → *ret*	*-3.01*	*0.61*	*0.14*	*0.33*	*-0.28*	*-0.28*	*0.04*

Table IV. Forecast error variance decomposition of equity market returns. The table reports the percentage of the variance of the error made in forecasting equity returns due to specific uncorrelated shocks to cross-border equity flow (Panel A), bond flow (Panel B), bank credit (Panel C), trade (Panel D), equity returns (Panel E) and Fed funds rate (Panel F) at horizons of 1, 6 and 12 months. Panels I and II report the results from two recursive VAR models (in *gross* and *net* terms, respectively) which are the reformulation via the Choleski decomposition of the reduced-form VAR model, equation (1), to achieve uncorrelated shocks. Shaded area and bold font indicate the largest share across portfolio flows and trade. The estimation period is 2007:01 to 2012:12.

Panel I. VAR model with *gross* capital flows and trade						**Panel II. VAR model with *net* capital flows and trade**				
		Income		***Geographical location***			***Income***		***Geographical location***	
Horizon (months)	**EU**	**OAE**	**EM**	**Asia**	**Latin America**	**EU**	**OAE**	**EM**	**Asia**	**Latin America**
		Panel A. Gross equity flows					Panel A. Net equity flows			
1	2.01%	**10.12%**	4.00%	14.91%	0.00%	1.26%	0.02%	1.47%	**0.46%**	1.41%
6	2.98%	**11.47%**	5.81%	13.65%	5.92%	4.47%	4.26%	3.91%	**9.91%**	4.17%
12	2.99%	**11.47%**	5.81%	13.64%	5.92%	4.19%	4.32%	3.91%	**10.03%**	4.31%
		Panel B. Gross bond flows					Panel b. Net bond flows			
1	0.29%	5.92%	1.42%	4.94%	4.05%	0.15%	4.16%	0.77%	0.41%	6.07%
6	0.31%	9.99%	2.05%	11.59%	7.95%	0.27%	6.16%	2.09%	1.51%	7.11%
12	0.38%	9.99%	2.05%	11.58%	7.98%	0.43%	6.14%	2.10%	1.48%	7.20%
		Panel C. Gross bank credit					Panel C. Net bank credit			
1	**11.29%**	0.33%	**7.29%**	**0.70%**	**6.48%**	**8.25%**	**1.77%**	**0.66%**	**2.22%**	**4.76%**
6	**14.57%**	0.42%	**11.03%**	**1.10%**	6.71%	**17.06%**	**10.38%**	**9.97%**	7.84%	**21.41%**
12	**15.70%**	0.42%	**11.05%**	**1.11%**	6.72%	**25.32%**	**10.60%**	**9.98%**	8.80%	**21.97%**
		Panel D. Gross trade					Panel D. Net trade			
1	4.65%	0.76%	0.08%	0.03%	2.84%	1.69%	0.35%	5.53%	0.29%	0.20%
6	4.34%	1.38%	2.66%	0.36%	**7.53%**	1.91%	0.54%	4.66%	0.38%	0.51%
12	4.40%	1.38%	2.65%	0.36%	**7.53%**	2.09%	0.54%	4.66%	0.38%	0.53%
		Panel E. Equity returns					Panel D. Equity returns			
1	81.06%	82.66%	87.01%	79.12%	86.58%	88.58%	91.63%	89.93%	96.22%	87.19%
6	75.80%	76.43%	78.25%	72.89%	71.77%	74.34%	76.97%	77.84%	79.41%	65.88%
12	74.40%	76.43%	78.22%	72.82%	71.72%	63.36%	76.71%	77.83%	77.93%	65.08%
		Panel F. Fed rate					Panel F. Fed rate			
1	0.71%	0.21%	0.20%	0.30%	0.04%	0.08%	2.08%	1.64%	0.40%	0.37%
6	2.00%	0.30%	0.20%	0.41%	0.13%	1.96%	1.70%	1.52%	0.95%	0.92%
12	2.13%	0.31%	0.22%	0.50%	0.14%	4.62%	1.69%	1.52%	1.38%	0.92%

Table V. Robustness checks. The table shows OLS coefficients estimates for the equity returns (*ret*) equation corresponding to one-month lagged net equity flow (*nef*), net bond flow (*nbf*), net bank credit (*nbc*), and net trade (*nt*). The second row (italics) reports *t*-statistics for the null hypothesis of 'no Granger-causality' from capital flows or trade to equity returns or the restriction that the coefficient of the corresponding lagged capital flow or trade variable is zero. ** and *** in the shaded area indicate that the null hypothesis of no Granger-causality is rejected at the 5% and 1% levels, respectively, using the exact Student *t* distribution with *T-(k*+1*)* degrees of freedom where *k* is the number of unknown coefficients in the equation. Each panel corresponds to a robustness check as described in Section 4 of the paper. All panels are based on monthly data from January 2007 to December 2012 averaged with equal weights across the countries in each group except Panel H which is based on corresponding equally-weighted average data from July 2007 to December 2012.

