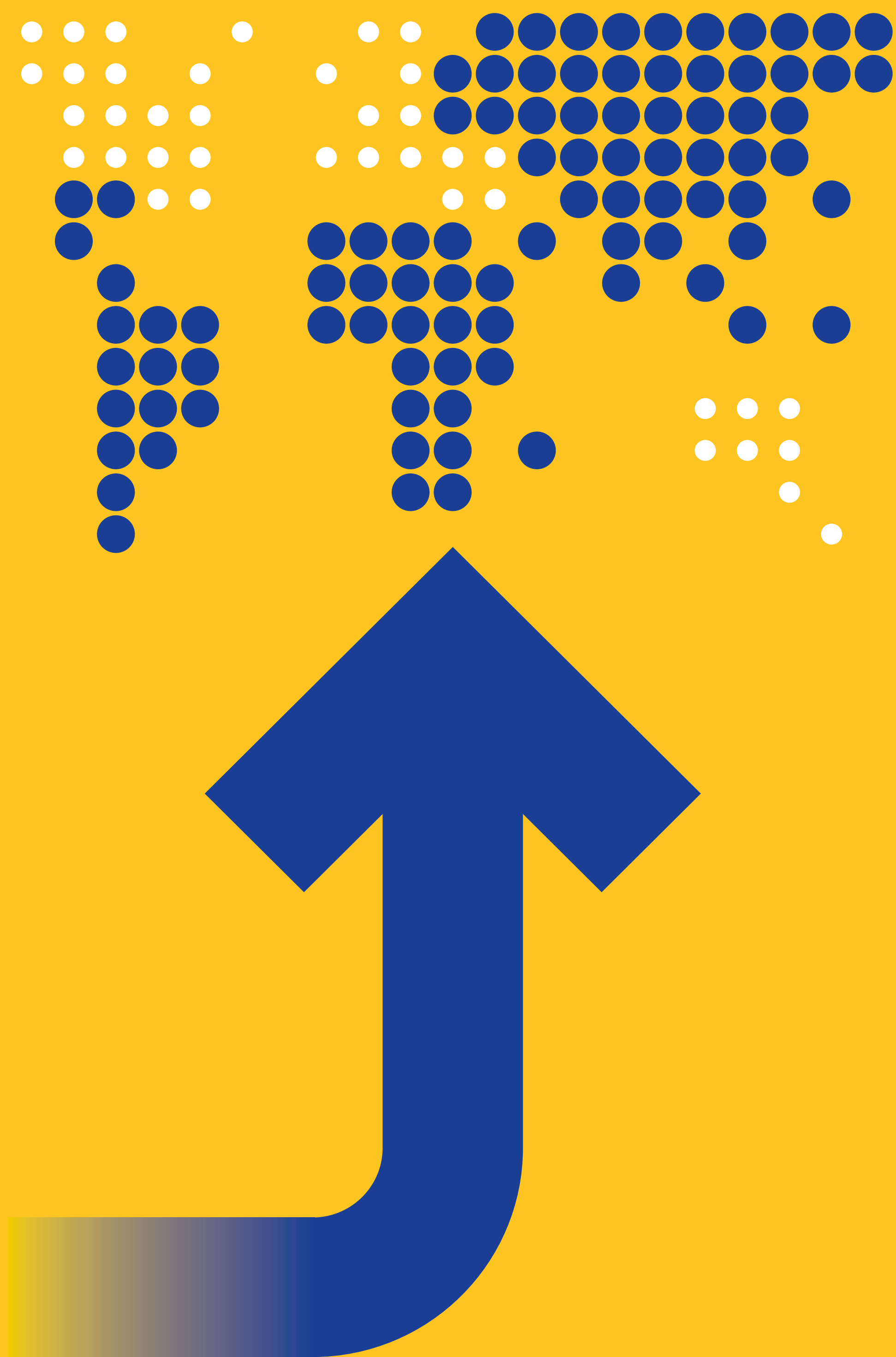


OCTOBER 9-11, 2016 WASHINGTON, D.C.

EMERGING MARKETS FORUM

2016 GLOBAL MEETING

Resilience Index: a 2016 Update

Emerging Markets Forum

A nonprofit initiative of the Centennial Group

Executive

Jose Fajgenbaum and Harpaul Alberto Kohli

This paper updates previous work conducted by the Centennial Group on the Resilience Index. The Index identifies the factors that increase the capacity of countries—Emerging Market and Developing Countries (EMDCs) and advanced economies—to absorb external shocks, such as those caused by the global financial crisis, and to, respond effectively to them. (Box 1 of the paper explains the rationale for each of the elements of the Index.)

We first computed the Index for 30 EMDCs in 2010, and the results were very encouraging. They suggested that those countries that had strengthened the underlying institutions and structural aspects of their economies, and created policy space through prudent macroeconomic policies, were in a position to counter the impact of even strong external shocks. Subsequent work has confirmed this conclusion.

In 2013, in the aftermath of the crisis of the peripheral countries of the Euro-area, we expanded the Resilience Index to100 EMDCs and 30 advanced economies. The results were remarkable. They showed that the Index also had the power to identify the countries that were heading into trouble as well as to point out the specific areas of weakness that had accumulated over the years. The latter highlighted the failure of the global surveillance systems in identifying and encouraging the much-needed corrective policy actions.

This latest update applies the Resilience Index to a total of 101 countries (EMDCs and advanced economies). A key objective of the current update is to assess developments since 2013 and further confirm the usefulness of the Index in terms of providing any warning signals that are developing. Again, the results continue to be reassuring as far as the usefulness of the Index is concerned but also highlight some new warning signals for some countries in an otherwise improving situation at the global level:

- Euro-area peripheral countries. The average Resilience Index for these countries has recovered from its bottom in 2013, as the strengthening of policies begun to bear fruit. However, this should not lead to complacency. They still need to continue to intensify their efforts in order to enhance their resilience, as their average Index is still considerably below its peak of 2001 and is markedly lower that the average Index for the advanced countries in this study.
- Two groups of EMDCs stand out. The average Resilience Index for two groups of EMDCs, the Asian and the Middle Eastern and North African countries, stand out because they raised their resilience to the average of the Index for the group of countries in this study. The Index for the Asian countries remains steady (though just slightly below the global average) but the Index for the Middle Eastern and North African countries started to decline in 2014-15, mainly owing to the drop in commodity prices. The latter group of countries needs to adopt corrective measures to arrest the slide and regain fiscal space.
- Latin America and the Caribbean, Sub-Saharan Africa and the CIS. The Resilience Index for the three regions, home to the largest number of EMDCs, continues to remain well below the world average. Within them, the position of commodity exporting countries has been weakening. The specific areas of weakness and some of countries at risk identified by the Index are highlighted further below.
- Monetary Policy sub-index. A major piece of good news is the world wide improvement in the monetary sub-index. It was mainly achieved through the adoption and implementation of inflation targeting frameworks in a large number of EMDCs since 2010, which in turn contributed to a stronger resilience. Where appropriate, the use of this framework should be encouraged in additional countries.
- Important danger signs. There are important danger signs among most commodity exporters. They have

been experiencing a considerable weakening of the Fiscal Policy sub-index during the last 2-3 years. This weakening has been associated with both a large drop in revenue due to a reversal in terms of trade gains and high government expenditure covered by increased debt. Given that commodity prices are unlikely to turn around any time soon, these countries need promptly to adopt corrective measures to stop the slide in their resilience and regain fiscal space. The urgency is greatest in the case of countries whose government revenue is heavily dependent on commodity export earnings; the sooner they act the lower the cost of adjustment will be.

- Countries seriously at risk. By ranking countries according to their Resilience Index, we find those countries that fall in the last decile as seriously at risk. These countries include Azerbaijan, Belarus, Ecuador, Ethiopia, Kazakhstan, Mozambique, Myanmar, Venezuela, Vietnam, and Zambia. They need to take immediate actions to strengthen their resilience; and their actions need to be watched quite closely by both the relevant international institutions and markets.
- The Index as a surveillance and risk assessment tool. As noted in our earlier work, the Resilience Index can be meaningfully added to the traditional tools of surveillance and private sector risk-assessment. It is a powerful device by itself, as it can help identify resilience weaknesses and the policy areas that actions should be taken to address them.

