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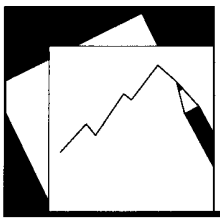

IMF Working Paper

Growth Surprises and Synchronized Slowdowns in Emerging Markets—An Empirical Investigation

Ghada Fayad and Roberto Perrelli

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Strategy, Policy, and Review Department

Growth Surprises and Synchronized Slowdowns in Emerging Markets—An Empirical Investigation

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Abstract

Output growth has slowed in several emerging markets since 2011—a remarkable feature for a non-crisis period in EMs. Such synchronized slowdowns were largely unanticipated by scholars and forecasters alike. In this paper we attempt to shed light on the main drivers of growth surprises and synchronized slowdowns in emerging markets post-global financial crisis. We find that lower trading partner demand was a key external factor in explaining these events during 2011–13, and that changes in external financing conditions have yet to play a role in EMs' growth. On the domestic front, the withdrawal of the fiscal stimulus put in place right after the Lehman collapse is a relevant aspect in these episodes, compounding the effect of the weaker external demand. Idiosyncratic factors, such as structural bottlenecks with the potential to impair growth in a more lasting fashion, also seem to partly explain these events, as reflected in the larger residuals found in regression-based estimates for certain countries.

JEL Classification Numbers: E32, F42, F43, F44

Keywords: Emerging market; growth surprises; growth deceleration; trading partners' demand

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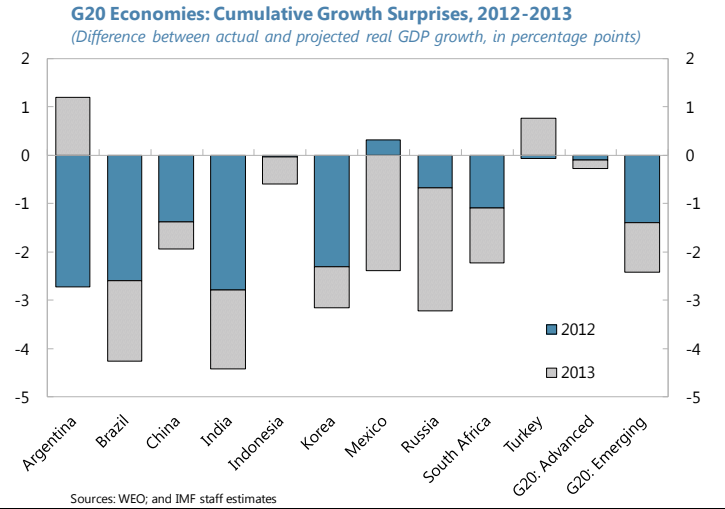
I. INTRODUCTION[1]

Following a decade of high growth and a swift rebound after the global financial crisis, many emerging markets (EM) are seeing stubbornly slower growth since 2011. Despite favorable terms of trade, and still easy financing conditions even after the "tapering talks", EMs' average annual output growth in 2013 was 1½ percentage points lower than during 2010–11 when post-crisis recovery peaked. This phenomenon has been widespread—output growth slowed in about three-fourths of all emerging markets in 2013. Such synchronized and persistent slowdowns typically have only occurred during acute crisis periods. This kind of deceleration was also largely unanticipated by scholars and forecasters alike, with more than 70 percent of the 50 largest EMs experiencing negative growth surprises in 2012–13 relative to IMF's World Economic Outlook (WEO) forecasts published 12-months earlier.

Figure 1. G20: Cumulative Growth Surprises, 2012-13



While the EM slowdowns can be partially explained by external conditions, it seems fair to suspect that domestic policies and idiosyncratic factors were also at play. For instance, the cumulative real GDP growth of the G-20 advanced economies during 2012–2013 was merely 0.3 percentage points lower than WEO projections—therefore broadly in line with country desks' expectations. Meanwhile, the cumulative growth surprise of G-20 emerging markets amounted to 2.4 percent in that same period. And considering that it takes 4–6 months for forecasts to fully reflect new information (Loungani, Stekler, and Tamirisa, 2013), the double dip on the negative side, reflected in negative surprises in 2012 and 2013, was a remarkable feature for a non-crisis period (Figure 1). Market analysts were also taken by surprise by the magnitude and persistence of the economic slowdown in these economies, as documented in number of investment bank reports.

In this paper we attempt to shed light on the main drivers of growth surprises and synchronized slowdowns in emerging market economies post-global financial crisis (GFC). We find that, for the average emerging market, lower trading partner demand growth was a key external factor in explaining slowdowns during 2011–13, and that changes in external financing conditions have yet to play a key role in the slowdowns. On the domestic front, the withdrawal of the fiscal stimulus put in place right after the Lehman collapse is a relevant

[1] We would like to thank Olivier Blanchard, Kalpana Kochhar, Luis Cubeddu, Ceyda Oner, and participants of the IMF/World Bank Annual Meetings Conference entitled "Emerging Markets: Where Are They, Where Are they Headed?", October 2013, for helpful comments. The usual disclaimers apply.

aspect in these episodes, compounding the effect of the weaker external demand. Idiosyncratic factors, such as structural bottlenecks with the potential to impair growth in a more lasting fashion, also seem to partly explain these events, as reflected in the larger residuals found in certain countries.

This paper is organized as follows. Section II provides a brief review of the still nascent literature on the post-GFC deceleration in emerging market economies. Section III documents the recovery of EMs as well as their post-recovery slowdown, and compares to deceleration episodes of previous crisis periods. Section IV estimates a model of EMs growth surprises, measured as deviations of actual real GDP growth rate from its projected value published in the IMF's World Economic Outlook in the previous year. Section V estimates a model of the synchronized slowdowns in EMs, and attempts to identify the contributions of external and domestic components to the current episode. Section VI concludes.

II. A Brief Review of the Literature

The diversity of the crisis severity is highlighted in a few seminal papers. Blanchard, Das, and Faruqee (2010) study the acute phase of the global financial crisis (2008Q4-2009Q1), and find that financial shocks mattered more than terms-of-trade shocks for EMs, as countries with high short-term external debt suffered larger declines in output than less leveraged economies (to support their argument, the authors contrast the cases of Chile, Latvia, and Russia). Didier, Hevia, and Schmukler, (2012) document a structural break in the EM policy framework, where larger fiscal space and healthier balance sheets allowed them to pursue countercyclical policies before and during the global shock. In these studies, improvements in EM debt profile (longer maturities and lower foreign currency exposure) seemed to have helped on hindering the global financial shock.

Some regional studies attempted to shed light on the causes of slowdown. For instance, IMF (2013) focuses on the BRICS and finds that, even though the growth slowdown can be largely attributed to an unwinding of positive cyclical factors, structural factors play a key role as potential growth has also deteriorated. In comparison to previous episodes, the slowdowns are found to be hardly unprecedented—as BRICS were always expected to decelerate to more moderate growth levels after the post GFC bounce-back—yet with larger than expected magnitudes. Anders (2013) also foresees a general slowdown in BRICS (and in Indonesia and Turkey) owing mainly to the end of the large commodity and credit booms, complacency about much needed reforms, and too high (China) or too low investment (Brazil, Russia, South Africa, and Turkey). IMF (2014a) similarly finds that most of the slowdown in the ASEAN-5 was cyclical, driven primarily by domestic factors, particularly the unwinding of aggressive stimulus during the crisis. Anand, Cheng, Rehman, and Zhang (2014) find that both China and India have recently exhibited a slowdown in potential growth related to a decline of total factor productivity (TFP) growth. For Latin American EMs, Sosa, Tsounta, and Kim (2013) find that factor accumulation (especially labor) was the main driver of real GDP growth in 2003-2012, but natural constraints on labor and moderated capital accumulation threatens growth momentum going forward.