	Income			***Geographical location***			***Income***			***Geographical location***	
	EU	**OAE**	**EM**	**Asia**	**Latin America**		**EU**	**OAE**	**EM**	**Asia**	**Latin America**
Panel A. Exogenous: VXO, GSCI, i10, TED						**Panel B. Exogenous: VXO, GSCI, i10, Fed**					
Equity flows	-1.48	0.50	6.35	**1.11** **	0.40	**Equity flows**	-1.70	0.49	6.92	1.04 **	0.60
H1: *nef* → *ret*	*-1.03*	*1.00*	*1.36*	*2.35*	*0.20*	H1: *nef* → *ret*	*-1.21*	*1.01*	*1.51*	*2.31*	*0.31*
Bond flows	0.09	**-0.83** **	0.32	-0.47	-0.18	**Bond flows**	0.06	-0.85	0.16	-0.53	-0.16
H2: *nbf* → *ret*	*0.15*	*-2.33*	*0.32*	*-1.41*	*-0.30*	H2: *nbf* → *ret*	*0.10*	*-2.47*	*0.16*	*-1.60*	*-0.28*
Bank credit	**0.34** **	**-0.51** ***	**-2.91** ***	**-0.39** ***	**-1.87** ***	**Bank credit**	**0.32** **	**-0.53** ***	**-2.92** **	**-0.37** ***	**-1.84** ***
H3: *nbc* → *ret*	*2.45*	*-3.72*	*-3.81*	*-3.81*	*-4.58*	H3: *nbc* → *ret*	*2.36*	*-3.87*	*-3.94*	*-3.79*	*-4.60*
Trade	0.46	1.02	-2.20	-0.86	0.26	**Trade**	0.80	0.58	-1.83	-0.93	0.38
H4: *nt* → *ret*	*0.11*	*0.30*	*-0.36*	*-0.33*	*0.07*	H4: *nt* → *ret*	*0.19*	*0.18*	*-0.32*	*-0.36*	*0.10*
Panel C. Exogenous: VXO, GSCI, i10, TED, Fed						**Panel D. Exogenous: VXO, GSCI, Fed (Endogenous: i10)**					
Equity flows	-1.45	0.51	6.73	**1.10** **	0.55	**Equity flows**	-1.36	0.47	6.91	**0.98** **	0.43
H1: *nef* → *ret*	*1.00*	*1.02*	*1.46*	*2.36*	*0.28*	H1: *nef* → *ret*	*-1.00*	*0.97*	*1.51*	*2.18*	*0.22*
Bond flows	0.06	**-0.87** **	0.31	-0.49	-0.18	**Bond flows**	-0.07	**-0.85** **	0.14	-0.50	0.00
H2: *nbf* → *ret*	*0.10*	*-2.45*	*0.31*	*-1.46*	*0.31*	H2: *nbf* → *ret*	*-0.14*	*-2.48*	*0.15*	*-1.52*	*0.00*
Bank credit	**0.33** **	**-0.53** ***	**-3.08** ***	**-0.39** ***	**-1.85** ***	**Bank credit**	**0.34** ***	**-0.53** ***	**-2.97** **	**-0.35** ***	**-1.64** ***
H3: *nbc* → *ret*	*2.44*	*-3.85*	*-4.00*	*-3.79*	*-4.58*	H3: *nbc* → *ret*	*3.00*	*-4.02*	*-4.06*	*-3.81*	*-4.70*
Trade	0.61	0.33	-3.07	-1.21	0.49	**Trade**	0.54	0.51	-1.86	-1.15	-0.34
H4: *nt* → *ret*	*0.14*	*0.10*	*-0.52*	*-0.46*	*0.13*	H4: *nt* → *ret*	*0.13*	*0.15*	*-0.33*	*-0.46*	*-0.09*

(*Cont.*)

