EXTERNAL SHOCKS AND FINANCIAL STRESS POST THE GLOBAL FINANCIAL CRISIS

UNCTAD financial conditions indicators and financial vulnerabilities in emerging markets

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Introduction

Ten years after the global crisis, the financial system remains a Damocles sword hanging over the world economy. The introduction of new national and international supervisory bodies, as well as the implementation of financial reforms, has undoubtedly increased banks' minimum capital requirements and reduced their exposure to specific risky assets. However, many financial risks remain unaddressed, and channels of transmission to the real economy, unattended. The largest banks have paradoxically grown even bigger (Standard and Poor's Global, 2017), especially in developed countries, on the back of public money intended for bailouts of the financial sectors. The new regulatory measures have not prevented the spread of toxic financial assets. In the meantime, shadow banking has continued to expand, representing a $160 trillion business (Financial Stability Board, 2018), twice the size of the global economy.

Emerging markets and developing economies are particularly exposed to the hazards of the unfettered and unstable growth of the financial sector. The explosion of private debt in these countries, feeding off a lingering belief in decoupling, combined with the relentless quest for high yields by investors, is becoming a major source of concern. These economies' share in global debt stocks increased from 7 per cent in 2007 to 26 per cent in 2017, while their ratio of credit to non-financial corporations to gross domestic product (GDP) increased from 56 per cent in 2008 to 105 per cent in 2017 (United Nations, 2018). Cheap liquidity made available in developed country markets prompted overheating in asset markets resulting in a fundamental disconnect between the financial system and the real economy. Moreover, the increase of private debt of non-financial corporations did not revive productive investment that has stalled almost everywhere (UNCTAD, 2018). While asset prices have exploded to unsustainable levels, nominal wages increased by much less, and stagnated in many countries. The ongoing emancipation of finance from the real economy fuels a spiral of debt, with economic growth mostly driven by sluggish household demand that has been sustained only by renewed debt bubbles.

Given these idiosyncratic financial risks and weaknesses of the post-2008 era, the question arises as to what extent developing countries are equipped to deal with the many hazards in their paths. In this context, six emerging countries have recently come under the spotlight, including Argentina, which has recently suffered the deepest financial crisis. The others, often referred to as the "fragile five", are Brazil, India, Indonesia, South Africa and Turkey. Over the last decade, their domestic economies have been critically affected by imbalances and instabilities in the international financial realm that became particularly problematic as soon as monetary conditions in the United States of America were expected to tighten, sparking several episodes of drastic capital outflows alongside severe currency depreciations. The latter, in turn, often translate into runaway inflation but also increased pressures on the sustainability of foreign currency debt, whose share in emerging countries' total debt keeps ramping up.

The fate of these economies is of key interest, since together they accounted for approximately 9.3 per cent of world GDP[1]– and 15.6 per cent of GDP based on purchasing power parity (International Monetary Fund, 2018) – in 2017. This makes fears of contagion and concerns of whether any one of these economies could turn out to be "patient zero" of a new global economic crisis all the more pertinent. While the rapid expansion of capital account liberalizations has undoubtedly exacerbated the exposure of developed and developing economies

Emerging markets and developing economies are particularly exposed to the hazards of the unfettered and unstable growth of the financial sector.

[1] UNCTADstat, available at http://unctadstat.unctad.org/EN/ (accessed 25 January 2019).

The anxiety over these emerging economies is further heightened by the fact that they were thought to be adequately shielded against exogenous financial shocks.

alike to financial twists and turns, anxiety over these emerging economies is further heightened by the fact that they were thought to be adequately shielded against exogenous financial shocks. Since the end of the 1990s, and following almost 20 years of intermittent financial crises, these economies have been urged to embrace floating exchange rates and improve their balance sheets, mostly accompanied by strenuous efforts to continuously build up foreign exchange reserves. While these measures have strengthened their resilience to external shocks, they obviously fail to deliver on the promise of financial stability, especially in the current era of hyperglobalization.

Against this background, the six emerging economies considered here would seem to have little room for manoeuvre to defend their currencies and curtail capital outflows. Substantial increases in domestic interest rates in many of these economies have mostly failed to stem capital flows, while at the same time slowing down the domestic economy, thus reinforcing downward trends arising from secular stagnation tendencies and the prospect of protracted global trade wars. In this wider context, the growing difficulties faced by this group of upper-middle-income developing countries may also turn out to be a case study for lower-income countries, which does not bode well for the continuation of their financial integration.

The objective of this paper is to measure and track financial stress in these six fragile emerging economies in the aftermath of the global financial crisis of 2008, using UNCTAD financial conditions indicators. The next section argues that there is a need for better tools to measure financial stress in the context of growing instabilities and complexities in international and domestic financial markets. The third section briefly presents the indicators and compares these with relevant existing indices of financial instability. This is followed by an overview of the occurrence of financial stress episodes in the six selected economies since the onset of the global financial crisis. The paper further discusses the likelihood of a synchronization of such stress episodes across countries, the role played by external drivers of financial instability and countries' capacity for resilience to exogenous shocks.

The need for new tools to monitor financial stress

Assessing and monitoring financial stress is critical to emerging countries to help increase policy space in this regard. Country risk evaluations have long been made against a limited set of macroeconomic indicators that include, for the most part, the exchange rate, current account and fiscal balances, and external debt levels, generally scrutinized in isolation and with varying emphasis, depending on the prevailing economic paradigm. However, this modus operandi, which inspired the first generation of early warning systems, no longer fits the bill in the era beyond the global financial crisis, when assumptions about more or less harmonious co-movements of these macrovariables are clearly inadequate, and conventional indicators may send scrambled signals about actual financial soundness. Such indicators may also fail to provide a comprehensive picture of the various mechanisms underpinning the recurrence of financial turmoil in emerging countries.

The challenge is even more daunting in practice – there are persisting statistical hurdles to be cleared in overcoming the lack of good-quality financial data in developing countries, and, at the same time, many developing countries continue to integrate rapidly into increasingly complex international financial markets. Financial systems in developing economies, too, have become more complex, and face challenges well beyond standard concerns with sovereign debt sustainability, customarily associated with financial crises in the South.

While the main trigger for financial crises in the South – recessions in the North followed by tightening monetary conditions, primarily in the United States, and concomitant effects on the direction of international capital flows – has hardly changed in 40 years, potential transmission channels of financial distress have multiplied, and the range of scenarios of escalation of such distress has widened substantially, as international financial markets have become hyperliberalized and domestic financial markets have grown at a rapid pace in many developing economies. Over the last decades, international capital flows have branched out into more volatile portfolio, and other investments, and have been frequently disrupted by, in turn, the federal funds rate, the United States 10-year bond yield and the dollar exchange rate. It has become much more difficult than before to understand which of these three indicators of United States monetary conditions is decisive for triggering new episodes of financial stress in emerging economies.

New pathways to high risk exposure have also emerged on the domestic side, as foreign investors have taken larger positions in domestically dominated asset classes, and foreign bank presence has spread out. When domestic assets – typically real estate, equities and other financial assets – are collateralized, margin trading can quickly induce excessive leveraging. The growing share of assets owned by overseas residents and the resulting likelihood of rapid capital flight as prices decline compound the potential for problems in developing countries. The instability of foreign exchange and asset markets has also been heightened since 2008 due to the end of the commodity supercycle, implying continuing downward pressures on international commodity prices, on which many developing countries still depend.

Financial systems in developing economies, too, have become more complex, and face challenges well beyond standard concerns with sovereign debt sustainability, customarily associated with financial crises in the South.

The widening gap between the growing complexity of the mechanisms underpinning financial instability and the scarcity of reliable measurement tools poses a serious challenge to the analysis of the emergence of financial stress in the South. This comes at a cost for developing countries. It makes it difficult for international investors to take clear-sighted decisions on how to allocate their resources wisely, frequently prompting a spiral of panic and destabilizing effects on already weakened markets. At the same time, policymakers struggle to pre-empt crises and take appropriate actions to mitigate their fallout. Response time is often too long, and countercyclical measures are more likely to take effect during even mild upturns of the economic cycle, triggering adverse outcomes. This statistical and methodological gap has also granted far too much prominence to sovereign credit ratings issued by credit rating agencies and often used by market participants as de facto financial conditions ratings. Yet, a number of studies have shown that these ratings have not been good predictors of the occurrences of financial crises (UNCTAD, 2015).

UNCTAD financial conditions indicators

Although there is a wide-ranging literature on issues of financial stability in developing countries, few systematic attempts have been made to develop a methodology to build composite indices of financial stress for a large number of emerging countries. Apart from the UNCTAD financial conditions indicators, there are two other notable institutional initiatives at the international level: the emerging markets financial stress index of the International Monetary Fund and, more recently, the emerging market macrorisk score of JP Morgan. The former covers 19 developing countries and builds on Balakrishkan et al. (2011) and Cardarelli et al. (2011). It is underpinned by five indicators: the exchange market pressure index, the banking sector beta, stock market returns, stock market volatility and sovereign debt spreads. The emerging market macrorisk score is described in Szentivanyi and Wong (2018) and computed for 23 emerging countries. It employs 11 metrics, grouped into 7 broad categories of cyclical position. These are cyclical position, basic balance, fiscal balance, general government debt, external debt, reserve adequacy and political risk.

While these indicators differ in terms of selected variables and wider underlying macroeconomic considerations, they share a common methodology that limits their performance in measuring financial stress. The emerging markets financial stress index is a variance-weighted average and the emerging market macrorisk score a z-score constructed from the standard deviation from the mean of each indicator using equal weights. In both cases, the indicators derive from a static specification and are calibrated with a priori weights, chosen arbitrarily. For instance, there is no apparent reason that the contribution of political risk to financial stress should be as important as fiscal balance, nor is this likely to remain constant over time. Both indicators can also be biased by serial correlation. As there may be some overlapping in the information disclosed by each of the variables in the selected sample, they may give too much or not enough prominence to some unobserved, yet decisive, factors. For example, the United States interest rate or the domestic interest rates, which are not directly included, are likely to simultaneously influence many of the subcomponents of these indices such that their effect may be counted multiple times. In short, the selection of a priori weights amounts to making important theoretical assumptions about the dynamics of financial instability and their interplay with other macroeconomic phenomena on the analysis without stating these explicitly.

While UNCTAD financial conditions indicators are also a composite index combining a large set of financial variables, they differ from both the aforementioned indices in their choice of methodology by building on a dynamic factor model. The model is an econometric technique that has seen major advances in recent years with respect to economic forecasting (Doz et al., 2011 and 2012; Stock and Watson, 2011) and has a number of advantages over indices based on weighted averages. Most importantly, the model does not rely on preconceived ideas about theoretical relationships between variables or about the sources of financial instability. UNCTAD financial conditions indicators can furthermore address various forms of serial correlation. They are also particularly well suited to deal with missing values and ragged-edge panel data, which are common in datasets from developing countries. Bicchetti and Neto (2018) provide more detail on the methodology used to build the UNCTAD financial conditions indicators.

> While UNCTAD financial conditions indicators are also a composite index combining a large set of financial variables, they differ from other indices in their choice of methodology by building on a dynamic factor model.

These combine 13 financial variables that can be divided into two broad categories: external and domestic factors. The former includes net capital flows, foreign exchange rates, commodity prices and computed spreads between United States 10-year treasury notes and domestic 10-year government bonds. The latter comprise the domestic interest rate (prime rate), returns to government bonds, yield curve indicators, debt service ratios for the private sector, stock exchange indices, financial sector indices, real estate sector indices, residential property prices and volatility indices. The contribution of each variable is defined ex-post by the dynamic factor model and varies across countries and over time.

