EUROPEAN CENTRAL BANK
EUROSYSTEM

WORKING PAPER SERIES
NO 724 / FEBRUARY 2007

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In 2007 all ECB publications feature a motif taken from the €20 banknote.

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ISSN 1561-0810 (print)
ISSN 1725-2806 (online)

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Abstract

The paper analyses whether, and to what extent, emerging market economies (EMEs) have systemic importance for global financial markets, above and beyond their influence during crises episodes. Using a novel database of exogenous economic and political shocks for 14 systematically relevant EMEs, we find that EME shocks not only have a statistically but also economically significant impact on global equity markets. The economic significance of EME shocks is in particular underlined by their remarkably persistent effects over time. Importantly, EMEs are found to influence global equity markets about just as much in "good" times as in "bad" times, i.e. during crises or periods of financial turbulence. Finally, we detect a large degree of heterogeneity in the transmission of EME shocks to individual countries' equity markets, stressing the different degrees of financial exposure, which is relatively higher for European equity markets.

JEL No.: F36; F30; G15.
Keywords: global financial markets; equity markets; transmission; financial integration; shocks; news; emerging market economies; mature economics; euro area; United States.

Non-technical summary

Do emerging market economies (EMEs) matter for global and mature economies' financial markets? There is a large literature showing that EMEs indeed exert a significant effect on global financial markets during financial crisis. However, there have been few major crises in emerging markets since 1998; yet at the same time, emerging markets' assets have become an increasingly important global asset class over the past decade. Emerging markets have, moreover, developed into an ever more relevant driver of global economic growth.

The paper asks whether, and to what extent, EMEs have systemic importance for global financial markets, above and beyond their influence during crises episodes. Such an analysis is complicated by an identification problem, i.e. the difficulty to distinguish financial market developments in emerging markets from those in mature economies. We use a novel database that identifies shocks that are truly idiosyncratic and specific to EMEs. These shocks comprise a set of economic and political events in 14 systemically relevant EMEs over the period 2000-2004 and are extracted from "exogenous" sources. More specifically, the database not only covers negative events that drive markets lower, but also "positive" news that e.g. indicate better than expected economic growth or the announcement of important economic reforms.

Using daily data over the period 2000-2004, we analyze the transmission of these shocks from the 14 EMEs to 15 mature economies' equity markets – covering the 12 euro area countries, the United States, Japan and the UK – plus global equity market returns, as well as the intra-regional and extra-regional spillover across EMEs.

The empirical analysis yields a number of striking findings. Most importantly, we find that, on a daily frequency, EME shocks have a significant and sizeable effect, inducing on average a 0.3% change in global equity returns on the day a shock occurs, and rising to around 0.5% cumulated after 5 days. Second, our analysis shows that EME-specific shocks are so important overall for global equity returns that their effects are highly persistent over time. While it is difficult to quantify precisely the overall explanatory power of the EME shocks for global equity markets, in particular the persistence of the effects stresses the economic relevance and systemic importance of emerging markets for global equity markets.

A third key finding of the paper is that global equity markets react almost as strongly to positive EME news as to negative news, with this result being robust across EMEs and over time. This underlines that EMEs matter for global financial markets not only during crises or other less favorable episodes, but that investors in mature economies also share the gains from positive developments in EMEs. This may reflect the growing economic integration of EMEs in the world economy and their rising trade and financial linkages with mature economies. Finally, there are a number of intriguing cross-country differences: although EME equity markets generally react more strongly to shocks in other EMEs of the same region, mature economies overall react mostly more strongly to EME shocks than emerging markets from other regions.

Overall, the findings of the paper emphasize the emergence and relevance of EMEs for global and in particular mature economies' financial markets. This is an important result, and constitutes the intended contribution of the paper to the literature underlining that emerging markets can no longer be considered as a minor player in global financial markets that matter only in times of crisis or financial market turbulence. Given the importance and ongoing increase of cross-border financial investment as a transmission channel and the rapid growth of EMEs as an asset class, the results suggest that EMEs are likely to continue becoming an even more important factor for the determination of global asset prices in the years to come.

1. Introduction

Do emerging market economies (EMEs) matter for global and mature economies' financial markets? The general perception is that EMEs are relevant for global financial markets mainly when they experience financial crises, thus inducing an abrupt portfolio rebalancing that also affects investment decisions and thus returns in markets of mature economies. In fact, there is a large literature focusing on and indeed finding evidence for the international transmission of EME shocks and for contagion during crises in emerging markets, foremost the Latin American crises of 1994-95 the Asian crisis of 1997-98 and the Russian default of August 1998 (see e.g. Kaminsky and Schmukler 1999, Baig and Goldfajn 1998, Rigobon 2002, Wongswan 2003).

However, there have been no major crises in systematically relevant emerging markets since 1998 – apart from the Turkish and Argentine crises of 2000 and 2001, which arguably have had little systemic repercussions for global financial markets (Krueger 2002, Fischer 2002, and Hall and Taylor 2002). At the same time, emerging markets' assets have become an increasingly important asset class over the past decade, in particular also for investors in mature economies including the United States and Europe. Emerging markets have, moreover, developed into an ever more relevant driver of global economic growth, as for instance much of global growth in the last few years being attributable to economies in Emerging Asia and also those in Latin America and Emerging Europe. And finally, EMEs are increasingly intertwined with mature economies via FDI and the relocation of production.

The present paper asks whether, and to what extent, EMEs have systemic importance for global financial markets, above and beyond their influence during crises episodes. Such an analysis is complicated by an identification problem, i.e. the difficulty to distinguish financial market developments in emerging markets from those in mature economies. We use a novel database of shocks that are truly idiosyncratic and specific to EMEs. These shocks comprise a set of economic and political events in 14 systemically relevant EMEs over the period 2000-2004. They are based on and extracted from "exogenous" sources, i.e. on International Finance Corporation reports (factbooks, quarterly reviews, and monthly reviews of emerging markets, among others), as well as Bekaert and Harvey (1998, 2004) and various IMF reports. The news reported in these sources have been selected based on their country-specific nature and overall economic and political importance, and *not* based on their financial market impact.

More specifically, the database comprises a broad range of important political and economic events such as announcements of new regulations, monetary and fiscal policy announcements, the default of a financial institution or the election or resignation of politicians in individual EMEs. The database not only covers negative events that drive markets lower, but also "positive" news that e.g. indicate better than expected economic growth or the announcement of important economic reforms. Given the focus on important idiosyncratic events in EMEs, the number of identified shocks is limited to, on average, about 6 to 7 shocks per emerging market per year.

Using daily data over the period 2000-2004, we analyze the transmission of these shocks from the 14 EMEs to 15 mature economies' equity markets – covering the 12 euro area countries, the United States, Japan and the UK – plus global equity market returns, as well as the intra-regional and extra-regional spillover across EMEs. Thus the analysis based on such identified EME shocks allows a very rich analysis of the transmission of different types of shocks, and during tranquil rather than only crises periods.

The empirical analysis yields a number of striking findings. A first revealing stylized fact is that there is a strong correlation between global equity returns and EME shocks even when taking a medium-term perspective: the correlation coefficient between quarterly global equity returns and the net sum of all EME shocks during that quarter is as high as 70%. While this obviously does not necessarily imply causality, it underlines that developments in EMEs strongly co-move with those in global equity markets. Turning to the issue of transmission, i.e. causality, we find that, on a daily frequency, EME shocks have a significant and sizeable effect, inducing on average a 0.3% change in global equity returns on the day a shock occurs, and rising to around 0.5% cumulated after 5 days.

Second, our analysis shows that EME-specific shocks are so important overall for global equity returns that their effect is still statistically significant after several weeks. While it is difficult to quantify precisely the overall explanatory power of the EME shocks for global equity markets, in particular the persistence of the effects stresses the economic relevance and systemic importance of emerging markets for global equity markets.

A third key finding of the paper is that global equity markets react almost as strongly to positive EME news as to negative news, with this result being robust across EMEs and over time. This underlines that EMEs matter for global financial markets not only during crises or other less favorable episodes, but that investors in mature economies also share the gains from positive developments in EMEs.

Finally, there are a number of intriguing cross-country differences: although EME equity markets generally react more strongly to shocks in other EMEs of the same region, mature economies overall react mostly more strongly to EME shocks than emerging markets from other regions. Among mature economies, US equity returns respond much more to shocks in Latin America than to those in Emerging European and Asian EMEs, while Japanese markets are most sensitive to Asian EMEs. By contrast, euro area and UK markets not only show the strongest exposure and overall reaction to EME shocks, but they appear to be roughly equally sensitive to shocks from all the three EME regions of Asia, Emerging Europe and Latin America.

Overall, the findings of the paper emphasize the emergence and relevance of EMEs for global and in particular mature economies' financial markets. This reflects the growing economic integration of EMEs in the world economy and their rising trade and financial linkages with mature economies. This is an important result, and constitutes the intended contribution of the paper to the literature, as it underlines that emerging markets can no longer be considered as a minor player in global financial markets that matter only in times of crisis or financial market turbulence. Given the importance and ongoing increase of cross-border financial investment as a transmission channel and the rapid growth of EMEs as an asset class, the results suggest that EMEs are likely to continue becoming an even more important factor for the determination of global asset prices in the years to come.

The paper is organized as follows. We start with a brief review of related literature in section 2, before proceeding to a detailed presentation and some stylized facts of our dataset in section 3. Section 4 presents the empirical methodology as well as the benchmark empirical results for the transmission of EME shocks. Section 5 then discusses various extensions to the benchmark model and several robustness tests. Section 6 concludes.

2. Related Literature

The empirical literature has pointed towards a rapidly increasing degree of financial market integration, at least over the past decade. In the early 1990s, most evidence pointed towards no or little market integration, as shown e.g. by King et al. (1994) who find evidence against the null hypothesis of integrated capital markets, or Bekaert and Campbell (1995) who only find a partial integration of equity markets, in particular of EMEs, based on an international CAPM modeling framework. However, in recent years the evidence on financial integration has changed. For instance, Kim et

al. (2005) find that the increase in stock market integration in Europe over the period 1999-2003 has been significantly driven in part, by macroeconomic convergence associated with European Economic and Monetary Union. In addition, Albuquerque et al. (2005) point out that increased market integration leads to a greater role for worldwide sources of risk.