The Resilience Index: An update

Jose Fajgenbaum and Harpaul Alberto Kohli

Introduction[1]

The Centennial Group developed the Resilience Index in the aftermath of the global financial crisis of 2008.[2] The impact of the financial crisis was swift and severe, spreading from the advanced countries to the emerging market and developing countries (referred to as EMDCs in this paper) through the contraction of global liquidity and capital flows, an almost unprecedented collapse in trade, and a major softening in commodity prices and tourism. But shortly after the onset of the crisis, it became evident that the EMDCs held up better than originally forecast in many cases, as their growth rates were stronger than originally expected. This performance reflected an increased resilience of EMDCs to external shocks. It reflected an increased capacity to absorb the impact of events originating in the advanced world and to bounce back through the power of their own policy reaction.

Like other analysts, we wondered what policy actions were taken by the EMDCs to help counter the impact of the crisis? What specific reforms contributed to the capacity of these countries to design and implement these policies? What can be inferred from the changes made by the EMDCs to their economic and financial institutions and other areas prior to the global financial crisis?

Our work in 2010 to 2013 concluded that the policy space enjoyed by many EMDCs and their confidence to employ that space had derived in large part from the reforms introduced in the crises that engulfed so many EMDCs during the period 1994-2003. Indeed, in addition to creating a strong buffer by raising international reserves, many of these countries introduced significant reforms, including in their macro-economic policy frameworks, their regulatory and supervisory regimes, their accounting and data-reporting standards, and their legal frameworks and transparency.

To help understand the significantly different speeds of recovery across EMDCs, we developed the Centennial Resilience Index. The index suggested that those countries that had strengthened the underlying institutions and structural aspects of their economies, and created policy space through cautious monetary and fiscal policies, were in a position to counter the impact of the shock that originated in the global financial system. They had successfully created both the room for policy adjustment and the capacity to design and implement policies that sharply limited the negative impact of the crisis in their economies.

In developing the Centennial Resilience Index, we sought to help identify the factors that increased the capacity of some EMDCs to absorb the shock, respond effectively, and recover faster than the others. As a result, we also wanted the Index to help identify the more resilient EMDCs.

To this end, we went beyond the traditional vulnerability indicators, which help explain a country's susceptibility to shocks. In addition to the typical "fundamentals," i.e., the strength or robustness of fiscal and monetary policies and the soundness of the financial system, as well as the growth of private debt above a prudent threshold, the Centennial Resilience Index includes important "structural aspects" of the economy. These structural aspects include the quality of its civil service, governance, export dependency, external robustness, private sector debt, and relative size of its international reserves/international investment position. Box 1 briefly describes the rationale for each of the elements of the Index. The fundamentals give a measure of the capacity and space that policymakers have to design and implement needed adjustment measures, and the credibility to convince the public and markets of their likely effectiveness. The structural aspects provide the capacity or flexibility of the economy itself to respond effectively to those actions.

1. We have benefitted from very useful comments and inputs provided by Jack T. Boorman, Harinder Kohli, and Claudio Loser, as well as from excellent support provided by Alden LeClair.

2. Boorman, Fajgenbaum, Bhaskaran, Kohli and Arnold, The new resilience of emerging market countries: Weathering the recent crisis in the global economy, October 2010, and The Centennial Resilience Index: Measuring Countries' Resilience to Shock, February 2013.

Box 1: The Centennial Resilience Index and the Rationale for Composition of Each Sub-Index

The Centennial Resilience Index provides a measure of the capacity of an economy to cope with and bounce back after having been hit by a shock. Appendix 1 provides a diagram of the structure of the index as well as a description of the methodology and the sources of data. Forty variables are grouped into ten sub-indices. A measure of each country's overall resilience is then derived from those sub-indices. The rationale for the inclusion of each of its sub-indices and component variables in each sub-index is briefly described below:

- Fiscal Policy Soundness

This represents the space policy makers have to adopt fiscal measures. Its component variables are the stock of public debt (this refers to the nonfinancial public sector or to the general government, depending on availability of data) in relation to GDP as well as the rate (and direction) of change of this variable as a measure of the overall deficit. A higher debt ratio or overall deficit decreases fiscal space and the room for maneuver that policy makers have to deal with shocks to the economy.

- Monetary Policy Soundness

The greater the credibility the central bank has built up—for example, by successfully controlling inflation—the more room the central bank has to ease monetary policy in a slowdown, thereby supporting activity in the economy. The component variables that underlie this sub-index are the difference between domestic inflation and G-7 inflation; whether an inflation targeting framework is in place (as it has typically been associated with increased credibility); and a measure of the unpredictability of inflation, estimated by its historical standard deviation.

- Government Effectiveness

The stronger the capacity of government officials to react and design policies, and the greater their credibility, the better and faster will be the implementation of these policies and thus the response of the economy. The greater the capacity of the government to follow through with its plans, the more likely the private sector will respond positively to stimulus measures, and thus the higher the country's resilience.

- Overall Governance

Good governance is generally seen as a necessary underpinning to an efficient economy, with reliable and independent institutions, adherence to the rule of law (confidence in contracts, property rights, etc.), transparency, limits to corruption, press freedom, required bank and credit ratings, accounting disclosure, shareholder rights, and availability of both private- and public-sector standardized data. Its components are indices that attempt to capture the quality of corporate governance and of the legal system, as well as a measure of policy transparency, and are taken from the Index of Financial Development and Strength developed by Centennial Group International (see Appendix 1 for the methodology used to derive that index).

- Bank Soundness

A sounder financial system with less risk of default, a strong capital base, well-provisioned assets, less-volatile income sources, and high profitability is less likely to amplify an external shock and thus makes the economy more resilient. Although this sub-index represents predominantly banks, it also includes some non-bank financial institutions, and therefore measures the broader financial sector. Its components are indices for asset quality, capital base, and income risk, derived from the IMF's Financial Soundness Indicators Compilation Guide and the just-mentioned Index of Financial Development and Strength.

- Export Diversity

The more diversified the export base, the more resilient the economy is likely to be. Its component variables measure export diversity by both destination and product.

- Export Independence

The greater the dependence on exports, the less resilient an economy is likely to be to external shocks of a particular kind. Its component variable is the ratio of exports to GDP.

- External Robustness

The stronger the external sector, the more resilient an economy is likely to be. Its component variables are the current account balance as a proportion of GDP, the ratio of international reserves to short-term debt, the stock of reserves in terms of months of imports, and a classification of the exchange rate regime. Because some of these variables are not as relevant for members of currency unions as for other countries, we have also included the net International Investment Position, as reported by the IMF.

- Private Debt

The private debt sub-index includes external debt and domestic debt. Much domestic debt consists of local bank credit to the private sector, and its excessive growth can lead to destabilizing asset bubbles and thus weakening resilience. Regarding external debt, the faster the expansion of externally financed credit to the private sector, the less resilient an economy is likely to be to a sudden stop in capital flows. Its component variables are the stocks and the changes over three years of the private credit by deposit money banks to GDP ratio and of the ratio of claims on the country's residents by foreign banks to GDP. To allow for financial deepening, credit expansion of up to 10 percent above the growth of nominal GDP was not considered risky. It would have been helpful and appropriate to include currency composition of private sector debt, but the relevant data were not available.

- International Reserves and Net International Investment Position

At least up to some limit, the higher the reserve holdings the stronger the self-insurance they offer; in addition, a high stock of reserves provides policy makers with room for maneuver and confidence to adopt expansionary policies in a downturn.

Box 1: The Centennial Resilience Index and the Rationale for Composition of Each Sub-Index

Thus, a high stock of reserves constitutes a buffer against external shocks. While it would appear that the higher the stock of reserves, the better off the country is, there are important costs in such an approach. Moreover, a recent IMF study shows that the self-insurance aspect tapers off after a certain level of reserves. A positive International Investment Position also indicates room for maneuver for both the private and public sectors.

The main attractiveness of the Index is that it gives a comprehensive, general- equilibrium type of view of the resilience of an economy; it shows how all the relevant elements interact and reinforce (or weaken) each other. For instance, the resilience of a country with strong fundamentals but weak structural aspects (e.g., fast growing externally financed private debt, or highly concentrated exports or export destinations) may be lower than the resilience of a country with average fundamentals but strong structural aspects. In addition, the elements of the Index give policymakers a good idea of the sources of their country's resilience and where they need to consider focusing their reform efforts.

We first computed the resilience index for 30 EMDCs. The results were promising. They pointed to the critical role played by the substantive reforms made by many of these countries in the wake of the earlier crises. They suggested that those countries that strengthened the underlying institutions and structural aspects of their economies while creating space through cautious fiscal and monetary policies were in a better position to counter the impact of the shock.[3] They had created the room for policy adjustment and the capacity to design and implement them that dampened the negative impact of the shock. The results of subsequent work based on an expanded number of countries confirmed this conclusion.