	Income			*Geographical location*			*Income*			*Geographical location*	
	EU	**OAE**	**EM**	**Asia**	**Latin America**		**EU**	**OAE**	**EM**	**Asia**	**Latin America**
Panel E. MSCI equity indices in local currency						**Panel F. VAR estimation with value-weight averaged data**					
Equity flows	-1.74	0.48	6.19	**1.00** **	0.67	**Equity flows**	-1.53	1.01	**20.08** **	**1.89** ***	1.72
H1: *nef* → *ret*	*-1.80*	*-1.47*	*1.92*	*2.65*	*0.48*	H1: *nef* → *ret*	*-1.21*	*-1.60*	*3.57*	*2.84*	*0.92*
Bond flows	0.21	**-0.62** ***	0.35	-0.38	-0.07	**Bond flows**	0.54	-0.07	0.30	-0.50	-0.01
H2: *nbf* → *ret*	*-0.51*	*-2.68*	*0.52*	*-1.36*	*-0.16*	H2: *nbf* → *ret*	*-0.65*	*0.27*	*0.33*	*-1.25*	*-0.03*
Bank credit	**0.25** **	**-0.36** ***	**-1.64** ***	**-0.30** ***	**-1.20** ***	**Bank credit**	**0.51** ***	-0.16	**-1.85** **	**-0.43** ***	**-1.68** ***
H3: *nbc* → *ret*	*2.42*	*-4.00*	*-2.68*	*-3.52*	*-4.16*	H3: *nbc* → *ret*	*2.81*	*-1.28*	*-3.18*	*-3.74*	*-3.99*
Trade	0.00	**0.01** **	0.00	0.00	0.00	**Trade**	0.46	0.28	3.89	-0.35	-0.57
H4: *nt* → *ret*	*0.38*	*2.37*	*1.19*	*0.59*	*0.15*	H4: *nt* → *ret*	*0.06*	*0.60*	*1.17*	*-0.85*	*-0.13*
Panel G. Country-by-country VAR estimation Mean Group approach						**Panel H. US subprime crisis start date on July 2007**					
Equity flows	-0.87	0.57	1.74	**2.66** ***	0.85	**Equity flows**	-2.58	0.80	**10.14** **	**1.65** ***	0.36
H1: *nef* → *ret*	-1.01	1.84	0.57	*2.98*	*1.64*	H1: *nef* → *ret*	*-1.50*	*1.57*	*2.19*	*3.53*	*0.17*
Bond flows	0.37	-0.04	0.07	0.16	-0.01	**Bond flows**	-0.25	**-0.88** **	0.03	**-0.67** **	-0.34
H2: *nbf* → *ret*	*0.91*	*-0.38*	*0.66*	*1.48*	*-0.09*	H2: *nbf* → *ret*	*-0.37*	*-2.62*	*0.03*	*-2.00*	*-0.53*
Bank credit	**0.36** ***	0.01	**-0.60** **	-0.35	**-0.96** **	**Bank credit**	0.28	**-0.52** ***	**-2.68** **	**-0.40** ***	**-2.01** ***
H3: *nbc* → *ret*	*3.01*	*0.17*	*-2.46*	*-1.36*	*-2.23*	H3: *nbc* → *ret*	*-1.70*	*-3.94*	*-3.14*	*-4.12*	*-4.85*
Trade	0.00	0.01	0.00	0.00	0.00	**Trade**	0.00	**0.01** *	0.01	0.00	0.01
H4: *nt* → *ret*	*0.03*	*1.12*	*0.79*	*0.92*	*0.03*	H4: *nt* → *ret*	*0.19*	*2.08*	*1.60*	*0.30*	*0.89*

APPENDIX A

Country coefficients and causality tests for equity return VAR equation (*net* variables). The table reports the country coefficients (and average coefficients per group) of the VAR equation for equity returns corresponding to lagged net equity flow, net bond flow, net bank credit, and net trade; the intercept and coefficients of lagged Federal funds rate, lagged equity returns and the global or push factors (VXO, GSCI and 10y government bond rate) are not tabulated but available upon request. The estimation method is OLS. Rejection of the 'no Granger-causality' null hypothesis that the coefficient of either lagged capital flow or trade is zero at the 5% level is denoted in light grey and at the 1% level is denoted in dark grey; the test is based on *t*-statistics and critical values from the exact Student *t* distribution. The pre-crisis period runs mostly from January 1988 (see Table I for details) to December 2006. The crisis period runs from January 2007 to December 2012.

	Panel A. Pre-crisis period				Panel B. Crisis period			
Group/ country	**Equity flow**	**Bond flow**	**Bank credit**	**Trade**	**Equity flow**	**Bond flow**	**Bank credit**	**Trade**
Advanced Eurozone countries (EU)								
OE	-0.1090		0.1880	-0.0081	-7.5910	-0.1598	1.0904	-0.0049
BG	-0.2390	-0.0463	-0.0932	-0.0018	-0.5362	0.0707	0.2054	-0.0018
FN	1.6070	0.2730	-0.0423	-0.0130	0.2705	2.3235	-0.0415	-0.0085
FR	-0.4670	0.1040	0.0321	-0.0008	-0.9786	0.2002	0.1029	-0.0020
BD	-0.5840	-0.8030	-0.1450	-0.0021	0.4624	-0.6421	0.7379	0.0011
IR	-0.1990	-0.0143	0.0220	0.0007	0.0826	0.0300	0.0905	-0.0013
IT	-0.4070	-1.1320	-0.1850	0.0000	0.5712	2.3225	0.3694	0.0054
NL	0.0037	0.0028	0.0960	0.0019	0.1180	0.3491	0.3608	0.0060
ES	-0.8250	-0.3650	-0.1570	0.0006	-0.1933	-1.1910	0.2847	0.0064
Average	*-0.1355*	*-0.2476*	*-0.0316*	*-0.0025*	*-0.8660*	*0.3670*	*0.3556*	*0.0000*
StDev	*0.7010*	*0.4865*	*0.1262*	*0.0049*	*2.5688*	*1.2044*	*0.3546*	*0.0052*
Other advanced economies (OAE)								
AU	0.0902	-0.2680	0.2520	-0.0031	0.2853	0.4730	-0.0119	-0.0028
CN	0.2200	-0.0096	0.0518	0.0000	0.4114	0.3450	0.4508	0.0032
CZ	0.5690	-0.0860	0.1040	-0.0146	0.5638	-1.0564	0.1876	0.0602
HK	0.3220	0.0329	0.0175	0.0024	3.2885	-0.0311	-0.0514	0.0001
JP	4.5070	-0.4620	-0.0015	-0.0007	1.7056	0.0991	-0.2357	0.0006
KO	3.6450	-0.7300	0.1210	-0.0044	1.2407	-0.2003	-0.0587	-0.0011
NW	-0.3570	-0.0278	0.0164	-0.0046	-0.7733	0.0068	-0.0822	0.0062
SP	-0.0791	-0.0057	0.0011	0.0043	0.0961	-0.1059	-0.1252	-0.0024
SD	0.1120	-0.5920	-0.0285	-0.0099	-0.4652	0.1835	0.2141	0.0009
SW	0.2310	-0.1130	-0.0010	-0.0003	0.0327	-0.0603	0.0323	0.0015
TW	0.0796	-0.4210	0.0422	0.0005	0.2156	-0.2453	-0.2152	0.0013
UK	-0.0165	0.0646	0.0015	-0.0006	0.2767	0.0867	0.0078	-0.0004
Average	*0.7769*	*-0.2181*	*0.0480*	*-0.0026*	*0.5732*	*-0.0421*	*0.0094*	*0.0056*
StDev	*1.5680*	*0.2699*	*0.0781*	*0.0053*	*1.0803*	*0.3819*	*0.1942*	*0.0174*

