

# The Post-Crisis Growth Slowdown in Emerging Economies and the Role of Structural Reforms

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## Abstract

This paper constructs indicators of structural bottlenecks arising from barriers to open markets, obstacles to business operations, and constraints to access to finance. Empirical evidence from a sample of 30 emerging economies indicates that barriers to open markets and access to finance are significantly associated with differences in total factor productivity growth in the post-global financial crisis period compared with the pre-crisis period—with countries with fewer barriers showing stronger recovery and resilience.

Barriers to access to finance are also associated with differences in the performance of private investment. Reforms to improve the policy framework in these areas, up to the level of the best-ranking countries, could offset the recently observed growth slowdown in emerging economies. These reforms would revitalize potential growth and mitigate the risks from external shocks associated with the global environment in the transition from the global financial crisis.

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# **The Post-Crisis Growth Slowdown in Emerging Economies and the Role of Structural Reforms**

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## **I. Introduction**

The period preceding the 2008-09 global financial crisis saw remarkable growth and poverty reduction in developing countries. In the boom years, from 2003 to 2007, developing country per capita GDP grew by 5.9 percent per year, compared to 2.3 percent in high-income countries. Higher growth spread across most developing countries, including in some of the poorest. The so-called “decoupling” of developing country growth prior to the crisis was in sharp contrast to earlier trends: Over the 1990s, developing countries grew at par with advanced economies, while in the 1980s, hit by the debt crisis, developing countries lagged behind advanced economies.

Strong growth and improved macroeconomic policy frameworks made developing countries relatively resilient to the global financial crisis compared to previous crises. Some countries even found policy room for counter-cyclical response. Thus, during 2008-09, per capita GDP in developing countries grew at a slower pace of 3 percent, while it contracted by 2.2 percent in advanced economies. Developing countries staged an impressive recovery in 2010, with growth rebounding to 6.8 percent. However, growth has been slowing steadily since then. Per capita GDP grew by 4.6 percent per year over 2010-2013, faster than in advanced economies but about 2 percentage points slower than in the pre-crisis period. A number of large emerging economies, including China, India, and Brazil, are growing at a slower pace than before the crisis.

One concern is whether part of this slowdown may reflect structural bottlenecks that impede growth over the medium term. Rapidly growing emerging economies are exposed to the so-called “middle-income traps”, a phenomenon that entails stagnation at middle-income levels and a failure to “graduate” into the advanced economy group (Eichengreen, Park, and Shin, 2013; Im and Rosenblatt, 2013). As countries reach middle-income status, “easy” productivity gains, by reallocating production from agriculture to manufacturing and exploiting low-hanging productivity gains and technology catch-up, become increasingly exhausted. Potential growth thenceforward needs to rely more on within-sector productivity improvements and transformation into activities that demand better skills and the production of more innovative goods and services. Population ageing that reduces savings may add to the difficulties to sustain high growth. Structural reforms and pro-active public investments could facilitate the transformations needed to sustain strong growth and avoid middle-income traps (Kharas and Kohli, 2011).

About two-thirds of the slowdown in emerging economies is estimated to reflect a decline in the cyclical component of growth, linked to a large extent to the sluggish recovery in advanced economies. About one-third is estimated to be structural, due to a decline in potential growth resulting from slowing productivity growth (World Bank, 2014a). There is concern that the post-crisis sluggish growth in advanced economies may continue, due to the fragilities in banking systems, the high levels of debt, and high structural unemployment. In Europe, in particular, growth is likely to remain substantially below the pre-crisis peak. Overall, in the coming years, the external environment for developing countries is likely to be less supportive to growth than

during the pre-crisis period. This would compound the risks of a structural growth slowdown as many countries that relied on fast growing export markets and favorable terms of trade will not be able to count on the same degree of external demand stimulus.

Moreover, the internal stimulus injected during the crisis has largely run its course. Reforms and structural transformations that boost productivity could help developing countries mitigate the risks associated with the post-crisis transition. Both theory and evidence highlight the role of total factor productivity (TFP) in driving long-run growth. Although reform priorities vary across countries, policies to improve the investment climate, spur competition, and facilitate resource allocation toward more productive and higher value-added sectors are essential for higher productivity and structural transformation in middle-income countries (Dabla-Norris, 2013). Middle-income countries, on average, have been improving their business environments, as indicated, for example, by the World Bank's Cost of Doing Business indicators and Enterprise Surveys. However, they are still far from the frontier and there is substantial room for further reform—a challenge even in many advanced economies.

In this paper, we address this policy agenda by assessing the extent to which structural bottlenecks to growth are linked to the economic performance of emerging economies in the post-crisis period. Several studies have addressed the question of business regulations and how they affect economic performance. A survey of cross-country evidence is provided by Scantarelli (2010). Early studies included advanced economies, based on OECD indicators of product market regulation (Nicoletti and Scarpetta, 2003). Studies were extended to developing countries with the availability of enterprise survey data and the DB indicators (Dethier, Hirn, and Straub, 2010; Djankov, McLiesh, and Ramalho, 2006; Hanusch, 2012). Results vary across studies, but a common finding is that more heavily regulated economies tend to grow slower and often also experience higher volatility (Loayza, Oviedo, and Serven, 2010).

We attempt a more granular investigation of structural bottlenecks compared to previous studies, by using indicators that measure barriers to open markets (reflected in barriers to trade, foreign direct investment, and competition); obstacles to business operations; and ease of access to finance. Bottlenecks in these areas could impede resource reallocation towards higher-productivity sectors, thus hindering long-run growth in middle-income economies. We construct indexes of structural bottlenecks in these areas for a sample of 30 upper middle-income emerging economies. These indexes are based on the World Bank's Cost of Doing Business database and selected indicators from the World Economic Forum's Global Competitiveness Report. Indicators from these two sources are available on a yearly basis starting from 2005, thus covering the pre- and post-crisis periods.

We focus on two variables of interest for long-run economic performance: the growth of total factor productivity (TFP) and private investment in proportion to GDP. We compare post-crisis trends in these two variables, over the period 2010-12, to the pre-crisis period 2003-07. TFP growth and private investment declined in most emerging economies when the 2008-09 crisis hit

and recovered at varying speed. We assess whether the post-crisis recovery of TFP growth and private investment in emerging economies is related to the structural bottlenecks in the business environment as captured by the relevant indicators. We find that the ease of access to finance and the barriers to open markets are robust in accounting for country differences in TFP growth in the period following the crisis while the ease of access to finance partly accounts for private investment recovery.