For the context of the present paper, we are particularly interested in the evidence of financial integration and interdependence of emerging markets. Much of the focus on EMEs in this context over the past decade has been on crises and contagion in and their impact on mature economies. The definition of contagion is not unanimous and rather controversial. Karolyi (2003) observes that the perception of market contagion is not always consistent with the empirical evidence. Along these lines, some researchers define contagion as an increase in the degree of interdependence, and find that little of such an increase has taken place in financial crises of the 1990s (Forbes and Rigobon, 2002). By contrast, focusing on the channels of contagion, Kaminsky and Reinhart (2002) find that financial turbulence in Brazil, Russia, and Thailand in the late 1990s spread globally when it affected asset markets in one or more of the world's financial centers.

Similarly, Kaminsky and Schmukler (1999) analyze the sources of the largest daily swings in markets during the Asian crisis by testing the impact of news on daily returns, and show that large swings affect local and international markets due to herding behavior. In the same vein, Baig and Goldfajn (1998) test for contagion during the Asian crisis and suggest that there exist discernible patterns of contagion during periods of financial market instability when market participants tend to move together across a set of countries. More recently, Rigobon (2002) supports the idea that the transmission of shocks was intensified during the Russian and the Asian crises, as well as Cappiello et al. (2005) who find that co-movements in equity returns tend to increase significantly during crises.

Concerning the speed of the transmission, the general consensus is that the transmission occurs very rapidly and is intensified during crisis periods, as shown in Ederington and Lee (1993), Fleming and Remolona (1999), and Andersen et al. (2003). These findings are in line with Ehrmann, Fratzscher and Rigobon (2005) who find that there are substantial international spillovers, and that the international propagation of shocks is strengthened in times of recession.

A second important strand relevant for the present paper is the transmission of macroeconomic shocks. The key argument here is that asset prices are determined simultaneously and thus it is difficult to identify which individual markets are the

drivers of global markets. Several studies have therefore taken macroeconomic announcements or news to identify shocks, and to analyze their transmission. The most frequent approach in the literature has been to study the impact of US and/or other developed market economies news on global financial markets. Canova (2005) find that US monetary shocks produce significant fluctuations in Latin America, but real demand and supply shocks do not. Wongswan (2003) finds a large and significant association between emerging-economy equity volatility and trading volume and developed-economy macroeconomic announcements at short-time horizons. Other studies focusing on the impact of US news on asset prices and foreign exchange rates include Andersen et al. (2003), Miniane and Rogers (2003) and Ehrmann and Fratzscher (2004). For instance, Andersen et al. (2003) analyze the response of the US market on exchange rates and find that the markets react in an asymmetric fashion to good and bad news, since bad news cause a greater impact than good news.

A third strand relevant for the present paper focuses on the role of financial and real integration as a determinant of the financial transmission process. For instance, considering the linkages among financial markets, Dungey and Martin (2006) provide evidence that cross market linkages played a key role during the Asian crisis. In this sense, the consensus in the literature is that trade and financial channels are important factors in determining how crises are transmitted internationally (Forbes 2004, Eichengreen et al. 1996, Glick and Rose 1999, Forbes and Chinn 2004). Focusing on the US during tranquil times, Ehrmann and Fratzscher (2006) link the strength of the transmission of US monetary policy shocks to the underlying asset holdings and find that the degree of global integration of countries is a key determinant for the transmission process.

In summary, the literature has so far primarily concentrated on measuring the degree of integration of EMEs into global financial markets or generally on how various EMEs respond to external and internal shocks. As to the relevance of EMEs for global financial markets, the focus has been on crisis periods and on contagion issues. To our knowledge, there is no systematic work so far assessing how important EMEs are as drivers of global financial markets overall, and not only during crises episodes. The analysis of this issue constitutes the aim of the present paper and its intended contribution to the literature.

3. The Data

A key difficulty with every type of analysis of financial market linkages is identification: as asset prices are determined simultaneously, with shocks often

triggering reactions of several asset prices within minutes, it is difficult to identify the source of asset price movements and the corresponding direction of causality.

We solve this identification issue by using mostly purely exogenous events occurring in EMEs. The list of events for each of the 14 EMEs mostly comes from reports by the International Finance Corporation (IFC) and the IMF, which have partly been collected and summarized by Bekaert and Harvey (1998, 2004). In most cases these databases do not list the exact day, so that we use newswire services to attribute each of the events to that particular day when it occurred and was first reported.

We believe that using these sources helps mitigate the identification problem as they are reliable and, importantly, the news reported in these sources have been selected based on their country-specific nature and overall economic and political importance, and *not* based on their financial market impact. This selection criterion implies that these news are largely exogenous and specific to the identified EMEs. Given the focus on important idiosyncratic events in EMEs, the number of identified shocks is limited to, on average, only about 6 to 7 shocks per emerging market per year.

Our database includes economic and political news, and also not only covers negative events, but also "positive" news that e.g. indicate better than expected economic growth or the announcement of important economic reforms. The shocks to emerging market j at time t are coded as follows:

$$S_{jt} = \begin{cases} 1 & \textit{positive shock} \\ 0 & \textit{no shock} \\ -1 & \textit{negative shock} \end{cases}$$

Annex 1 provides an overview and some specific examples of our database for the case of Argentina. The news include events such as announcements of new regulations, monetary and fiscal policy announcements, the collapse of a financial institution or the election or resignation of a politician in individual EMEs.

It should be stressed again that the "exogeneity" of the events, or shocks, captured by the IFC/IMF database is of fundamental importance for the validity of the analysis of the paper. As Annex 1 illustrates for the case of Argentina, most of the news indeed appear to be country-specific and exogenous in the sense that their origin is primarily a domestic and not a foreign one. Moreover, although some of the news may not come entirely unexpected by the markets, at least part of the news and their timing are likely to be unanticipated.

We are also comforted by the fact that the primary source of the data is the IFC and the IMF, and their stated purpose is to identify country-specific events that have large economic relevance, and not primarily those that have a global market impact. For all these arguments, we believe this database provides the best possible identification method for EME-specific shocks in order to conduct our analysis of the impact of EMEs on global equity markets. As we will discuss further below, we also include for a set of "global" shocks in order to control for a possible correlation of EME shocks with other unrelated global developments.

As to the country coverage, the database covers 14 EMEs, four in Latin America (Argentina, Brazil, Chile and Mexico), four in Emerging Europe (Czech Republic, Poland, Russia and Turkey) and six in Asia (India, Indonesia, Korea, Malaysia, Taiwan and Thailand), while the time period is 1 January 2000 to 31 July 2004. This list covers most of the systemically important EMEs, possibly with the exception of China. Hong Kong and Singapore are also not included, partly due to data availability and partly also as they may not be considered as emerging markets any longer given their degree of development and also financial market depth.

Table 1

Table 1 gives a summary for the distribution of the shocks across EMEs. Overall, there are 424 days with shocks for all 14 EMEs over the whole sample period. This means that on average each EME had about 30 shocks over the close to 5-year sample period, or about 6 to 7 shocks per year. While some countries experience significantly more shocks over that period – these are e.g. as expected countries such as Argentina, Mexico and Russia – other have experienced very few shocks that are captured. Moreover, the shocks can mostly relatively easily be classified as political or economic shocks, and as positive or negative shocks. In the few cases where the sign of the news cannot be readily identified, we use the direction of the domestic stock market reaction to sign the news.

Figure 1 shows the distribution of the shocks over time, quarter by quarter since 2000. The key point of this chart is that both positive and negative shocks are distributed relatively equally over time. Hence this underlines that the empirical findings are not driven by individual episodes during the sample period. This point is further investigated and confirmed in section 4 when analyzing the time variations in the transmission of EME shocks.

Figure 1

Equity market returns come from Datastream market price indices. We chose Datastream indices as they have a very broad coverage of stocks within individual markets and are most readily comparable across countries. Datastream market indices are also available for a broad set of countries, thus providing an ideal source for our analysis of equity market spillovers. An additional advantage of Datastream indices is that also sectoral indices are available. We will go into detail about sectoral spillovers as an extension in section 4.[1]

The empirical analysis is based on daily financial market data, using closing quotes of the respective national stock markets in local currency. It is important to consider this timing issue in the empirical modeling due to the fact that several equity markets do not have an overlap in trading times so that e.g. yesterday's shocks in Latin American EMEs need to be used to analyze the effects on Asian markets today.

A final caveat is the issue of cross-listing of firms as in particular multinational firms may be listed in several markets simultaneously. Thus, for instance, a strong reaction of a particular market may at least in part reflect such cross-listing. To control for this issue, the ideal way would be to exclude foreign cross-listed firms from domestic equity return indices. Unfortunately, such data is not available for all of the 14 EMEs and 15 mature markets in our sample. A test for those few markets where such information is available, however, suggests that the transmission effects from EMEs are affected only moderately. Part of the explanation for these limited effects is that cross-listing primarily occurs among mature economies, and much less so with EMEs.

4. Empirical Results

This section constitutes the core of the paper, providing the empirical results for the transmission of EME shocks to global equity markets. We start with the benchmark model and results in section 4.1, discuss their economic relevance (section 4.2) and then present several extensions and robustness tests in section 4.3.

4.1 Methodology

As the first step of the analysis, we want to measure the transmission of shocks in emerging market country *j* to the equity market of country *i*. Our benchmark empirical specification looks as follows:

[1] However, there are also some potential drawbacks of Datastream indices, such as that for instance IFC equity indices may in some instances be of higher quality – see e.g. Sarno and Taylor (1999) for a detailed discussion. However, the need for indices that cover a broad set of countries and are directly comparable with one another point to Datastream indices as our preferred choice.

$$r_{it} = \alpha_i + \sum_{j=1}^{14} (\beta_j \, S_{jt}) + \delta \, X_{it} + \varepsilon_{it} \qquad (1)$$

which estimates the response of the equity return of country i, r_{it}, to the shocks emanating from the 14 EMEs in the sample, S_{jt}, and to a vector of controls, X_{it}, such as own past returns and day-of-the-week effects. Note that this model is estimated in a panel for all 29 countries *i* in our sample, including a country fixed effect α_i. The model thus yields transmission coefficients β_j for each of the 14 EMEs, which measure the average effects of each of the 14 EMEs on the other 29 countries.[2]

It is important to emphasize that ideally one would like to control for all other relevant factors in the vector of controls X_{it} which may affect global equity markets, in particular "global" shocks. In order to control for such shocks as much as possible, we include two sets of proxies for global shocks in the vector of controls X_{it}. First, we follow Andersen et al. (2003) and Ehrmann and Fratzscher (2006) and include 10 of the most important US macroeconomic shocks, as measured through the news or unanticipated component of US macroeconomic announcement,[3] as a proxy for global economic shocks. Although these macroeconomic shocks are US-based in nature, they have been shown by in the literature to have a substantial effect on global FX and equity markets.