UNCTAD financial conditions indicators are available for 32 developing countries and countries with economies in transition from various regions of the world (figure 1). The indicators are delivered on a monthly basis. In this paper, they are shown for the six selected emerging countries (annex I) and span from January 2000 to November 2018

FIGURE 1
Coverage of UNCTAD financial conditions indicators, 2018

■ *Coverage of indicators*
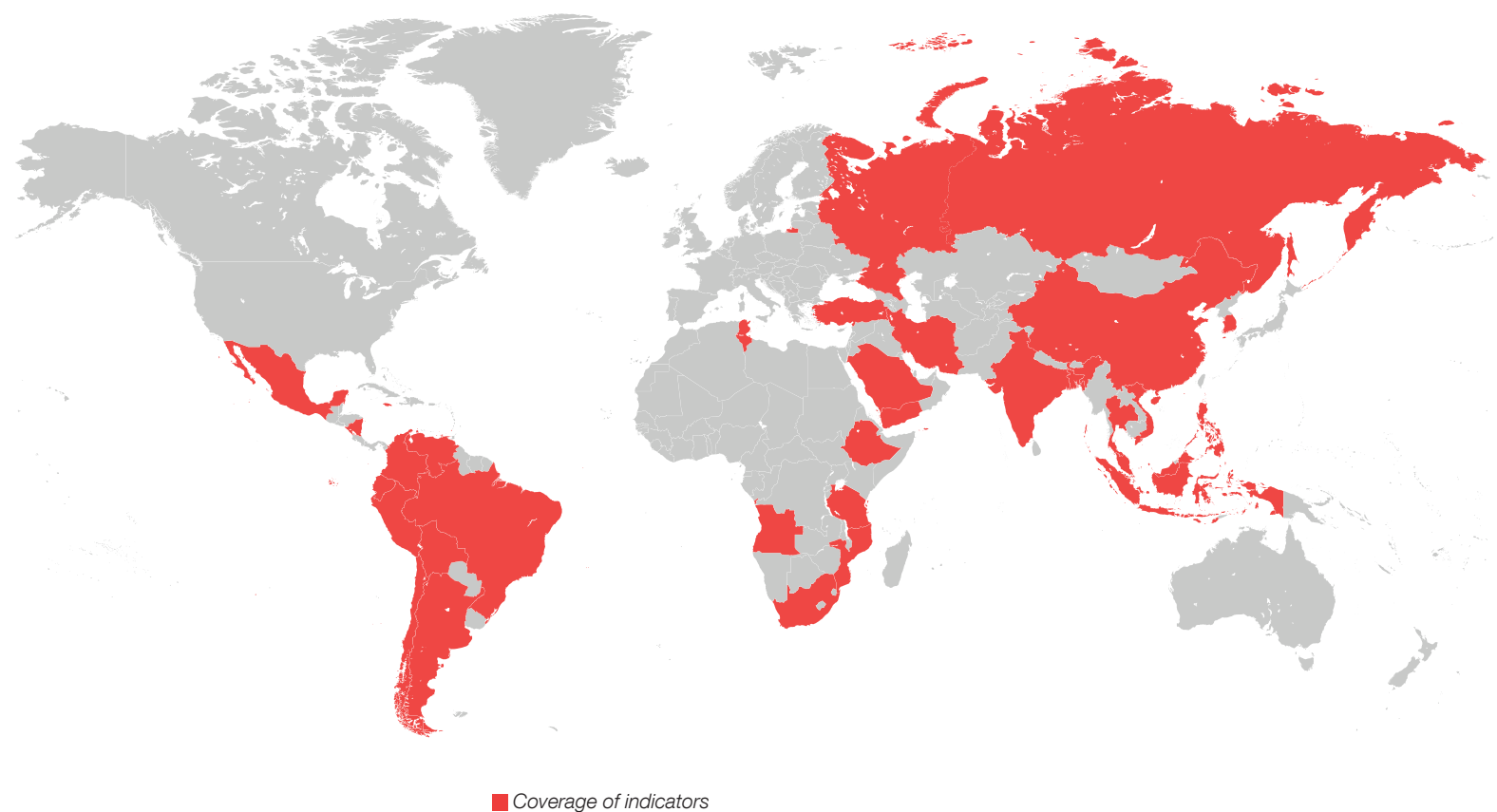
Source: UNCTAD

The rising frequency of financial stress episodes

As mentioned earlier, a major objective of a financial conditions indicator is to assist policymakers and investors in determining whether an economy is going through a round of financial stress and whether it may have hit some kind of threshold of concern. When the indicator decreases dramatically, as UNCTAD financial conditions indicators did for all countries just before and during the global financial crisis of 2008, there is no doubt that financial stress has reached an alarming level. At other times, however, it may be less clear whether the indicator has entered a red zone. This issue can be addressed in three different ways.

The first approach, adopted by the International Monetary Fund, is to recognize a financial stress episode as soon as the indicator rises above the historical mean for a certain number of standard deviations. The International Monetary Fund uses a cut-off point of one standard deviation above the mean. One limitation of this method is that the number of standard deviations by which the indicator exceeds the mean on a given date can vary substantially once the sample is updated with new observations, especially of extreme values. A month could, therefore, be initially tagged as one of high financial stress, but switched to low financial stress following the inclusion of new observations.

Comparing the indicator with its value in some past and well-defined benchmark episode is a second approach towards characterizing financial stress. For instance, in the case of Argentina, a financial stress episode could be acknowledged whenever the value of the index equals or exceeds its record in December 2001, the country's first default in the period covered and clearly picked up by the financial conditions indicator as a local peak. This approach has the advantage of being less affected than the standard deviation method by the addition of new observations. While this way of reading the indicator makes sense if the analysis is to be carried out for a single country, the fact that the benchmark episode is country specific may hamper and/or bias cross-country comparisons. Using global events such as the global financial crisis, which are in general the most extreme and intense, would tend to disqualify any other potential episode of financial stress.

A third strategy that can be employed to define a period of financial stress is to set a cut-off point in terms of quartiles. If the first quartile is opted for, a month would be labelled as indicating financial stress if the corresponding value of the financial conditions indicator is lower than or equal to the indicator in 25 per cent of all the months in the sample. An advantage of this method is the well-known statistical property that including extreme observations has much less impact on the quartiles of a sample – or any other quantile of the sample – than on the standard deviation. As a result, a month is less likely to switch its financial stress status once the sample is updated. Moreover, the cut-off point is not country dependent, and can be applied homogeneously and consistently across various countries.

> **A major objective of a financial conditions indicator is to assist policymakers and investors in determining whether an economy is going through a round of financial stress and whether it may have hit some kind of threshold of concern.**

TABLE 1

Percentage of months spent in moderate or high financial stress

Time period	Argentina	Brazil	India	Indonesia	South Africa	Turkey	Average
2000–2007	17	23	17	20	17	18	18
2008–2018	31	27	31	29	31	31	30
Of which 2009–2012	17	8	18	2	15	0	10
2013–2018	31	32	25	35	32	42	33

Source: Authors' calculations based on UNCTAD financial conditions indicators.

This last approach is therefore adopted in this paper, with cut-offs of 10 and 25 per cent that refer to episodes of moderate or high and high financial stress, respectively. The use of two cut-off points also makes it possible to check the consistency of the results. Table 1 shows the percentage of months spent in a situation of moderate or high financial stress, by country, and as an average, distinguishing the period of the post-global financial crisis period from that of 2000–2007. It highlights a sharp increase between the two time periods. On average, the six emerging countries spent 18 per cent of the 2000–2007 period – one year and five months – under moderate or high financial stress, compared with 30 per cent, or three years and three months, in the period 2008–2018.[2] The specific country situations are fairly similar, showing low dispersion from the mean. The increases for Brazil and Indonesia are slightly less than for other countries, mostly because of a higher starting point, as these two countries experienced more turbulences in the period 2000–2007. These overall similarities are further evidence of how these emerging economies share similar financial vulnerabilities.

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[2]. Until November 2018.

TABLE 2

Percentage of months spent in high financial stress

Time period	Argentina	Brazil	India	Indonesia	South Africa	Turkey	Average
2000–2007	7	6	1	7	5	8	6
2008–2018	12	13	17	12	14	11	13
Of which 2009–2012	0	2	12	0	3	0	3
2013–2018	11	14	7	10	13	13	11

Source: Authors' calculations based on UNCTAD financial conditions indicators.

Table 2 focuses on financial stress episodes of high intensity and provides a comparable picture. The occurrence of high financial stress episodes increased between the two time periods from an average of 6 per cent – half a year – to 13 per cent – one year and five months. India stands out as being the country with the least episodes of financial distress before 2008 but the most after 2008.

Tables 1 and 2 clearly indicate that 2013 was a turning point for these six emerging economies. Leaving aside the period from January 2008 to September 2009 that marks the actual global financial crisis, the data show that most of the financial stress episodes recorded between 2008 and 2018 took place from 2013 onwards. The preceding years (2009–2012) saw levels of financial distress mostly below those of the period preceding the global financial crisis (2000–2007), but this relative lull masked the silent build-up of growing financial vulnerabilities. The contrast between these two periods is stark for all countries, and extreme for countries such as Argentina, Indonesia and Turkey, which managed to completely avoid episodes of high financial stress in the earlier period but that have suffered frequent outbreaks ever since. This discontinuity in 2013 reflects major changes in these economies' external economic environment, such as the end of quantitative easing in the United States. In May 2013, the Federal Reserve hinted at a reduction in the pace of asset purchases as part of its quantitative easing programme, inducing a steep market sell-off in emerging markets. The impact of this episode (the "Fed taper tantrum") on each of the six countries is examined in greater detail in the final section.

Leaving aside the period from January 2008 to September 2009 that marks the actual global financial crisis, the data show that most of the financial stress episodes recorded between 2008 and 2018 took place from 2013 onwards.

A greater synchronization of financial stress episodes across emerging countries

Another characteristic of the post-global financial crisis era is that financial stress episodes are more synchronized across countries. Figure 2 shows the evolution of the probability of a moderate or high financial stress episode affecting several countries simultaneously between 2000–2007 and 2009–2018, respectively. While the latter decade saw fewer occurrences of rounds of financial stress, affecting only one country, the likelihood of more generalized events involving at least three of the countries in the sample has increased. The odds that all six countries would be dragged into financial turmoil now stands at 6 per cent, whereas this was unlikely in the preceding decade. The inclusion of 2008 in the second period naturally exacerbates this gap, since all six countries were affected by the global financial crisis. Although the size of the sample is too small to draw conclusions in this regard, there were some regional patterns in the simultaneity of financial stress linking, for instance, Argentina with Brazil, as well as India with Indonesia. As yet, such links are less discernible after 2008. It would be interesting to confirm this finding for a larger sample of countries.

FIGURE 2

Synchronization of financial stress episodes by time period
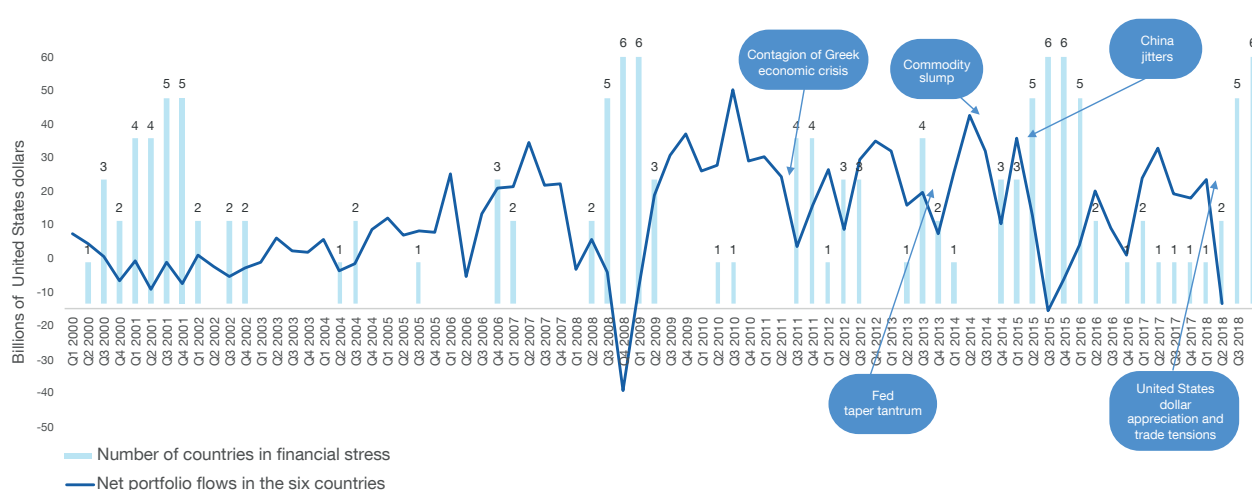Probability (%) that a financial stress episode affects…
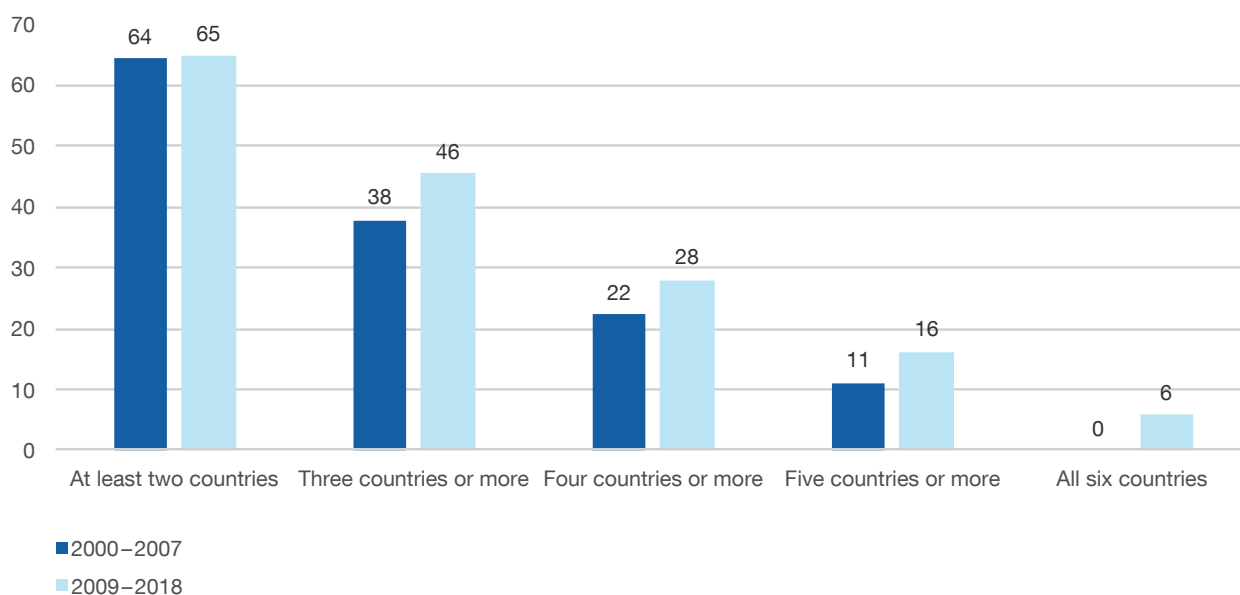
Source: Authors' calculations based on UNCTAD financial conditions indicators.