The next section presents the main characteristics of the country sample, the construction of the aggregate indexes of structural bottlenecks, and the associated country rankings. The third section examines the empirical association of these aggregate indexes with TFP growth and private investment post-crisis compared to the pre-crisis period. We also construct an aggregate index of structural bottlenecks to growth based on the individual indicators that seem more robust in explaining differences in country performance. The last section concludes.

## **II. Indexes of structural bottlenecks to growth**

The country sample covers 30 upper middle-income emerging economies, including all emerging economy members of the G20.<sup>i</sup> European Union emerging economies have not been considered because of the particular severity of the financial crisis in the Eurozone that evolved into a sovereign debt crisis and led to a double-dip recession in 2012 with significant repercussions also for EU emerging economies.

We consider three key areas of the enabling environment for private entrepreneurship that may affect resource reallocation toward higher productivity activities and the capacity to innovate and generate higher growth. These include:

- i) access to finance;
- ii) barriers to open markets (including barriers to trade, FDI, and competition);
- iii) barriers to business operations.

*Access to finance:* Obtaining finance is essential for successful entrepreneurs to expand business and realize economies of scale, initiate endeavors in new market segments, and adopt new technologies required for productivity gains. The financial crisis has tested the capacity of banking systems and capital markets to provide credit and capital at affordable terms, especially to small and medium enterprises that form the backbone of emerging economies. Our working hypothesis is that countries where companies face fewer obstacles in getting credit and capital, and where there are better mechanisms for resolving financial distress (company insolvency), are better placed to improve productivity and maintain sustained levels of private investment.<sup>ii</sup>

*Barriers to open markets:* Open markets prevail when domestic competition is unhindered and when barriers to international trade and FDI are low—as both trade and FDI promote

competitive forces in the economy. The ability of countries to reallocate resources to more productive uses and the efficiency of their investments may depend on the regulatory and institutional framework governing competition and market entry. Dynamism in firm entry when markets are open usually contributes to innovation, increases productivity, and crowds out inefficient firms. Countries that open their borders to trade and lower their trade costs usually see bigger increases in national income than those that restrict trade. Growth benefits from a reduction of trade barriers not only because of the enlarged opportunities for exchange of goods and services but also because of the higher productivity and innovation in the economy brought by more intense competition. Similarly, countries that place fewer restrictions on FDI can expect to benefit from know-how that usually comes with foreign investment and from a better positioning into global value chains. This in turn may boost productivity and help further improve trade performance, with a multiplier effect on productivity and growth. Our working hypothesis is that countries with open markets—i.e., with fewer structural bottlenecks to international trade, FDI, and competition—were in a better position to recover from the global financial crisis and regain pre-crisis levels of productivity growth and investment.<sup>iii</sup>

*Barriers to business operations:* Businesses may encounter barriers to their operations for many reasons: for example, because of cumbersome procedures for obtaining licenses or construction permits; or lengthy, costly, and unreliable procedures involved in enforcing contracts or resolving commercial disputes. These can be seen as “generic” barriers to business operations, in addition to those mentioned above related to accessing credit, trading across borders, or entering a new market. Barriers to business operations usually result in a less friendly environment, which may even encourage firms to move part of business operations to the informal economy. These barriers can inhibit access to credit, innovation, and productivity growth. It can thus be hypothesized that high barriers to business operations hamper productivity growth and discourage private investment.

- *Definition of indexes of structural bottlenecks*

Indexes of structural bottlenecks in these three areas of the business environment have been constructed based on selected indicators from the World Bank’s Doing Business (DB) database and the World Economic Forum’s Global Competitiveness Report (GCR).<sup>iv</sup> For the construction of these indexes, annual data were used over 2005-12, covering the pre- and post-crisis periods. The indicators for each year represent surveys conducted in the previous year—e.g., the indicators for 2012 show the results from surveys conducted in 2011. The three indexes are composed of 31 individual indicators, of which 24 are extracted from DB and 7 from GCR. The composition of the three indexes is shown below.

*Access to Finance:* Includes 9 indicators from DB:

- Getting credit 1-Strength of legal rights index;
- Getting credit 2-Depth of credit information index;

- Getting credit 3-Private bureau coverage (% of adults);
- Protecting investors 1-Extent of disclosure index;
- Protecting investors 2- Extent of director liability index;
- Protecting investors 3-Ease of shareholder suits index;
- Resolving insolvency 1-Time (years);
- Resolving insolvency 2-Cost (% of estate);
- Resolving insolvency 3-Recovery rate (cents on the dollar).

The index is meant to assess some key systems and institutions that underpin the ease of access to finance. Strong legal rights can facilitate the use of collateral to obtain credit and, at the same time, improve the ability of lenders to collect claims in the event of default. This can encourage lenders to extend credit, especially to SMEs. Strong credit registries and bureaus improve the information on the quality of borrowers and help to ease access to credit. These requirements are captured by the first three indicators on getting credit. Lenders or shareholders may also be reluctant to provide finance if corporate insiders can manipulate information or appropriate funds with little possibility for being sued by shareholders. The three indicators on protecting investors are meant to assess this prerequisite for a well-functioning financial system. The last three indicators measure the ease of resolving insolvency. Weak insolvency frameworks do not allow timely corporate debt resolution so that companies facing difficulties remain insolvent while their assets remain unavailable to their creditors. Efficient insolvency regimes can facilitate debt recovery and company restructuring, thus encouraging lending and helping viable companies to survive. A higher score of the index indicates better conditions for access to finance.<sup>v</sup>

*Barriers to Open Markets:* Includes 7 indicators from GCR and 3 indicators from DB:

-GCR indicators:

- Prevalence of trade barriers;
- Trade tariffs (trade-weighted average tariff rate);
- Business impact of rules on FDI;
- Burden of customs procedures;
- Intensity of local competition;
- Extent of market dominance;
- Effectiveness of anti-monopoly policy.

-DB indicators:

- Trading across borders 1-Documents to export (number);
- Trading across borders 2-Time to export (days);
- Trading across borders 3-Cost to export (US\$ per container).

The index on barriers to open markets combines GCR and DB indicators on the prevalence of trade barriers, the level of trade tariffs, the extent of regulation of FDI, and the extent of red tape and the cost to ship goods overseas with indicators that capture the extent of competition and the



effectiveness of competition policy (the last three GCR indicators). The individual indicators are measured in such a way that a lower score of the index signals lower barriers to open markets.<sup>vi</sup>

Barriers to Business Operations: Includes 10 indicators from DB:

- Number of procedures to start a business;
- Number of days to start a business;
- Registering property 1-Procedures (number);
- Registering property 2-Time (days);
- Registering property 3-Cost (% of property value);
- Construction permits 1- Procedures (number);
- Construction permits 2-Time (days);
- Construction permits 3-Cost (% of income per capita);
- Enforcing contracts 1-Time (days);
- Enforcing contracts 2-Cost (% of claim).