A number of papers focus on a longer time horizon to explain growth deceleration in EMs. Using probit regressions on a sample from 1955 to 2009, Aiyar, Duval, Puy, Wu, and Zhang (2014) examine the role of institutional and structural factors on the probability of a slowdown, and find a connection between experiencing a growth deceleration and falling into a middle-income trap. IMF (2014b) highlights the importance of external factors in explaining the bulk of the variance of growth dynamics in EMs. Using a VAR analysis on quarterly data for 1998–2013, they find that the influence of internal factors has increased in recent years and that these factors appear to be reducing growth rather than spurring it. Cubeddu et al. (2014) delve deeper into the factors behind EMs' strong performance over the last decade and the more recent slowdown, exploring the role of supply-side factors, external conditions and macro policies for a larger set of EMs. They find that higher growth rates during the 2000s reflected a combination of improved fundamentals and strong tailwinds that boosted demand and raised productivity in most countries. Since productivity surges tend to be procyclical (Basu and Fernald, 2001), the authors highlight the transitory nature of those productivity gains, and suggest that supply-side constraints and weaker employment expansion could hold back growth in a number of EMs in the years to come. Therefore, the authors emphasize the importance of rebalancing EMs' growth through a renewed emphasis on structural reforms and a revision of macroeconomic policy priorities towards addressing pending vulnerabilities.

Our work closely relates to and complements the nascent literature on the most recent slowdowns in EMs. In contrast to the works above, our paper uses a larger sample (Latin America, Eastern Europe, Emerging Asia, MENA, and South Africa) and concentrates on the post-crisis period, with the goal of shedding light on the critical role of country heterogeneity in what is, to our knowledge, the first non-crisis episode of synchronized slowdowns in EMs.

III. GROWTH MOMENTUM: EM V-SHAPED RECOVERY AND SYNCHRONIZED SLOWDOWNS

A. Post-Lehman V-shaped Recovery

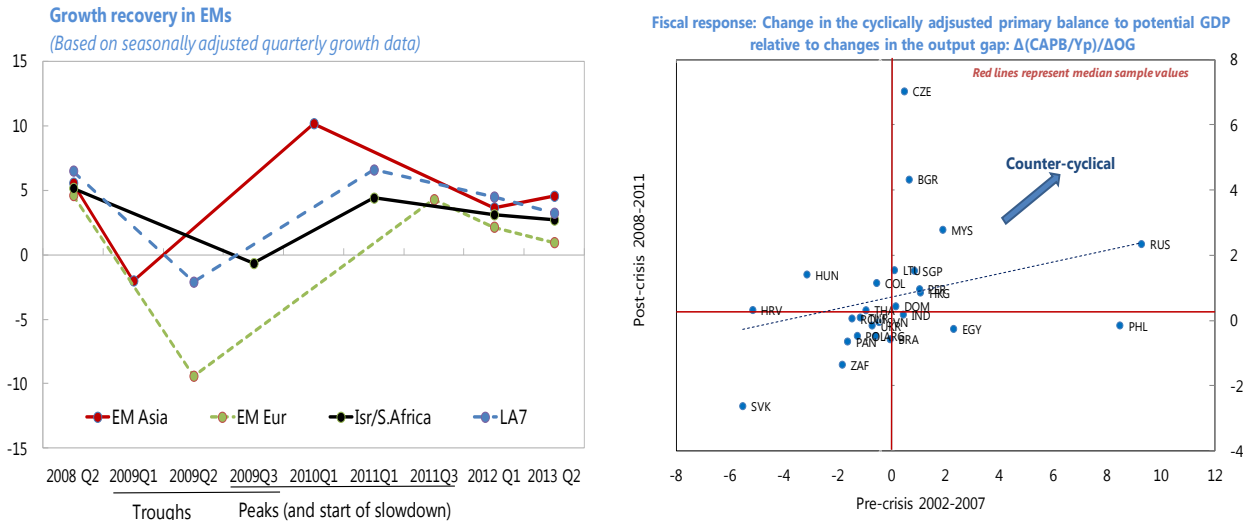
In the aftermath of the global financial crisis, most EMs started recovering in the first half of 2009, but with large heterogeneity across regions in terms of severity of crisis and strength and speed of recovery. Emerging Asia, and to a lesser extent Latin America, recovered the quickest and the strongest, with growth returning to or exceeding pre-crisis growth levels, and output gaps closing in many of those countries by early 2010. Instead, emerging Europe was more severely affected, and was slower to recover, with output gaps remaining negative in most countries (Figure 2, left panel). Overall, the rebound in EMs started earlier and evolved faster than in advanced economies (Didier, Hevia, and Schmukler, 2012).

The heterogeneous recovery has been object of study by scholars and research institutions. IMF (2010) finds that the recovery was faster in countries that (i) gave a bigger fiscal stimulus, (ii) had faster growing trading partners, (ii) had better pre-crisis fundamentals (or lower vulnerabilities), and (iv) followed flexible exchange rate regimes. Tsangarides (2012) finds that during the 2010-2011 recovery, "peggers" fared much worse than "floaters", and that trading partners' growth contributed to the EM recovery.

Counter-cyclicality of domestic policies also played a role. Claessens, Dell'Ariccia, Igan, and Laeven (2010) show that the strength of the fiscal response to the crisis, and thus the speed of recovery, is a function of the history of correlation between fiscal policy and growth, i.e. to which extent fiscal policy was counter- or pro-cyclical in the past, thus leaving more or less "fiscal space" and room for intervention that policymakers could use during times of distress. A broader view on the role of macro fundamentals on the EM recovery is offered in IMF (2012) as well as in Didier, Hevia, and Schmukler (2012). These studies explain the resilience of EMs this time around by good macro frameworks granting most EMs, with the exception of emerging Europe and Central Asia, the ability to conduct countercyclical policies before and during this crisis, unlike in previous episodes.

Preliminary evidence from our sample of EMs suggests that countries that were countercyclical in the run up to the crisis had the fiscal space to spend in adverse times (Figure 2, right panel), whereas pro-cyclical policies of countries in good times exacerbated their business cycle in bad times (Figure 2, left panel).