Second, we include a measure of global risk aversion, measured by the Chicago Board Options Exchange's SPX Volatility Index, which reflects a market estimate of future volatility, based on the weighted average of implied volatilities for a wide range of strike prices. The rationale for including this proxy for risk aversion is that the strength in the transmission may differ over time and may in part depend on the overall risk attitude of investors.[4]

An even more general specification of model (1) is one in which we average also across all EME source countries of shocks:

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[2] Note that we ensure in the estimation that shocks from countries j are excluded when these same countries are included as country i in the estimation.

[3] These shocks are the surprise component of the announcements of the 10 US macroeconomic news: monetary policy, GDP advance release, industrial production, CPI, retail sales, trade balance, non-farm payroll employment, ISM business confidence, consumer confidence, and housing starts. The surprise component of each of these variables is calculated as the difference between the announced value and the expected value, where this latter is measured as the median expectation from surveys conducted by Money Market Services (MMS) International.

[4] As these are controls and not the focus of this paper, the results for these shocks are not shown in the tables below, but are available upon request. Most of the macroeconomic shocks and the risk-aversion proxy are found to exert a statistically significant effect on global and most regional equity markets.

$$r_{it} = \alpha_i + \beta \sum_{j=1}^{14}(S_{jt}) + \delta\, X_{it} + \varepsilon_{it} \quad (2)$$

so that in this case β measures the average effect of all EME shocks on equity returns. Alternatively, instead of obtaining the average response of a number of country returns to EME shocks, we extract the effect on each individual equity return r_{it} by estimating for each equity return i separately

$$r_{it} = \alpha + \beta_i \sum_{j=1}^{14}(S_{jt}) + \delta\, X_{it} + \varepsilon_{it} \quad (3)$$

to get the average transmission of all 14 EMEs to equity return r_{it}, or

$$r_{it} = \alpha + \sum_{j=1}^{14}(\beta_{ij}\, S_{jt}) + \delta\, X_{it} + \varepsilon_{it} \quad (4)$$

in order to obtain the response of r_{it} to each of the 14 EMEs separately. Note that we use an OLS estimator with panel-corrected standard errors (PCSE) throughout the paper for the estimations in order to take account of and to correct for the heteroskedasticity as well as the cross-sectional correlation in the data. Using such an estimator is important in order to obtain correct variance-covariance matrices as otherwise we would underestimate the true standard errors of the coefficients.

4.2 Benchmark results

Table 2 shows the benchmark result for models (2) and (3) for a select number of global, regional and mature economies' equity markets. The market reaction of "world" shows the β coefficient for model (3) when using the Datastream world market return index. The subsequent rows show the response of regional equity market return indices for Latin America, Emerging Asia and Emerging Europe, as well as the return indices of the large mature markets of the euro area, Japan, UK and the USA. The last row titled "all countries (panel)" shows the panel estimates based on model (2), i.e. indicating the average response of the 29 equity markets in the sample.[5]

[5] This panel estimate is comparable to the first row of using the world market index itself, only that the 29 countries in our sample do not constitute the whole global equity market – though they account for well over 90% of it – and that they are "unweighted" in the sense that in the panel regression each equity market return r_{it} has an equal influence on the coefficient, i.e. independent of their actual share in global equity market capitalisation.

Table 2

Table 2 indicates that global equity returns react by 0.30% on average in response to a shock in one of the 14 EMEs. Global returns appear to be most sensitive to shocks in the Latin American EMEs, though they also sensitive to shocks in Emerging Asia and in Emerging Europe. The panel estimates in the last row are similar in magnitude when all EME shocks are taken together, giving a point estimate of 0.32%, though there are different responses from the world index to shocks from different regions.

Looking at the response of mature economies sheds light on these different regional effects and provides a number of interesting results. In particular, US, Japanese and European markets react very differently to regional EME shocks. US equity markets change substantially more in response to Latin American than to Asian or Emerging European shocks. By contrast, Japanese markets appear to respond most to Asian shocks, and not at all to shocks emanating from Emerging Europe. The euro area and the UK are very different again in that their reaction is very similar to shocks from all three EME regions. For instance, euro area and UK markets react substantially more to shocks from Emerging Europe then do the United States and Japan.

A final point relates to the reaction of EME stock markets to shocks in other EMEs. Table 2 nicely illustrates that EME equity markets react very strongly to shocks in the own region; this is the case for Latin America (0.59%), Asia (0.41%) and Emerging Europe (0.97%). However, there are some, though more limited cross-regional spillovers also for EMEs.

Table 3

Table 3 shows the full matrix of spillover of the 14 EMEs to the 29 countries, plus the regional averages. As for Table 2, the point estimates of the row called “all countries (panel)” are based on panel estimates of models (1) and (2), while all other estimates are based on individual country regressions of models (3) and (4).

Table 3 confirms the results of Table 2, only that it provides a much more detailed breakdown of the country-by-country transmission of shocks. For instance, the findings in the table confirm that EME spillovers to other EMEs are much stronger within regions than across regions, though cross-regional spillovers do exist and are sometimes sizeable.

An additional interesting point of Table 3 is that it shows the breakdown of the responses of the 12 euro area countries to EME shocks. Apart from Finland – most likely reflecting the technology dependence of the country – the euro area countries with the largest overall reaction to EME shocks are France, Netherlands, Germany and Spain, i.e. countries that are relatively integrated or exposed both financially and in terms of trade to EMEs. The countries with the overall lowest response are Ireland, Luxemburg, Portugal, Greece and Austria.[6] For many of the euro area countries it is also confirmed that they appear to respond about equally to shocks stemming from any of the three EME regions.

Tables 4 – 6

As the final step of the analysis, we analyze the presence of various asymmetries in the transmission process. In particular, we investigate whether negative EME shocks have a larger effect than positive one. As discussed above, this hypothesis has been emphasized in particular in the literature on financial crises, which frequently suggests that negative EME shocks may have a much larger relevance for mature financial markets. Moreover, we also compare different types of shocks, i.e. political versus economic shocks.

Table 4 shows that negative EME shocks only have a slightly larger effect on the global equity market index (-0.33%) than positive events (0.28%). This underlines that also positive EME developments induce financial spillovers. There are again a number of revealing cross-country differences. Japanese and euro area equity markets, for instance, are even more responsive to positive shocks than to negative EME events, while the opposite is the case for US markets. Another revealing dimension relates to the shocks emanating from different EME regions. Negative shocks in Latin America and Asia appear to have a significantly larger impact than positive news. By contrast, positive shocks emanating from Emerging Europe in all cases have larger spillovers to other regions, including the euro area, than negative shocks.

Table 5 distinguishes between economic and political shocks, showing that there is no substantial difference in the relevance between these types of shocks. Tables 6.a and 6.b then combine the type of news with the direction of the shocks. It appears that in particular negative political news have the largest overall impact on foreign equity markets, though in general again all categories of shocks have significant spillover effects.

[6] The finding for Austria appears somewhat surprising, especially given the countries financial exposure to several Emerging European countries, though recall that these include only the Czech Republic, Poland, Russia and Turkey in our sample.

In summary, we find significant and sizeable spillovers from EMEs to global equity markets, with world equity returns responding on average 0.3% to EME shocks. The disaggregation of the shocks by source EME and by affected countries shows a highly heterogeneous picture, with mature economies being most sensitive to EME shocks from their own region, with the exception of Europe which appears to be roughly equally responsive to all thee EME regions.

5. Sensitivity

As a final step, this section presents various extensions and robustness checks (section 5.2) and discusses the overall economic relevance of EMEs shocks for global equity markets (section 5.1).

5.1 Economic relevance of EMEs for global equity markets

How permanent and long-lasting are the effects of EME shocks on global equity markets? This is an important question because a key issue of interest is not only whether the effect of EMEs on global financial markets is *statistically* significant, but also whether it is *economically* relevant. From a more general perspective, EME events may have a statistically significant effect on global equity markets on a particular day, but they may in the medium- to long-run – e.g. over several weeks or months – be dominated by other developments, like economic and political developments in mature economies, such that EMEs may play only a small overall role for global equity markets.

This issue is hard to tackle because our data includes only a small, albeit relevant fraction of EME events that affects global financial markets. In other words, our data includes only "shocks", i.e. well identified, mostly *unanticipated* events while many other unanticipated or anticipated EME developments are clearly not captured by our data. This means that it is impossible to determine precisely how much of global equity market movements are explained by developments in EMEs and how much by mature economies or truly common shocks.

As a first test in order to gauge the overall relevance of EME shocks for global markets, an interesting stylized fact is to plot the "net" number of shocks per quarter – subtracting the total number of negative shocks from the total number of positive shocks across all 14 EMEs – together with the global equity market return during that quarter. Figure 2 shows a remarkably high degree of comovement between both, in

particular since the end of 2002. In fact, the correlation coefficient between the two series is 0.70 for the whole sample period. It should be stressed that while this obviously does not necessarily imply causality, it underlines that developments in EMEs strongly co-move with those in global equity markets. While this is merely indicative of the overall importance of EMEs, it appears to be a striking stylized fact of the data.

Figure 2

Given this limitation, and in order to turn to a more formal test, we can gauge the importance of EMEs for global equity markets also by analyzing the *permanence* of the transmission of EME shocks. The intuition is as follows: if EMEs are an important driver of global equity markets *and* if our data captures relevant EME events, then the impact of our EME shocks on global equity markets should be detectable in the data at least for several days or even weeks. We test for this permanence in two alternative ways. First, we estimate a dynamic version of model (3) by including and testing for the lagged effects of EME shocks:

$$r_{it} = \alpha + \sum_{k=0}^{K} \beta_{ik} \sum_{j=1}^{14} (S_{jt-k}) + \delta X_{it} + \varepsilon_{it} \qquad (5)$$

with k as the number of lags. Figure 3 shows the cumulated coefficients up to 3 months (65 days), while testing the null hypothesis $H_0 : \sum_{k=0}^{K} \beta_k = 0$, for the returns of the world equity index, as well as for the United States', the euro area' and the emerging markets' equity indices. The key finding is that there is a high degree of persistence or permanence in the spillover effects of EME shocks. For the world, US and euro area indices the effect increases for a number of days after a shock occurs and then stabilizes. Most importantly, statistically the impact of EME shocks is mostly significant even still after 1 month, or about 20 business days. This is somewhat less the case for the US equity markets, but for which the effects of EME shocks are still statistically significant for up to 10 days, or 2 weeks.