The crisis in the peripheral countries of the Euro-area presented a challenge to the Resilience Index. Would it work for advanced countries and would it identify the major vulnerabilities present in advanced economies? The index was modified to increase its relevance and applied to a much larger sample: nearly 100 EMDCs and 30 advanced economies. The results were very encouraging: they confirmed that, beginning in 1999, EMDCs as a group had significantly strengthened their resilience to external shocks and that, particularly since 2003, advanced countries experienced a steady deterioration.

Moreover, we concluded that the resilience index had the power to identify the countries that were heading for trouble as well as to isolate the policy areas of weakness that were accumulating over the years, and thus increasing the countries' vulnerability. The crises that hit the Euro-area peripheral countries was not of sudden making and was not the result solely of the global financial crisis of 2008; it had begun long before that. We also concluded that the latter pointed to a failure of the various global surveillance systems; that these systems "lacked the teeth" necessary to encourage corrective policy actions where needed.[4]

This paper updates previous work conducted by the Centennial Group in this area. The resilience index has been applied to group of 78 EMDCs and 23 advanced countries.[5] A key objective of this paper is further to assess the usefulness of the resilience index in terms of providing any warning signals that are developing.

Results of this update

The updated estimates of the Resilience Index and the sub-indices for the EMDCs and Advanced Countries are summarized in Figures 1a to 1k. The estimates show some strengthening of the resilience index for the majority of countries starting in 2012. The results reflect a somewhat stronger improvement of the Resilience Index for Advanced Countries the year before, owing to the progress in some of the largest countries as well as a few Euro-area peripherals. The strong rebound of the Fiscal Policy sub-index of the Advanced Countries is noteworthy. The steady recovery in the Bank Soundness sub-index and the improvement in curtailing

3. While EMDCs may be confronted with similar external shocks, the more resilient ones would able to absorb the shock, respond effectively, and recover faster than the others.

4. These findings were discussed in a paper presented in Chiba, Japan in October 2012. After some modifications, this paper was finalized as The Centennial Resilience Index: Measuring Countries' Resilience to Shock, February 2013.

5. The number of countries (and variables) has been reduced because of data constraints.

Figure 1: Results of the Update

excessive Private Sector Debt in the Advanced Countries also contributed to the improvement.

By contrast, the results show a continued but slightly weakening resilience of the EMDCs, mainly owing to a significant decline in the Fiscal Policy sub-index, partly offset by a strengthening in Monetary Policy (mainly by moving to inflation targeting), reducing the excessive accumulation of risky Private Sector Debt, and improving their External Robustness.

The decline of the Fiscal Policy sub-index for the EMDCs is of serious concern. Most likely it reflects the impact of the fall in commodity prices on government revenue and insufficient adjustment on the expenditure side, as well as the fact that unusually low global interest rates have encouraged

Figure 1: Results of the Update

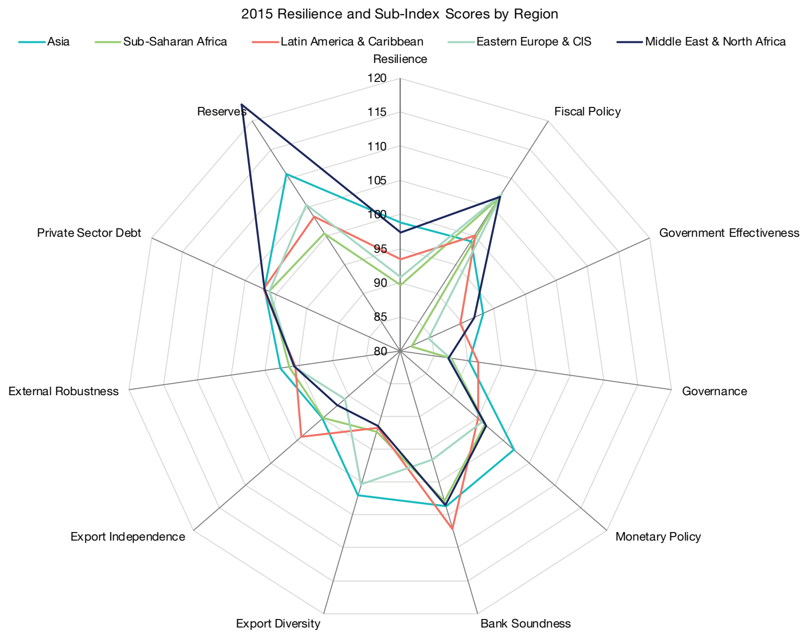
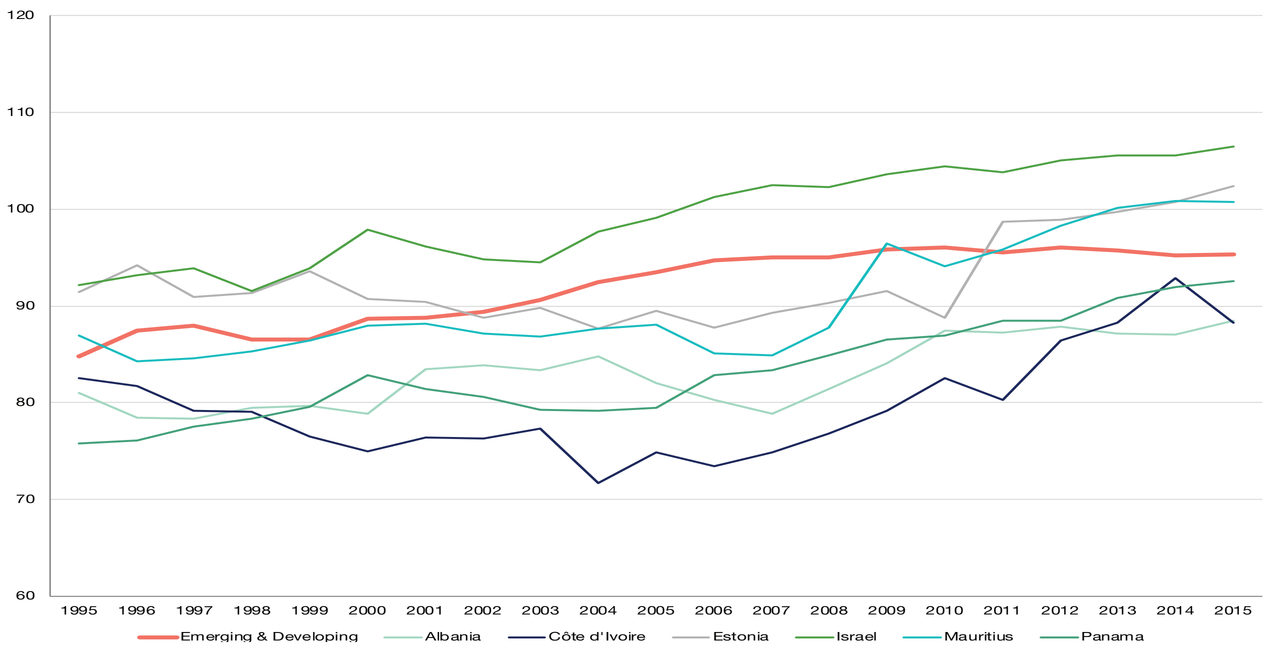


Figure 2: Selected EMDCs with Strengthening Resilience After the Global Financial Crisis



many countries to relax fiscal policy and add to their debts. The increase in government deficits has already led to public finance difficulties in some cases, while eroding any room policy makers of a number of EMDCs may have to deal with a higher debt burden and an eventual external shock. Moreover, the likelihood that commodity prices will not turn around any time soon makes this situation worrisome.

EMDCs that strengthened the most their resilience compared to the year prior to the global financial crisis

These countries are presented in Figure 2 This strengthening was achieved by reinforcing Fiscal Policy (Cote d'Ivoire, Panama), Governance (Albania, Cote d'Ivoire, Mauritius), Monetary Policy (Albania, Estonia, Mauritius), Bank Soundness (Cote d'Ivoire), Export Diversification and Independence, External Robustness (Israel, Estonia, Mauritius), and International Reserves (Albania, Israel, Mauritius), while reducing the vulnerability of excessive and risky Private Sector Debt (Albania, Cote d'Ivoire, Estonia, Mauritius, Panama).