Figure 2. Emerging Markets Recovery from Global Financial Crisis

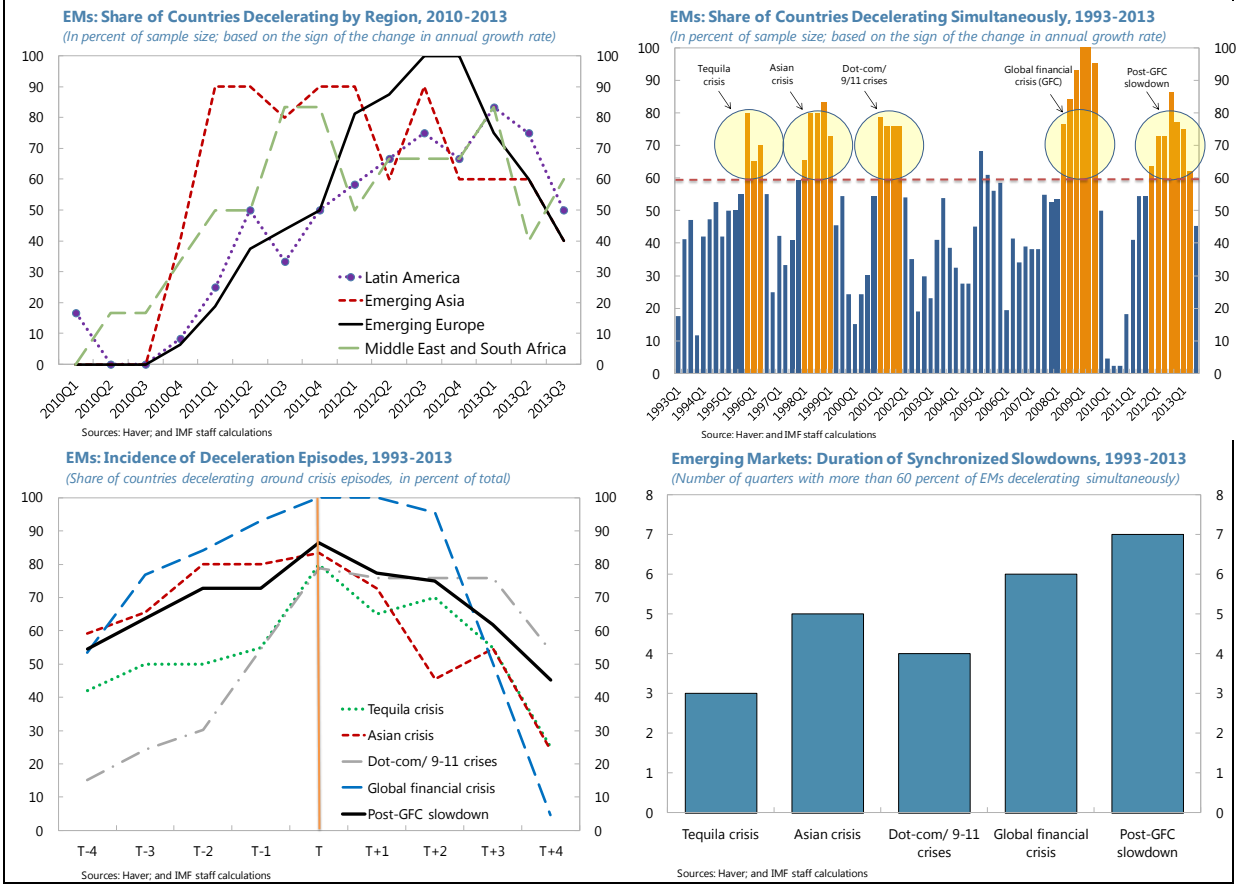


Sources: WEO and IMF staff calculations

B. Synchronized Slowdowns

Most emerging markets started to experience a broad-based economic slowdown within three years of the Lehman fallout. Emerging Asia was the first region to decelerate, with growth slowing in about 90 percent of the countries in early 2011. Other regions lost steam shortly after, with more than 80 percent of Middle East and South Africa group facing a slowdown by the end 2011. Latin America and EM Europe decelerated soon after, mostly in late 2012-early 2013 (Figure 3, top left panel). Considering all regions, by 2012Q3 over 85 percent of the EMs in our sample were decelerating simultaneously (Figure 3, top right panel).

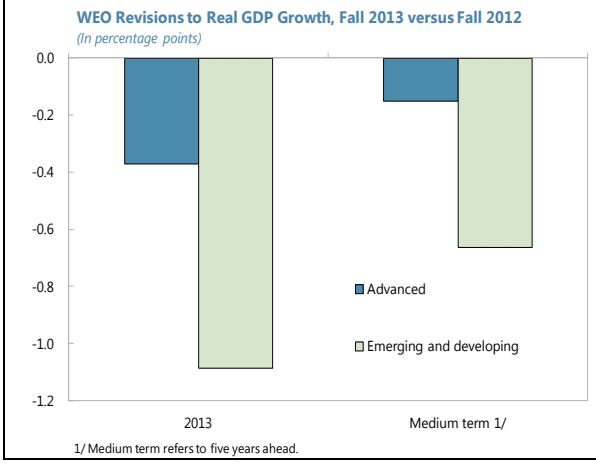
Figure 3. Incidence of Deceleration Spells in Emerging Markets



We compare the post-GFC deceleration with previous spells of synchronized slowdowns. Centering the episodes at their respective peaks, we find that the GFC is the spell with the highest incidence of EMs decelerating simultaneously, yet it is also the episode with the shortest duration: two quarters after the peak, the share of EMs decelerating started to drop abruptly, approaching zero within one year (Figure 3, bottom left panel). This sharp decline is related to the V-shaped recovery of many EMs in 2009-2010. Interestingly, the GFC was quickly followed by another round of synchronized slowdowns (the "post-GFC" spells), which arguably could be treated as a "lagged effect" of the global financial crisis. The post-GFC spells, however, have longer duration than the others, with more than 60 percent of the EMs decelerating simultaneously for almost two years (Figure 3, bottom right panel).

The synchronized slowdown surprised many scholars and forecasters. Average real GDP growth in emerging markets was revised down by 1.1 percentage points between the publication of the IMF's World Economic Outlook in the Fall of 2012 and its sequel in the Fall of 2013. This compares to a trimming of less than 0.4 percent for advanced economies (Figure 4), indicating that the EM slowdown was also influenced by domestic and idiosyncratic factors. In addition, downward revisions in near-term growth were accompanied by revisions in the medium term growth forecast, suggesting that part of the slowdown reflected a reexamination of potential output. For instance, WEO's medium term projection (gauged as the five-year-ahead growth forecast) was revised down by 0.7 percentage points for emerging markets, against a 0.1 percent revision for advanced economies, during this period.

Figure 4. WEO Revisions to Real GDP Growth

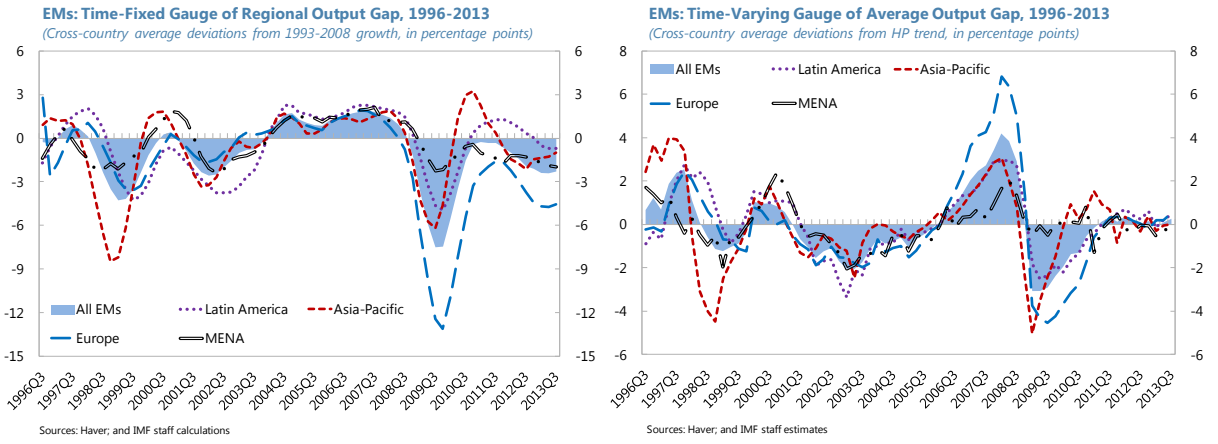


Finally, we call attention to the regional heterogeneity of output gaps during the crisis episodes above described. Our analysis uses two basic proxies for potential output—a time-varying metric, and a time-fixed benchmark.[2] We find strong co-movement of output gaps across regions, with large "negative mass" taking place around major crisis periods. As shown in Figure 5, European emerging markets have the highest "gap volatility" (boom-bust cycles); emerging Asia experienced positive gaps after the GFC; and Latin America got a boost with the strong performance of commodities prices in 2010–11 (small positive gap). Interestingly, gaps based on a time-fixed benchmark turned negative while gaps based on the time-varying proxy were almost closed in the post-GFC deceleration. This highlights the need to examine a possible reduction in potential output in tandem with the recent slowdown—see, for instance, IMF (2013) and Tsounta (2014).[3] Whether policy makers will take the post-GFC slowdown as a "one-off" event or as a prelude to long-lasting lower growth is a critical input for the policy design and macro framework of emerging market economies.