(*Cont.*)

	Panel A. Pre-crisis period				Panel B. Crisis period			
Group/ country	**Equity flow**	**Bond flow**	**Bank credit**	**Trade**	**Equity flow**	**Bond flow**	**Bank credit**	**Trade**
Emerging markets (EM)								
AG	1.0850	0.1310	-0.1140	-0.0211	0.5455	0.2525	-2.4403	0.0099
BR	7.7800	-0.2860	0.1050	-0.0005	1.3263	0.0109	-1.4140	-0.0034
CL	0.4220	-0.0324	-0.0046	-0.0089	-1.0131	-0.1453	-0.2871	-0.0068
CH	4.4120	-0.2520	0.7630	0.0000	0.1822	0.5229	-0.4717	0.0004
CB	4.8970	0.2080	0.1030	-0.0096	1.9867	0.1615	-0.5597	-0.0011
HN	0.1000	0.3780	-0.1670	-0.0116	-2.2534	-0.5255	-0.6992	-0.0071
IN	3.3680	0.0620	-1.0940	0.0081	4.1281	-0.7782	-2.5010	0.0049
ID	-3.4210	-0.4370	-0.4790	-0.0093	7.7286	0.7510	-0.0017	0.0144
MY	0.9990	-0.0783	-0.1290	-0.0048	0.9995	-0.0216	0.9652	-0.0009
MX	3.7950	0.0261	0.0437	-0.0004	1.4283	-0.3259	-0.1102	0.0017
PH	0.6750	-0.1170	0.1360	0.0153	5.3785	0.1458	-0.1879	-0.0087
PO	5.7050	-0.1880	0.2400	0.0533	-30.0692	0.2669	0.3067	-0.0004
RS	10.3800	-1.4980	-0.2500	-0.0003	30.8793	-0.0281	0.1407	0.0034
SA	2.3370	0.0684	-0.1670	-0.0173	4.1380	0.6917	-0.8191	0.0037
TH	9.9140	-0.3460	-0.4330	0.0012	0.6699	0.0850	-0.9178	0.0104
Average	*3.4965*	*-0.1574*	*-0.0965*	*-0.0004*	*1.7370*	*0.0709*	*-0.5998*	*0.0014*
StDev	*3.8256*	*0.4307*	*0.4057*	*0.0175*	*11.8046*	*0.4175*	*0.9459*	*0.0067*
Asian countries								
CH	4.4120	-0.2520	0.7630	0.0000	0.1822	0.5229	-0.4717	0.0004
HK	0.3220	0.0329	0.0175	0.0024	3.2885	-0.0311	-0.0514	0.0001
ID	-3.4210	-0.4370	-0.4790	-0.0093	7.7286	0.7510	-0.0017	0.0144
IN	-3.4210	-0.4370	-0.4790	-0.0093	7.7286	0.7510	-2.5010	0.0049
JP	4.5070	-0.4620	-0.0015	-0.0007	1.7056	0.0991	-0.2357	0.0006
KO	3.6450	-0.7300	0.1210	-0.0044	1.2407	-0.2003	-0.0587	-0.0011
MY	0.9990	-0.0783	-0.1290	-0.0048	0.9995	-0.0216	0.9652	-0.0009
PH	0.6750	-0.1170	0.1360	0.0153	5.3785	0.1458	-0.1879	-0.0087
SP	-0.0791	-0.0057	0.0011	0.0043	0.0961	-0.1059	-0.1252	-0.0024
TH	9.9140	-0.3460	-0.4330	0.0012	0.6699	0.0850	-0.9178	0.0104
TW	0.0796	-0.4210	0.0422	0.0005	0.2156	-0.2453	-0.2152	0.0013
Average	*1.6030*	*-0.2957*	*-0.0401*	*-0.0004*	*2.6576*	*0.1592*	*-0.3456*	*0.0017*
StDev	*3.8479*	*0.2340*	*0.3554*	*0.0069*	*2.9580*	*0.3570*	*0.8424*	*0.0063*
Latin American countries								
AG	1.0850	0.1310	-0.1140	-0.0211	0.5455	0.2525	-2.4403	0.0099
BR	7.7800	-0.2860	0.1050	-0.0005	1.3263	0.0109	-1.4140	-0.0034
CB	4.8970	0.2080	0.1030	-0.0096	1.9867	0.1615	-0.5597	-0.0011
CL	0.4220	-0.0324	-0.0046	-0.0089	-1.0131	-0.1453	-0.2871	-0.0068
MX	3.7950	0.0261	0.0437	-0.0004	1.4283	-0.3259	-0.1102	0.0017
Average	*3.5958*	*0.0093*	*0.0266*	*-0.0081*	*0.8547*	*-0.0093*	*-0.9623*	*0.0001*
StDev	*2.9840*	*0.1894*	*0.0909*	*0.0085*	*1.1637*	*0.2328*	*0.9660*	*0.0063*