Figures 3 – 4

A second and alternative way of testing for the permanence of the effects is to use different data frequencies. For this exercise, we repeat the estimation of model (3) using different data frequencies starting with daily data (as in the benchmark model), then moving to two-day frequencies and so on up to using 65-day or quarterly frequency. Figure 4 gives the results again for four of the equity market indices. This second exercise gives us essentially the same results as the first one: the effect of

EME shocks appears to increase slightly in the first few days and then levels off. Again, the key result is that the effect of EME shocks on global equity markets is present in the data even when using quarterly data. Both of the tests underline the overall economic importance of EMEs for global equity markets.

5.2 Extensions and robustness

We now turn to various extensions and robustness tests of the benchmark results. A first important issue is that of time-variations in the transmission process. Do EMEs matter for global equity markets only in some periods rather than others? As discussed above, much of the literature appears to indirectly or directly suggest that EMEs have the largest impact on global markets during financial crises. Recall that our sample period of 2000-2004 had no major EME crisis of systemic importance, especially when compared to the Latin American crisis of 1994-95, the Asian financial crisis of 1997-98, or the Russian default and the LTCM episode in the second half of 1998. Nevertheless, the Argentine default of late 2001 and the Turkish crisis of 2001 were two relevant events during our sample period.

To test for the presence of time variations in the transmission process, we modify the benchmark models (2) and (3) to allow for different spillover coefficients for each of the five years of our data:[7]

$$r_{it} = \alpha_i + \sum_{t=1}^{5} \beta_t D_t \sum_{j=1}^{14} (S_{jt}) + \delta X_{it} + \varepsilon_{it} \qquad (6)$$

with D_t=1 for a particular year, and D_t=0 otherwise, so that in this case β_t measures the average effect of all EME shocks on global equity returns in year *t*.

Figure 5

Figure 5 plots the coefficients for the panel estimation of model (6). The figure shows a slight decrease in the effects, indicating that the strongest transmission of shocks from EMEs to global equity markets occurred in 2000 and 2001, while the smallest effects are recorded for 2003 and 2004. However, it should be stressed that the transmission is statistically significant and sizeable for all years. Hence EME shocks have continuously exerted an influence on global equity markets throughout the

[7] Note that using a higher frequency, such as quarterly or even monthly data, is not feasible due to the relative few EME shocks in our dataset at such frequencies.

sample period, amid relatively small variations in the precise magnitude of the transmission.[8]

Turning to a second important issue, it is possible that the cross-country difference in the transmission process, as highlighted in Table 3, may in part be explained by the very different sector composition of countries' equity indices. Some sectors, such as the financial or technology sectors may be more open and exposed to foreign developments. Hence countries' stronger reaction to EME shocks may partly reflect the fact that different sectors have different weights in individual countries' equity indices. For instance, the fact that Spain is affected relatively strongly by shocks in Latin America may be explained e.g. by the fact that it is highly integrated financially with many Latin American economies but it could also be due to the fact that Spain's equity market index is dominated by some sectors rather than others.

Table 7

Given the relevance of financial institutions in the transmission process, an obvious hypothesis is that countries where financial institutions are relatively important and constitute a large share of the equity index also respond more strongly to EME shocks. We test this by re-estimating models (2) and (3) using Datastream financial sector sub-indices. Table 7 reveals that we can broadly reject this hypothesis as financial sector returns are generally not more sensitive to EME shocks than the market index as whole (see Table 2). In fact, the overall effect of EME shocks on global financial sector returns is with 0.269% somewhat lower than the impact on the overall market index.

Table 8

Third and finally, we want to check the effect of large and important shocks, and thus restrict the sample to those news that triggered a significant domestic market movement. To determine the threshold, we choose a 1% cut-off, although we conducted robustness tests for the 0.5% and 1.5% cut-offs. We do this to check how the results of the benchmark model change when using a narrower set of shocks. The corresponding Table 8, however, shows that this is not the case and that most spillover coefficients increase significantly for this narrower sample. Indeed, the increase in the magnitude of the transmission is consistent with the argument that news that have a larger effect on the domestic market should also have a greater impact on other markets.

[8] Note that this pattern of the time variations in the spillover coefficients is not driven by some specific markets' responses, as it is very similar also when looking only at mature economies.

6. Conclusions

How important are emerging markets as drivers of global financial markets? While there is a large literature and plenty of evidence for the role and impact of EMEs during financial crises, much less attention has been paid to the systemic importance of global financial markets overall, including during "normal" or tranquil times. In fact, the last few years have been marked by the absence of major crises or systemic turbulence in EMEs as well as the strong emergence, or re-emergence, of EMEs as a key asset class for investors in mature economies.

This paper has focused on the importance of EMEs for global financial markets by analyzing the transmission of EME shocks to global equity markets. Our database for this analysis has the key advantage of containing largely exogenous shocks that are specific to individual emerging economies. We have estimated the transmission of these shocks to 29 mature economies and emerging markets and find that EME shocks have a statistically and economically significant impact on global equity markets. On average, shocks to the 14 EMEs in our sample move world equity markets by 0.3% on the day they occur. Importantly, the persistence of these effects is found to be remarkably long as the impact of EME shocks is statistically significant even one month after they occur. Moreover, EMEs influence global equity markets not just in "bad" times but also in "good" times. In fact, the average effect of positive shocks stemming from EMEs is in many cases very similar to that of negative events.

A second key result of the paper is that we detect a large degree of heterogeneity in the response of individual countries' equity markets to EME shocks. For mature economies, US equity markets appear to be more sensitive to developments in Latin America than in Emerging Asia or Emerging Europe, while the Japanese market reacts the strongest to shocks elsewhere in Asia. By contrast, an interesting finding is that European (euro area and UK) equity markets appear to be different as they are exposed the strongest and also roughly equally responsive to shocks in all three emerging market regions.

Overall, the findings underline the importance of emerging markets as drivers of global asset price developments in recent years. In many ways, this is what one would expect given the substantial contribution of EMEs to global economic growth and their rapidly increasing clout in global financial markets as investors. Understanding the evolution of EMEs as a global player in financial markets is an important topic from a financial market angle, but also from a policy perspective given their rapid emergence and the rising economic interdependence between mature and emerging market economies.

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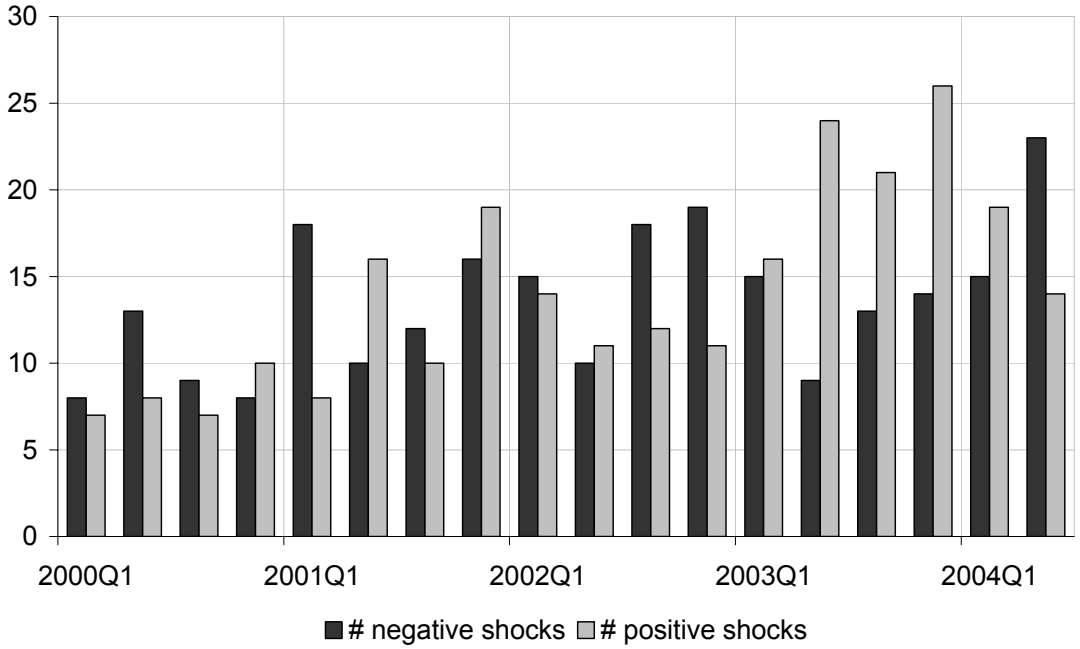
Appendix

Annex 1: Data description and examples

Date*	News
24 February 2000	A strike is called against the labor market reform proposal, stipulating decentralization of collective labor contracts.
10 March 2000	IMF Board approves Stand-By Arrangement with Argentina.
6 June 2000	A national strike is called.
17 August 2000	Responding to public denunciations, President De La Rúa creates a special commission, chaired by Vice PresidentCarlos Álvarez, to investigate the bribery charges associated with the Senate approval of the labor reform law.
6 October 2000	Vice President Carlos Álvarez resigns.
5 March 2001	Ricardo López Murphy is appointed Minister of Economy.
29 March 2001	Minister Cavallo secures "emergency powers" from Congress.
16 April 2001	Minister Cavallo announces a modification of the convertibility law, with the replacement of the dollar by an equallyweighted basket of the dollar and the euro.
26 April 2001	The Central Bank Governor is replaced over alleged money laundering charges.
8 May 2001	A national strike is called against the labor reform.
11 July 2001	Standard & Poor's lowers Argentina's long-term sovereign rating further from B+ to B.
21 August 2001	A zero deficit plan is announced, with a mandatory reduction in expenditures to balance the budget.
3 December 2001	IMF announces planned augmentation of Stand-By Arrangement by $8 billion.
6 December 2001	The government introduces a partial deposit freeze (corralito) and capital controls.
10 December 2001	Minister Cavallo travels to the United States to meet with IMF management.
19 December 2001	Minister Cavallo resigns.
20 December 2001	President Fernando De La Rúa resigns over death of demonstrators. Ramón Puerta, President of the Senate, becomes interim President.
3 January 2002	President Duhalde announces the end of convertibility, and the introduction of a dual foreign exchange regime.
7 January 2002	The convertibility law ceases to be in effect. A dual exchange rate regime is introduced, one fixed at 1.40 pesos to a dollar for foreign trade, and the other determined in the free market.
8 March 2002	The pesoization of government debt under Argentine law is decreed.
5 March 2003	The Supreme Court ruled that conversion to pesos was illegal. According to the Central Bank, approximately to 8,760 million US dollars are at stake. [a17]
10 September 2003	Argentine finance officials reached an agreement with the IMF for a three-year, US$ 12.6 billion stand-by credit. Under the terms of the new arrangement, the government pledges to raise the consolidated primary fiscal surplus
14 June 2004	Roberto Lavagna sent a "fiscal responsibility" bill to Congress to set limits on spending by provincial governments.
2 July 2004	Argentina obtained regulatory approval in the U.S. for a debt exchange to restructure some $100 billion in defaulted debt.