The most generalized episodes of financial stress persistently break out in the immediate aftermath of a substantial fall in net capital flows (figure 3). All six countries experienced five major occurrences of net capital flow reversals since their recovery from the global financial crisis. In most cases, financial stress emerged within one month from the date of the shock. The first of these took place in the first half of 2011 in the wake of contagion stemming from the crisis in Greece and induced a financial stress episode affecting Argentina, Brazil, India and South Africa. This episode persisted for one year, resulting in another slight decline in net capital flows in 2012. The second capital flow shock was triggered by the Fed taper tantrum, and affected Brazil, India, South Africa, and most notably, Indonesia. This was followed by a third bout of capital flow reversals, starting in July 2014 and prompted by falling commodity prices that mainly affected the three leading commodity exporters in the sample: Argentina, Brazil and South Africa. About one year later, the devaluation of the renminbi and an overall slowdown of the economy of China caused another major decline in net capital flows that sparked financial turmoil in all six countries, albeit with more sustained reverberations in Argentina and South Africa.

The most recent international capital flow shock occurred in the first quarter of 2018 in response to sustained United States dollar appreciations alongside the recent intensification of global trade tensions. Net portfolio flows for the six emerging countries declined sharply from $24 billion in the first quarter to $14 billion in the second quarter, propelling all six emerging economies into a new round of generalized financial stress for the second time since the global financial crisis. In the case of Turkey, these events worsened a situation that had already been critical since the third quarter of 2017, as shown by the financial conditions indicator for Turkey (annex 2, figure 6).

All six countries experienced five major occurrences of net capital flow reversals since their recovery from the global financial crisis.

FIGURE 3

Evolution of net portfolio flows and number of countries in financial stress, 2000–2018

Source: Authors' calculations based on UNCTAD Financial Statistics Database and UNCTAD financial conditions indicators.

Abbreviation: Q, quarter

The driving force of external factors

In addition to capital flow volatility, UNCTAD financial conditions indicators include three other external elements that are key to the emergence of financial stress episodes in these countries – exchange rates, commodity prices and spreads between countries' sovereign and United States 10-year bonds.

The increased occurrence of financial stress episodes, their greater synchronization and their high sensitivity to capital flow volatility are three clear signals that, from 2013 onwards, emerging countries have entered a new era of financial vulnerability in which external factors play a crucial role. In addition to capital flow volatility, UNCTAD financial conditions indicators include three other external elements that are key to the emergence of financial stress episodes in these countries – exchange rates, commodity prices and spreads between countries' sovereign and United States 10-year bonds. As economic intuition would suggest, the contribution to the financial conditions indicators is positive for the first two of these factors and negative for the third (Bicchetti and Neto, 2018). In other words, a currency appreciation or a rise in commodity prices will tend to reduce financial stress, but an increase of the 10-year spread will have the reverse effect mainly by spurring carry-trade transactions.

Table 3 shows a relative deterioration of all three factors in 2013–2018, compared with 2009–2012. All six countries experienced important currency depreciations. The average real effective exchange rate decreased by 11.3 points. Commodity prices have not rallied since the slump in 2014 and have remained well below their average level in 2009–2012. The Standard and Poor's Goldman Sachs commodities index, a composite price index covering 24 commodities, including oil, lost 1,442 points on average. The increase of the 10-year government spread is more modest, with an average gain of 0.5 points of yield difference.

TABLE 3

Changes in average real effective exchange rates, Standard and Poor's Goldman Sachs commodities index and computed spreads between sovereign 10-year government bonds and United States 10-year treasury notes

time period	Average real effective exchange rate[a]	Average Standard and Poor's Goldman Sachs Commodity Index	Average spread of 10-year government bonds and United States 10-year treasury notes[b]
2009-2012	95.4	4711.2	6.3
2013-2018	84.1	3269.7	6.8

Source: Authors' calculations based on data from Thomson Reuters Datastream.

[a] In six countries.
[b] In five countries, excluding Argentina.

However, the picture varies across countries. Thus, the rise of the 10-year average government bond spreads has clearly been more pronounced in Brazil, South Africa and Turkey compared with the two Asian economies, India and Indonesia. With regard to Argentina, whose situation is peculiar, the computed spread decreased drastically once the country regained access to financial markets in 2016 following 15 years in the financial wilderness. The growing increase of financial stress episodes in all six emerging economies since 2013 can be

attributed to external factors such as volatile capital flows, downward pressures on currencies, decreasing commodity prices and, to a lesser extent, widening yield gaps between domestic and United States Government bonds, while also bearing in mind the role of domestic factors that account for resilience differentials.

These findings would suggest that, in order to gain a better understanding of the mechanisms contributing to the emergence of financial distress in these emerging economies, a closer look at the role of external factors during the period 2009–2018 is warranted. The buoyant financial conditions prevalent in the aftermath of the global financial crisis gave way to an environment marked by volatility that coincided with three global developments. First, the growth differential between emerging markets and advanced economies narrowed: from a peak of 6.1 percentage points in 2009, it decreased to 2.4 in 2017 (International Monetary Fund, 2018), with a slowdown of the growth rate of emerging markets accounting for most of the decline. Second, emerging markets experienced a deterioration of their external accounts and debt levels. The current account position of emerging markets went from a surplus of 1.3 per cent of GDP in 2009 to a deficit of 0.2 per cent in 2017 (International Monetary Fund, 2018). In the meantime, debt levels increased from 154 per cent of GDP to 211 per cent over the same period (Mbaye et al., 2018). Finally, gradual monetary normalization in advanced economies brought uncertainty about the capacity of emerging markets to manage tighter global financial conditions in a context of large external financing needs and high debt levels.

Against this background, the evolution of the financial conditions indicators for all six emerging countries shows the impact of a deteriorating global financial environment on domestic financial conditions since 2013. From this point onwards, the UNCTAD financial conditions indicators pick up five events of sharply deteriorating domestic financial conditions linked to external developments (annex I).

Fed taper tantrum (2013)

The first external shock that affected all six emerging countries took place on 23 May 2013, when the Federal Reserve hinted at a reduction in the pace of asset purchases as part of its quantitative easing programme. Uncertainty about the impact of tighter financial conditions and a stronger dollar on emerging markets caused a sharp market sell-off. The six sample countries were particularly affected. Net portfolio capital inflows for this group of countries declined from $31.8 billion in the first quarter of 2013 to $7.3 billion in the last quarter. Equity indices measured in dollars declined by 9.7 per cent for the year and their currencies lost 17.6 per cent against the dollar. On average, yields on 10-year sovereign bonds increased by 287 basis points.

The financial conditions indicators for the group registered a sharp decline following the shock. Figure 4 follows their cumulative evolution, beginning three months before the shock and ending six months after its occurrence. This makes it possible to assess the impact of the external shock on the indicators of each country. Further, the heat map in annex 2, table 1, provides an overview of the macroeconomic and financial environment faced by the countries concerned and helps to put the financial stress registered by the indicator in a broader context. The announcement by the Federal Reserve had the largest impact in India, Indonesia and Turkey, as measured by the financial conditions indicators. A common factor of concern for Indonesia and Turkey was their large current account deficit (table 4). Each country presented additional idiosyncratic factors of vulnerability. India

The first external shock that affected all six emerging countries took place on 23 May 2013, when the Federal Reserve hinted at a reduction in the pace of asset purchases as part of its quantitative easing programme.

had a weak fiscal position and high levels of government debt. Concerns in Indonesia focused on the large share of international investors in domestic debt markets and the impact on the yield of sovereign bonds. In Turkey, there were high levels of external debt combined with credit expansion.

FIGURE 4

Cumulative evolution of the financial conditions indicators: Fed taper tantrum
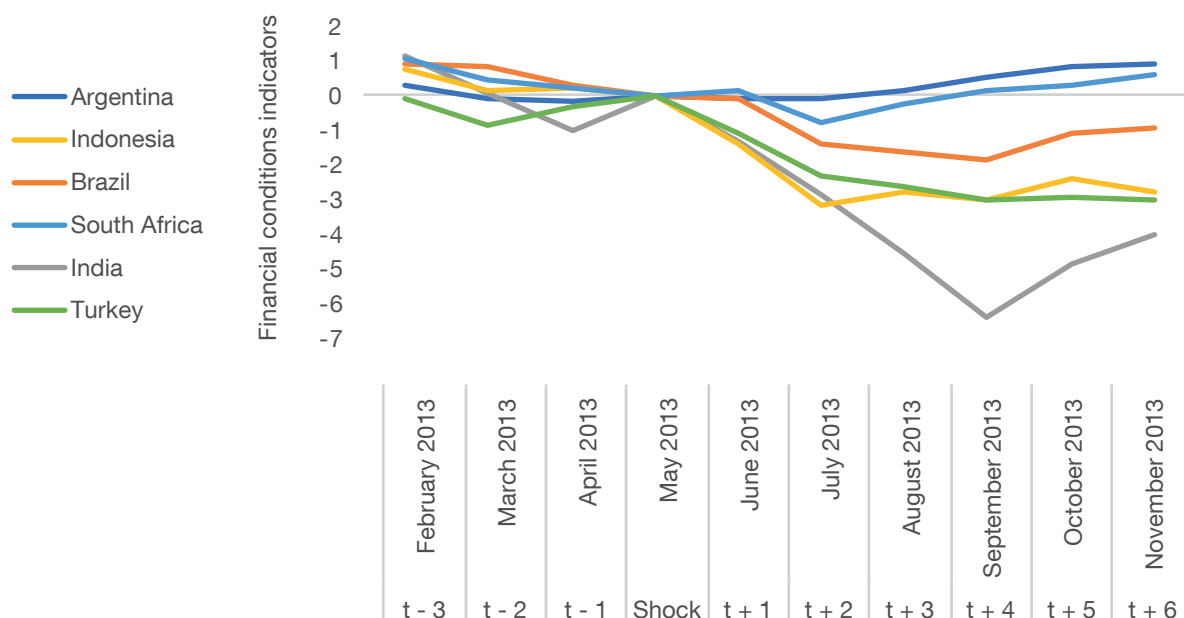
Source: Authors' calculations based on UNCTAD financial conditions indicators.