APPENDIX B

Net capital flows and trade for each country per group. The table reports for each country the period-average bilateral *net* capital flows and trade of each country vis-à-vis the U.S. expressed as current US$ million scaled by domestic GDP in current US$ billion. Panel A reports pre-crisis averages over the entire period from 1988:01 to 2006:12 and the last year 2006:01 to 2006:12. Panel B reports averages over the first year of the crisis period from 2007:01 to 2007:12 and the entire crisis period 2007:01 to 2012:12. In each panel the last three rows report the total sum, mean and standard deviation for each group. The summary statistics per group for bank credit flows and total capital flows are highlighted in grey.

	I. Pre-crisis period (Jan 1988 to Dec 2006)										II. Crisis period (Jan 2007 to Dec 2012)									
	Panel A. Jan 1988 to Dec 2006					Panel B. Jan 2006 to Dec 2006					Panel C. Jan 2007 to Dec 2007					Panel D. Jan 2007 to Dec 2012				
Group/ country	Equity flow	Bond flow	Bank credit	Capital flows	Trade	Equity flow	Bond flow	Bank credit	Capital flows	Trade	Equity flow	Bond flow	Bank credit	Capital flows	Trade	Equity flow	Bond flow	Bank credit	Capital flows	Trade
Advanced Eurozone countries (EU)																				
OE	-0.09	-0.15	1.74	1.50	-0.37	0.22	-0.19	9.17	9.21	-1.37	0.23	-0.23	6.71	6.71	-1.68	0.03	-0.70	5.33	4.66	-1.21
BG	-0.58	-0.73	-21.76	-23.06	1.64	-0.42	4.14	10.05	13.76	1.44	-0.17	7.87	31.68	39.39	1.81	0.09	11.12	15.89	27.11	1.82
FN	-0.01	0.09	19.08	19.16	-0.62	0.41	-0.36	40.74	40.79	-0.93	-0.06	-0.76	65.50	64.68	-0.72	-0.16	0.27	94.22	94.33	-0.67
FR	-0.07	-0.11	1.46	1.29	-0.30	-0.62	-0.72	15.82	14.48	-0.50	-0.43	0.14	32.37	32.09	-0.48	-0.13	-1.28	28.75	27.33	-0.38
BD	-0.13	-0.28	-2.22	-2.63	-0.88	0.34	-0.19	-11.86	-11.71	-1.37	0.21	-0.43	-10.44	-10.66	-1.12	0.04	-0.77	-10.50	-11.23	-1.05
IR	-0.55	-3.14	2.08	-1.60	-3.26	0.86	-0.73	34.79	34.92	-7.81	-0.94	-1.78	87.77	85.06	-7.27	-1.04	9.33	30.03	38.32	-9.14
IT	-0.09	-0.09	0.20	0.02	-0.68	0.07	0.07	8.65	8.79	-0.89	0.14	-0.10	11.02	11.06	-0.82	0.09	-0.39	9.55	9.25	-0.71
NL	-0.53	0.28	2.94	2.68	2.03	0.27	-0.79	14.10	13.58	1.67	-1.40	-0.09	28.97	27.48	1.53	0.03	-0.32	29.05	28.77	1.75
ES	-0.06	-0.23	-3.48	-3.77	0.13	-0.01	0.67	3.07	3.73	-0.16	-0.06	0.49	7.98	8.42	-0.04	0.01	-0.38	7.60	7.23	0.01
Total	*-2.10*	*-4.35*	*0.04*	*-6.42*	*-2.32*	*1.12*	*1.91*	*124.53*	*127.56*	*-9.92*	*-2.47*	*5.13*	*261.56*	*264.22*	*-8.78*	*-1.04*	*16.88*	*209.92*	*225.76*	*-9.56*