[2] In this study, we estimate proxies for output gaps based on two metrics: (a) the difference between the actual real growth rate of output and the (time-fixed) average growth rate of output during the 15 years preceding the global financial crisis (1993–2008); and (b) using traditional filter-based estimates of the output gap, with controls for possible end-point bias based on the IMF WEO's out-of-sample forecasts of quarterly real GDP until end-2015.

[3] IMF (2013) uses a multivariate filter based on the relation between output and inflation to distinguish between cyclical and structural slowdown in the BRICS (Brazil, Russia, India, China, and South Africa). The study finds a reduction in the potential growth of these economies in the post-crisis years, related to structural impediments. For China and Russia, the authors find that potential growth is expected to fall even further in the medium term.

Figure 5. Output Gap Estimates Based on Pre-crisis Period Versus Full Sample Period



IV. Estimating EM Growth Surprises Post-Global Financial Crisis

We analyze the determinants of the growth surprises observed in a panel of emerging market economies during the post-global financial crisis years. We measure growth surprises as the difference between the actual real GDP growth rate for country *i* in year *t* and the projected real GDP growth rate for that same country one-year ahead, as published in the IMF's World Economic Outlook (Fall edition) of the previous year[4]:

$$surprise(\dot{y}_{it}) = \dot{y}_{it} - E_{t-1}(\dot{y}_{it}) \quad (1)$$

We attempt to explain growth surprises in each emerging market as a function of surprises in its trading partners' growth rates, surprises in its terms-of-trade growth, and surprises in its fiscal consolidation during those years. The "trading partners' surprises" are weighted by the ratio of exports-to-GDP of each emerging market, to better capture the interaction between EMs' openness and their trading partners' growth. A positive correlation between EMs' growth surprises and trading partners' growth surprises is naturally expected. Similarly, terms-of-trade surprises are expected to be positively correlated with EMs' growth surprises. EMs' "fiscal surprises" are measured as the gap (in percent of GDP) between the actual and the projected change in the general government total expenditure in each year of our sample. In the short run, we expect a positive correlation between EMs' growth surprises and EMs' fiscal surprises mostly due to the impact of public consumption and investment in the domestic demand, and the time required for the private sector to "crowd in" once the fiscal consolidation takes place. Finally, we control for global volatility (VIX) and for country-specific initial conditions (financial openness, output gap, and REER overvaluation in 2010)[5]. The paucity of data on systematic projections of monetary policy rates in our sample of EMs prevented us from testing for the contribution of monetary surprises to growth surprises.

[4] For the actual growth in 2013, we use the desks' latest estimates based on three quarters of actual outturns.

[5] We also tested for the impact of changes in global interest rates, using the yields on the US Treasury 10-year bonds as a proxy, but found no statistical significance for this variable during the sample period.

For each emerging market *i*, we compute its trading partners' growth surprise in year *t* as the weighted average of the shares of country *i*'s gross exports to each of its main trading partners in year *t-1*, multiplied by the respective trading partners' growth surprises in year *t*:

$$trading\ partners'surprise_{it} = \sum_{j=1}^{J} w_{jt-1}\left[\dot{y}_{jt} - E_{t-1}(\dot{y}_{jt})\right] \quad (2)$$

Solving equation (2) requires us to estimate growth surprises in advanced economies as well, which we carry out by following the same approach described in equation (1). The shares of each emerging market's gross exports to its respective trading partners are computed using the IMF's Directions of Trade Statistics database.

Robustness

To control for the inter-dependence of trading partners' growth performance, we split trading partners' surprises into two groups: surprises in advanced markets (AM) partners and surprises in Emerging and Developing (EMDEV) partners. For simplicity, we assume that AM surprises are exogenously determined, but EMDEV surprises are not. To properly capture the contribution of the latter in our model, we include the residuals of the regression of growth surprises in emerging and developing trading partners on the growth surprises of advanced trading partners (which we name "EMDEV residual surprise") as an explanatory variable in the model. By design, such residuals are orthogonal to AM trading partners' surprises. A reduced form of the model is described in equation (3):

$$\begin{aligned} surprise(\dot{y}_{it}) = {} & \beta_0 + \beta_1 AM\ trading\ partners'surprise_{it} \\ & + \beta_2 EMDEV\ trading\ partners'\ residual\ surprise_{it} \\ & + \beta_3 Fiscal\ surprise_{it} + \beta_4 ToT\ surprise_{it} \\ & + \beta_5 VIX_t + \beta_6 Initial\ Conditions_i + \varepsilon_{it} \end{aligned} \quad (3)$$

We also estimate a variation of the model described in equation (3) by replacing the EMDEV residual surprises with the China's residual surprise weighted by its respective trade share with each emerging market economy. This variable aims to capture the portion of the Chinese growth surprise that is not explained by the growth surprise of advanced markets on that year, which presumably was a result of China's idiosyncratic shocks.[6] Finally, as a robustness test, we interact EMDEV's residual surprise and China's residual surprise with net commodities exports (in percent of GDP) for each emerging market economy.[7]

[6] The increasing role of China in propagating international shocks and contributing to higher business cycle synchronization (especially among the Asian EMs) is discussed in IMF's (2014b). The authors find that synchronization is higher at times of major crises, such as in 1997-98 and 2008-09, and that the increase in value-added trade among these countries amounted to one quarter of the rise in the synchronization of Asian business cycles over the last decade.