EMDCs that experienced the largest erosion in their Resilience Indices relative to the year prior to the global financial crisis

These countries are shown in Figure 3. This erosion reflected without exception the considerable weakening in Fiscal Policy, and the weakening of Banking Soundness (Cyprus, Greece, Slovenia), Monetary Policy (Argentina, Ghana), Governance (Greece, Mozambique), External Robustness (Argentina, Mozambique) and Export Diversification and Independence. These countries, together with a significant number of other countries showing considerably declining Resilience Indices, appear to be at risk, particularly in the current weak global environment.

Overall trends in the Resilience Indices of the Advanced Countries

The general weakening of the Resilience Indices of the Advanced Countries that was noted in our exercise has been reversed since 2012, as the Resilience Index for this group of countries has recovered to the 2002-03 levels (Figure 4). Two sub-indices, Fiscal Policy and Banking Soundness, account for the bulk of this recovery. Iceland is the country with the strongest improvement in its Resilience Index since the global financial crisis of 2008, owing to considerable progress in Fiscal Policy, Bank Soundness, External Robustness, and in reducing risky Private Sector Debt. Also noteworthy is the considerable improvement shown by Switzerland, in the areas of Bank Soundness, External Robustness, and International Reserves. By contrast, Norway, Sweden and, to some extent, Finland are using their fiscal space to provide fiscal stimulus to their economies. Of course, the aggregates for the group mask the still-severe weakness in the Resilience Indices of the Euro-area peripheral countries Cyprus, Greece, Ireland, Portugal and Spain. The deterioration in the resilience of these countries that started in 2005 reached bottom in 2013, when the strengthening of policies by most

Figure 3: **Selected EMDCs with Declining Resilience After the Global Financial Crisis**

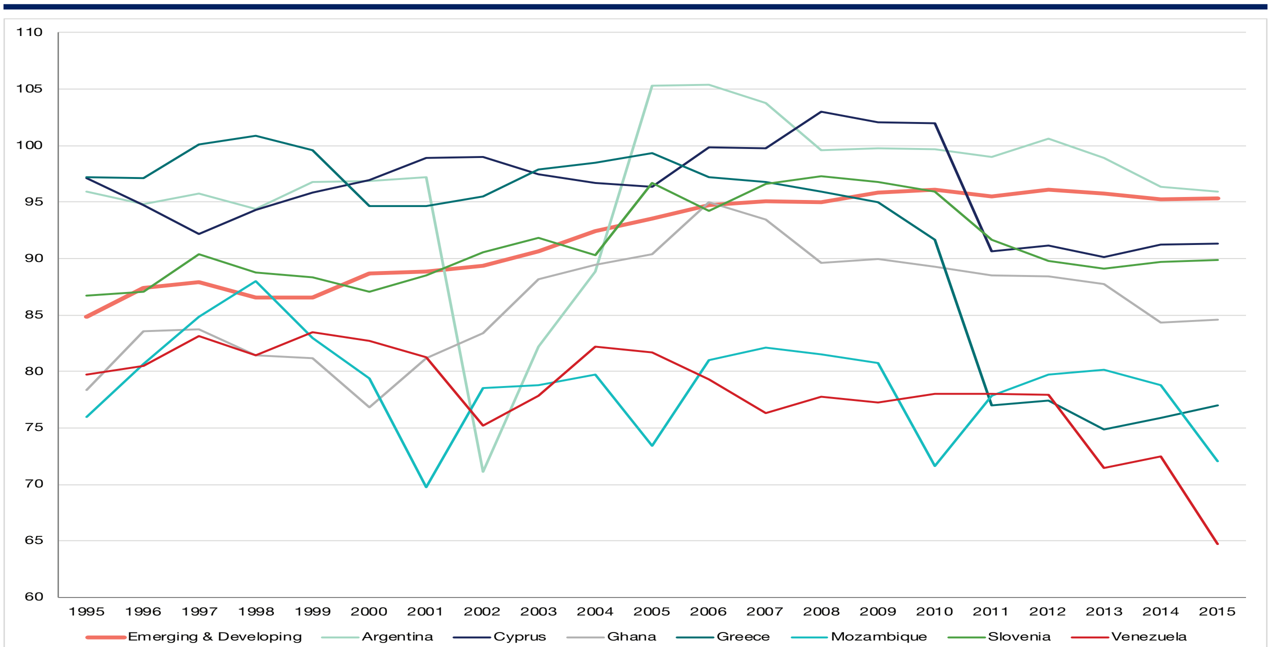
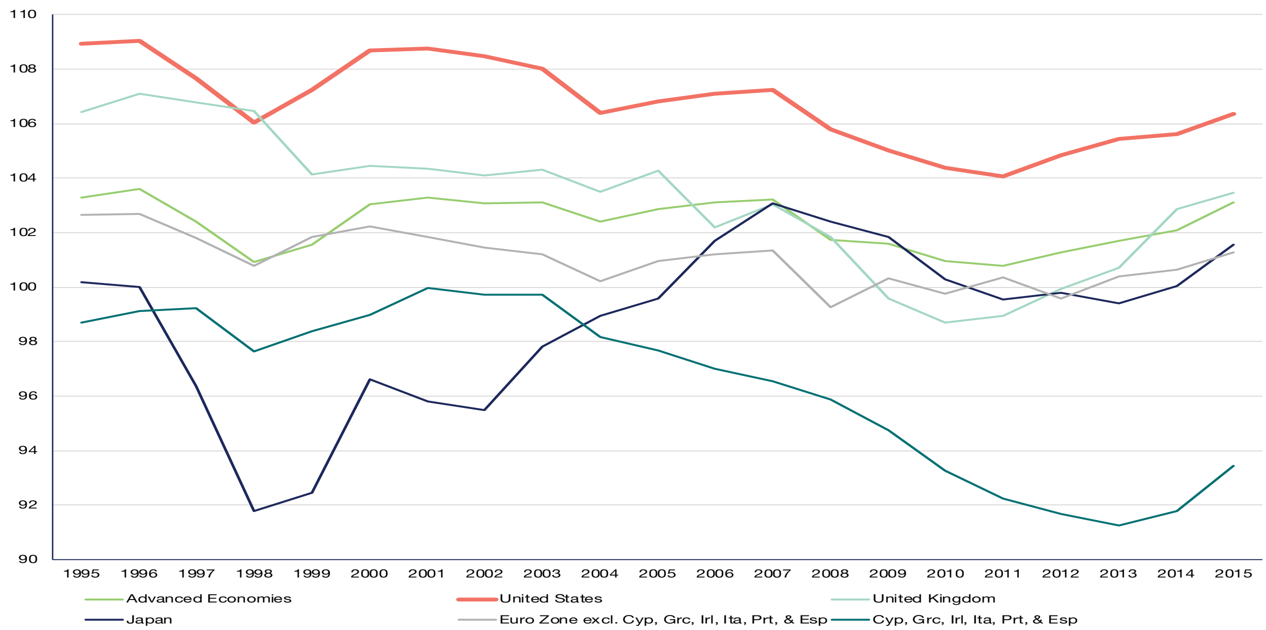


Figure 4: The Resilience Index for Advanced Countries



countries of the group begun to bear fruit, as shown by the rebound of the Resilience Index that started in 2014. However, the deterioration of Italy's resilience, which started in 2001 continued through 2014. Only in 2015, its Resilience Index recovered as a result of improvements in Fiscal Policy and Bank Soundness.[6]

The decline in the Resilience Index for Venezuela is noteworthy, as it reached the second lowest level in this study. Clearly the country is at considerable risk and urgent remedial measures are needed to improve virtually all sub-indices.

Brief Reviews of the Resilience of Selected Countries and Regions

Large Advanced Countries

The US

The Resilience Index started a declining trend in 2003 and bottomed out in 2011; since then, it steadily recovered and by 2015 was only slightly below the 2003 level. This reflects the similar paths of the Fiscal Policy and the Bank Soundness sub-indices, although the former started to decline earlier (as a consequence of the burst of the tech bubble) and considerably further (first due to the so-called "Bush tax cuts" and then to an important widening of the government deficit caused by a fall in government revenue and the appropriate fiscal stimulus package adopted to ameliorate the impact of the global financial crisis. The Fiscal Policy sub-index has recovered since 2011 but there is a long way to go to restore the pre-2003 levels. The Bank Soundness sub-index remained relatively stable through 2006: it deteriorated considerably thereafter (mainly reflecting a weakening in asset quality); it has recovered strongly since then and is now at the pre-crisis levels. The Export Independence sub-index had strengthened through 2003 but declined considerably thereafter (owing to growing exports in relation to GDP). This development has been offset in part by improvements in the External Robustness sub-index since 2007 and in the Private Debt sub-index since 2008 (largely reflecting deleveraging and some write down in mortgages). Government Effectiveness and Governance have remained strong and quite stable through the period.[7]

The UK

The Resilience Index for the UK fluctuated widely during the period under review. There was a significant improvement

6. The recent problems of Italy's banks with non-performing loans suggest that the strengthening of Bank Soundness was short lived; moreover, they can create a very serious problem for the Euro-area banking system.