The index of barriers to business operations captures dimensions of the regulatory and policy environment that may hamper the ability of businesses to adapt to changing conditions, or may generate red tape and rent seeking that reduce business returns. The first two indicators measure the administrative ease of starting a business. The next three indicators measure the ease and cost of registering property. Bottlenecks in registering property may impede business operation, especially in the more productive, formal sector. Unregistered property cannot be used as collateral to obtain credit, thus limiting opportunities for new businesses to be created or existing ones to expand. Obtaining construction permits is a common hurdle. The ease of obtaining construction permits is measured by the 6<sup>th</sup>, 7<sup>th</sup> and 8<sup>th</sup> indicators. They identify the extent to which cumbersome procedures or licensing from several different agencies expose businesses to opportunities for rent seeking. The last two indicators measure the time and cost involved in resolving, through the local courts, a standard commercial dispute between domestic businesses. In view of the definition of the individual indicators, a lower score of the composite index signals lower barriers to business operations.

- *Methodology for the construction of the indexes*

The three composite indexes of structural bottlenecks to growth have been constructed by first normalizing the individual indicators listed above. For each individual indicator the mean and the standard deviation have been computed for the entire sample of countries. The individual indicators are then normalized by subtracting from each value the mean and dividing by the computed standard deviation:

$$\hat{X}_{n,t}^i = \frac{(X_{n,t}^i - m^i)}{\sigma^i}$$

Where  $X^i$  represents the  $i$  individual indicator from GCR and DB;  $n$  and  $t$  denote the country and the year, respectively; and  $m^i$  denotes the mean and  $\sigma^i$  the standard deviation of indicator  $X^i$ .

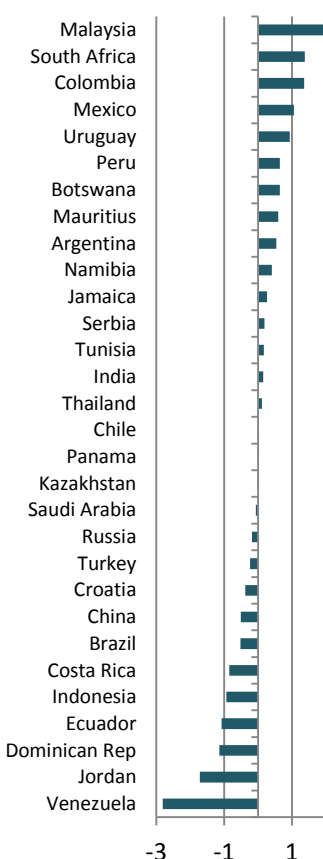
The aim of this normalization is to prevent one individual indicator with a high variance from dominating the variation in the composite index. Each of the three composite indexes is constructed using these transformed individual indicators. The composite indexes for each country in each year are, first, computed as the average of the scores of the (normalized) individual indicators. The three composite indexes are then normalized using a similar transformation, by subtracting from each value the mean of the index and dividing by the standard deviation of the composite index:<sup>vii</sup>

$$\hat{I}_{n,t}^j = \frac{(I_{n,t}^j - m^j)}{\sigma^j}$$

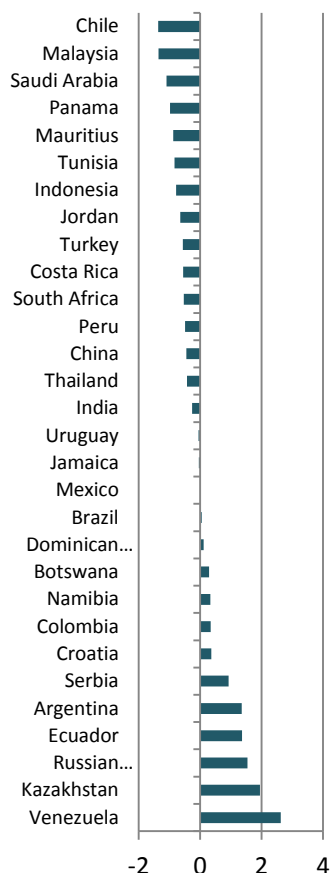
Where  $I^j$  represents the composite index  $j$  of structural bottlenecks to growth,  $n$  and  $t$  denote the country and the year, respectively; and  $m^j$  accounts for the mean and  $\sigma^j$  for the standard deviation of index  $j$ . The values of the indexes indicate divergence from the mean in terms of number of standard deviations (computed for the whole country sample).

We list below the ranking of the countries included in the sample on each of the three composite indexes according to the average country scores on each index over the period 2005-2012 (Figures 1-3). Countries with better conditions for access to finance score higher on the relevant composite index (“access to finance”). Countries with lower barriers to open markets and barriers to business operations score lower on the respective composite indexes that measure these barriers.<sup>viii</sup>

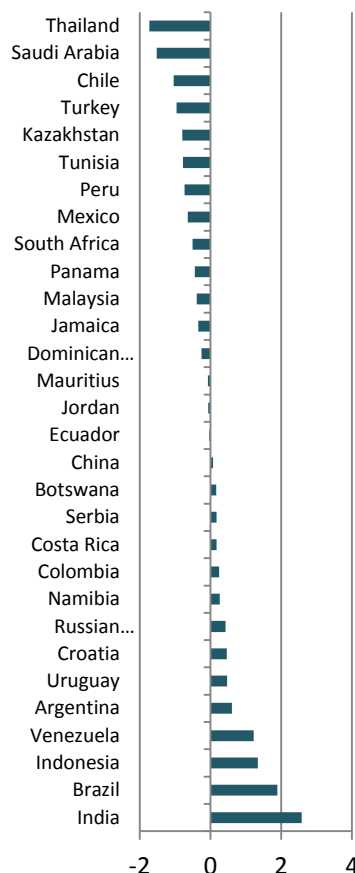
**Figure 1. Ease of Access to Finance**



**Figure 2. Barriers to Open Markets**



**Figure 3. Barriers to Operations**

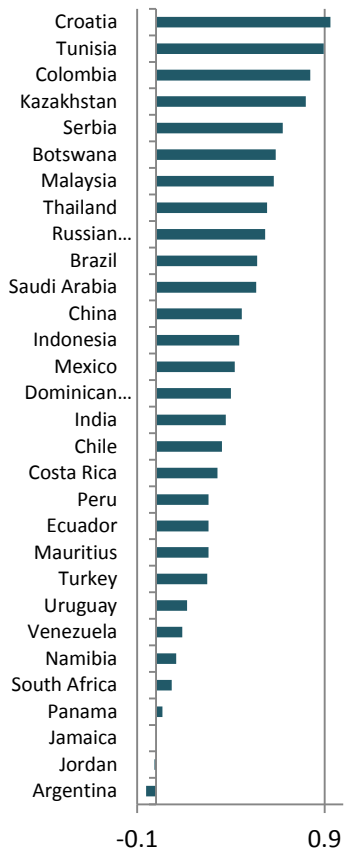


As shown in Figures 1-3, overall, the ten G20 emerging economies do not rank particularly well on the three composite indexes compared to the other emerging economies included in the sample. They are relatively better positioned on the index of barriers to open markets, where their average rank is 14.9 among the 30 countries. However, room still exists for reform action among the G20 members to unlock further growth gains from trade and cross-border investment. Emerging G20 economies rank below average on the two other indicators, with an average rank of 16.2 and 17.6 on the indexes of ease of access to finance and barriers to business operations, respectively.