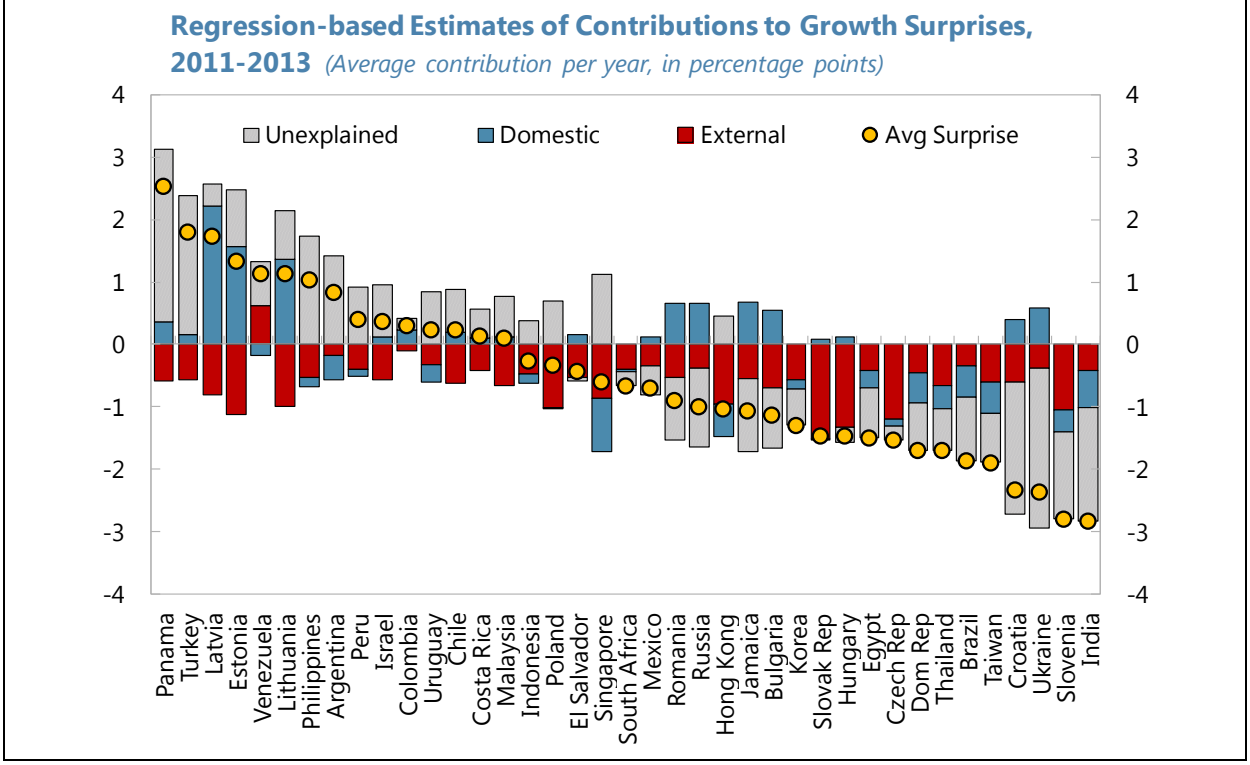
[7] To capture emerging markets' exposure to commodities, we use a time-fixed proxy: the 2000-2010 average net commodity exports computed by the IMF's Research Department and used, inter-alia, in the country classification of the IMF's World Economic Outlook.

Our database includes annual observations on a panel of 60 emerging markets during the 2011–13 period. We use pooled OLS estimators with robust standard errors to compute the contribution of each explanatory variable. Time-fixed effects were excluded due to the short time span of the sample, but they were captured by the changes in the VIX index. Country-fixed effects were not used due to limited degrees of freedom but we attempt to partially control for them through the use of country-specific (time-invariant) initial conditions.

Empirical Findings

We find that external factors—here mainly represented by the contribution of growth surprises in advanced trading partners—are positive and statistically significant, accounting for the bulk of the surprise spells in most emerging markets (Figure 6 and Table 1). China's growth surprises were also positive and statistically significant in most models, highlighting the rising importance of China as a trade destination to EMs. Even though the prices of some commodities remained high during the sample period, their changes may have adversely affected EMs' growth—in our models, terms-of-trade surprises are positive and significant. Finally, changes in the VIX index were also positive and significant, suggesting that rises in global risk aversion were associated with positive growth surprises in EMs.[8]

Figure 6. Factors Contributing to EM Growth Surprises, 2011–13



[8] This counter-intuitive result may be the result of a sampling effect. Most of the negative growth surprises happened in 2012/2013, whereas the VIX spiked in 2011 with the European turmoil then came down in 2012-2013, exactly when EM growth fell below projections.

Domestic factors were captured in our regression by the fiscal surprises and by a range of initial conditions. Among the tested initial conditions (output gap, financial openness, and REER overvaluation in 2010), only the output gap was statistically significant, indicating that countries with a positive gap in 2010 experienced negative growth surprises in the following years. Fiscal surprises had the incorrect sign (negative) in all models but were not statistically significant in these regressions (Table 1).

Table 1. Determinants of Growth Surprises in Emerging Market Economies, 2011–13

Dependent variable: EM growth surprise	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Explanatory variables:							
Trading partners' growth surprise: Advanced partners	0.022***	0.022***	0.022***	0.020***	0.019***	0.015**	0.019***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.007)
Residual trading partners' growth surprise: Emerging and developing partners		0.008					
		(0.006)					
Residual trading partners' growth surprise: China as a partner			0.016**	0.013**	0.011**	0.009*	0.001
			(0.006)	(0.005)	(0.005)	(0.005)	(0.007)
Fiscal surprise				-0.094	-0.148	-0.110	-0.114
				(0.117)	(0.098)	(0.103)	(0.077)
Terms-of-trade surprise					0.070***	0.060***	0.048***
					(0.015)	(0.015)	(0.018)
Change in VIX index						0.027*	0.030**
						(0.014)	(0.013)
Output gap in 2010							-0.204***
							(0.062)
Constant	-0.215	-0.215	-0.215	-0.104	-0.126	0.143	-0.010
	(0.184)	(0.184)	(0.183)	(0.197)	(0.196)	(0.263)	(0.252)
Sample size	180	180	180	138	138	138	117
R-squared	0.05	0.06	0.06	0.08	0.13	0.17	0.27

Note: Standard errors in parentheses. ***, **, and * indicate statistical significance at 1, 5, and 10 percent, respectively.

Our results expand the literature by gauging the role of EMs' fiscal consolidation surprises, and by trying to screen the contribution of AM's trading partners' growth surprises from that of China's growth surprises. In a related study, Blanchard, Das, and Faruqee (2010) examine growth surprises during the semester composed of 2008Q4 and 2009Q1, in an attempt to separate the impact of the global financial crisis from pre-crisis domestic trends. Their specification involves two explanatory variables—trade and short-term financing requirement. They find that unexpected trading-partner growth was positively correlated with EMs' growth surprise, and that countries with higher ratios of short-term external debt to GDP experienced larger negative growth surprises than peers during that single semester. Nevertheless, the constant term was statistically significant in their regressions, which the authors interpret as a sign of omitted variables. Differently from that study, the constant term is statistically zero in all of our regressions, as highlighted in Table 1.

V. EXPLAINING EM SYNCHRONIZED SLOWDOWNS POST-GLOBAL FINANCIAL CRISIS

In this section, we attempt to explain the synchronized slowdown in EMs between 2011 and 2013, using simple pooled panel OLS.[9] We adopt the following specification:

$$Growth_{it} = \sum_{j=1}^{J} \alpha_j \, Domestic\ factors_{jit} + \sum_{k=1}^{K} \beta_k \, External\ conditions_{kit} + \sum_{l=1}^{L} \gamma_l \, Initial\ conditions_{li} + \sum_{n=1}^{N} \lambda_n \, Initial\ conditions_{ni} * Domestic\ factors_{nit} + \varepsilon_{it} \quad (4)$$

The dependent variable is yearly real GDP growth rate. *Domestic factors* include policy variables and fundamentals, namely: fiscal policy measured by the change in the cyclically adjusted primary balance to potential GDP, the exchange rate regime, and monetary policy measured by the change in policy rate.[10] *External factors* include changes in trading partner's real import demand, changes in terms of trade, changes in global volatility (VIX), and changes in US bond yields. *Initial conditions*, all measured in 2010, include REER overvaluation, the output gap, measure for financial openness, as well as a dummy for commodity exporters. We interact initial conditions (FO) with fundamentals (peg).