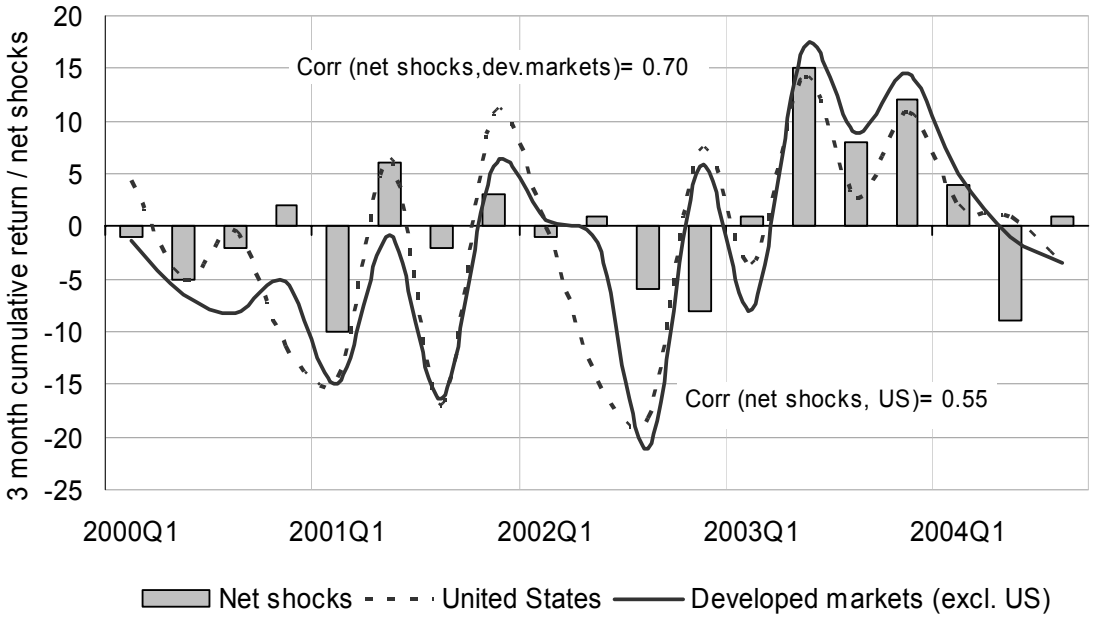
Source: Factiva, Datastream Bekaert and Campbell (2004) and Independent Evaluation Office, International Monetary Fund (2004). *The IMF and Argentina, 1991–2001.*

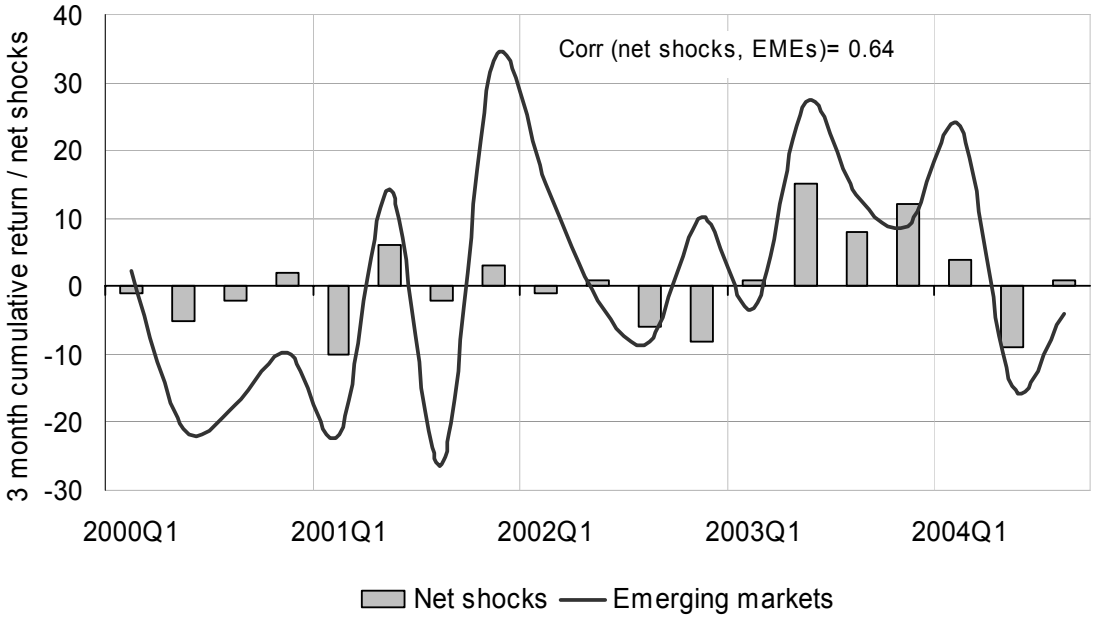
Figure 1: Distribution of EME shocks over time



Notes: The figure shows the cumulated positive and negative shocks in a quarterly basis.

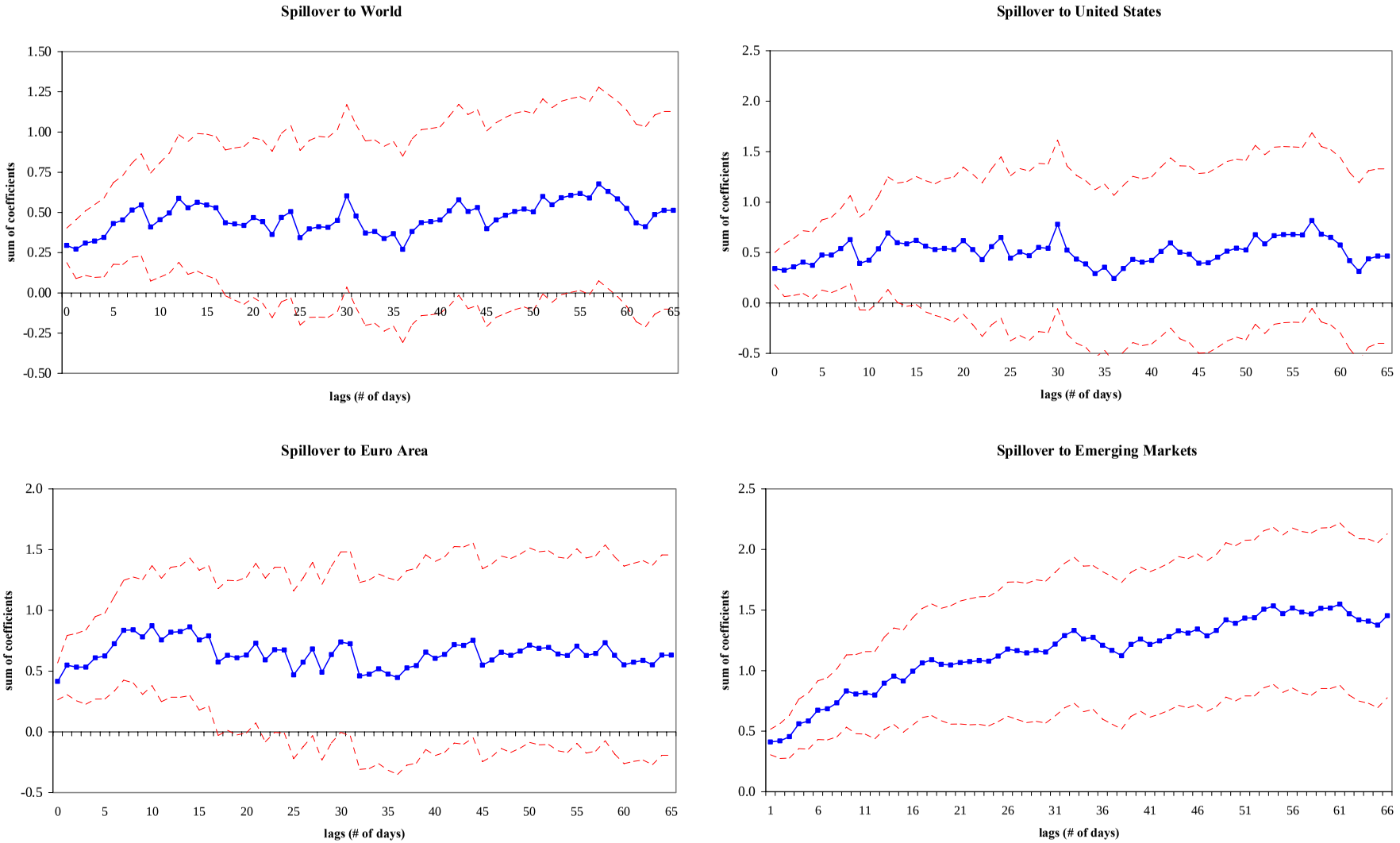
Figure 2: EME shocks and global equity returns – 3-months cumulated