Abbreviations: t − 1, time minus one month; t − 2, time minus two months; t − 3, time minus three months; t − 1, time plus one month; t + 2, time plus two months; t + 3, time plus three months; t + 4, time plus four months; t + 5, time plus five months; t + 6, time plus six months.

However, the Fed taper tantrum did not have a significant impact on the financial conditions indicators for Argentina and South Africa. In Argentina, exclusion from international financial markets protected the country from the impact of sharp reductions in capital flows observed in other emerging markets. In addition, the country registered a manageable current account deficit and low levels of external debt. In South Africa, commodity prices account for the resilience of the financial conditions indicator. While the country presented a high current account deficit and a weak fiscal position, stable commodity prices provided support to overall economic and financial stability.

The collapse of commodity prices (2014)

Once the shockwaves of the Fed taper tantrum had dissipated, emerging markets enjoyed a period of reprieve in the first half of 2014. While uncertainty remained, a more positive economic outlook encouraged the return of international investors. This period of stability lasted until July 2014 when a second shock in the form of a collapse of commodity prices took hold. The Standard and Poor's Goldman Sachs commodity index fell by 35.8 per cent between July and December 2014. This raised concerns about the growth prospects and current account positions of

emerging markets with commodity producers in the spotlight. Investors reacted by shifting their portfolios away from these economies. This dynamic had a significant impact on the six emerging countries. Net portfolio capital inflows for the group declined from $42 billion to $10.4 billion between the second and fourth quarters of 2014. Unlike 2013, equity valuations and borrowing spreads improved by the end of 2014. Despite the market turmoil, equity valuations in dollars increased by 11.5 per cent, and borrowing costs decreased on average by 129 basis points. However, the shock did have a negative impact on exchange rates. The currencies of the six emerging countries lost 9.8 per cent against the dollar (annex 2, table 2).

Against this background, the financial conditions indicators for the entire sample of countries declined after commodity prices began to fall. The commodity shock coincides with the peak of the indicators for the group. Argentina, Brazil and South Africa experienced large declines in the second half of 2014 (figure 5). In the cases of Argentina and South Africa, their financial conditions indicators suffered a steep decline as they lost the support provided by commodity prices in 2013. Furthermore, the situation in Argentina was compounded by a recession that started in the last quarter of 2013 and a deterioration in its fiscal balance. Brazil experienced a similar situation, characterized by a decline in the indicator in the context of a recession and a large current account deficit. On the other hand, the relative resilience of the indicator in Indonesia can be explained by strong capital inflows throughout the year, totalling $42.8 billion. This translated into stable financial conditions.

> The financial conditions indicators for the entire sample of countries declined after commodity prices began to fall in July 2014.

FIGURE 5

Cumulative evolution of the financial conditions indicators: Commodity shock
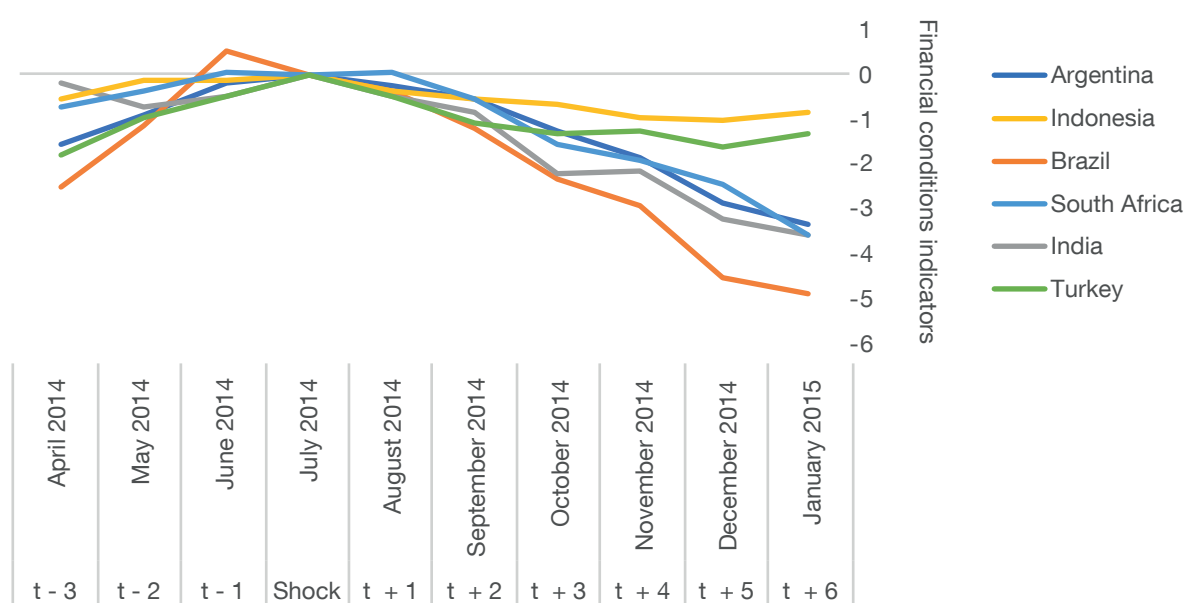
Source: Authors' calculations based on UNCTAD financial conditions indicators.

Abbreviations: See figure 4.

The renminbi shock (2015)

The year 2015 saw a replay of the dynamic of the previous year. The first semester was characterized by a recovery of confidence in emerging markets. Stabilization of commodity prices and an improved outlook on growth performance account for this recovery. The second semester saw a reversal of this favourable environment, triggered by the surprise announcement, on 11 August, by the People's Bank of China of a 1.9 per cent devaluation of the renminbi. The renminbi shock caused widespread volatility in the financial markets of emerging markets, including a 23.5 per cent drop in commodity prices. All six emerging countries experienced widespread financial instability. A massive reversal in capital flows took place. While net portfolio capital inflows to the group had reached $48.6 billion in the first half of 2015, this trend reversed in the second half of the year, with net outflows totalling $22 billion. The group of countries saw a 22.7 per cent drop in their equity indices in 2015, their currencies lost 21.2 per cent against the dollar over the year and sovereign spreads increased by 175 points (annex 2, table 3).

The renminbi shock caused widespread volatility in the financial markets of emerging markets, including a 23.5 per cent drop in commodity prices. All six emerging countries experienced widespread financial instability.

Following the renminbi shock, the financial conditions indicators for all six countries, except for Indonesia, experienced a decline (figure 6). In all the cases, the indicator was already on a downward trend prior to the shock. The countries most affected by the announcement of the People's Bank of China were Argentina, Brazil and South Africa,. In Argentina, the decline in the financial conditions indicator can be traced back to a combination of economic and political developments in the second half of the year. The country experienced an economic slowdown, while its external imbalances widened. In addition, there was significant political uncertainty regarding the outcome of the elections in November 2015 and its impact on the economic policy direction of the country. Following the elections, the indicator initially improved beginning in February 2016.

In Brazil, the recession that started in 2014 deepened in the following year causing a deterioration in the fiscal balance. The country experienced large portfolio outflows which caused a steep currency depreciation and a substantial reduction in equity values. Tight monetary policy aimed at stabilizing the exchange rate had a negative impact on financial conditions.

In South Africa, the drop in the indicator took place in a context of declining economic growth. Despite a weak domestic economy, the current account deficit remained high and external debt continued to increase.

FIGURE 6

Cumulative evolution of the financial conditions indicators: The renminbi shock
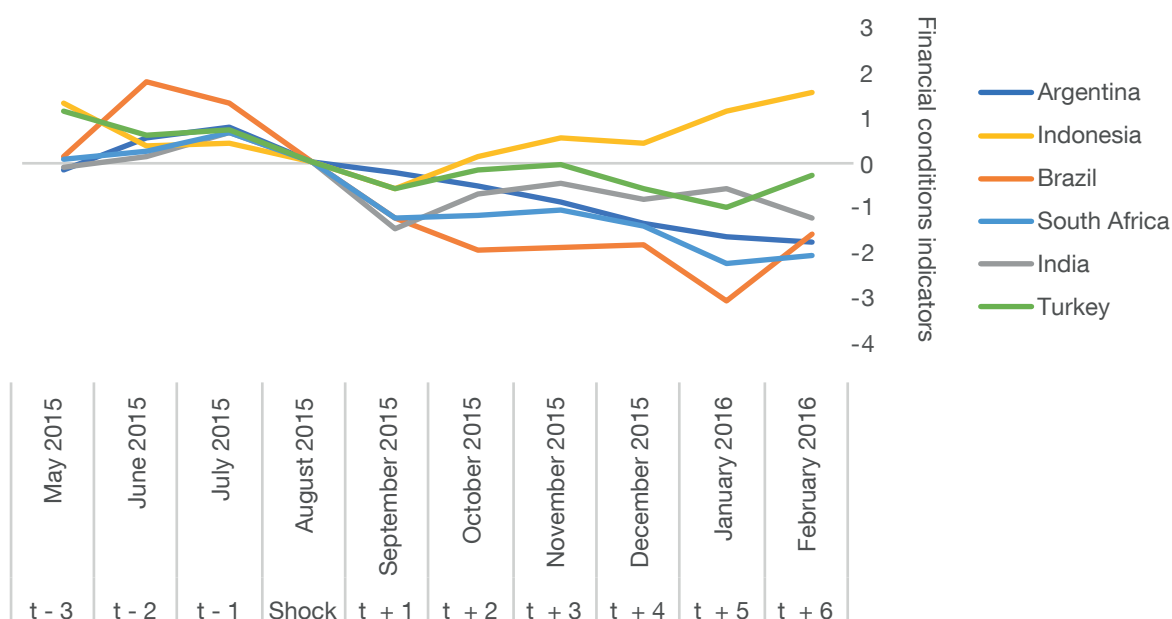
Source: Authors' calculations based on UNCTAD financial conditions indicators.

Abbreviations: See figure 4.

In contrast to other countries in the group, the financial conditions indicator for Indonesia showed an improvement by the end of the year. While the country experienced a slowdown in GDP growth alongside a sharp currency depreciation in the wake of the renminbi shock, measures to attract capital flows, introduced by the Government in response, such as tax incentives and changes to financial regulation appear to have had an effect. In late 2015, the country experienced a surge in capital flows and bonds, and the stock market recovered from the lows registered in August.

Political uncertainty in the United Kingdom of Great Britain and Northern Ireland and the United States (2016)

Repeating previous patterns, emerging markets appeared to benefit from an improvement in global conditions in the first half of 2016 and the return of global investors following the losses registered in 2015. Key factors included a recovery in commodity prices, improved growth prospects and attractive valuations. This changed again in the second half of 2016. However, unlike previous events, the 2016 shock was not tied to a specific trigger. Instead, global markets experienced a period of growing uncertainty prompted by the vote in June on the departure of the United Kingdom from the European Union and the outcome of the United States elections in November of that year. Largely as a consequence, net portfolio capital flows to the group of countries suffered a sharp reduction, falling from $20.2 billion to $0.92 billion between the second quarter and last quarter of 2016. Nonetheless, equity valuations ended up in positive territory for the year, gaining 23.8 per cent.

Global markets experienced a period of growing uncertainty prompted by the vote in June on the departure of the United Kingdom from the European Union and the outcome of the United States elections in November of 2016.

In the meantime, notwithstanding a high degree of intra-year volatility, both exchange rates and sovereign yields remained broadly stable (annex 2, table 4).

This is reflected in a decline of the financial conditions indicators for all countries in the sample in the second half of 2016 (figure 7). July 2016 marked a break in the trend of such indicators for most of the countries. Brazil, Indonesia and Turkey saw the largest declines. The evolution of the financial conditions indicators for Brazil and Turkey follows the political instability observed in both countries. In Brazil, the indicator declined sharply in the context of uncertainty over the impeachment process against President Rousseff. She was suspended from office in May and eventually ousted from office in August 2016. The financial situation in the country deteriorated as a result of capital outflows and concerns about the fiscal balance. In Turkey, the indicator declined following the political coup in July 2016. Subsequent instability triggered capital outflows in the last quarter of the year and a drop in equity valuations. In Indonesia, the decline in the indicator reflects a large outflow of capital that brought tighter financial conditions in the fourth quarter of 2016.