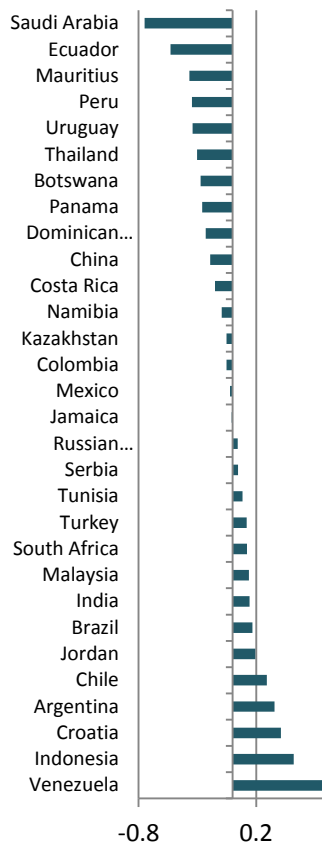
After the crisis, the emerging economies included in the sample have taken measures to address the structural bottlenecks to growth as measured by the three composite indexes. This is shown by the improved country scores in the post-crisis period (2010-12) compared to the scores in the pre-crisis period (2005-07). All but two of the 30 countries saw an improvement in the indexes measuring the access to finance and barriers to operations (Figure 4 and 6). By contrast, progress in lowering barriers to open markets was uneven, with about half of the countries in the sample reducing these barriers post-crisis but with the rest increasing these barriers (Figure 5). It is

notable that seven among the ten G20 emerging economies adopted measures that increased the barriers to open markets.

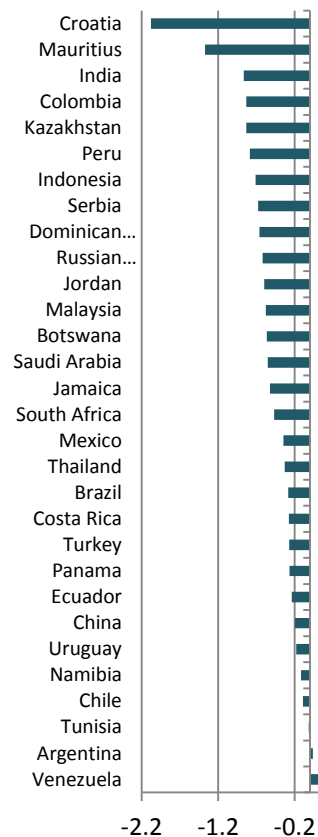
**Figure 4. Changes in Ease of Access to Finance**  
(2010-2012 vs. 2005-2007)



**Figure 5. Changes in Barriers to Open Markets**  
(2010-2012 vs. 2005-2007)



**Figure 6. Changes in Barriers to Operations**  
(2010-2012 vs. 2005-2007)

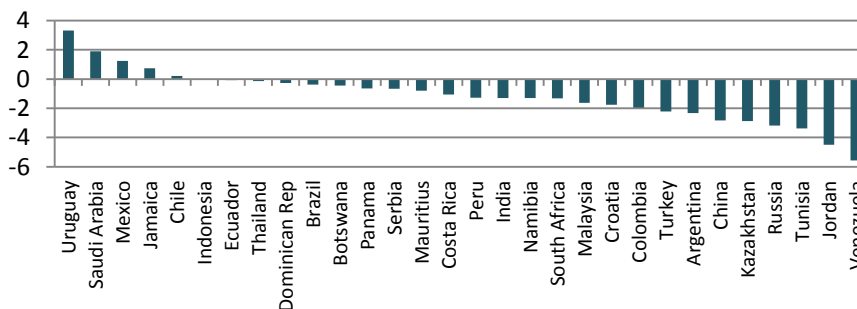


### III. Post-crisis performance and the significance of structural bottlenecks to growth

The empirical analysis focuses on TFP growth and private investment as these two variables are key determinants of long-run GDP growth and reflect the capacity of an economy to promote structural transformation and allocate resources to higher productivity and value-added sectors. We first review TFP growth and private investment (as a proportion of GDP) performance in the post-crisis period (2010-12) compared to the pre-crisis years (2003-07) in the sample of 30 emerging economies. We then present empirical evidence on the extent to which post-crisis differences in TFP growth and private investment across countries are associated with the structural bottlenecks to growth as captured by the three composite indexes.

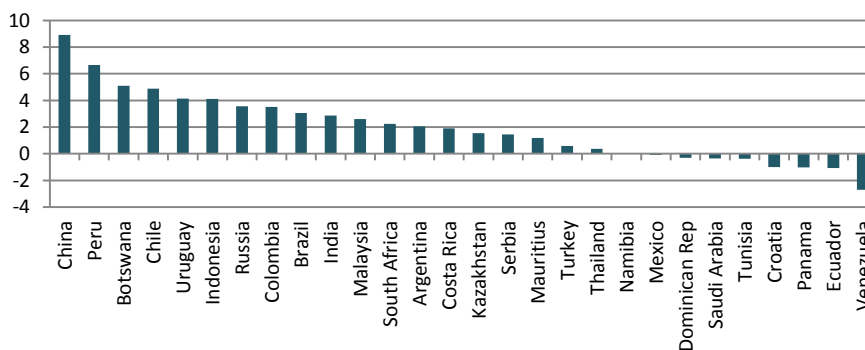
Annual data for TFP growth from Penn World Table version 8.0 have been used up to 2011. The data for TFP growth in 2012 were obtained from the Conference Board database.<sup>ix</sup> Series for private investment as a proportion of GDP were constructed using annual data from the IMF's World Economic Outlook database.<sup>x</sup> Differences for each country in post- and pre-crisis TFP growth and private investment as a proportion of GDP are portrayed in Figures 7 and 8.