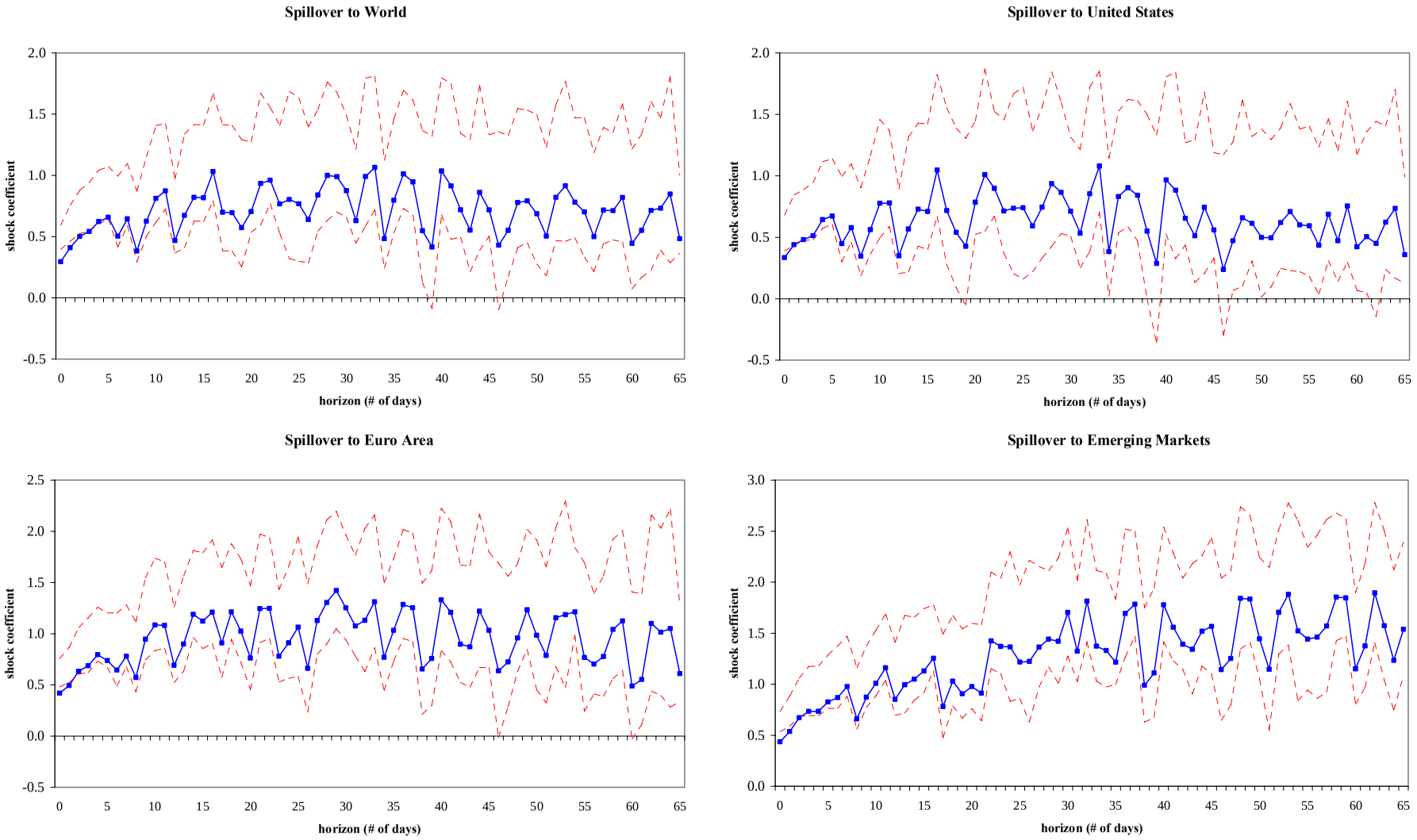
Notes: The figure shows the cumulated net shocks (cumulated difference between positive and negative shocks) and the cumulated stock market return in a quarterly basis.

Figure 3: Shock transmission to World, US, Euro Area and EMEs – cumulated dynamic effects up to 3 months (65 days)



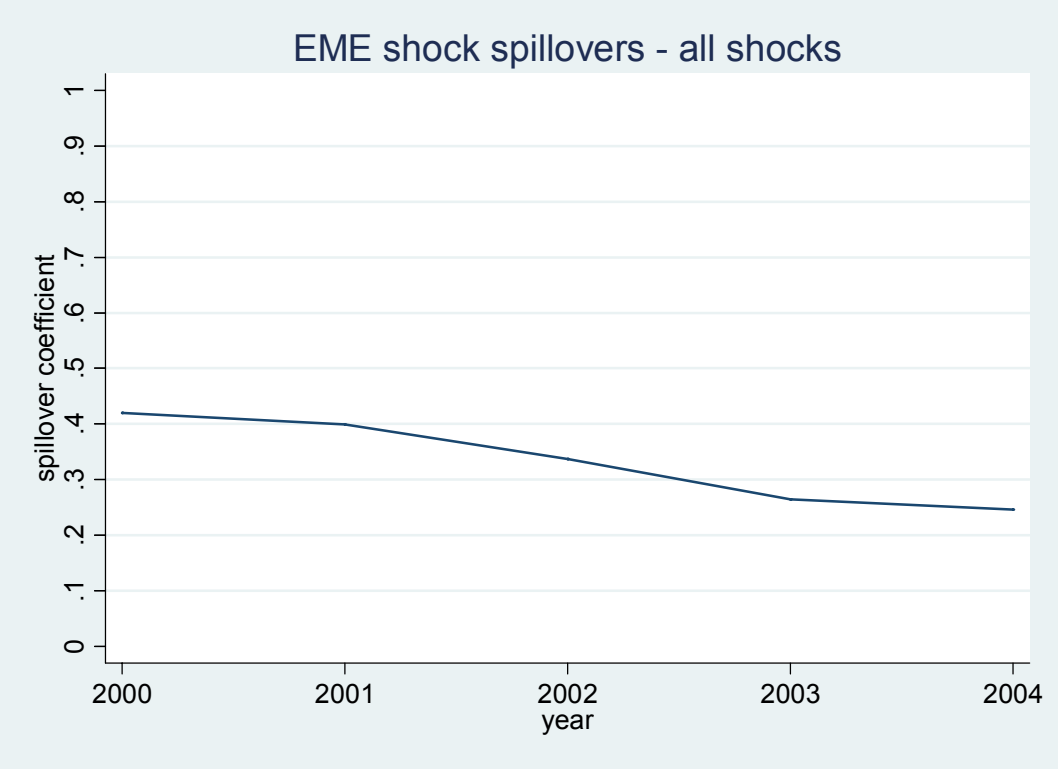
Notes: The figure is based on model (5) and shows the cumulated coefficients up to k days, testing the null hypothesis $H_0 : \sum_{k=0}^{K} \beta_k = 0$, for the returns of the world equity index, as well as for the United States', the euro area' and the emerging markets' equity indices. The dotted lines show the 90% confidence intervals.

Figure 4: Shock transmission to World, US, Euro Area and EMEs – data frequency up to 3 months (65 days)



Notes: The figure is based on model (3) for different data frequencies ranging from 1 day to 65 days, showing the transmission coefficient β for the returns of the world equity index, as well as for the United States', the euro area' and the emerging markets' equity indices. The dotted lines show the 90% confidence intervals.

Figure 5: Asymmetry of shock transmission – changes over time



Notes: The figure is based on model (6) estimated with annual dummies.

Table 1: Summary statistics

	Shocks			Economic shocks			Political shocks		
	Total	*Positive*	*Negative*	*Total*	*Positive*	*Negative*	*Total*	*Positive*	*Negative*
Emerging markets	424	204	220	308	152	156	176	80	96
Latin America:	214	113	101	146	77	69	76	39	37
Argentina	58	24	34	29	11	18	29	13	16
Brazil	39	22	17	34	19	15	5	3	2
Chile	38	22	16	20	14	6	18	8	10
Mexico	92	50	42	67	35	32	25	15	10
Emerging Asia:	152	67	85	99	45	54	55	23	32
India	48	19	29	27	12	15	21	7	14
Indonesia	35	10	25	16	4	12	19	6	13
Korea	40	21	19	19	10	9	21	11	10
Malaysia	21	9	12	12	4	8	9	5	4
Taiwan	31	17	14	20	11	9	11	6	5
Thailand	26	15	11	24	14	10	2	1	1
Emerging Europe:	168	81	87	123	61	62	55	24	31
Czech Republic	28	14	14	15	9	6	13	5	8
Poland	56	30	26	44	24	20	12	6	6
Russia	77	32	45	56	22	34	21	10	11
Turkey	24	13	11	15	8	7	9	3	6

Notes: The table shows the number of news, economic news and political news recorded for each country and region.
Sources: IMF; IFC; Bekaert and Harvey (1998, 2002); Factiva.

Table 2: Transmission of EME shocks – all shocks, by region

Transmission of EME shocks, all shocks by region

Event shock to:	All 14 EMEs		Latin America 4		Emerging Asia 6		Emerging Europe 4	
Market reaction of:	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*
World	0.300 ***	0.04	0.362 ***	0.06	0.149 **	0.07	0.268 ***	0.07
Latin America	0.402 ***	0.06	0.592 ***	0.07	0.101	0.09	0.315 ***	0.10
Emerging Asia	0.302 ***	0.05	0.220 ***	0.07	0.407 ***	0.09	0.234 ***	0.08
Emerging Europe	0.635 ***	0.08	0.400 ***	0.10	0.329 ***	0.13	0.966 ***	0.16
Euro area	0.354 ***	0.06	0.307 ***	0.08	0.278 ***	0.11	0.373 ***	0.10
Japan	0.216 ***	0.07	0.238 ***	0.10	0.212 *	0.12	0.072	0.11
United Kingdom	0.318 ***	0.05	0.315 ***	0.07	0.234 ***	0.10	0.292 ***	0.10
United States	0.328 ***	0.06	0.457 ***	0.08	0.107	0.10	0.271 ***	0.10
All countries (panel)	0.323 ***	0.03	0.274 ***	0.04	0.263 ***	0.04	0.334 ***	0.05

Notes: The table shows the transmission coefficients for EME shocks based on models (1)-(4). ***, **, * indicate statistical significance at the 99%, 95%, and 90% levels.