FIGURE 7

Cumulative evolution of financial conditions indicators: 2016 shock
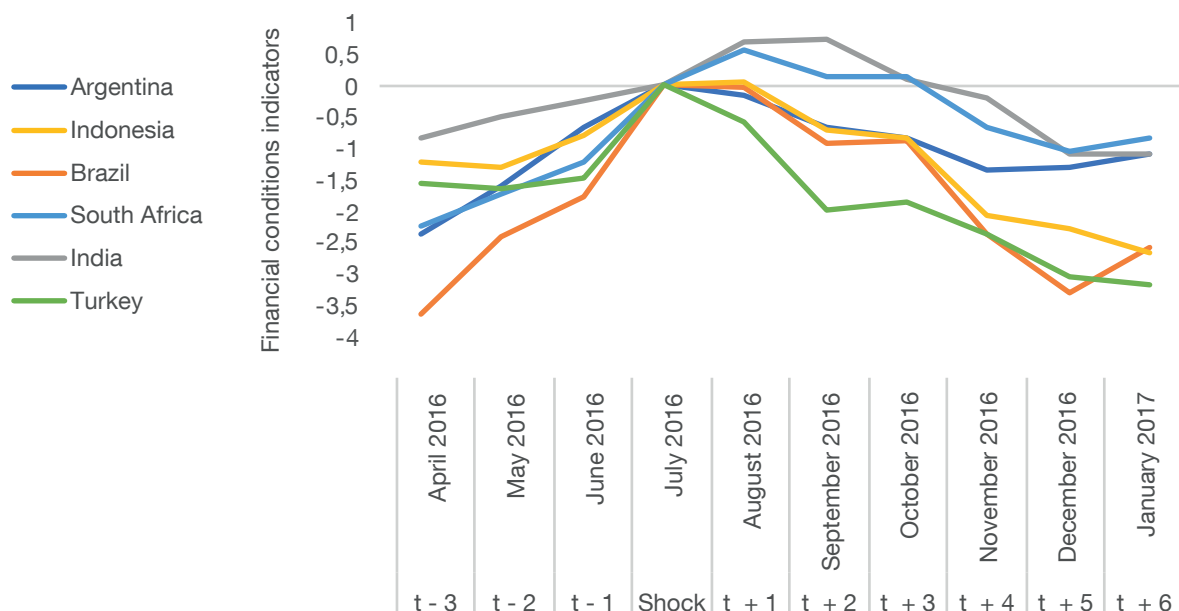
Source: Authors' calculations based on UNCTAD financial conditions indicators.

Abbreviations: See figure 4.

In the case of India, the indicator picked up the impact of demonetization measures adopted by the Government in November 2016. Following a surprise announcement, the Government withdrew 86 per cent of cash in circulation. This led to widespread turmoil as citizens struggled to replace their bills and affect payments. The impact of this turmoil on financial stability is reflected in the deterioration of the indicator in the three months following the adoption of demonetization.

Throughout 2017, emerging markets took advantage of a relatively benign global economic environment – at least in the short run – and an easing of global financial conditions. The improved financial conditions indicator for all six countries in this

group show the direct impact on these economies of these more favourable conditions. Several global factors accounted for this improvement. In particular, a weak dollar improved equity valuations and earnings prospects for companies from these countries. Moreover, net portfolio capital inflows to the group increased from $34.2 billion in 2016 to $93.4 billion in 2017 and, after two years of decline, commodity prices stabilized and improved in the second half of 2017.

Appreciation of the United States dollar and escalation of trade tensions (2018)

This environment gave way to a turbulent 2018. A first round of market sell-offs in emerging markets started in February. As in 2016, this episode was not tied to a specific event. Rather, with uncertainty about the direction and decisiveness of United States monetary policy and concerns about a stronger dollar, as well the impact of protectionist measures lingering in the background, investors focused on two local shocks: the currency and financial crises in Argentina and Turkey. Both countries experienced a sudden stop of capital inflows followed by steep capital flow reversals. In Argentina, the Government's rapid capital and trade account liberalization measures failed to attract foreign direct investment rather than short-term portfolio capital, a trend reinforced by the central bank's high interest rate policy, which failed to reduce inflation to expected targets and worsened external imbalances. In addition, the central bank's aggressive sterilization policies to finance the country's primary deficit supported a steady expansion of public debt. In Turkey, rising United States interest rates and a political dispute with the United States Government triggered the crisis against a backdrop of concerns about the autonomy of its central bank and the sustainability of its credit-led growth strategy. The responses to these crises in the two countries were, however, very different. Two years after its return to the international financial markets, Argentina combined steep interest hikes with recourse to the largest-ever International Monetary Fund programme. Turkey, faced also with trade tensions with the United States, shunned both strategies and instead embarked on a process of internal adjustment through large currency devaluations and a substantial contraction of domestic credit and imports. To support the adjustment process, the government of Turkey secured bilateral funding and implemented a program of targeted liquidity provision for domestic banks while avoided the imposition of capital controls.

Overall, market turmoil had a significant effect on all six emerging economies. Portfolio capital flows declined from net inflows of $23.6 billion in the first quarter of 2018 to net outflows of $13.4 billion in the second quarter. For the year, equity markets of the group of countries lost 26.3 per cent on average. Currencies depreciated by 21.4 per cent against the dollar, and sovereign yields increased 164 basis points (table 5, annex 2).[3]

Against this background, the financial conditions indicators for the group of countries registered a deterioration in financial conditions (figure 8), with the indicator for Turkey experiencing the largest deterioration in the group. This likely reflects the Government's decision to undertake substantial internal and external adjustments without support from the International Monetary Fund. Whether or not this alternative response to emerging market financial crises will succeed in the longer run remains to be seen, but for now it is expected that the impact of these measures will be reflected in GDP growth after the third quarter of 2018.

With uncertainty about the direction and decisiveness of United States monetary policy and concerns about a stronger dollar, as well the impact of protectionist measures lingering in the background, investors focused on two local shocks: the currency and financial crises in Argentina and Turkey.

[3]. Figures until November 2018.

FIGURE 8

Cumulative evolution of the financial conditions indicators: Market sell-offs in emerging markets
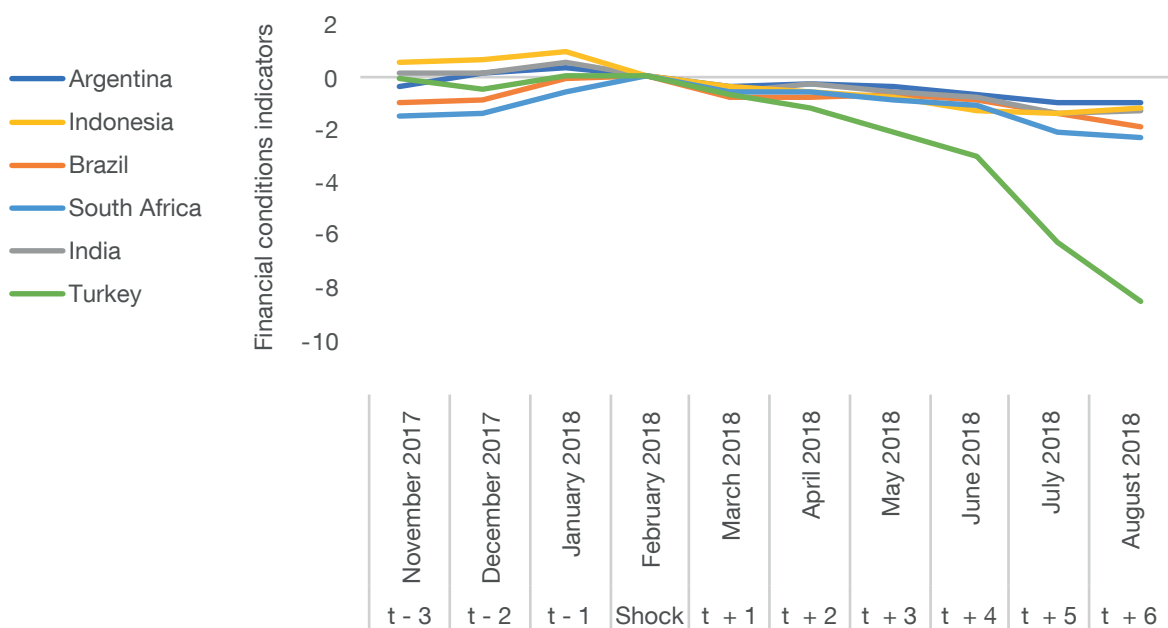
Source: Authors' calculations based on UNCTAD financial conditions indicators.

Abbreviations: See figure 4.

In addition, the decline in the financial conditions indicator for Argentina was on a smaller scale compared with Turkey, despite a deeper financial crisis in 2018. This highlights a specific aspect of the link between the methodology of the UNCTAD financial conditions indicators and macroeconomic developments in Argentina over the past two decades: due to its long-drawn out dispute with non-cooperative creditors over its 2001 sovereign bond default, Argentina remained largely isolated from international financial markets. The trajectory of the indicator for Argentina is therefore strongly influenced by the evolution of the exchange rate and of commodity prices over the entire period, while broadly stable bank interest rates for the best part of this period mean that this variable has not yet been picked up significantly for the period as a whole, and data for net capital flows after June 2018 were unavailable at the time of writing.

Conclusion

Based on the UNCTAD financial conditions indicators, this paper finds that 2013 represents a turning point for the six emerging countries considered here, in regard to their exposure to financial stress. Whereas the period immediately after the global financial crisis and up to 2012 was conducive to the build-up of financial vulnerabilities in domestic financial sectors, it was only from 2013 onwards that all six countries experienced a drastic surge in financial stress episodes, alongside greater synchronization of these episodes beyond regional boundaries. Financial stress episodes invariably followed sharp declines in net capital flows to the six economies. While structural domestic constraints and policy regimes remain relevant, the immediately driving factors of financial instability were external, including exchange rate volatility, slumps in commodity prices and, to a lesser extent, yield gaps between United States Government bonds and domestic long-term bonds. With little reason to assume that any of these external factors will stabilize soon or capital flows will become steady, financial pressures, such as those affecting Argentina and Turkey most recently, are likely to persist.

UNCTAD financial conditions indicators have performed well in signalling and capturing the effects of such external shocks. Over and above the latest shock arising from appreciations of the dollar and global trade tensions, the indicators picked up the Fed taper tantrum (2013), commodity price shocks (2014), the renminbi shock (2015), and volatility relating to political uncertainty in the United States and the United Kingdom in 2016, with considerable precision, given substantial data limitations.

The analysis of the evolution of UNCTAD financial conditions indicators for these six countries over the period 2013–2018 serves to highlight three main policy lessons. First, global financial conditions have a strong impact on domestic financial conditions. Global events marked a clear turning point in the trend of the indicators, in particular with regard to the 2014 and 2016 shocks. While the degree of impact was mediated by country-level factors and policies, the synchronized deterioration of the indicators across countries with markedly different domestic characteristics clearly underlines the global nature of financial instability. This calls for urgent global macroeconomic policy coordination designed to re-instate a stable and development-friendly financial landscape (UNCTAD, 2017).

Second, the channels of transmission are largely country-specific and, as reflected in UNCTAD financial conditions indicators, may amplify or lessen the impact of global shocks on domestic financial sectors. Thus Argentina, Brazil and South Africa remain particularly vulnerable to fluctuations in commodity prices. In Turkey, years of large external imbalances and accumulation of external debt made the country highly susceptible to the sudden stop in capital inflows observed in 2018. Meanwhile, the cases of India and Indonesia show that while low external deficits and debt levels help to retain a degree of domestic policy space to respond to financial instability, this may not be sufficient to insulate such economies from financial turmoil.

> With little reason to assume that any of the external factors will stabilize soon or capital flows will become steady, financial pressures, such as those affecting Argentina and Turkey most recently, are likely to persist.

Finally, the complex interaction between global and domestic factors in the evolution of financial conditions, as measured by UNCTAD financial conditions indicators, underlines the need for improved policy tools to increase resilience to global shocks. The strategic use of capital controls throughout the financial cycle is key. As argued here, episodes of domestic financial stress are clearly and directly related to sharp reversals in capital flows. The use of capital controls during periods of strong inflows can help to dampen consequent distortions of domestic credit and asset prices (Davis and Presno, 2014). During periods of global financial turbulence, capital controls can reduce the negative impact of large capital outflows and mitigate the impact of a financial crisis (Gallagher, 2010). However, while relevant, the analysis of the specific impact of capital controls on the evolution of the indicators during periods of net capital outflows is beyond the scope of this paper.