**Figure 7: Difference of post-crisis and pre-crisis TFP growth (in %)**



Note. The pre-crisis and post-crisis TFP growth is computed using the average of TFP growth over 2003-2007 and over 2010-2012, respectively.

**Figure 8. Difference of post-crisis and pre-crisis private investment (in % of GDP)**



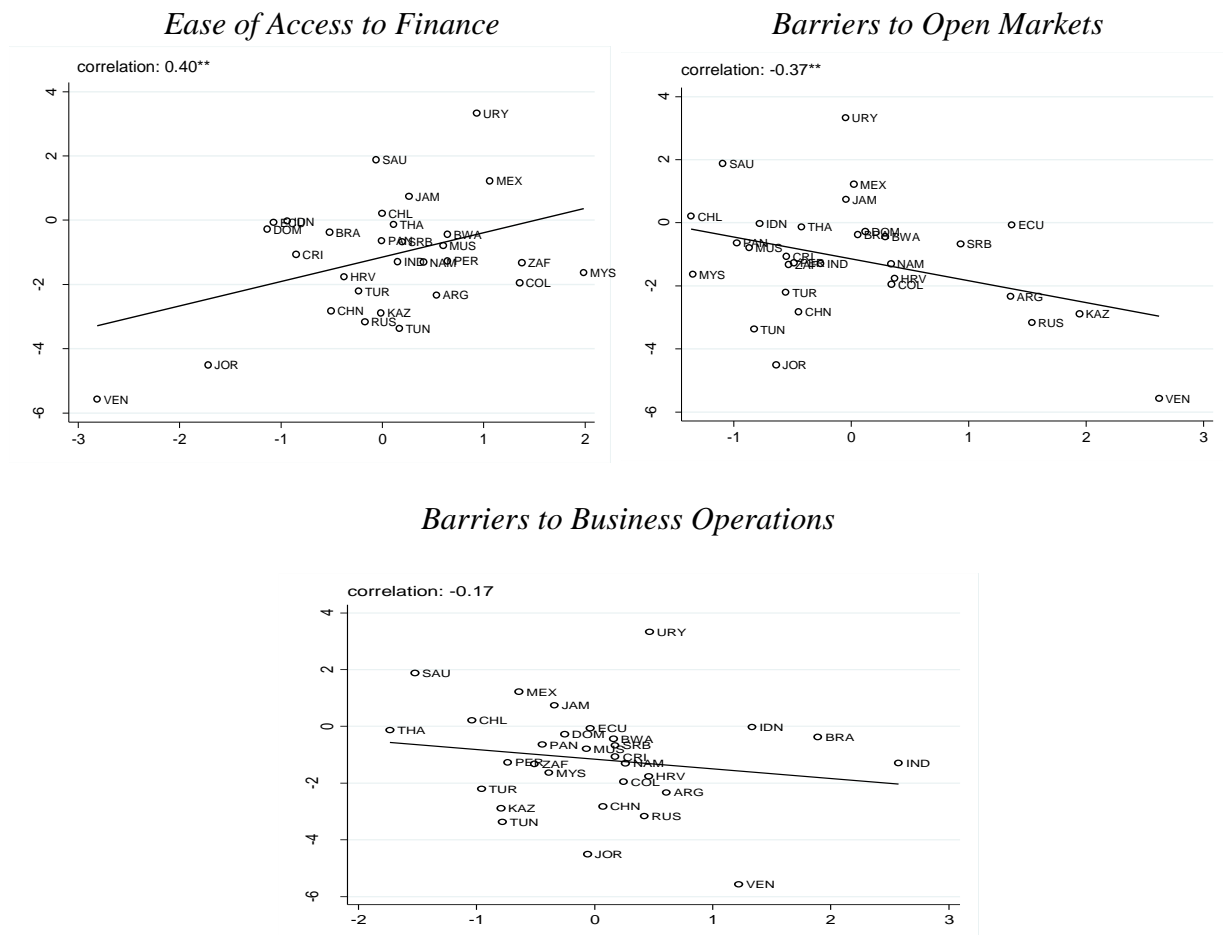
Note. The pre-crisis and post-crisis average of private investment (in % of GDP) is computed using the average of private investment over 2003-2007 and over 2010-2012, respectively.

Only in four of the 30 countries in the sample did TFP growth post-crisis exceed its pace in the pre-crisis period (Figure 7). In another four countries, TFP growth post-crisis remained broadly aligned with the pre-crisis years. The vast majority of countries experienced a slowdown in TFP growth, ranging from 0.3 percentage points (Dominican Republic) to 5.6 percentage points (República Bolivariana de Venezuela). Only three among the G20 emerging economies saw higher or at least stable TFP growth in the post-crisis period (Saudi Arabia, Mexico, and Indonesia), while TFP growth was slower in all BRICS. By contrast, post crisis private

investment in proportion to GDP has been significantly more resilient than TFP growth. It exceeded its pre-crisis level in 18 countries of the sample while it declined in only 4 (Figure 8). Private investment was higher post-crisis in eight of the G20 emerging economies.

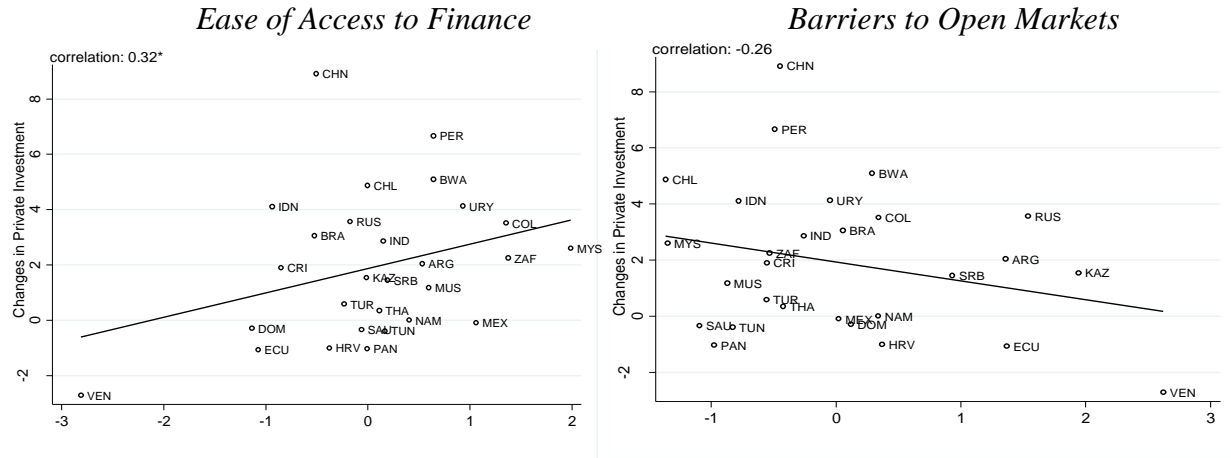
Is there evidence that post-crisis TFP growth and private investment were stronger in emerging economies with lower structural bottlenecks to growth as measured by the three composite indicators discussed above? Simple correlations show that post-crisis differences in TFP growth are positively associated with the composite index of ease of access to finance and negatively associated with the two other composite indexes of barriers to open markets and barriers to business operations—although the last correlation is not significant (Figure 9). Moreover, post-crisis differences in private investment are positively associated with the index of ease of access to finance and negatively associated with the open markets index (Figure 10). However, only the correlation between private investment and ease of access to finance is significant.