Table 3: Transmission of EME shocks – by country

Event shock to:	Aggregate				Latin America 4				Emerging Asia 6						Emerging Europe 4			
Market reaction of:	All 14 EMEs	Latin America 4	Emerging Asia 6	Emerging Europe 4	Argentina	Brazil	Chile	Mexico	India	Indonesia	Korea	Malaysia	Taiwan	Thailand	Czech Rep.	Poland	Russia	Turkey
World	0.300 ***	0.362 ***	0.149 **	0.268 ***	0.151	0.378 ***	0.201	0.520 ***	0.274 ***	0.093	0.101	-0.081	0.246	0.186	0.293 *	0.100	0.260 ***	0.571 ***
Latin America	0.402 ***	0.592 ***	0.101	0.315 ***	0.427 ***	0.952 ***	0.375 **	0.617 ***	0.305 **	0.146	0.126	-0.238	-0.010	0.144	0.444 **	0.064	0.266 ***	0.926 ***
Emerging Asia	0.302 ***	0.220 ***	0.407 ***	0.234 ***	0.092	0.007	0.520 ***	0.317 ***	0.426 ***	0.314	0.676 ***	0.189	0.754 ***	0.389 ***	0.511 ***	0.093	0.175	0.378 *
Emerging Europe	0.635 ***	0.400 ***	0.329 ***	0.966 ***	0.358 *	0.512 **	0.160	0.388 ***	0.153	0.700 **	0.224	0.204	0.479	0.182	0.457	0.299	0.933 ***	3.177 ***
Euro area	0.354 ***	0.307 ***	0.278 ***	0.373 ***	-0.049	0.397 ***	0.107	0.571 ***	0.115	0.354 *	0.205	-0.049	0.692 ***	0.432 **	0.502 **	0.247	0.330 ***	0.543 *
Japan	0.216 ***	0.238 ***	0.212 *	0.072	-0.016	0.047	0.601 ***	0.279 **	0.197	0.107	0.635 ***	0.587 *	0.056	0.260	-0.062	0.033	0.124	0.048
United Kingdom	0.318 ***	0.315 ***	0.234 ***	0.292 ***	0.109	0.340 **	0.240	0.471 ***	0.231	0.204	0.081	-0.035	0.500 **	0.315 *	0.309	0.238	0.331 ***	0.222
United States	0.328 ***	0.457 ***	0.107	0.271 ***	0.254 *	0.526 ***	0.128	0.633 ***	0.394 ***	-0.052	-0.099	-0.131	0.104	0.120	0.273	0.051	0.248 ***	0.796 ***
All countries (panel	0.323 ***	0.274 ***	0.263 ***	0.334 ***	0.130	0.273 ***	0.232 ***	0.374 ***	0.180 ***	0.385 ***	0.297 ***	0.111 **	0.412 ***	0.308 ***	0.396 ***	0.149 ***	0.317 ***	0.728 ***
Latin America:																		
Argentina	0.377 ***	0.826 ***	0.019	0.062	2.412 ***	0.175	0.449	0.234	0.035	0.280	0.220	0.619	-0.268	-0.402	-0.041	-0.563 *	0.561 ***	0.262
Brazil	0.508 ***	0.642 ***	0.136	0.496 ***	0.405 *	1.419 ***	0.358	0.557 ***	0.353	0.216	0.239	-0.552	0.216	0.120	0.765 **	0.135	0.393 **	1.312 **
Chile	0.243 ***	0.348 ***	0.074	0.214 ***	0.008	0.521 ***	0.657 ***	0.369 ***	0.118	0.081	0.066	0.114	0.281 *	-0.166	0.315 ***	0.182	0.165	0.452 *
Mexico	0.365 ***	0.651 ***	0.079	0.183 *	0.342 **	0.742 ***	0.295 *	0.951 ***	0.375 ***	0.035	0.094	-0.102	-0.363	0.368 **	0.195	-0.028	0.143	0.835 ***
Emerging Asia:																		
India	0.288 ***	0.082	0.510 ***	0.311 ***	-0.511 ***	0.308	0.584	0.195	1.286 ***	0.267	0.513 *	-0.223	0.090	0.427 *	0.697 ***	-0.006	0.496 ***	-0.209
Indonesia	0.311 ***	-0.006	0.724 ***	0.235	-0.071	-0.644 **	0.492 *	0.172	0.461 *	2.236 ***	0.604 **	-0.085	0.370	0.225	-0.125	0.239	0.235	0.382
Korea	0.368 ***	0.292 **	0.413 **	0.289 *	0.252	-0.104	0.432	0.483 ***	0.381	0.296	1.577 ***	0.327	0.784 *	0.441	0.764 **	-0.001	0.193	0.683
Malaysia	0.087 *	-0.035	0.179 **	0.131 *	-0.124	-0.199	0.191	0.034	0.082	0.255	0.037	0.502 ***	0.312	-0.031	0.078	0.093	0.082	0.355 ***
Taiwan	0.335 ***	0.258 *	0.612 ***	0.137	0.145	-0.115	0.666 *	0.461 ***	0.309	0.067	0.737 ***	0.448	2.094 ***	0.414	0.250	0.054	-0.006	0.685
Thailand	0.231 ***	0.140	0.270 **	0.264 *	-0.148	-0.050	0.596 ***	0.175	-0.102	0.287	0.821 ***	0.445	0.110	1.133 ***	0.449 *	0.211	0.221	0.234
Emerging Europe:																		
Czech Republic	0.271 ***	0.078	0.285 ***	0.376 ***	0.142	0.142	-0.294	0.118	0.233	0.594 ***	0.290	0.263	0.154	0.153	1.330 ***	0.110 ***	0.315 ***	0.173
Poland	0.444 ***	0.254 ***	0.302 ***	0.576 ***	0.240	0.141	0.290	0.303 **	0.148	0.389	0.595 ***	0.342	0.109	0.673 ***	0.301	0.957	0.370 ***	0.632 ***
Russia	0.723 ***	0.587 ***	0.400 ***	0.946 ***	0.530 ***	0.865 ***	0.231	0.531 ***	0.451 *	0.579	0.268	0.156	0.768 **	-0.062	0.190	0.120	1.389 ***	1.870 ***
Turkey	0.780 ***	0.300	0.409	1.410 ***	0.259	0.226	0.446	0.265	-0.552	1.184 **	-0.095	0.072	0.879	1.007	1.167	0.420	0.432	7.728 ***
Euro area:																		
Austria	0.016	-0.063	0.046	0.080	-0.157	0.047	-0.097	-0.087	-0.115	0.174	0.136	-0.070	0.153	0.251 **	0.187	0.041	0.063	0.108
Belgium	0.211 ***	0.240 ***	0.066	0.220 ***	0.037	0.206	0.148	0.386 ***	0.014	0.187	-0.019	0.017	0.275	0.025	0.444 *	0.200	0.229 *	-0.117
Finland	0.616 ***	0.461 ***	0.677 ***	0.524 ***	-0.022	0.808 **	-0.088	0.750 ***	0.289	0.823 **	0.894 ***	-0.058	1.500 ***	0.781 *	0.838 *	0.092	0.345	1.626 ***
France	0.376 ***	0.354 ***	0.303 ***	0.355 ***	-0.068	0.351 *	0.219	0.683 ***	0.157	0.417 *	0.251	0.033	0.668 **	0.442 *	0.519 *	0.218	0.307 *	0.443
Germany	0.381 ***	0.356 ***	0.217 *	0.455 ***	-0.046	0.513 ***	0.065	0.652 ***	0.106	0.234	0.180	-0.419	0.761 ***	0.469 ***	0.619 **	0.359 **	0.364 ***	0.670 ***
Greece	0.203 ***	0.218 ***	0.123	0.243 **	0.231	0.084	-0.031	0.379 ***	0.141	0.385	0.305	0.107	-0.085	0.181	0.213	0.218	0.362 ***	0.046
Ireland	0.154 ***	0.061	0.147	0.226 ***	-0.245	0.264	-0.038	0.230 ***	0.036	0.259	-0.053	0.212	0.263	0.210	0.025	0.140	0.302	0.463
Italy	0.285 ***	0.155 *	0.322 ***	0.334 ***	-0.168	0.268 *	-0.029	0.397 ***	0.120	0.433	0.021	0.071	0.708	0.392	0.397	0.197	0.341	0.481
Luxemburg	0.109 *	0.017	0.102	0.134	-0.109	0.142	0.018	0.003	-0.181	0.421	-0.299	0.279	0.075	0.088	0.325	0.064	0.328	-0.322
Netherlands	0.358 ***	0.340 ***	0.247 **	0.362 ***	0.000	0.318 *	0.204	0.637 ***	0.072	0.229	0.173	0.099	0.653	0.467	0.431	0.341	0.333	0.392
Portugal	0.131 ***	0.085	0.122	0.158 **	-0.037	0.108	0.018	0.125	0.077	0.144	0.201	-0.094	0.272	0.203	0.411	0.053	0.158	0.219
Spain	0.327 ***	0.302 ***	0.249 **	0.321 ***	0.082	0.452 ***	-0.068	0.519 ***	0.053	0.428	0.251	0.195	0.473	0.340	0.290	0.192	0.346	0.538

Notes: The table shows the transmission coefficients for EME shocks based on models (1)-(4). ***, **, * indicate statistical significance at the 99%, 95%, and 90% levels.

Table 4: Asymmetries of transmission – positive versus negative shocks

Positive shocks

Event shock to:	All 14 EMEs		Latin America 4		Emerging Asia 6		Emerging Europe 4	
Market reaction of:	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*
World	0.284 ***	0.06	0.272 ***	0.08	-0.008	0.09	0.378 ***	0.10
Latin America	0.446 ***	0.09	0.589 ***	0.10	-0.007	0.14	0.404 ***	0.14
Emerging Asia	0.321 ***	0.07	0.242 ***	0.09	0.338 ***	0.12	0.278 ***	0.11
Emerging Europe	0.802 ***	0.11	0.674 ***	0.13	0.100	0.15	1.108 ***	0.20
Euro area	0.381 ***	0.08	0.285 ***	0.11	0.182	0.15	0.490 ***	0.13
Japan	0.249 ***	0.10	0.304 **	0.13	0.112	0.18	0.143	0.15
United Kingdom	0.289 ***	0.08	0.288 ***	0.11	0.060	0.12	0.318 ***	0.12
United States	0.299 ***	0.09	0.305 ***	0.12	-0.080	0.13	0.410 ***	0.16
All countries (panel)	0.332 ***	0.04	0.286 ***	0.04	0.132 ***	0.04	0.393 ***	0.06

Negative shocks

Event shock to:	All 14 EMEs		Latin America 4		Emerging Asia 6		Emerging Europe 4	
Market reaction of:	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*
World	-0.331 ***	0.06	-0.464 ***	0.08	-0.275 ***	0.11	-0.148	0.09
Latin America	-0.368 ***	0.08	-0.595 ***	0.11	-0.189	0.13	-0.219 *	0.13
Emerging Asia	-0.289 ***	0.08	-0.196 *	0.11	-0.462 ***	0.14	-0.187	0.13
Emerging Europe	-0.480 ***	0.12	-0.090	0.16	-0.515 ***	0.21	-0.811 ***	0.23
Euro area	-0.338 ***	0.09	-0.332 ***	0.12	-0.354 **	0.16	-0.245	0.15
Japan	-0.181 *	0.11	-0.164	0.17	-0.292 *	0.16	0.005	0.16
United Kingdom	-0.361 ***	0.09	-0.346 ***	0.10	-0.373 ***	0.15	-0.264 *	0.15
United States	-0.380 ***	0.09	-0.630 ***	0.12	-0.258 *	0.15	-0.121	0.12
All countries (panel)	-0.320 ***	0.03	-0.261 ***	0.05	-0.369 ***	0.04	-0.270 ***	0.05

Notes: The table shows the transmission coefficients for EME shocks based on models (1)-(4), but further distinguishing between positive and negative shocks. ***, **, * indicate statistical significance at the 99%, 95%, and 90% levels.