Our regression model does not include country-fixed effects to allow for important country-specific time-invariant initial conditions, such as initial output gap and financial openness, be estimated. Year-fixed effects were also excluded due to the short time span of the sample, but changes in external conditions common to all countries, such as the changes in the VIX index, serve similar purpose.[11] On the other hand, some variables of interest that were included in the regression models did not pass the significance test, such as the 10-year US bond yield, changes in monetary policy rate, changes in terms of trade, and whether a country is a commodity exporter.[12] Keeping these variables in the regression does not alter the main

[9] Data for this analysis is based on staff calculations using the latest October 2013 WEO, the GEE and AREAER database (for exchange rate classifications). Additionally, public sources (Bloomberg, IFS, DOTS, and HAVER) are used. The sample uses annual data for the years 2011, 2012 and 2013 as well as initial conditions for 2010.

[10] We use a peg dummy equal to one when exchange rate classification is below or equal to 8 (i.e. for all classifications except floats and free floats).

[11] Though we choose not to, our results are maintained if we use year-fixed effects.

[12] In the case of monetary policy rates, Perrelli and Roache (2014) use a principal component analysis to detect a "common cycle" of declining rates in EMs during 2011–12, and an incipient reversal in 2013 around the time that markets began to price-in an unwinding of quantitative easing by the U.S. Federal Reserve. This suggests that common global factors, both trend and cyclical, have exerted strong influence in EM rates these years.

results; hence we opted to exclude them from the baseline specifications reported below. Nevertheless, the lack of significance of changes in external financing conditions (US yields) was particularly surprising given the literature on the topic (see, for instance, Culiuc, 2014). Our interpretation is that such impact will be felt with lags not captured in our sample period.

The results presented in Table 2 (column 1) confirm that countries grew slower when: (i) their trading partner's import demand was weaker, (ii) fiscal policy was less accommodative (i.e. our measure of primary balance is higher), (iii) they were initially overheating (positive output gaps) and started with overvalued exchange rates.[13]

Controlling additionally for the exchange rate regime and its interaction with initial financial openness (column 2), we find that while countries with more flexible exchange rate regimes grew faster, the more financially open peggers also experienced growth improvements. The contractionary effect of fixed exchange rate regimes, in terms of magnitude and significance, has also been established in Tsangarides (2012), where pegged regimes recovered slower from the GFC during 2010-2011. Indeed, the question of the growth effect of pegged regimes is an empirical one. On the positive side, by reducing relative price volatility and uncertainty, pegs are likely to be associated with lower real interest rates, stimulate investment, trade and growth. Furthermore, by contributing to monetary policy discipline and predictability, pegs reduce a country's vulnerability to speculative exchange rate fluctuations. On the negative side, the resulting lack of exchange rate adjustment and price rigidities could result in price distortions and misallocation of resources in the event of real shocks, increasing output volatility. The need to defend the peg in the event of a negative external shock is costly and increases uncertainty about sustainability of regime, with negative repercussions on investment prospects (Levy Yeyati and Sturzenegger , 2003).We also find that countries with higher financial account balances to GDP grew faster (column 3).

To capture the domestic economy's own degree of openness, we interact our external variable, trading partners' import demand, with each country's own exports to GDP ratio, measured in 2010 (column 4). Our main findings hold, with our main variables of interest remaining significant, though the external variable less strongly so.[14]

[13] Our results are robust to using a different fiscal policy variable, namely real public consumption expenditure growth.

[14] We chose a time-invariant measure of exports to GDP to lessen the correlation between the two interaction terms. Results are very similar if we interact instead exports to GDP averaged over 2011-2013.

Table 2. Determinants of Slowdowns in Emerging Market Economies, 2011–13

Dependent variable: Real GDP Growth	(1)	(2)	(3)	(4)
Trading partners' import demand (* Exports to GDP) 1/	0.43***	0.47***	0.43***	0.35*
Change in cyclically adjusted primary balance to potential GDP	-0.23**	-0.20**	-0.19**	-0.21**
Initial output gap	-0.06	-0.087	-0.13	-0.16
Initial REER overvaluation	-0.071**	-0.043	-0.062*	-0.062**
Initial financial openness	-0.33	-0.99***	-0.83***	-1.008***
Peg Dummy		-3.35***	-2.89***	-2.97***
Financial Openness * Peg		2.59***	2.19***	2.10***
Balance on financial account to GDP			0.15*	0.19**
Change in VIX index	-0.06	-0.01	-0.005	0.032
Constant	2.49**	2.96**	2.69**	4.63***
Observations	72	72	72	72
R-squared	0.25	0.43	0.48	0.41

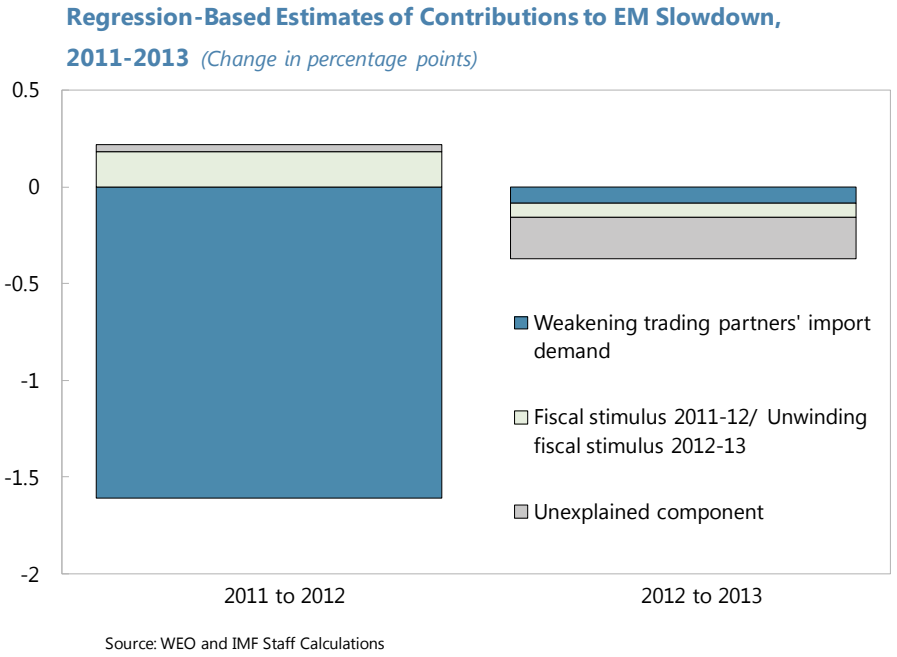
Note: ***,**,* indicate statistical significance at 1, 5, and 10 percent respectively, with robust standard errors.
1/ The regression in column 4 includes trading partners' import demand interacted with domestic economy's initial export to GDP ratio (in 2010), to capture the effect of a country's degree of openness.

Decomposing the Growth Slowdown

We then use the estimated coefficients from column 3 to compute $\hat{Y}_t$ for the average EM, and for each sample year. Taking the difference in $\hat{Y}_t$ between each pair of consecutive years, we decompose the growth slowdown in 2012 and 2013 into its different components that are implied by our model. We define the difference between actual and estimated slowdown as the unexplained component (Figure 7).[15]

[15] Results in Figure 7 are presented for the EMs that experienced a slowdown between 2011 and 2013, about 88 percent of our sample.