**Figure 9: Correlation between changes in TFP growth (2010-2012 vs. 2003-2007) and indexes of structural bottlenecks**

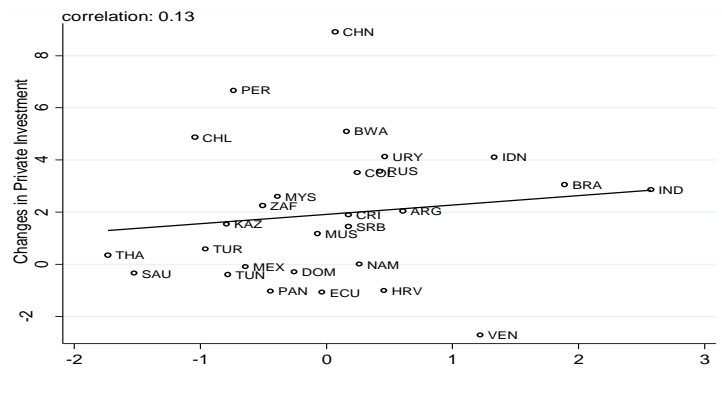


\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Figure 10: Correlation between changes in Private Investment (2010-2012 vs. 2003-2007) and indexes of structural bottlenecks**



*Barriers to Business Operations*



\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

To examine these links further, we ran Ordinary Least Squares regressions of the difference between each country's TFP growth in 2010-12 and 2003-07 on the country's average score, over 2005-2012, in each of the three aggregate indexes of structural bottlenecks to growth. Similar regressions were estimated for post- and pre-crisis differences in private investment as a proportion of GDP.

In the set of regressions explaining the change in TFP growth, we include as a control variable the average TFP growth rate over the crisis years (2008-2009). A justification for controlling for the depth of TFP growth contraction during the crisis is that countries where TFP growth fell sharply during the crisis are likely to have experienced a stronger TFP growth rebound post-crisis. Such a rebound would thus reflect a catching-up with previous TFP growth trends, and would be unrelated to the structural reform efforts. In the regressions for post-crisis changes in

the private investment ratio, we include as a control variable the average GDP growth rate over the crisis (2008-2009). The intuition here is that relatively higher economic growth during the crisis may have boosted confidence, helping businesses to maintain and possibly increase investment in the aftermath of the crisis.

Table 1 shows results for post-crisis TFP growth. The coefficients of the three indexes have the expected sign: easier access to finance (column 1), lower barriers to open markets (column 2), and lower barriers to business operations (column 3) are all associated with higher TFP growth post-crisis compared to pre-crisis levels. Only the coefficient associated with barriers to operations is not significant.

Table 2 shows the results for changes in private investment post-crisis compared to pre-crisis levels. Easier access to finance (column 1) has a significant positive effect on private investment changes. Lower barriers to open markets are associated with higher private investment post-crisis but the effect is not significant (column 2). Lower barriers to business operations carry the “wrong sign” and are not statistically significant.

The robust results on the impact of barriers to open markets on TFP growth post-crisis are worth emphasizing. As the reduction of these barriers has been slow post-crisis, and they have even increased in several emerging economies, including G20 members (Figure 5), a more ambitious reform agenda in this area can contribute to faster potential growth by boosting TFP growth.



**Table 1. Regressions of post-crisis differences in TFP growth on composite indexes of structural bottlenecks to growth**

Independent variables	Dependent variable: Difference between TFP growth in 2010-12 and 2003-2007		
	(1)	(2)	(3)
<i>Ease of access to finance</i>	0.739* (1.729)		
<i>Barriers to open markets</i>		-0.702** (-2.063)	
<i>Barriers to business operations</i>			-0.292 (-0.783)
<i>TFP growth during crisis years (2008-2009)</i>	-0.0488 (-0.321)	-0.118 (-0.660)	-0.0747 (-0.411)
Constant	-1.235** (-2.636)	-1.353** (-2.524)	-1.282** (-2.388)
Observations	30	30	30
R-squared	0.167	0.162	0.038

Notes: t-statistics robust to heteroscedasticity in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The dependent variable is the difference between TFP growth in 2010-12 and 2003-07. The indexes of structural bottlenecks are measured by the average scores of each index over 2005-12.

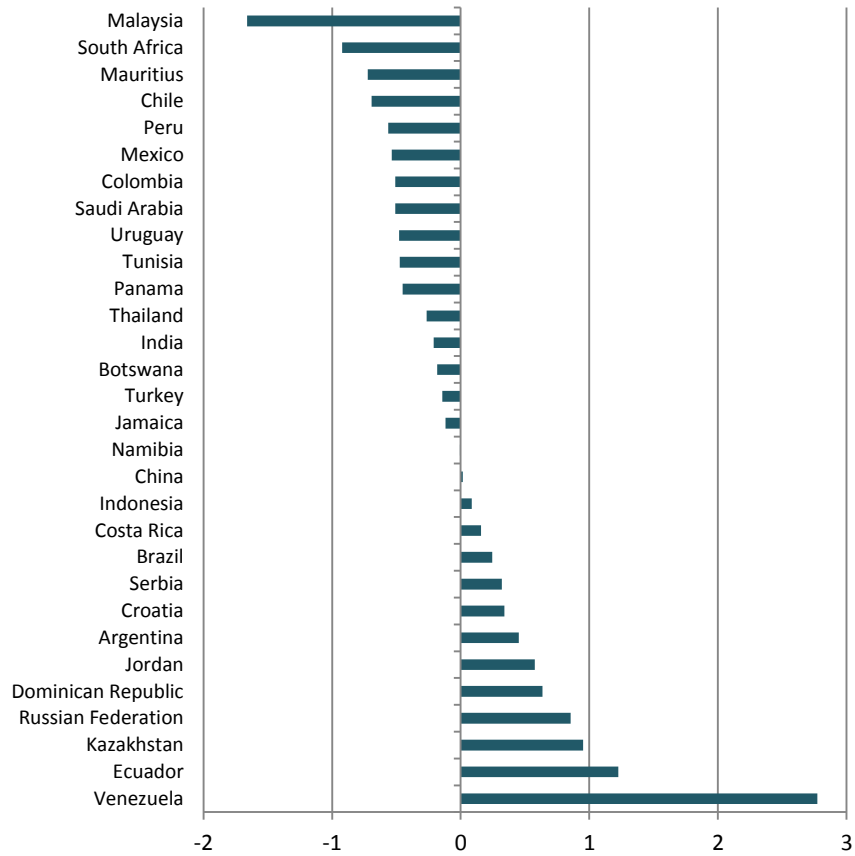
**Table 2. Regressions of post-crisis differences in private investment (in % of GDP) on composite indexes of structural bottlenecks to growth**