Table 5: Asymmetries of transmission – political versus economic shocks

Political shocks

Event shock to:	All 14 EMEs		Latin America 4		Emerging Asia 6		Emerging Europe 4	
Market reaction of:	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*
World	0.291 ***	0.06	0.309 ***	0.09	0.230 **	0.11	0.260 ***	0.11
Latin America	0.501 ***	0.08	0.629 ***	0.11	0.205	0.13	0.529 ***	0.15
Emerging Asia	0.321 ***	0.08	0.355 ***	0.13	0.390 ***	0.13	0.176	0.15
Emerging Europe	0.445 ***	0.11	0.347 **	0.17	0.379 *	0.21	0.496 ***	0.19
Euro area	0.257 ***	0.09	0.248 *	0.13	0.204	0.16	0.245	0.18
Japan	0.123	0.10	0.103	0.16	0.143	0.20	0.020	0.16
United Kingdom	0.282 ***	0.08	0.265 ***	0.11	0.235 *	0.14	0.217	0.16
United States	0.367 ***	0.09	0.425 ***	0.12	0.277	0.17	0.328 **	0.15
All countries (panel)	0.274 ***	0.03	0.266 ***	0.05	0.256 ***	0.04	0.242 ***	0.04

Economic shocks

Event shock to:	All 14 EMEs		Latin America 4		Emerging Asia 6		Emerging Europe 4	
Market reaction of:	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*
World	0.288 ***	0.05	0.370 ***	0.07	0.100	0.09	0.261 ***	0.08
Latin America	0.327 ***	0.07	0.534 ***	0.09	0.045	0.12	0.224 *	0.12
Emerging Asia	0.296 ***	0.06	0.164 **	0.08	0.419 ***	0.12	0.259 ***	0.10
Emerging Europe	0.696 ***	0.10	0.382 ***	0.11	0.300 *	0.17	1.167 ***	0.20
Euro area	0.388 ***	0.07	0.328 ***	0.09	0.312 **	0.14	0.409 ***	0.12
Japan	0.220 ***	0.08	0.277 **	0.13	0.239 *	0.13	0.089	0.13
United Kingdom	0.321 ***	0.06	0.317 ***	0.09	0.215 *	0.13	0.325 ***	0.11
United States	0.293 ***	0.07	0.450 ***	0.10	0.012	0.12	0.238 **	0.12
All countries (panel)	0.333 ***	0.03	0.265 ***	0.04	0.264 ***	0.04	0.373 ***	0.06

Notes: The table shows the transmission coefficients for EME shocks based on models (1)-(4), but further distinguishing between economic and political shocks. ***, **, * indicate statistical significance at the 99%, 95%, and 90% levels.

Table 6.a: Asymmetries of transmission – positive economic versus negative economic shocks

Positive economic shocks

Event shock to:	All 14 EMEs		Latin America 4		Emerging Asia 6		Emerging Europe 4	
Market reaction of:	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*
World	-0.307 ***	0.07	-0.511 ***	0.09	-0.174	0.14	-0.153	0.11
Latin America	-0.334 ***	0.10	-0.564 ***	0.13	-0.145	0.17	-0.219	0.16
Emerging Asia	-0.279 ***	0.09	-0.148	0.11	-0.486 ***	0.19	-0.202	0.15
Emerging Europe	-0.585 ***	0.15	-0.115	0.17	-0.525 *	0.27	-1.085 ***	0.30
Euro area	-0.383 ***	0.11	-0.384 ***	0.14	-0.307	0.20	-0.377 **	0.19
Japan	-0.081	0.13	-0.190	0.20	-0.192	0.19	0.157	0.21
United Kingdom	-0.386 ***	0.10	-0.412 ***	0.12	-0.240	0.20	-0.434 **	0.19
United States	-0.339 ***	0.10	-0.695 ***	0.14	-0.106	0.18	-0.084	0.14
All countries (panel)	0.334 ***	0.05	0.313 ***	0.04	0.181 ***	0.06	0.370 ***	0.07

Negative economic shocks

Event shock to:	All 14 EMEs		Latin America 4		Emerging Asia 6		Emerging Europe 4	
Market reaction of:	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*
World	0.267 ***	0.08	0.250 **	0.11	0.008	0.12	0.355 ***	0.12
Latin America	0.316 ***	0.10	0.530 ***	0.13	-0.079	0.17	0.235	0.16
Emerging Asia	0.310 ***	0.08	0.192 *	0.12	0.338 **	0.16	0.309 ***	0.13
Emerging Europe	0.798 ***	0.14	0.644 ***	0.16	0.021	0.18	1.243 ***	0.27
Euro area	0.391 ***	0.10	0.286 **	0.14	0.319	0.21	0.438 ***	0.15
Japan	0.353 ***	0.11	0.362 **	0.17	0.298	0.19	0.299 *	0.17
United Kingdom	0.256 ***	0.09	0.239 *	0.13	0.185	0.17	0.235 *	0.14
United States	0.245 **	0.11	0.237	0.15	-0.105	0.16	0.373 **	0.19
All countries (panel)	-0.327 ***	0.04	-0.273 ***	0.07	-0.327 ***	0.05	-0.323 ***	0.06

Notes: The table shows the transmission coefficients for EME shocks based on models (1)-(4), but further distinguishing between positive economic and negative economic shocks. ***, **, * indicate statistical significance at the 99%, 95%, and 90% levels.

Table 6.b: Asymmetries of transmission – positive political versus negative political shocks

Positive political shocks

Event shock to:	All 14 EMEs		Latin America 4		Emerging Asia 6		Emerging Europe 4	
Market reaction of:	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*
World	0.222 ***	0.08	0.260 **	0.12	-0.011	0.14	0.365 ***	0.14
Latin America	0.592 ***	0.12	0.682 ***	0.14	0.132	0.23	0.795 ***	0.23
Emerging Asia	0.285 ***	0.10	0.314 **	0.14	0.338 *	0.19	0.186	0.18
Emerging Europe	0.507 ***	0.13	0.604 ***	0.20	0.256	0.26	0.571 ***	0.13
Euro area	0.244 **	0.12	0.221	0.17	-0.039	0.21	0.527 ***	0.20
Japan	-0.050	0.14	0.101	0.20	-0.188	0.32	-0.244	0.22
United Kingdom	0.270 ***	0.11	0.310 *	0.16	-0.122	0.15	0.460 ***	0.19
United States	0.286 ***	0.12	0.379 **	0.17	-0.003	0.19	0.422 *	0.22
All countries (panel)	0.251 ***	0.05	0.282 ***	0.07	0.098 *	0.05	0.326 ***	0.07

Negative political shocks

Event shock to:	All 14 EMEs		Latin America 4		Emerging Asia 6		Emerging Europe 4	
Market reaction of:	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*
World	-0.353 ***	0.10	-0.399 ***	0.14	-0.413 ***	0.16	-0.176	0.18
Latin America	-0.410 ***	0.11	-0.609 ***	0.17	-0.260	0.17	-0.304	0.20
Emerging Asia	-0.350 ***	0.13	-0.418 *	0.23	-0.431 ***	0.18	-0.173	0.23
Emerging Europe	-0.376 **	0.19	-0.067	0.28	-0.472	0.30	-0.461	0.36
Euro area	-0.263 *	0.15	-0.309	0.21	-0.389 *	0.23	-0.009	0.29
Japan	-0.284 *	0.16	-0.128	0.27	-0.393	0.26	-0.250	0.22
United Kingdom	-0.290 **	0.13	-0.236	0.17	-0.508 ***	0.20	-0.014	0.26
United States	-0.438 ***	0.13	-0.518 ***	0.19	-0.490 **	0.25	-0.252	0.22
All countries (panel)	-0.291 ***	0.03	-0.268 ***	0.04	-0.375 ***	0.05	-0.179 ***	0.05

Notes: The table shows the transmission coefficients for EME shocks based on models (1)-(4), but further distinguishing between positive political and negative political shocks. ***, **, * indicate statistical significance at the 99%, 95%, and 90% levels.

Table 7: Extension – financial sector

Event shock to:	All 14 EMEs		Latin America 4		Emerging Asia 6		Emerging Europe 4	
Market reaction of:	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*
World	0.269 ***	0.04	0.226 ***	0.06	0.202 ***	0.08	0.271 ***	0.07
Latin America	0.415 ***	0.06	0.562 ***	0.09	0.188 *	0.10	0.259 ***	0.10
Emerging Asia	0.227 ***	0.05	0.095	0.07	0.297 ***	0.09	0.306 ***	0.08
Emerging Europe	0.550 ***	0.10	0.255 **	0.12	0.344 **	0.18	0.900 ***	0.19
Euro area	0.269 ***	0.06	0.161 *	0.09	0.252 **	0.12	0.324 ***	0.10
Japan	0.200 **	0.09	0.147	0.13	0.207	0.15	0.143	0.14
United Kingdom	0.297 ***	0.06	0.224 ***	0.09	0.271 **	0.12	0.294 ***	0.11
United States	0.322 ***	0.06	0.330 ***	0.09	0.172	0.11	0.295 ***	0.11
All countries (panel)	0.277 ***	0.03	0.183 ***	0.05	0.253 ***	0.05	0.327 ***	0.05

Notes: The table shows the transmission coefficients for EME shocks based on models (1)-(4), focusing only on the Datastream financial sector return indices. ***, **, * indicate statistical significance at the 99%, 95%, and 90% levels.

Table 8: Extension – "important" shocks

Event shock to:	All 14 EMEs		Latin America 4		Emerging Asia 6		Emerging Europe 4	
Market reaction of:	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*	coef.	*std.err.*
World	0.496 ***	0.06	0.684 ***	0.09	0.323 ***	0.09	0.422 ***	0.10
Latin America	0.715 ***	0.08	1.141 ***	0.12	0.359 ***	0.12	0.525 ***	0.14
Emerging Asia	0.542 ***	0.08	0.395 ***	0.13	0.903 ***	0.15	0.383 ***	0.13
Emerging Europe	1.120 ***	0.14	0.701 ***	0.20	0.658 ***	0.18	1.795 ***	0.27
Euro area	0.618 ***	0.08	0.629 ***	0.12	0.558 ***	0.14	0.626 ***	0.14
Japan	0.320 ***	0.10	0.345 **	0.17	0.440 ***	0.17	0.170	0.17
United Kingdom	0.586 ***	0.08	0.590 ***	0.12	0.544 ***	0.12	0.583 ***	0.13
United States	0.534 ***	0.09	0.905 ***	0.13	0.189	0.14	0.426 ***	0.14
All countries (panel)	0.573 ***	0.06	0.570 ***	0.08	0.538 ***	0.08	0.572 ***	0.10

Notes: The table shows the transmission coefficients for EME shocks based on models (1)-(4), focusing on "important" shocks, i.e. only on those news that moved the domestic equity market by 1% or more. ***, **, * indicate statistical significance at the 99%, 95%, and 90% levels.

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ISSN 1561081-0