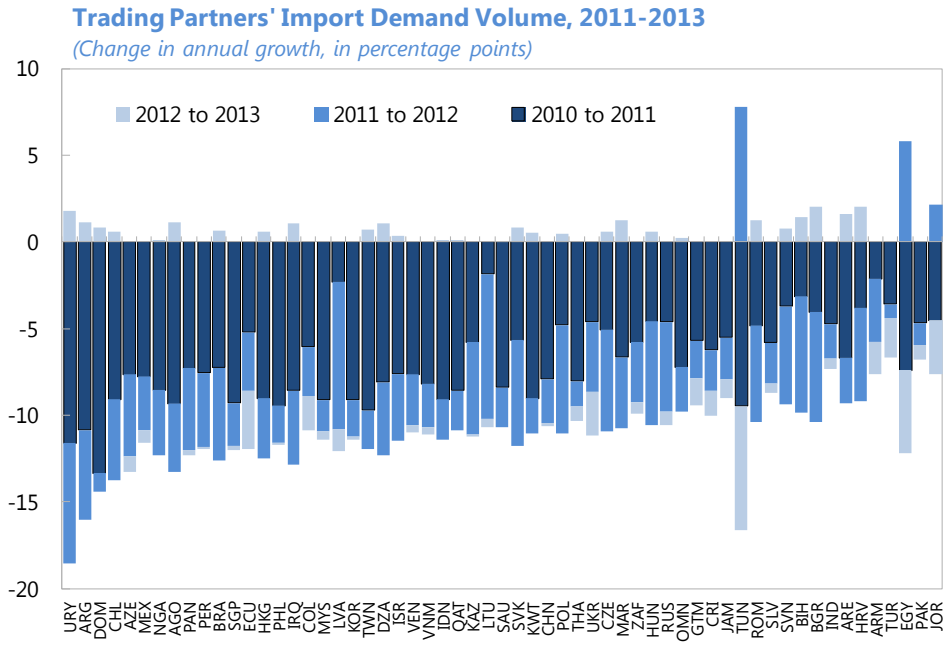
Figure 7. Factors Contributing to EM Growth Slowdowns, 2011–13



Source: WEO and IMF Staff Calculations

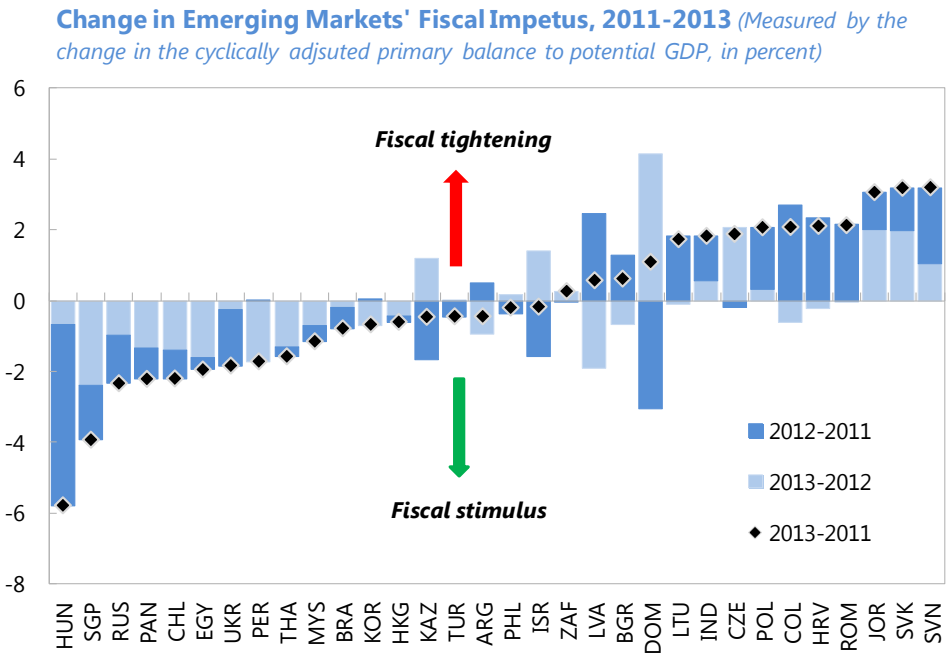
It is worth noting that all EMs experienced a deterioration in their trading partners' import demand from 2010 until 2013, even though decreasingly so especially between 2012 and 2013 when improvements in trading partner's import demand were observed in some countries (as reflected in Figures 8 and 9). Fiscal policy for the average EM was accommodative between 2011 and 2012, but contractionary between 2012 and 2013. The unexplained component, which for the average EM is more pronounced in the slowdown between 2012 and 2013 than in the previous year, could reflect domestic components beyond fiscal policy as well as idiosyncratic factors that are not captured in our regression. These factors may be related to long-standing structural obstacles that are hard to quantify but that prevent EMs from growing faster. Finally, we highlight that, while these findings hold for the average EM, considerable cross-country heterogeneity is observed, as documented in the next section.

Figure 8. Trading Partners' Import Demand Volumes, 2011–13



Source: WEO; GEE: and IMF staff calculations

Figure 9. Change in Fiscal Impetus, 2011–13

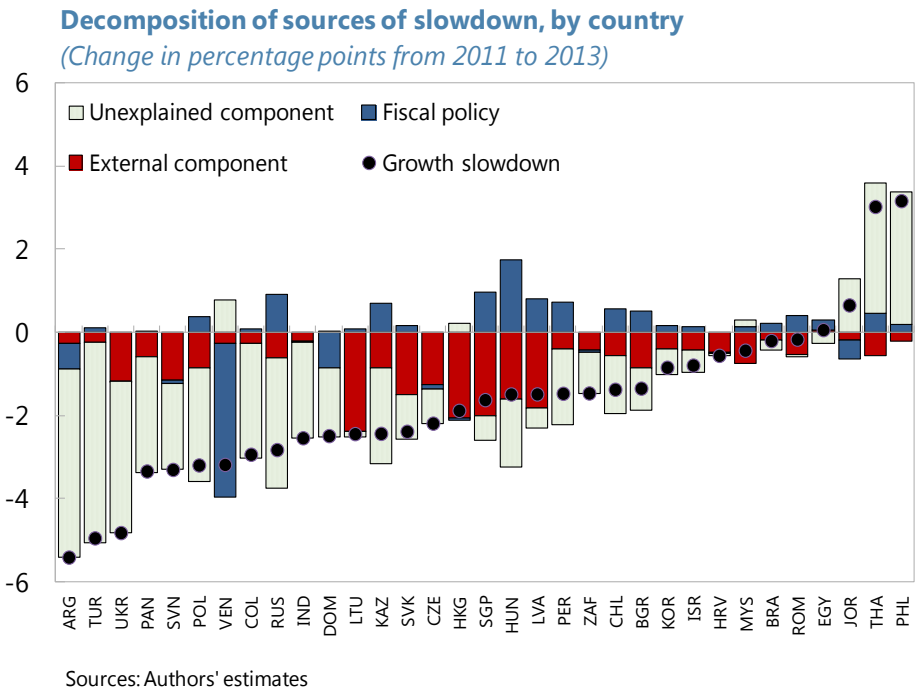


Source: Fund staff estimates.