Independent variables	Dependent variable: Difference between private investment in 2010-12 and 2003-2007		
	(1)	(2)	(3)
<i>Ease of access to finance</i>	0.961*** (2.859)		
<i>Barriers to open markets</i>		-0.501 (-1.071)	
<i>Barriers to business operations</i>			0.234 (0.515)
<i>GDP growth during crisis years (2008-2009)</i>	0.285 (1.295)	0.214 (0.974)	0.247 (1.072)
Constant	1.191** (2.202)	1.422** (2.517)	1.330** (2.195)
Observations	28	28	28
R-squared	0.210	0.125	0.098

Notes: t-statistics robust to heteroscedasticity in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1  
The dependent variable is the difference between private investment (in % of GDP) in 2010-12 and 2003-07.  
The independent variables are measured by the average scores of each index over 2005-12.

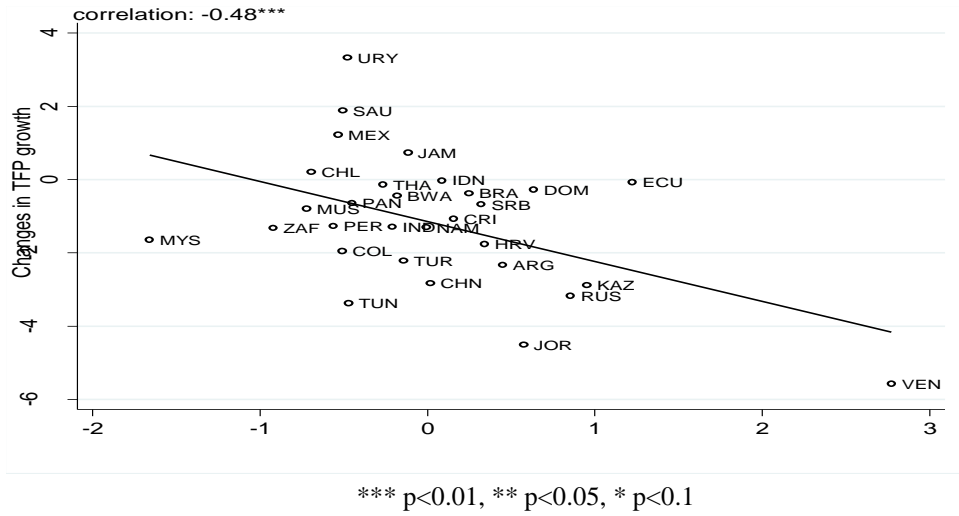
To consolidate the findings of the empirical analysis, we also construct an aggregate index of structural bottlenecks to growth by combining into a single indicator the two indexes with a significant association with differences in post-crisis TFP growth: (i) barriers to open markets and (ii) ease of access to finance. As the empirical analysis does not confirm a significant association of barriers to business operations with post-crisis economic performance, this index has not been included in the aggregate index of structural bottlenecks. The aggregate Index of Structural Bottlenecks (ISB) is calculated using the same methodology as for the three individual indexes (see Section II). The aggregate index is constructed in such a way that countries with comparatively lower barriers to open markets and easier access to finance score lower. Countries with structural bottlenecks below the average for the sample exhibit negative scores. The scores for the ISB over the period 2005-12 indicate that structural bottlenecks in half of the G20 emerging economies (India, Mexico, Saudi Arabia, South Africa, and Turkey) are below the average for the sample (Figure 11).

**Figure 11. Aggregate Index of Structural Bottlenecks (ISB)**

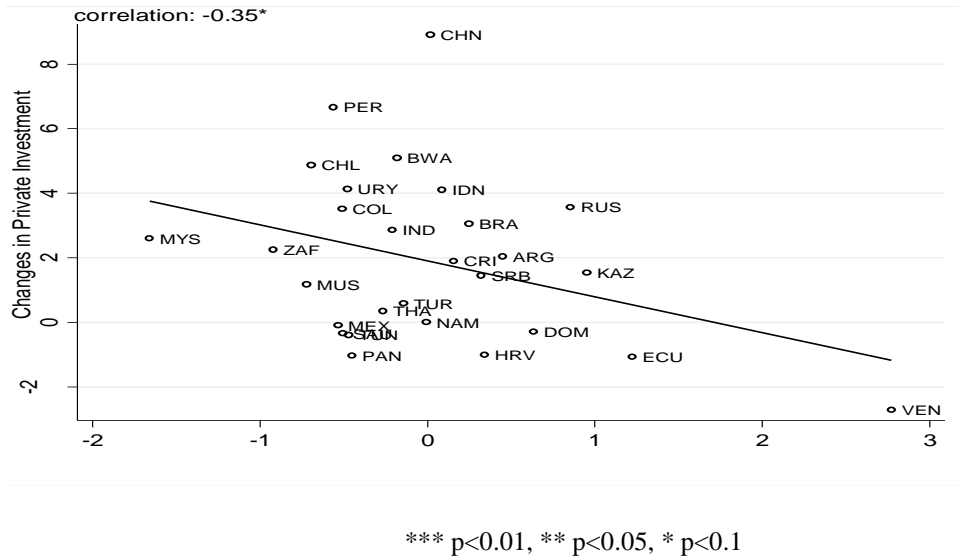


Correlations between the average country scores on ISB and post-crisis changes in TFP growth and private investment are significant and negative as expected (Figures 12 and 13). Regressions using the previous specification confirm that the aggregate index of structural bottlenecks has a significant negative association with post-crisis changes in both TFP growth and private investment (Table 3).