Average	*-0.23*	*-0.48*	*0.00*	*-0.71*	*-0.26*	*0.12*	*0.21*	*13.84*	*14.17*	*-1.10*	*-0.27*	*0.57*	*29.06*	*29.36*	*-0.98*	*-0.12*	*1.88*	*23.32*	*25.08*	*-1.06*
StDev	*0.24*	*1.03*	*10.44*	*10.78*	*1.53*	*0.44*	*1.54*	*15.84*	*15.70*	*2.75*	*0.56*	*2.81*	*30.87*	*30.31*	*2.63*	*0.36*	*4.77*	*29.78*	*30.20*	*3.23*
Other advanced economies (OAE)																				
AU	0.13	-0.05	1.37	1.45	1.23	0.54	-0.28	-6.17	-5.90	1.00	-0.22	-0.31	-1.49	-2.03	0.93	-0.02	0.88	8.41	9.27	0.97
CN	-0.14	-0.46	14.39	13.79	-3.19	-0.27	-1.34	28.10	26.49	-4.56	-0.14	-0.45	32.84	32.25	-3.90	-0.22	-0.98	23.49	22.29	-2.32
CZ	-0.09	-0.79	1.39	0.51	-0.40	0.05	-0.19	19.02	18.88	-0.69	-0.02	0.03	12.91	12.92	-0.54	-0.06	-0.01	2.27	2.21	-0.56
HK	1.47	-7.65	-39.19	-45.37	0.72	9.34	-27.81	-51.91	-70.38	4.22	-16.58	-19.01	-100.66	-136.25	5.07	-3.61	-9.30	-14.24	-27.15	7.76
JP	0.22	-1.03	4.81	4.00	-1.26	0.05	-1.20	16.03	14.88	-1.72	0.13	-0.20	13.70	13.63	-1.61	-0.09	-1.67	19.02	17.26	-1.08
KO	0.18	-0.72	15.91	15.38	-1.26	0.04	-1.31	11.51	10.24	-1.19	0.05	-0.55	9.13	8.64	-1.05	0.19	-0.40	8.68	8.47	-1.06
NW	-0.35	-1.00	-4.82	-6.18	-1.04	0.10	-4.64	-54.63	-59.17	-1.15	-1.11	1.98	-85.93	-85.06	-0.91	-1.30	-1.29	-14.35	-16.94	-0.72
SP	-1.59	-4.30	-79.55	-85.44	-1.22	5.70	-4.83	-80.93	-80.06	3.46	3.06	-7.85	-130.50	-135.29	3.38	-0.94	-4.91	-65.78	-71.63	3.72
SD	-0.01	-0.34	15.04	14.70	-1.34	-0.09	-1.09	24.11	22.92	-2.03	-0.75	-0.53	10.68	9.40	-1.54	-0.86	-0.18	4.42	3.38	-1.06
SW	-0.24	-1.00	16.73	15.50	-0.19	-0.23	-1.35	75.25	73.67	0.03	0.78	0.86	295.15	296.79	0.42	-0.90	-1.79	123.59	120.89	0.28
TW	0.57	-1.92	-27.75	-29.11	-4.22	0.88	-1.97	-35.38	-36.47	-3.43	0.05	1.21	-40.69	-39.43	-2.64	0.21	-3.09	-51.89	-54.76	-2.40
UK	-0.32	-5.14	-34.14	-39.61	0.01	-0.54	-10.01	-79.42	-89.96	-0.27	-0.08	-11.34	-58.38	-69.80	-0.20	-0.53	-7.65	20.28	12.10	-0.05
Total	*-0.17*	*-24.38*	*-115.81*	*-140.37*	*-12.15*	*15.58*	*-56.02*	*-134.41*	*-174.84*	*-6.35*	*-14.84*	*-36.15*	*-43.23*	*-94.22*	*-2.58*	*-8.14*	*-30.38*	*63.91*	*25.39*	*3.47*
Average	*-0.01*	*-2.03*	*-9.65*	*-11.70*	*-1.01*	*1.30*	*-4.67*	*-11.20*	*-14.57*	*-0.53*	*-1.24*	*-3.01*	*-3.60*	*-7.85*	*-0.22*	*-0.68*	*-2.53*	*5.33*	*2.12*	*0.29*
StDev	*0.70*	*2.38*	*29.69*	*31.73*	*1.52*	*3.03*	*7.80*	*48.71*	*51.44*	*2.53*	*4.94*	*6.39*	*107.96*	*112.59*	*2.47*	*1.05*	*3.18*	*46.57*	*47.51*	*2.85*

(*Cont.*)