7. The Monetary Policy sub-index cannot assess whether the considerable expansionary monetary policy of the US and other advanced countries in recent years constitutes a resilience weakness or strength.

in 2002–03 (as a result of a slowing in the growth of Private Debt), a subsequent deterioration during 2008-11, and a strong rebound to pre-global crisis levels by 2015. The deterioration during 2008-11 reflected declines in the Fiscal Policy and Bank Soundness (asset quality and income risk) sub-indices associated with the global financial crisis, offset in part by an improvement in the External Robustness sub-index since then. The strengthening in the Resilience Index after 2011 reflects a considerable strengthening in the Fiscal Policy sub- index and improvements in Bank Soundness, Export Independence and Public Sector Debt sub-indices. Like in the case of the US, Government Effectiveness and Governance remained strong and quite stable through the period.

Euro-area, excluding the peripheral countries

The average Resilience Index for this group of countries has been consistently below the average for the Advanced countries since 1999. Following a strengthening after 2005, the Resilience Index fluctuated narrowly around a relatively moderate level until 2012, as it improved markedly from 2013. The Fiscal Policy sub-index weakened considerably from 2001 to 2010, particularly during 2008-10, and although it strengthened noticeably by 2015, it was still below the 2001 level. The Bank Soundness sub-index fluctuated during the period under review, with a major deterioration in 2008-09 (asset quality and income risk) and a marked improvement by 2014-15. It is important to note that the level of this sub-index is lower than the average for all countries in this study. The Private Sector Debt sub-index improved considerably starting in 2008, as excessive bank credit was contained. External Robustness has steadily increased because the external current account improved, short-term debt declined and International Reserves to imports increased. A rise in the Export Diversity sub-index has been virtually offset by a decline in the Export Independence sub-index (due to faster growing exports relative to GDP).[8] Like for the previous two countries, Government Effectiveness and Governance remained strong and quite stable through the period.

Japan

Japan is one of the exceptions among the larger advanced economies, as its Resilience Index shows a significant and generalized strengthening during 2000–08, declining slightly thereafter in the face of the global financial crisis and recovering in 2014-15. The strengthening reflects improvements in most sub-indices: Government Effectiveness, Governance (particularly in the corruption perceptions score of the Policy Transparency component and in the Corporate Governance component), Monetary Policy, Export Diversity, Private Sector Debt, and International Reserves. Bank Soundness strengthened showed significant weakening during 1997–03 followed by an important strengthening since then. The Fiscal Policy sub-index deteriorated considerably in the aftermath of the global financial crisis, although it has recovered somewhat thereafter; it is sill well below its pre-crisis level. The Fiscal Policy sub-index has continuously been well below the average for all countries in this study, mainly owing to the large stock of government debt in relation to GDP.

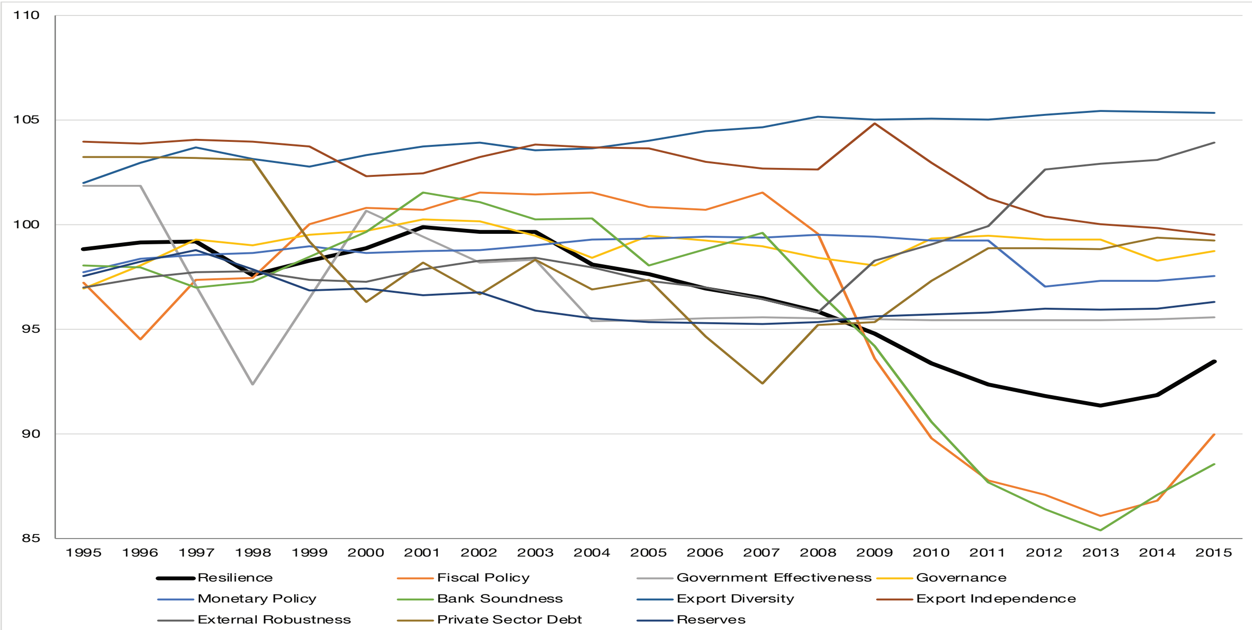
Euro-area Peripheral Countries

The Resilience Indices for the peripheral countries of the Euro-area (Greece, Ireland, Portugal, Spain, Cyprus, and Italy) continue to present a startling picture, although they have improved since 2013 (Figure 5). A decade-long steady decline in the resilience of these countries followed the unraveling of the strong improvements that took place in 2002-03. The decline ended in 2013, when the strengthening of policies by most countries of the group begun to bear fruit. While the Resilience Index for this group of countries strengthened in 2014 and in 2015, it remains considerably lower than its peak in 2001. As in the previously discussed countries, Fiscal Policy played a major role: that sub-index deteriorated considerably through 2013 and strengthened in 2014-15 following appropriate fiscal adjustment programs. In addition, there have been significant improvements in the External Robustness and the Private Sector Debt sub-indices since 2008.

At the beginning of the period covered by this study, the Resilience Indices for these countries, except for Spain and Greece, were significantly lower than the average for the group of advanced economies; indeed, the indices for Spain and Greece were roughly the same as those for the advanced economies. The weakening of the resilience of Spain and Cyprus was not as dramatic of as those of Greece, Portugal, and Ireland—all of which fell almost continuously over the entire period. Italy's resilience, always below the average for the advanced countries, deteriorated markedly from 2001 to 2014. Only in 2015, its Resilience Index recovered as a result

8. This is a phenomenon that is common for most countries in the European Union given the high trade levels among these countries. It certainly requires further study.

Figure 5: Cyprus, Greece, Ireland, Italy, Portugal, & Spain



of improvements in Fiscal Policy and—likely short-lived—in Bank Soundness.