Annex 1

UNCTAD FINANCIAL CONDITIONS INDICATOR FOR ARGENTINA

ARGENTINA
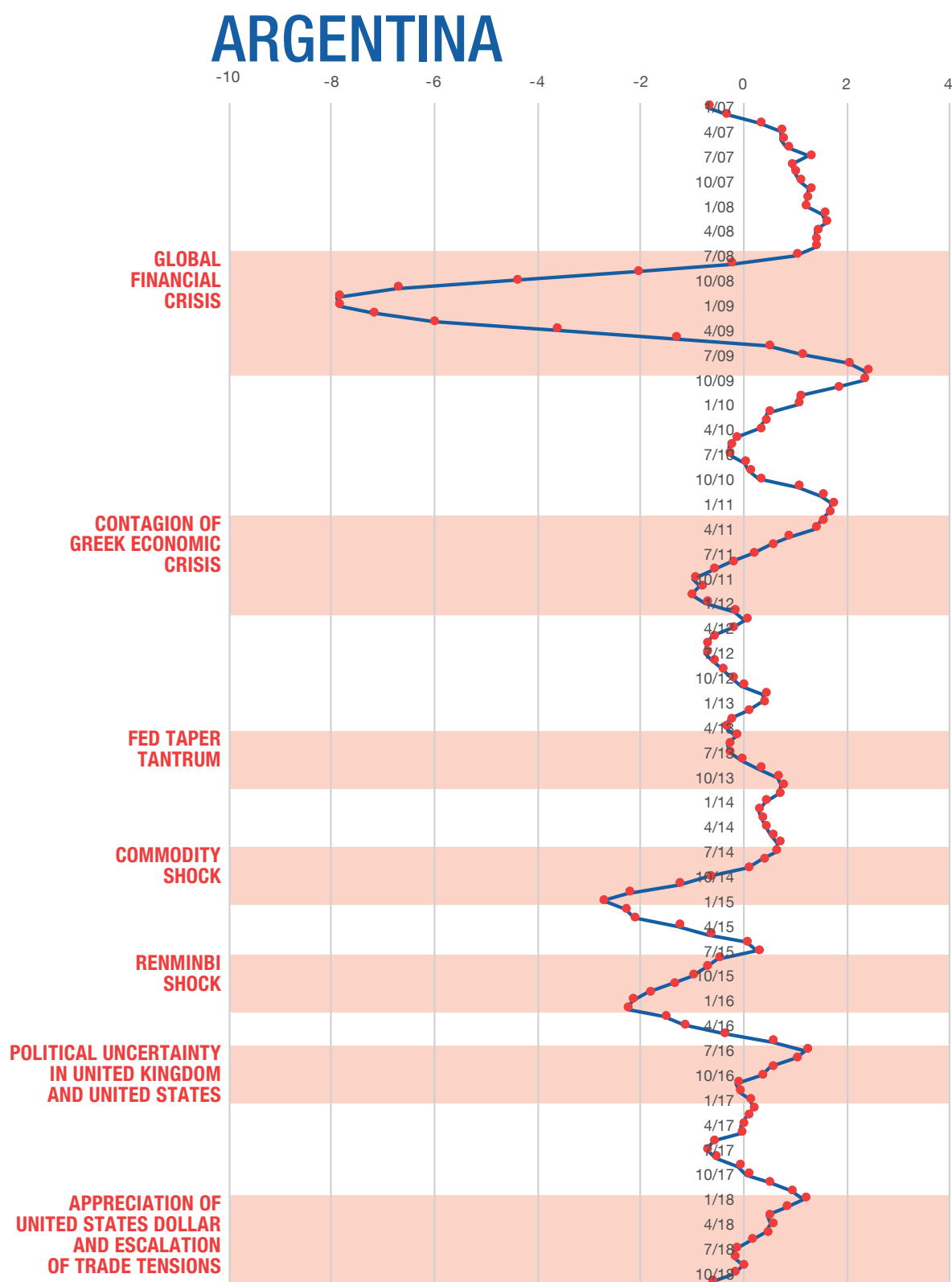
FIGURE 2

UNCTAD FINANCIAL CONDITIONS INDICATOR FOR BRAZIL

BRAZIL

FIGURE 3

UNCTAD FINANCIAL CONDITIONS INDICATOR FOR INDIA

INDIA

FIGURE 4

UNCTAD FINANCIAL CONDITIONS INDICATOR FOR INDONESIA
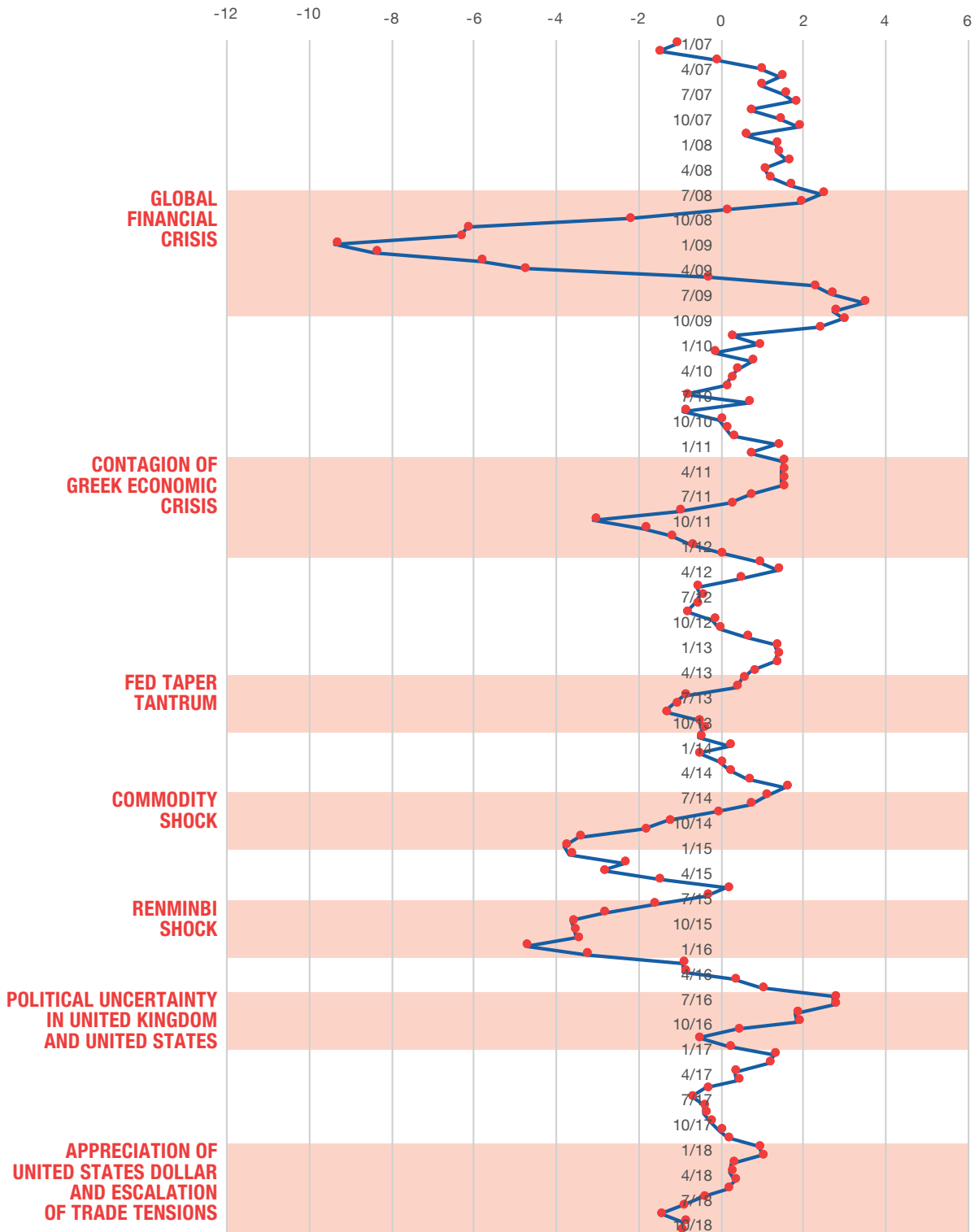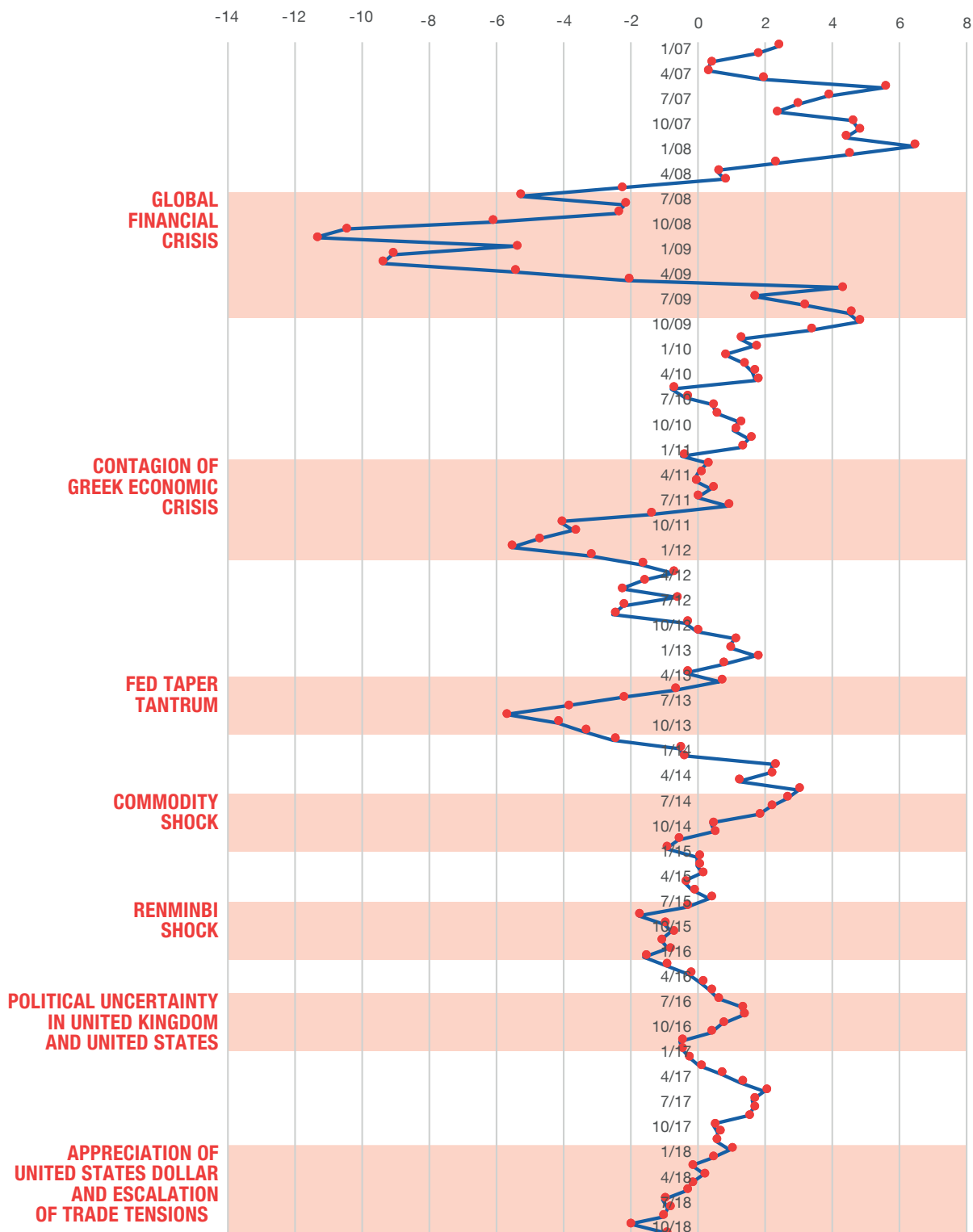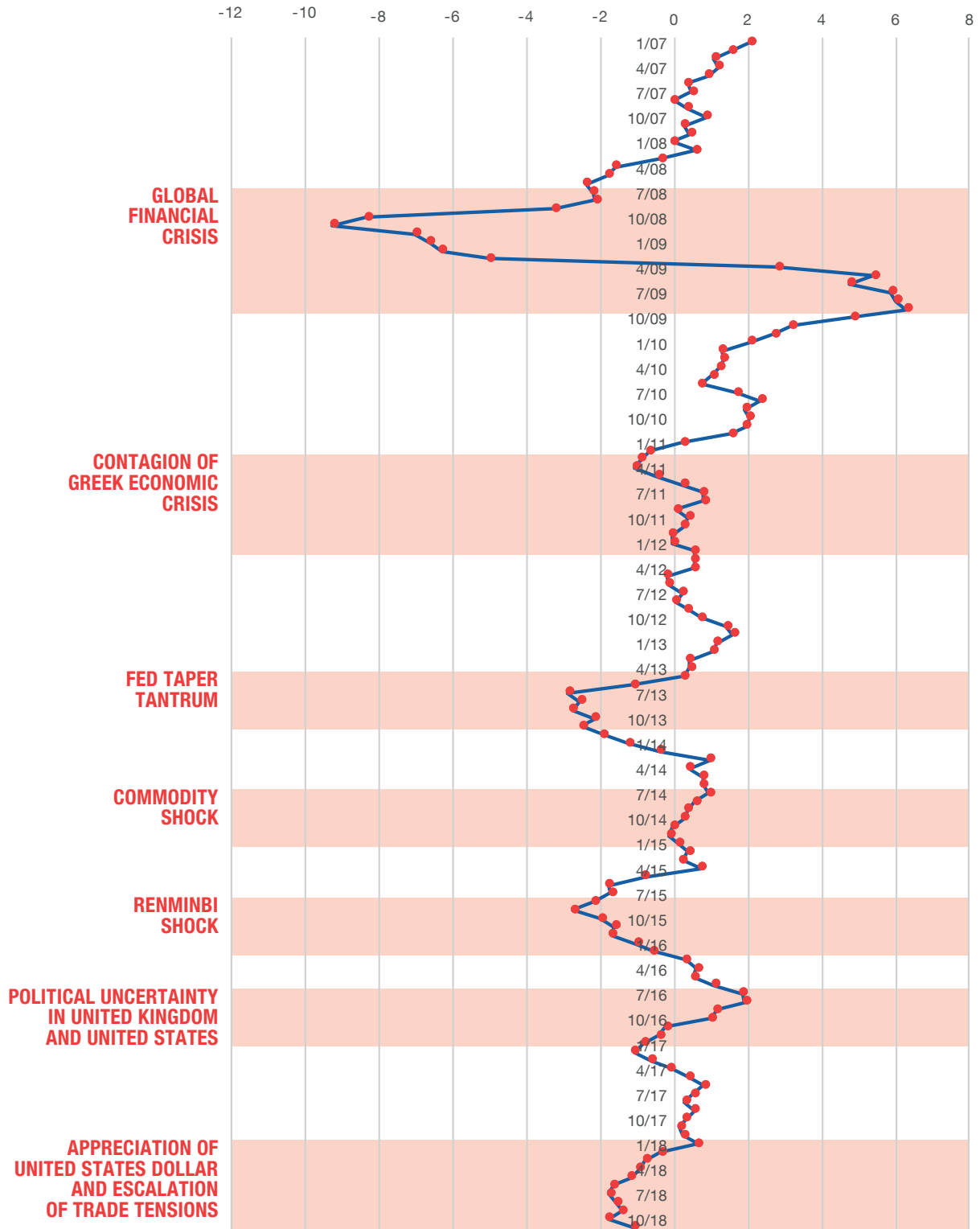
INDONESIA