**Figure 12: Correlation between changes in TFP growth (2010-2012 vs. 2003-2007) and ISB**



**Figure 13: Correlation between changes in Private Investment (2010-2012 vs. 2003-2007) and ISB**



**Table 3. Regressions of post-crisis differences in TFP growth and private investment (in % of GDP) on composite Index of Structural Bottlenecks to growth (ISB)**

Independent variables	(1) Changes in TFP growth (2010-2012 vs. 2003- 2007)	(2) Changes in Private Investment (2010-2012 vs. 2003-2007)
<i>ISB</i>	-1.072*** (-2.805)	-1.024* (-1.786)
<i>TFP growth during crisis years (2008-2009)</i>	-0.0704 (-0.520)	
<i>GDP growth during crisis years (2008-2009)</i>		0.229 (1.472)
Constant	-1.265*** (-3.329)	1.364** (2.310)
Observations	30	28
R-squared	0.239	0.193

Note: t-statistics robust to heteroscedasticity in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

The way structural reforms may contribute to growth may be numerically illustrated with the help of the aggregate ISB country scores: As shown by the constant term of the regression for country differences in TFP growth, the slowdown in TFP growth post-crisis is estimated at 1.27 percentage points (Table 3, column 1). On the other hand, the estimated coefficient of ISB in the regression for TFP growth is -1.07, indicating that lower barriers to trade, FDI, and competition (i.e., lower barriers to open markets), and better access to finance can potentially offset a large part of the post-crisis TFP slowdown.

The difference in the average ISB score of the three best ranking G20 emerging economies (Mexico, Saudi Arabia, South Africa) and the score of the three lowest ranking ones (Argentina, Brazil, Russia) is 1.2 (Figure 11). Reforms that improve the ISB score so as to bridge the difference between these two groups of G20 emerging economies would boost TFP growth by an estimated 1.28 percentage points (1.2\*1.07). This would offset the post-crisis slowdown in TFP growth, and help set the stage for a sustained increase in potential GDP growth. It would also help emerging economies to improve their resilience to the sluggish recovery of advanced economies from the global financial crisis. Moreover, using the estimated regression for changes in private investment (Table 3, column 2), this same improvement in ISB scores would boost

private investment by an estimated 1.22 (1.2\*1.02) percentage points of GDP, further stimulating GDP growth and spurring job creation in emerging economies.

#### **IV. Conclusion**

Growth has slowed in emerging economies in the years following the global financial crisis, partly because of cyclical reasons, owing to the sluggish recovery of advanced economies, and partly because of structural reasons, reflecting a homegrown slowdown in potential growth. Emerging economies are also exposed to the risk of the so-called “middle-income traps” as they exhaust the potential for low-hanging productivity gains from factor reallocation out of agriculture and technological catch-up. The risks associated with the “new normal” of the post-crisis global environment and possible “middle-income traps” could be mitigated by a renewed focus on reforms to spur structural transformation. Such reforms would need to facilitate resource allocation toward more productive and higher value-added activities and the production of more innovative goods and services.

Our results suggest that removing bottlenecks to such structural transformation may help sustain high growth in emerging economies in the future. We focused on structural bottlenecks arising from barriers to open markets—including obstacles to trade, FDI, market entry, and competition—barriers to business operation, and barriers to access to finance. Empirical evidence from a sample of upper middle-income emerging economies indicates that barriers to open markets and the ease of access to finance are significantly associated with changes in post-crisis TFP growth and private investment compared to the pre-crisis period.

The findings suggest that improving the policy framework in these two areas, by bringing it up to the level of the best-ranking emerging economies, could offset the growth slowdown in the post-crisis period. Reforms to reduce barriers to open markets would merit particular attention as in this area progress has been limited and uneven. Practically all G20 members have resorted to trade distorting measures since the onset of the crisis, some more than others. In the post-crisis period, several G20 emerging economies have raised barriers to trade and FDI (WTO, 2014). To date, the G20 has reached multilateral commitment only to refraining from imposing new protectionist measures but has shown low ambition on multilateral cooperation for trade reform to reduce trade barriers and increase transparency in trade. Not only is there a need to adhere firmly to the G20 commitment to refrain from new protectionist measures, but there is also a need to unwind the protectionist measures that have been put in place so far and to implement fresh reforms to reduce trade barriers (including in services) and improve investment disciplines. These actions need to be complemented by domestic regulatory and institutional reforms to enhance competition in product and factor markets.

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## Endnotes

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<sup>i</sup> Country sample: **Argentina**, Botswana, **Brazil**, Chile, **China**, Colombia, Costa Rica, Croatia, Dominican Republic, Ecuador, **India**, **Indonesia**, Jamaica, Jordan, Kazakhstan, Malaysia, Mauritius, **Mexico**, Namibia, Panama, Peru, **Russian Federation**, **Saudi Arabia**, Serbia, **South Africa**, Thailand, Tunisia, **Turkey**, Uruguay, and Venezuela (G20 members in bold).

<sup>ii</sup> There is an extensive empirical literature on finance and growth. A recent survey is provided by J.B. Ang (2008).

<sup>iii</sup> As for the linkages between finance and growth, the empirical literature on trade, FDI, and growth is extensive. Surveys are provided by T. Singh (2010) and A. Chowdhury and G. Mavrotas (2006).

<sup>iv</sup> For detailed descriptions of the indicators used, see World Bank (2014b) and World Economic Forum (2013).

<sup>v</sup> In order to ensure consistency in the definition of the composite index, the indicators of time and cost to resolve insolvency are multiplied by -1.

<sup>vi</sup> In view of their definition in GCR, the indicators on prevalence of trade barriers, business impact of rules on FDI, and burden of customs procedures are multiplied by -1.

<sup>vii</sup> Instead of using the average of the individual normalized indicators to construct the composite indicators, we also experimented with a different aggregation procedure using principal components analysis. The results are broadly similar to those shown below and are available on request.

<sup>viii</sup> Countries with a positive score on the access to finance index are characterized by better conditions for access to finance compared to the average for the sample. Concerning the indexes of barriers to open markets and barriers to business operations, countries with a negative score are characterized by lower barriers than the average for the sample as measured by the respective composite indexes.

<sup>ix</sup> Data sources are respectively: <http://www.rug.nl/research/ggdc/data/penn-world-table> and <https://www.conference-board.org/data/economydatabase/>. The TFP growth data for 2012 from the Conference Board are available for 25 countries of the sample. For the remaining 5 countries, the post-crisis data cover only the shorter 2010-11 period.

<sup>x</sup> Private investment as proportion of GDP is computed by dividing the real private investment (current private investment deflated by the investment deflator) by the real GDP. No data are available to allow the computation of the private investment variable for Jamaica and Jordan.