	I. Pre-crisis period (Jan 1988 to Dec 2006)										II. Crisis period (Jan 2007 to Dec 2012)									
	Panel A. Jan 1988 to Dec 2006					Panel B. Jan 2006 to Dec 2006					Panel C. Jan 2007 to Dec 2007					Panel D. Jan 2007 to Dec 2012				
Group/ country	**Equity flow**	**Bond flow**	**Bank credit**	**Capital flows**	**Trade**	**Equity flow**	**Bond flow**	**Bank credit**	**Capital flows**	**Trade**	**Equity flow**	**Bond flow**	**Bank credit**	**Capital flows**	**Trade**	**Equity flow**	**Bond flow**	**Bank credit**	**Capital flows**	**Trade**
Emerging markets (EM)																				
AG	0.02	-0.26	-5.96	-6.21	0.27	0.01	-0.02	-30.29	-30.29	0.31	-0.12	0.41	-23.57	-23.28	0.44	-0.02	-0.28	-19.24	-19.54	0.70
BR	0.17	-0.20	12.76	12.72	-0.25	0.44	-2.07	1.74	0.12	-0.57	0.91	-4.94	5.53	1.50	-0.09	0.54	-1.18	12.93	12.29	0.26
CL	0.09	-0.60	28.39	27.88	0.46	0.02	-0.63	-6.39	-6.99	-1.60	-0.95	-3.73	-12.59	-17.27	-0.41	-0.28	-1.34	12.28	10.66	1.61
CH	0.03	-1.52	-2.80	-4.29	-4.43	0.14	-3.75	0.05	-3.55	-7.19	-0.11	-2.81	-2.24	-5.16	-6.17	-0.03	-1.38	-4.37	-5.78	-4.21
CB	-0.02	-0.04	-0.68	-0.74	-0.93	-0.14	0.95	-9.90	-9.09	-1.31	0.09	-0.58	-5.75	-6.24	-0.35	-0.06	-0.68	-5.61	-6.34	-1.11
HN	0.00	-0.04	-2.21	-2.25	-1.25	-0.02	2.58	-1.37	1.19	-1.03	0.16	1.24	-2.22	-0.83	-0.94	-0.02	0.80	0.37	1.14	-0.88
IN	0.07	-0.02	-0.71	-0.66	-0.75	0.26	0.06	-1.63	-1.31	-1.07	0.03	0.09	-1.75	-1.63	-0.61	0.08	-0.10	1.28	1.25	-0.57
ID	0.06	0.00	-0.82	-0.76	-2.46	-0.08	-0.31	-3.81	-4.20	-2.37	0.04	-0.56	-2.65	-3.17	-1.99	0.10	-0.03	-5.00	-4.93	-1.35
MY	0.25	-0.08	-6.78	-6.61	-8.67	0.62	-0.62	-8.05	-8.05	-12.33	0.43	-2.62	-8.19	-10.38	-9.02	0.18	-1.48	-9.69	-10.99	-5.27
MX	0.10	-0.40	3.45	3.15	-2.46	-0.14	-1.12	-16.03	-17.28	-5.57	-0.12	-0.54	-14.02	-14.68	-5.98	-0.23	0.05	-15.78	-15.96	-4.92
PH	0.12	-0.02	0.68	0.78	-2.67	0.17	0.30	-10.85	-10.38	-1.42	0.25	-1.53	-14.80	-16.08	-0.95	0.04	-0.49	-18.84	-19.28	-0.49
PO	0.02	-0.23	-5.30	-5.51	0.01	0.05	0.29	-1.30	-0.96	-0.07	0.05	-0.02	-1.71	-1.69	0.18	0.05	-0.32	-1.24	-1.51	0.01
RS	0.01	-0.64	-4.32	-4.95	-0.65	0.14	-1.60	-7.18	-8.65	-1.27	-0.05	-1.69	-7.24	-8.98	-0.77	-0.02	0.44	-5.69	-5.26	-0.92
SA	0.10	0.05	-0.45	-0.29	-0.22	0.72	-0.18	-5.40	-4.86	-0.97	0.43	-0.15	-5.07	-4.79	-1.03	0.04	0.72	-4.83	-4.07	-0.63
TH	0.06	-0.18	4.64	4.52	-4.19	0.32	-0.63	-5.96	-6.27	-5.86	0.11	-0.76	-5.56	-6.21	-4.86	0.16	-1.00	-6.67	-7.51	-3.92
Total	1.07	-4.17	*19.87*	*16.78*	-28.22	2.52	-6.75	*-106.36*	*-110.59*	-42.32	1.16	-18.21	*-101.82*	*-118.88*	-32.55	0.51	-6.26	*-70.08*	*-75.83*	-21.71
Average	*0.07*	*-0.28*	*1.32*	*1.12*	*-1.88*	*0.17*	*-0.45*	*-7.09*	*-7.37*	*-2.82*	*0.08*	*-1.21*	*-6.79*	*-7.93*	*-2.17*	*0.03*	*-0.42*	*-4.67*	*-5.06*	*-1.45*
StDev	*0.07*	*0.40*	*8.94*	*8.92*	*2.43*	*0.26*	*1.42*	*7.93*	*7.92*	*3.45*	*0.39*	*1.68*	*7.08*	*7.10*	*2.88*	*0.19*	*0.75*	*9.40*	*9.31*	*2.11*
Asian countries																				