FIGURE 5

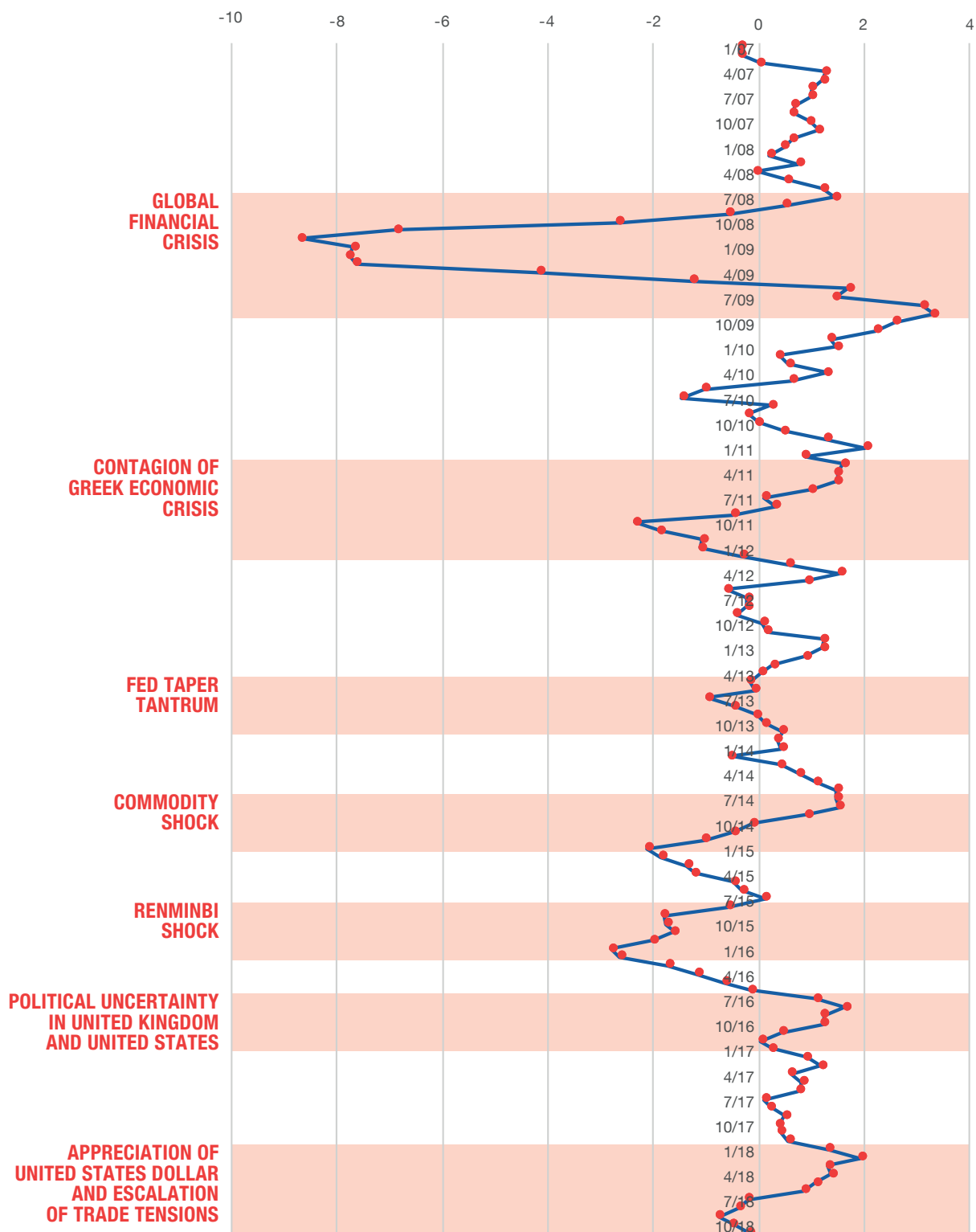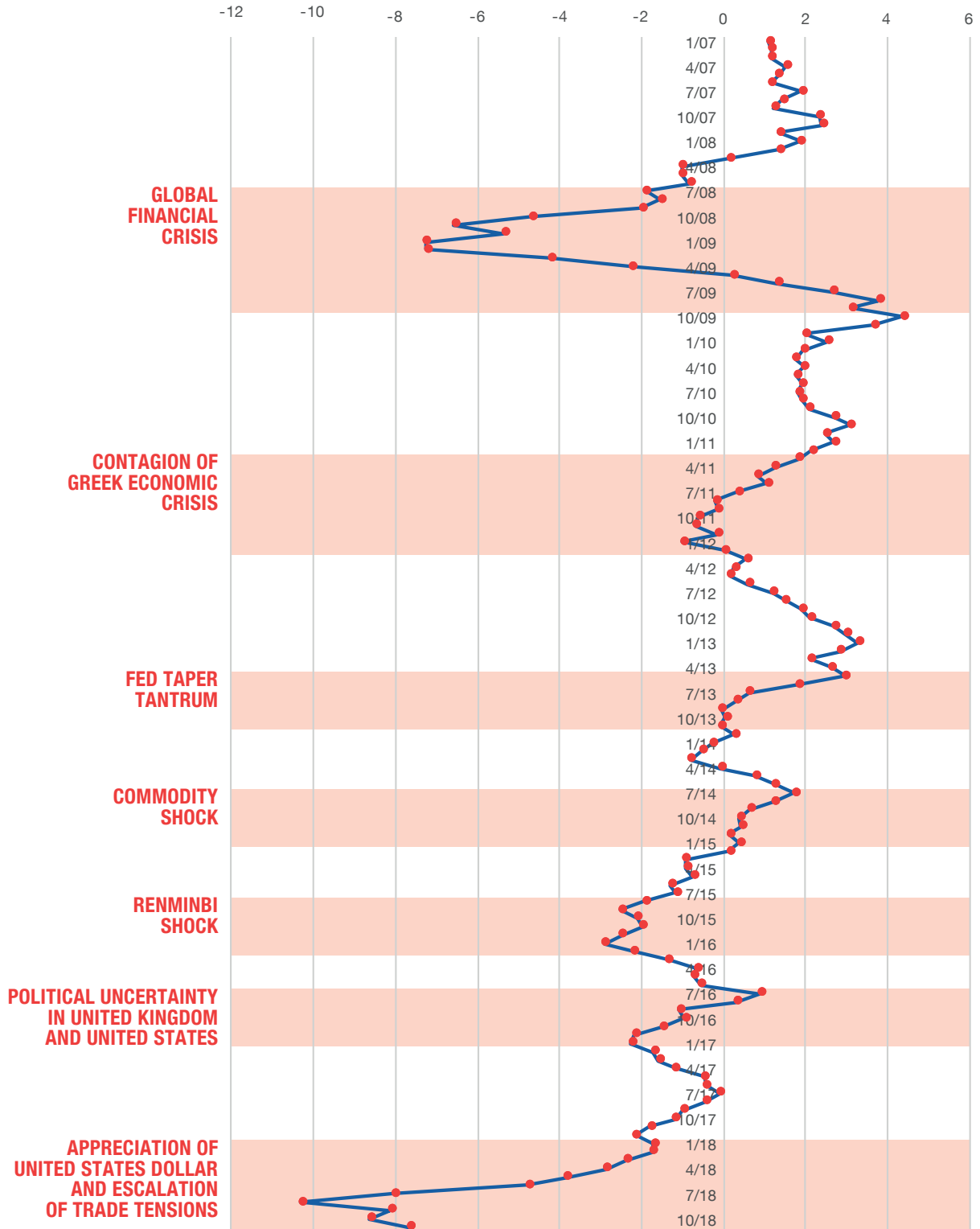**UNCTAD FINANCIAL CONDITIONS INDICATOR FOR SOUTH AFRICA**

SOUTH AFRICA

FIGURE 6

UNCTAD FINANCIAL CONDITIONS INDICATOR FOR TURKEY

TURKEY

Annex 2
Heat maps

TABLE 1

HEAT MAP: EMERGING ECONOMIES, 2013

Colour of cell indicates degree of vulnerability: | Low | Medium | High

	Criteria	Argentina	Brazil	India	Indonesia	South Africa	Turkey	Average
External vulnerabilities								
Current account balance (percentage of GDP)	>0, ≤-3	-2.1	-3.0	-1.7	-3.2	-5.8	-6.7	**-3.8**
Nominal exchange rate (index = 100)	(≥-10, ≤10), (≤-20, ≥20)	75.5	86.8	88.6	79.2	81.0	83.1	**82.4**
Portfolio flows (fourth quarter trailing) – in billion dollars)[a]	≤1 SD, ≥2 SD	0.6	16.5	-22.4		-2.5	-17.0	**-5**
External debt (percentage of GDP)	≤40, ≥60	25.6	12.6	22.7	31.0	39.0	40.5	**28.6**
Short-term external debt (share of external debt)	≤20, ≥40	23.6	10.4	21.7	16.1	19.5	33.9	**20.9**
Fiscal vulnerabilities								
Primary balance (percentage of GDP)	>0, ≤-2	-2.6	1.7	-2.4	-1.0	-1.4	0.8	**-0.8**
Government debt (percentage of GDP)	≤40, ≥60	41.7	60.2	68.5	24.8	44.1	31.4	**45.1**
Foreign holdings of government debt (percentage of total)	≤20, ≥30	25.4	15	6	58.8	35.2	42.2	**30.4**
10-year government bond yield (variation in basis points)	≤0, ≥200	559	353	65	332	140	276	**287**
Financial and monetary vulnerabilities								
Inflation rate (consumer price index)[b]	≤IT, ≥IT + IT x 50%	10.6	6.2	10.9	6.4	5.8	7.5	**7.9**
Policy rate			10	7.75	7.5	5	4.5	**7.0**
Domestic credit growth (fourth quarter trailing)[c]	≤10, ≥20	-1.1	1.9	1.4	-1.6	-12.6	9.5	**-0.4**
Equity valuations United States dollar (index = 100)	(≥-10, ≤10), (≤-20, ≥20)	139.7	71.6	88.5	76.2	93.4	72.5	**90.3**
GDP growth		2.4	3.0	6.4	5.6	2.5	8.5	**4.7**

Sources: Thomson Reuters Datastream; Arslanalp and Tsuda, 2014.