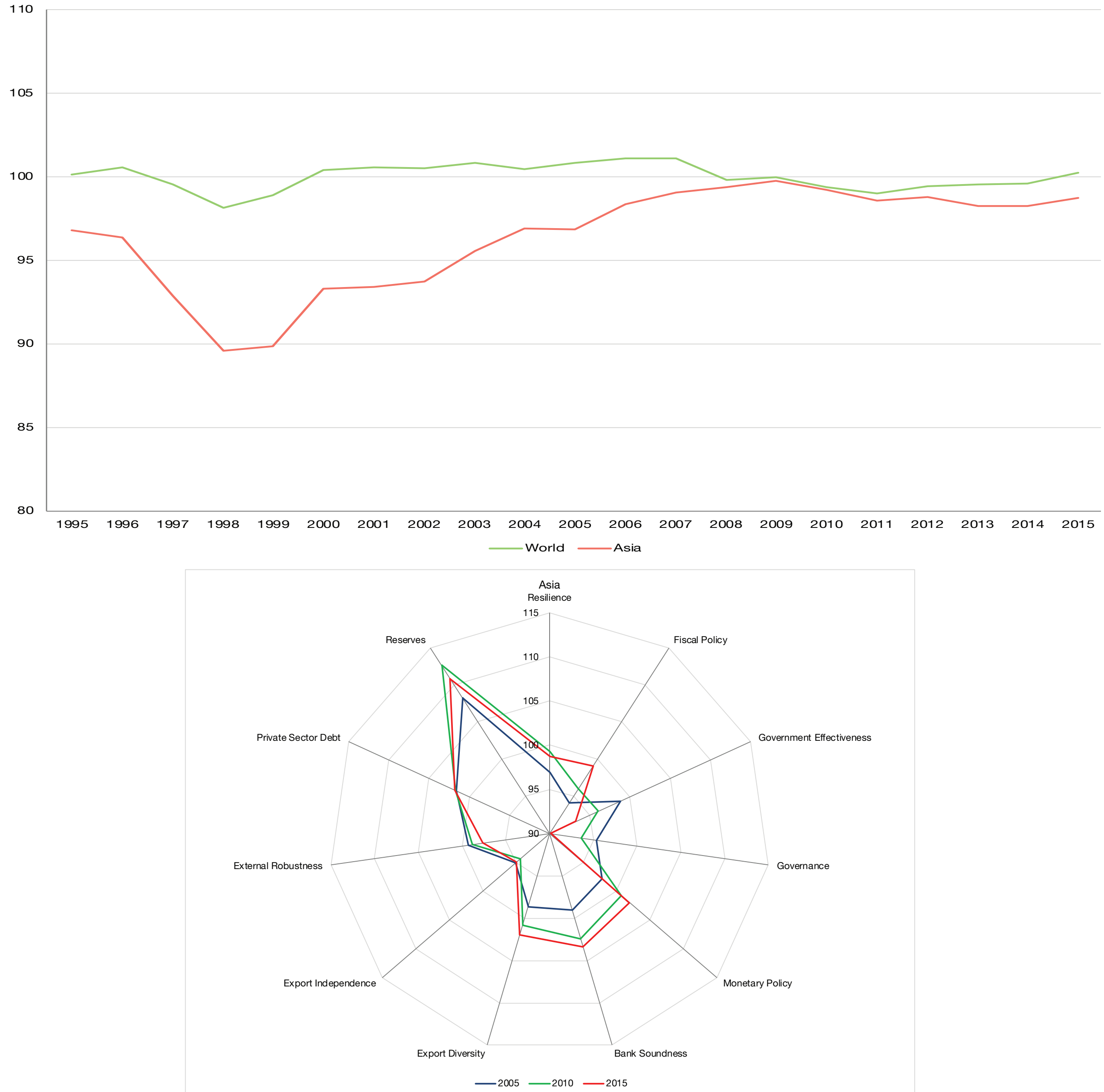
The crises that hit all these countries was not of quick making and was not the result solely of the global financial crisis that struck in 2008. As noted, the decline in the resilience of each of these countries began long before that, and for Ireland, Greece, and, perhaps, Portugal was extraordinary by almost any international standard. There are similar patterns in the loss of resilience in these countries. The fall in overall resilience was driven most importantly by a steady weakening of their Fiscal Policy and External Robustness sub-indices (especially due to an increase in short-term external debt), and by a loss of in their International Investment Position (including their reserve assets) that left them exposed to the effects of the global crisis. The already-weakened fiscal position in all countries was, of course, exacerbated by the slowdown caused by the global crisis. Not surprisingly, the sub-index for Private Debt picks up the growing vulnerabilities in Ireland, Greece, Portugal, Spain, and Italy resulting from the explosion in mortgages and other lending during the credit booms of the early and mid-2000's. The increased vulnerability from that lending was clearly evident in most of these countries long before the global crisis began. As noted in our 2013 paper, this raises the question as to why this growing weakness was not better tracked by the various surveillance processes to which they were subjected—including within the Euro-area like the ECB, the IMF, and the OECD.

Only in Italy was the soundness of the banking system a contributing factor to the decline in resilience. For the rest of the group, the weaknesses in government regulation and supervision of the banking system became clearly evident when the crisis hit. The subsequent strengthening of policies of the Bank Soundness sub-index has supported the resilience improvement of the last two years. The Governance, Government Effectiveness, Export Diversity, and Export Independence sub-indices remained relatively neutral with regard to the overall resilience of most countries of this group.

Developing Asia

As shown in Figure 6, the average Resilience Index of this group of countries improved considerably through 2008 and has remained close to the average index for the countries covered by this study since then. (The inclusion of data for 1995-96 to the current update allows a better appreciation of the severe impact of the 1997/98 Asian crisis on the resilience of many countries in the region (Indonesia suffering a uniquely sharp decline). Indeed, the Resilience Index fell considerably, reflecting the weakening of the Fiscal Policy, Government Effectiveness, and Bank Soundness sub-indices. The recovery was gradual initially, but gained

Figure 6: Resilience Index for Asian EMDCs



steam subsequently, particularly in the Fiscal Policy and Bank Soundness areas. Indeed, the Resilience Index of the region recovered to its pre-crisis level in 2004 and was at the highest level at the time of the onset of the global financial crisis. More recently, the strengthening in the Fiscal Policy, Monetary Policy and Bank Soundness sub-indices offset in part the deterioration in the Government Effectiveness and Governance sub-indices.

The years after the Asian crisis saw real improvements in many countries—with Bangladesh, China, Indonesia, Malaysia, The Philippines, Singapore, and Thailand standing out. India's Resilience Index has improved significantly, while the high scores for Hong Kong and Singapore continued to increase and those for China and Korea have remained strong and relatively stable since 2000 and 2008, respectively. There has been a notable improvement in the Resilience Index of Myanmar, following the country's political and economic opening. Bangladesh, Cambodia, Sri Lanka, and Vietnam saw their resilience improve starting around

2009, but their Indices remain considerably lower than the average for the region.

There are some common patterns behind these changes in the resilience of Asian countries. Banking Soundness has been strong throughout the period under review in Cambodia, Hong Kong, Korea, Malaysia, and Singapore, and has been considerably improved in China, Sri Lanka, and particularly The Philippines and Indonesia (after a virtual collapse of their banking system during the Asian crisis). Following significant strides in strengthening their systems, Bangladesh, India and Vietnam experienced a reversal after 2011. Most countries, with the exception of Sri Lanka and Indonesia have increased their holdings of International Reserves, some very significantly, while Malaysia, Singapore, Thailand and The Philippines saw some decline in recent years.

There is also a common pattern regarding the resilience of countries reflected in the Fiscal Policy sub-index. Hong Kong and Singapore have had very strong fiscal positions over the years; Bangladesh, Cambodia, Indonesia, Korea, Sri Lanka and The Philippines saw considerable strengthening, while other countries, including China, India, and Malaysia experienced some reversal in the wake of the global crisis—in some cases, such as China, as a result of the strong and appropriate use of fiscal stimulus to counter the effects of the global crisis on their economies. By contrast, there is no clear picture across countries as regards their performance on other sub-indices. The impact of increased Private Debt is mixed—but minor—in most countries. Regarding Governance and Government Effectiveness, there has been somewhat more progress across the region in improving the latter.