A. Cross-country heterogeneity

Our fitted regression results in Figure 7 decomposed the slowdown for the average EM. However, as emphasized throughout this paper, there is considerable regional and country heterogeneity, which we try to capture now by decomposing the slowdown for each of the EMs of our sample. For this purpose, we use the regression results presented in column 4 of Table 2, whereby the external component captures a country's initial degree of openness. Figure 10 ranks countries by the contribution of external factors and shows that for a large number of EMs that are relatively less open, non-external factors explained a large share of slowdown. For instance, in countries like Argentina, Turkey, and to lesser extent India, a large unexplained component exacerbated the slowdown. In others, these unexplained factors alleviated the severity of the slowdown.

Figure 10. Decomposition of Sources of Slowdown by Country, 2011–13



B. Separating EM from AM trading partners

In this section, we attempt to control for the inter-dependence of trading partners' growth performance. Using major trading partners' real growth rates, we separate advanced markets (AM) trading partners and emerging markets (EM) trading partners, and also account separately for China (as a trading partner). The underlying assumption is that AM trading partners' growth is less endogenous than the growth of EM trading partners.[16] To account for AM-EM linkages, we compute the part of EM trading partners' growth which is not explained by that of AM trading partners (i.e. the residual from a regression of the former on the latter) (column 1). We also compute the portion of China's growth which is orthogonal to that of AM partners (column 2), and the share of EM trading partners' growth which is orthogonal to both AMs and China (column 3). Results in Table 3 show the robustness of our findings to this disaggregation. Specifically, the growth rates of AM trading partners and that of China (as a trading partner) are strongly statistically significant in all specifications, whereas that of EM trading partners lose significance once we control for AMs and China. The remaining control variables maintain their economic and statistical significance.

Table 3. Decomposing Trading Partners' Contribution to Slowdowns, 2011–13

Dependent variable: Real GDP Growth	(1)	(2)	(3)
AM Trading partners' growth	2.79***	2.48***	2.45***
EM Trading partners' growth, orthogonal to AMs	0.83**		
China Trading partners' growth, orthogonal to AMs		1.35***	1.37***
EM Trading partners' growth, orthogonal to AMs and China			-0.15
Change in cyclically adjusted primary balance to potentia	-0.19***	-0.17**	-0.17**
Initial output gap	-0.27***	-0.33***	-0.34***
Initial financial openness	-0.81***	-0.82***	-0.82**
Initial REER overvaluation	-0.046	-0.048	-0.049*
Peg Dummy	-3.55***	-3.29***	-3.26***
Initial financial Openness * Peg	2.22***	2.12***	2.10***
Balance on financial account to GDP	0.09	0.11	0.11*
Change in VIX index	-0.004	0.007	0.009
Constant	3.34***	3.49***	3.52***
Observations	72	72	72
R-squared	0.56	0.57	0.57

Note: ***,**,* indicate statistical significance at 1, 5, and 10 percent respectively, with robust standard errors. EM trading partners' growth which is orthogonal to AMs are the redisuals of a regression of EM on AM trading partners' growth.. EM trading partners' growth which is orthogonal to both AMs and China are the residuals of a regression of EM on AM & China TP growth.

[16] Trading partners' growth data is constructed as a weighted sum of main trading partners' growth rates, and the weights used are the shares of each emerging markets' exports to its trading partners. Since this data is available country by country, we have the flexibility of choosing and grouping trading partners as the main AMs and the main EMs. Unfortunately, we cannot do so for our measure of trading partners' import demand, as this data is not available at such level of detail in the GEE database.

C. Pre-crisis vs. post-crisis growth drivers

Our analysis of growth slowdown in the aftermath of the crisis during 2011-2013 quantified the contributions of external trade and fiscal policy, among others, in a period when output gaps were still negative in most EMs. In this section, we investigate whether these drivers were also significant contributors to pre-crisis growth in EMs. For this purpose, we run for the period 2000-2007 a similar regression to the one in Table 2 column 3, without initial conditions but with country and year fixed effects.[17] We find that among all potential factors, only trading partners' import demand remain significant, even though less strongly so, and with about half the magnitude of the coefficient identified in table 2. The effect of fiscal policy instead was not significantly different from zero (Table 4). This coincides with the findings of the recent literature on the strength of fiscal multipliers across the business cycle, suggesting that government spending multipliers are larger in recessions in advanced economies (Blanchard and Leigh, 2013; Auerbach and Gorodnichenko, 2012; Baum et al., 2012). In times when output gaps are negative and excess capacities are available, the crowding-out of private spending by government spending does not hold, thus strengthening the economy's response to fiscal stimulus in downturns. Overall, results on pre- and post-crisis growth drivers suggest that one growth contributor, trade with AMs pre-crisis, was replaced with another, fiscal stimulus post crisis.

Table 4. Determinants of EM Growth Pre-Global Financial Crisis, 2000–07

Dependent variable: Real GDP Growth	
Trading partners' import demand	0.20*
Change in cyclically adjusted primary balance to potential GDP	0.012
Peg Dummy	0.19
Financial Openness	0.19
Financial Openness * Peg	-0.27
Balance on financial account to GDP	0.04
Terms of trade change	0.003
Country and year fixed effects	YES
Constant	1.93
Observations	179
R-squared	0.35

Note: ***,**,* indicate statistical significance at 1, 5, and 10 percent respectively, with robust standard errors.

[17] We restrict the estimation period to the 2000s to exclude the Mexican, Asian, and Russian crises of the 1990s.

VI. CONCLUDING REMARKS

In this paper we study the determinants of growth surprises and synchronized slowdowns in emerging market economies during the post-global financial crisis years. Growth surprises were measured as the difference between actual real GDP growth rates and the one-year-ahead forecast of the IMF's *World Economic Outlook* published in the Fall of the preceding years. The slowdown spells were based on changes in the real GDP growth rates of emerging market economies observed during the 2011–2013 period.

On the determinants of growth surprises, we find that external factors—mainly represented by the contribution of growth surprises in advanced trading partners, by terms-of-trade surprises, and by changes in global risk aversion—are highly positive and significant, accounting for the bulk of the spells in EMs. China's residual growth surprises are also positively correlated with other emerging markets' growth surprises, and statistically significant in most models. Among the domestic factors, EMs' fiscal surprises—gauged in this paper as the difference (in percent of GDP) between the actual and the projected change in the general government total expenditure of each EM, in each year of our sample, had the incorrect sign (negative) but were not statistically significant in these regressions. Finally, our models also suggest that countries with a positive gap in 2010 experienced negative growth surprises afterwards.

Regarding the synchronized slowdown post-global financial crisis, we find that countries grew slower when: (i) their trading partner's import demand was weaker; (ii) their fiscal policy was less accommodative; (iii) they were initially overheating, and (iv) they started with overvalued exchange rates. Our models indicate that countries with flexible exchange rate regimes grew faster, but financially open peggers also experienced growth improvements. Idiosyncratic factors, such as structural bottlenecks that prevent EMs from growing faster, seem to have played a role on these events, as reflected in the larger residuals found in certain countries.

The current slowdown raises the question of whether emerging markets can bounce back to the growth rates seen in the last decade, or if their prospects are dimmer than we thought a few years ago. Strong external demand and developing supply chains brought higher growth through trade and specialization in the 2000s. And prudent policies paid off: countries that managed their economies well in the "good times" had more firepower to deal with the global financial crisis and with the subsequent deceleration than economies with large external and financial imbalances.

But this episode may as well be a prelude for more modest growth rates in the years to come, when demand management policies are less effective than supply-side reforms. If so, EMs may need to recognize that they will grow at lower rates than in the past until they remove supply bottlenecks, boost productivity, and move up in the value chain. Otherwise they risk generating imbalances that will come back to haunt them.

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