Abbreviations: IT, central bank inflation target; SD, standard deviation.

[a] For portfolio flows, indicator tracks fourth quarter trailing sum and compares it with standard deviation of portfolio flows for 10 years ending in the first quarter of 2018.
[b] For inflation rate, indicator compares consumer price index to central bank official inflation target.
[c] For domestic credit growth, figure for 2018 refers to the first quarter of 2018.

TABLE 2

HEAT MAP: EMERGING ECONOMIES, 2014

Colour of cell indicates degree of vulnerability: Low | Medium | High

	Criteria	Argentina	Brazil	India	Indonesia	South Africa	Turkey	Average
External vulnerabilities								
Current account balance (percentage of GDP)	>0, ≤-3	-1.6	-4.2	-1.3	-3.1	-5.1	-4.7	**-3,3**
Nominal exchange rate (index = 100)	(≥-10, ≤10), (≤-20, ≥20)	77.1	88.8	98.0	98.3	90.7	93	**90,9**
Portfolio flows (fourth quarter trailing) – in biillion dollars)[a]	≤1 SD, ≥2 SD	-2.8	9.1	30.9		2.6	-3.9	**7**
External debt (percentage of GDP)	≤40, ≥60	27.0	14.9	22.3	33.3	40.7	41.2	**29,9**
Short-term external debt (share of external debt)	≤20, ≥40	17.8	16.3	18.7	15.4	19.8	33.3	**20,2**
Fiscal vulnerabilities								
Primary balance (percentage of GDP)	>0, ≤-2	-3.5	0.0	-2.6	-0.9	-1.3	0.5	**-1.3**
Government debt (percentage of GDP)	≤40, ≥60	43.6	62.3	67.8	24.7	47.0	28.8	**45.7**
Foreign holdings of government debt (percentage of total)	≤20, ≥30	28.8	17	7	59.1	34.9	42.9	**31.5**
10-year government bond yield (variation in basis points)	≤0, ≥200	-440	-24	-96	-71	-13	-130	**-129**
Financial and monetary vulnerabilities								
Inflation rate (consumer price index)[b]	≤IT, ≥IT + IT x 50%		6.3	6.7	6.4	6.1	8.9	**6.9**
Policy rate			11.75	8	7.75	5.75	8.25	**8.3**
Domestic credit growth (fourth quarter trailing)[c]	≤10, ≥20	-8.9	-4.5	6.9	10.7	-2.4	8.2	**1.7**
Equity valuations United States dollar (index = 100)	(≥-10, ≤10), (≤-20, ≥20)	116.2	83.6	135	119.7	96.2	118,0	**111.5**
GDP growth		-2.5	0.5	7.4	5.0	1.9	5.2	**2.9**

Sources: Thomson Reuters Datastream; Arslanalp and Tsuda, 2014.

Abbreviations: IT, central bank inflation target; SD, standard deviation.

[a] For portfolio flows, indicator tracks fourth quarter trailing sum and compares it with standard deviation of portfolio flows for 10 years ending in the first quarter of 2018.
[b] For inflation rate, indicator compares consumer price index to central bank official inflation target.
[c] For domestic credit growth, figure for 2018 refers to the first quarter of 2018.

HEAT MAP: EMERGING ECONOMIES, 2015

Colour of cell indicates degree of vulnerability: Low | Medium | High

	Criteria	Argentina	Brazil	India	Indonesia	South Africa	Turkey	Average
External vulnerabilities								
Current account balance (percentage of GDP)	>0, ≤-3	-2.7	-3.3	-1.1	-2.0	-4.6	-3.7	**-2.9**
Nominal exchange rate (index = 100)	(≥-10, ≤10), (≤-20, ≥20)	65.4	67.2	95.5	89.9	74.4	80.1	**78.8**
Portfolio flows (fourth quarter trailing) – in billion dollars[a]	≤1 SD, ≥2 SD	3	-19.2	-28.3		-3.3	-35.9	**-17**
External debt (percentage of GDP)	≤40, ≥60	25.7	20.7	22.7	36.4	47.2	45.0	**33.0**
Short-term external debt (share of external debt)	≤20, ≥40	35.5	15.3	17.0	12.5	21.1	26.3	**21.3**
Fiscal vulnerabilities								
Primary balance (percentage of GDP)	>0, ≤-2	-4.4	-2.0	-2.7	-1.3	-1.6	0.6	**-1.9**
Government debt (percentage of GDP)	≤40, ≥60	55.1	72.6	70.0	27.5	49.3	27.6	**50.3**
Foreign holdings of government debt (percentage of total)	≤20, ≥30	28.4	17	6	59.8	33.8	40.1	**30.8**
10-year government bond yield (variation in basis points)	≤0, ≥200	167	329	-9	62	265	237	**175**
Financial and monetary vulnerabilities								
Inflation rate (consumer price index)[b]	≤IT, ≥IT + IT x 50%		9.0	4.9	6.4	4.5	7.7	**6.5**
Policy rate			14.25	6.75	7.5	6.25	7.5	**8.5**
Domestic credit growth (fourth quarter trailing)[c]	≤10, ≥20	-7.3	-25.4	5.5	0.6	-16.9	-2.7	**-7.7**
Equity valuations United States dollar (index = 100)	(≥-10, ≤10), (≤-20, ≥20)	89.1	59.2	95.2	80.5	76.4	63.4	**77.3**
GDP growth		2.7	-3.6	8.2	4.9	1.3	6.1	**3.3**

Sources: Thomson Reuters Datastream; Arslanalp and Tsuda, 2014.

Abbreviations: IT, central bank inflation target; SD, standard deviation.

[a] For portfolio flows, indicator tracks fourth quarter trailing sum and compares it with standard deviation of portfolio flows for 10 years ending in the first quarter of 2018.
[b] For inflation rate, indicator compares consumer price index to central bank official inflation target.
[c] For domestic credit growth, figure for 2018 refers to the first quarter of 2018.

TABLE 4

HEAT MAP: EMERGING ECONOMIES, 2016

Colour of cell indicates degree of vulnerability: | Low | Medium | High |

	Criteria	Argentina	Brazil	India	Indonesia	South Africa	Turkey	Average
External vulnerabilities								
Current account balance (percentage of GDP)	>0, ≤-3	-2.7	-1.3	-0.6	-1.8	-2.8	-3.8	**-2.2**
Nominal exchange rate (index = 100)	(≥-10, ≤10), (≤-20, ≥20)	81.9	121.9	97.5	102.3	113.5	83.0	**100.0**
Portfolio flows (fourth quarter trailing) – in billion dollars[a]	≤1 SD, ≥2 SD	35	-41.2	-14.2		6.1	22.0	**1**
External debt (percentage of GDP)	≤40, ≥60	31.3	16.5	20.0	33.2	45.6	44.9	**31.9**
Short-term external debt (share of external debt)	≤20, ≥40	26.1	17.3	18.4	12.7	20.4	24.8	**19.9**
Fiscal vulnerabilities								
Primary balance (percentage of GDP)	>0, ≤-2	-4.7	-2.5	-2.5	-1.0	-0.7	-1.0	**-2.1**
Government debt (percentage of GDP)	≤40, ≥60	55.0	78.4	69.5	28.3	51.6	28.3	**51.9**
Foreign holdings of government debt (percentage of total)	≤20, ≥30	37.8	13	6	59,1	35,8	41,5	**32,2**
10-year government bond yield (variation in basis points)	≤0, ≥200	0.0	-399	-134	-104	-149	64,0	**-120**
Financial and monetary vulnerabilities								
Inflation rate (consumer price index)[b]	≤IT, ≥IT + IT x 50%		8.7	5.0	3.5	6.6	7.8	**6.3**
Policy rate		24.75	13.75	6.25	4.75	7	8	**10.8**
Domestic credit growth (fourth quarter trailing)[c]	≤10, ≥20	8.4	18.4	1.4	10.1	19.0	-1.2	**9.4**
Equity valuations United States dollar (index = 100)	(≥-10, ≤10), (≤-20, ≥20)	134.1	180.2	103	119.0	116.5	89.9	**123.8**
GDP growth		-1.8	-3.5	7.1	5.0	0.6	3.2	**1.8**

Sources: Thomson Reuters Datastream; Arslanalp and Tsuda, 2014.

Abbreviations: IT, central bank inflation target; SD, standard deviation.

[a] For portfolio flows, indicator tracks fourth quarter trailing sum and compares it with standard deviation of portfolio flows for 10 years ending in the first quarter of 2018.
[b] For inflation rate, indicator compares consumer price index to central bank official inflation target.
[c] For domestic credit growth, figure for 2018 refers to the first quarter of 2018.

TABLE 5

HEAT MAP: EMERGING ECONOMIES, 2018

Colour of cell indicates degree of vulnerability: | Low | Medium | High

	Criteria	Argentina	Brazil	India	Indonesia	South Africa	Turkey	Average
External vulnerabilities								
Current account balance (percentage of GDP)	>0, ≤-3	-3.7	-1.3	-3.0	-2.4	-3.2	-5.7	**-3.2**
Nominal exchange rate (index = 100)	(≥-10, ≤10), (≤-20, ≥20)	50.0	86.3	88.9	93.0	88.0	71.1	**79.6**
Portfolio flows (fourth quarter trailing) – in billion dollars[a]	≤1 SD, ≥2 SD	-9.3	11.4	-16.4		3.6	-8.5	**-4**
External debt (percentage of GDP)	≤40, ≥60	64.8	16.4	20.5	34.7	53.9	60.3	**41.8**
Short-term external debt (share of external debt)	≤20, ≥40	19.1	15.6	18.8	14.0	20.5	24.9	**18.8**
Fiscal vulnerabilities								
Primary balance (percentage of GDP)	>0, ≤-2	-2.7	-2.4	-1.7	-0.6	-0.8	-2.1	**-1.7**
Government debt (percentage of GDP)	≤40, ≥60	62.7	88.4	69.6	29.8	55.7	32.3	**56.4**
Foreign holdings of government debt (percentage of total)	≤20, ≥30	47.7	12	6	62.3	41.1	42.2	**35.2**
10-year government bond yield (variation in basis points)	≤0, ≥200	161.5	-13	35.6	173.2	-6	635.0	**164**
Financial and monetary vulnerabilities								
Inflation rate (consumer price index)[b]	≤IT, ≥IT + IT x 50%		3.3	5.3	3.7	4.7	13.0	**6.0**
Policy rate		45.00	6.5	6.5	5.75	6.5	24	**15.7**
Domestic credit growth (fourth quarter trailing)[c]	≤10, ≥20	16.3	-3.5	8.8	4.5	18.7	10.6	**9.2**
Equity valuations United States dollar (index = 100)	(≥-10, ≤10), (≤-20, ≥20)	49.0	92.6	82.9	88.7	74.4	54.7	**73.7**
GDP growth		1.3	2.0	7.6	5.3	1.3	4.0	**3.6**

Sources: Thomson Reuters Datastream; Arslanalp and Tsuda, 2014.

Abbreviations: IT, central bank inflation target; SD, standard deviation.

[a] For portfolio flows, indicator tracks fourth quarter trailing sum and compares it with standard deviation of portfolio flows for 10 years ending in the first quarter of 2018.
[b] For inflation rate, indicator compares consumer price index to central bank official inflation target.
[c] For domestic credit growth, figure for 2018 refers to the first quarter of 2018.

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