CH	0.03	-1.52	-2.80	-4.29	-4.43	0.14	-3.75	0.05	-3.55	-7.19	-0.11	-2.81	-2.24	-5.16	-6.17	-0.03	-1.38	-4.37	-5.78	-4.21
HK	1.47	-7.65	-39.19	-45.37	0.72	9.34	-27.81	-51.91	-70.38	4.22	-16.58	-19.01	-100.66	-136.25	5.07	-3.61	-9.30	-14.24	-27.15	7.76
ID	0.06	0.00	-0.82	-0.76	-2.46	-0.08	-0.31	-3.81	-4.20	-2.37	0.04	-0.56	-2.65	-3.17	-1.99	0.10	-0.03	-5.00	-4.93	-1.35
IN	0.07	-0.02	-0.71	-0.66	-0.75	0.26	0.06	-1.63	-1.31	-1.07	0.03	0.09	-1.75	-1.63	-0.61	0.08	-0.10	1.28	1.25	-0.57
JP	0.22	-1.03	4.81	4.00	-1.26	0.05	-1.20	16.03	14.88	-1.72	0.13	-0.20	13.70	13.63	-1.61	-0.09	-1.67	19.02	17.26	-1.08
KO	0.18	-0.72	15.91	15.38	-1.26	0.04	-1.31	11.51	10.24	-1.19	0.05	-0.55	9.13	8.64	-1.05	0.19	-0.40	8.68	8.47	-1.06
MY	0.25	-0.08	-6.78	-6.61	-8.67	0.62	-0.62	-8.05	-8.05	-12.33	0.43	-2.62	-8.19	-10.38	-9.02	0.18	-1.48	-9.69	-10.99	-5.27
PH	0.12	-0.02	0.68	0.78	-2.67	0.17	0.30	-10.85	-10.38	-1.42	0.25	-1.53	-14.80	-16.08	-0.95	0.04	-0.49	-18.84	-19.28	-0.49
SP	-1.59	-4.30	-79.55	-85.44	-1.22	5.70	-4.83	-80.93	-80.06	3.46	3.06	-7.85	-130.50	-135.29	3.38	-0.94	-4.91	-65.78	-71.63	3.72
TH	0.06	-0.18	4.64	4.52	-4.19	0.32	-0.63	-5.96	-6.27	-5.86	0.11	-0.76	-5.56	-6.21	-4.86	0.16	-1.00	-6.67	-7.51	-3.92
TW	0.57	-1.92	-27.75	-29.11	-4.22	0.88	-1.97	-35.38	-36.47	-3.43	0.05	1.21	-40.69	-39.43	-2.64	0.21	-3.09	-51.89	-54.76	-2.40
Total	1.44	-17.43	*-131.57*	*-147.56*	-30.42	17.46	-42.07	*-170.93*	*-195.54*	-28.89	-12.54	-34.59	*-284.21*	*-331.33*	-20.45	-3.72	-23.83	*-147.50*	*-175.05*	-8.88
Average	*0.13*	*-1.58*	*-11.96*	*-13.41*	*-2.77*	*1.59*	*-3.82*	*-15.54*	*-17.78*	*-2.63*	*-1.14*	*-3.14*	*-25.84*	*-30.12*	*-1.86*	*-0.34*	*-2.17*	*-13.41*	*-15.91*	*-0.81*
StDev	*0.71*	*2.39*	*27.23*	*29.26*	*2.55*	*3.06*	*8.11*	*29.09*	*31.28*	*4.66*	*5.20*	*5.78*	*46.99*	*53.99*	*3.97*	*1.13*	*2.77*	*24.94*	*26.57*	*3.72*
Latin American countries																				
AG	0.02	-0.26	-5.96	-6.21	0.27	0.01	-0.02	-30.29	-30.29	0.31	-0.12	0.41	-23.57	-23.28	0.44	-0.02	-0.28	-19.24	-19.54	0.70
BR	0.17	-0.20	12.76	12.72	-0.25	0.44	-2.07	1.74	0.12	-0.57	0.91	-4.94	5.53	1.50	-0.09	0.54	-1.18	12.93	12.29	0.26
CB	-0.02	-0.04	-0.68	-0.74	-0.93	-0.14	0.95	-9.90	-9.09	-1.31	0.09	-0.58	-5.75	-6.24	-0.35	-0.06	-0.68	-5.61	-6.34	-1.11
CL	0.09	-0.60	28.39	27.88	0.46	0.02	-0.63	-6.39	-6.99	-1.60	-0.95	-3.73	-12.59	-17.27	-0.41	-0.28	-1.34	12.28	10.66	1.61
MX	0.10	-0.40	3.45	3.15	-2.46	-0.14	-1.12	-16.03	-17.28	-5.57	-0.12	-0.54	-14.02	-14.68	-5.98	-0.23	0.05	-15.78	-15.96	-4.92
Total	0.35	-1.50	*37.96*	*36.80*	-2.93	0.20	-2.89	*-60.86*	*-63.55*	-8.74	-0.19	-9.39	*-50.39*	*-59.96*	-6.39	-0.05	-3.42	*-15.41*	*-18.89*	-3.46
Average	*0.07*	*-0.30*	*7.59*	*7.36*	*-0.59*	*0.04*	*-0.58*	*-12.17*	*-12.71*	*-1.75*	*-0.04*	*-1.88*	*-10.08*	*-11.99*	*-1.28*	*-0.01*	*-0.68*	*-3.08*	*-3.78*	*-0.69*
StDev	*0.07*	*0.21*	*13.50*	*13.39*	*1.18*	*0.24*	*1.14*	*11.99*	*11.62*	*2.26*	*0.67*	*2.32*	*10.80*	*9.72*	*2.65*	*0.33*	*0.59*	*15.17*	*14.75*	*2.56*