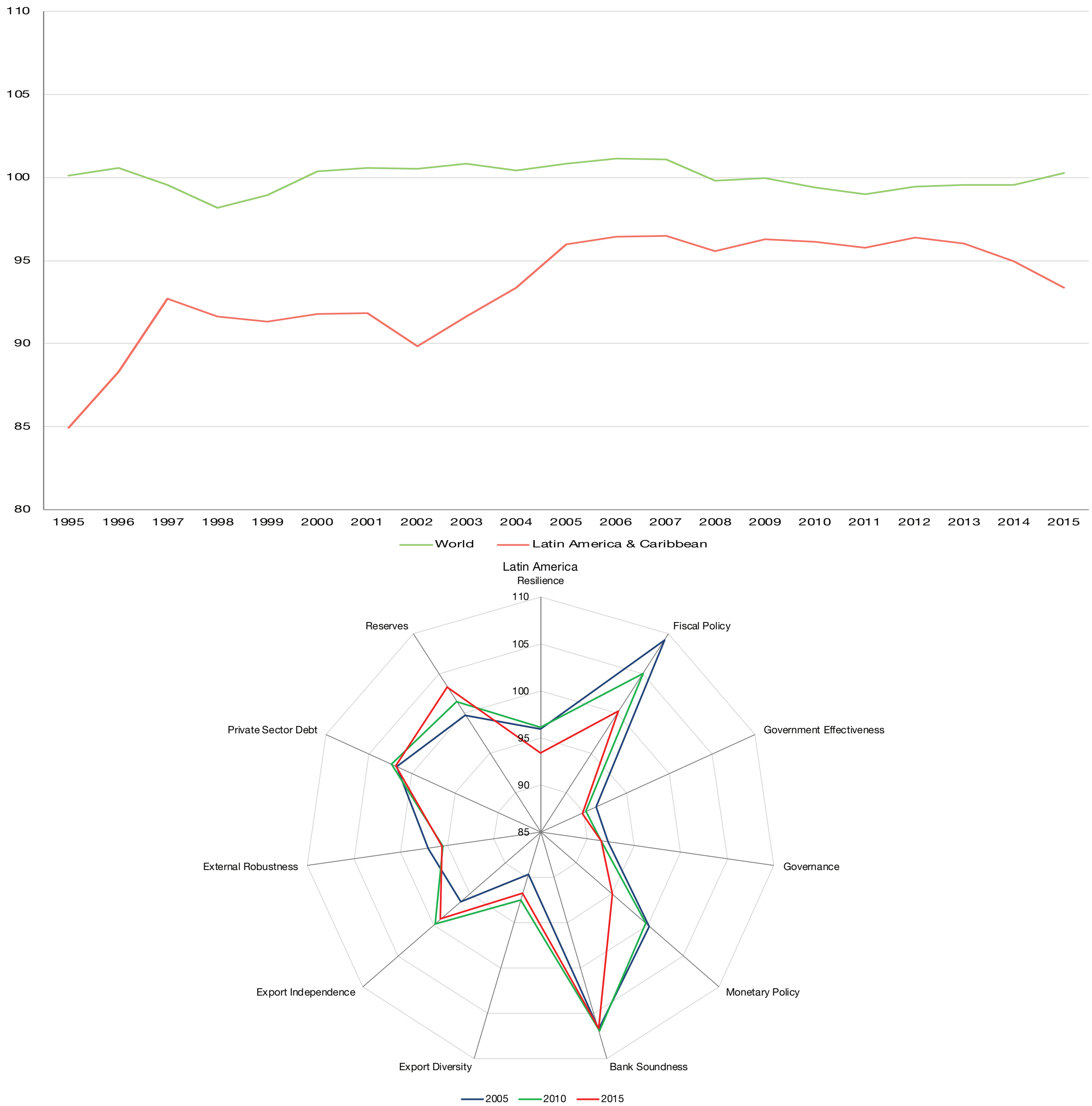
Latin America and the Caribbean

The average Resilience Index for Latin America approached relatively fast the average index for the countries covered by this study through 2005, remained close through 2012 when it started to decline markedly (Figure 7a). The strengthening pattern of the Resilience Index up to 2012 can be explained by improvements of the Fiscal Policy and Monetary Policy sub-indices through 2005-06, improvement in International Reserves through 2009, and the steady strengthening and subsequent stability of the Bank Soundness, International Reserves up to 2012 Export-Diversity and Independence sub-indices. Subsequently, the weakening of the overall index can be attributed to the Fiscal Policy and Monetary Policy sub-indices and, to a lesser extent, the Reserves and External Robustness sub-indices. The deterioration of the region's Resilience Index since 2013 reflects in part the decline in export receipts and government revenue associated with the commodities cycle, as well as the weakening of resolve in monetary and expenditure policies, in the wake of the general adverse conditions in international markets, offset by a depreciation of many of the region's currencies. The significant decline in the Monetary Policy sub-index is explained by the high inflation rates recorded in Argentina and Venezuela, and to a much lesser extent in Brazil, Colombia and Ecuador. The Bank Soundness and Private Sector Debt sub-indices have been steady and strong.

While most Latin American and Caribbean countries drastically improved their overall resilience from 2002 to 2007, with a slight weakening in the aftermath of the global crisis, conditions have recently deteriorated markedly for specific countries (Figure 7). Three countries experienced sharp declines in their overall index from their most recent peaks-Argentina, Ecuador, and Venezuela. Other countries showing a weakening performance were Bolivia, Brazil, Colombia, Mexico, and El Salvador, mostly after significant improvements during the early part of the commodity boom cycle. By contrast, countries that have experienced measurable improvements in overall performance include Chile, Guatemala, Panama, and Peru. Countries with higher than average resilience are Chile, Peru and Uruguay. The trends for the smaller countries of the region are very similar to those of the larger countries, with resilience significantly strengthening through 2007 or 2009, and only slight reversals subsequently.

The trends in resilience of the Latin American and Caribbean countries show some common patterns. All countries, with the exception of Guatemala, and Venezuela experienced a weakening of the Fiscal Policy sub-index, but the Monetary Policy sub-index was particularly weak for Argentina and Venezuela, as noted above. The pattern of the External Robustness sub-index differs across the region in recent years, with particular deteriorations for Bolivia, El Salvador, Peru, Uruguay and Venezuela. Banking Soundness has been fairly stable for the region, as has been the case for Private Sector Debt, except for a significant improvement in the case of Panama. The International Reserves sub-index shows declines in the case of Argentina, and Bolivia, and either stable or rising for others. Export Diversity has been a factor in improving the resilience of Bolivia, Chile, Colombia, Guatemala, and Panama. By contrast, Costa Rica and Ecuador show a weakening in this sub-index in the latter years of

Figure 7: Resilience Index for Latin American & Carribean EMDCs



the period under review. There was no significant change in the Government Effectiveness and Governance sub-indices although they remain low compared to other regions. Excessive accumulation of Private Debt is not an issue in the Latin American and Caribbean countries.

Sub-Saharan Africa

The region's Resilience Index still remains below the average for the countries covered by this study and the EMDCs despite the considerable strengthening the resilience of most Sub-Saharan African countries through 2007; the region's resilience weakened somewhat thereafter (Figure 8). A key reason for the strengthening was the enormous benefits low-income countries derived from public debt reduction—mainly under the HIPC and the MDRI Initiatives—in the early- to mid-2000s and the considerable reforms and policy improvements associated with the Initiative. These policies combined with a considerable improvement in the terms of trade helped most countries in the region to strengthen their public finances and achieve strong GDP growth.

The weakening of the region's Resilience Index mentioned above initially reflected a major deterioration in the Fiscal Policy sub-index that started in 2006 associated with high government expenditure covered by increased debt and a subsequent drop in revenue due to a reversal in terms of trade gains. The further decline in the Resilience Index that started in 2013 raises concern given that commodity prices are unlikely to turn around any time soon.

Gradual declines in the Government Effectiveness sub-index starting in 2006 and in the Governance sub-index starting in 2008 are noteworthy. It should also be noted the pattern of the Export Diversification sub-index: weakening beginning in 2004 and strengthening since 2012, i.e., moving in the opposite direction of the cycle of the region's terms of trade.[9]

Botswana, Kenya, and Mauritius stand out for their high resilience, as the latter two countries have strengthened considerably their Resilience Index since 2005 and 2008, respectively. Botswana, instead, saw a considerable decline since 2008. South Africa's resilience remained solid throughout the period, although slightly below the average for the countries included in this study. Other countries that have had steady improvements during the period under review include Cape Verde and Cote d'Ivoire, while others had significant strengthening through 2006–09 (Ethiopia, Ghana, Mozambique, Senegal, Tanzania) but saw a reversal thereafter, largely related to a weakening in the Fiscal Policy sub-index. Similarly, the decline in the terms of trade in the last few years explains the deterioration in the Resilience Index of Nigeria and Uganda, among others.

Among the common patterns, and as note above, there was a major, generalized improvement in the Fiscal Policy sub-index starting in the early to mid-2000s as a result of the debt reduction mentioned earlier, continued sound policies and increased revenue from terms of trade gains. Monetary Policy improved in a number of countries throughout the period, including Ghana, Kenya, Mozambique, Nigeria, South Africa, Tanzania, Uganda, and Zambia. Many countries strengthened Banking Soundness (Botswana, Cape Verde, Ethiopia, Kenya, Mozambique, Nigeria, Uganda), while others show steady strong scores for this sub-index, particularly Ghana, Mauritius, Tanzania, and South Africa, throughout the period under review. Government Effectiveness strengthened in a number of countries (Ethiopia, Ghana, Mauritius, Uganda), but declined in Cote d'Ivoire, Kenya, Mozambique, Senegal, South Africa, and Tanzania. Governance also shows a mixed picture, with important improvements in Cape Verde, Ghana, Cote d'Ivoire, Kenya, Mauritius, Nigeria, and Zambia, and deteriorations in Senegal, South Africa and Tanzania. A strengthening of the External Robustness sub-index is another common feature of the region (Cape Verde, Kenya, Nigeria, Senegal, Namibia, South Africa and Zambia). Many countries raised their International Reserves, particularly Botswana, Cape Verde, Cote d'Ivoire, Ghana, Kenya, Mozambique, Nigeria, Senegal, Tanzania, Uganda, South Africa, and Zambia.

The decline in the Resilience Index for Zambia is noteworthy, as it reached the lowest level in this study. Clearly the country is at considerable risk and urgent remedial measures are needed to improve virtually all sub-indices.

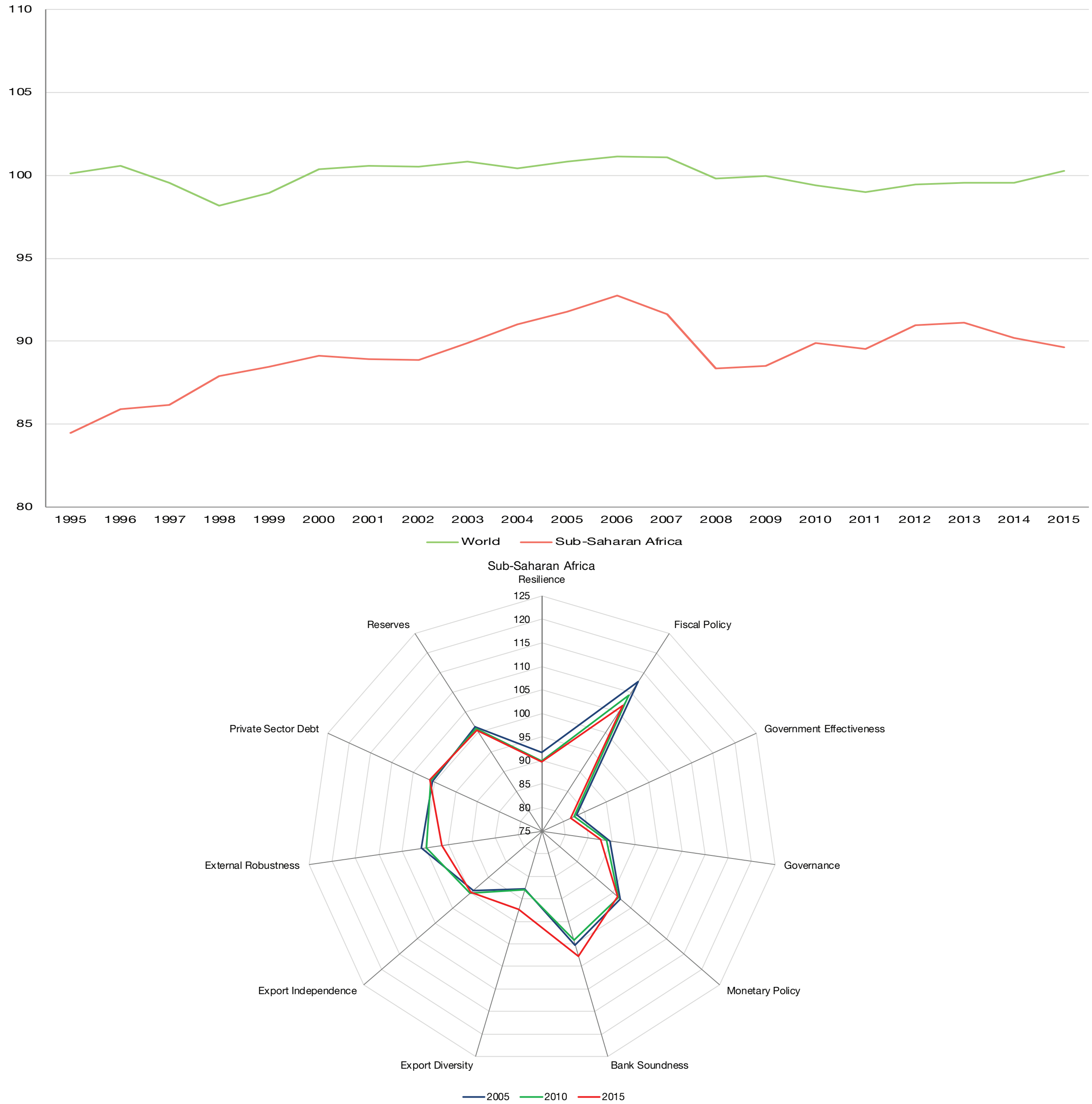
North Africa and the Middle East

Despite the economic diversity of the countries in this group, it is possible to identify a common pattern of strong or strongly improving resilience, with a significant jump starting in 2004 and a weakening over the last two years (Figure 9). This pattern mirrors the cycle of the region's terms of trade, particularly the world price of oil. Thus, the oil exporting countries show a weakening in their resilience in 2014-15. The Fiscal Policy, External Robustness, and International Reserves sub-indices benefited from the earlier strengthening of terms of trade, as can be seen from their considerable increases beginning in 2004/05, while weakening in the downturn of the last two-three years. The region's Bank Soundness sub-index strengthened substantially, especially since the mid-2000s, while the important improvements in Governance were halted in 2011 and partially reversed thereafter. As in the case of Sub-Sahara Africa, the Export Diversification sub-index weakens beginning in 2003 and strengthens starting in 2009, much earlier than the decline in price of oil.

There is a common pattern of very strong scores in the Fiscal Policy, External Robustness, and International Reserves sub-indices, and a number of countries show improvements in Governance and Export Diversity. Although Bank Soundness strengthened substantially in many countries, especially since the mid-2000s, Bahrain and Lebanon experienced significant weakening. There is no discernible

9. While this pattern of the Export Diversification sub-index is sensible and puzzling at the same time because one could expect that a decline in terms of trade should reduce resilience. We need to study this issue in our next update; in this context, introducing explicitly the changes in terms of trade as a relevant variable for estimating the Resilience Index may also need to be considered.

Figure 8: Resilience Index for Sub-Saharan African EMDCs

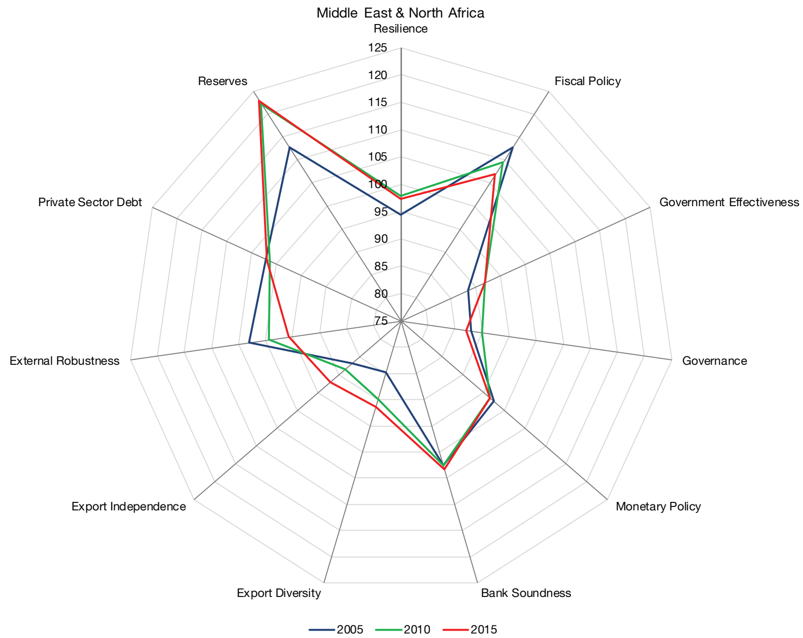


change in Government Effectiveness, while Export Diversity and Export Independence show a mixed picture for this region, especially given the significant number of oil exporting countries, where oil is by far the largest export.

The Fiscal Policy sub-index shows very high or rising scores in several countries (Algeria, Israel, Saudi Arabia, United Arab Emirates,); Fiscal Policy has weakened in some countries since 2007 and in others since 2010 (Bahrain, Egypt, Jordan, Morocco, Tunisia). Governance improved in many countries throughout the period under review (Israel, Saudi Arabia, Tunisia, United Arab Emirates). External Robustness strengthened significantly in Algeria, Bahrain, Israel, Morocco, and Saudi Arabia, but weakened considerably in Jordan, Lebanon and Tunisia. The Banking Soundness sub-index shows significant strengthening, particularly as a result of improvements in asset quality and the banks' capital base, in Algeria, Bahrain, Israel, Lebanon, Morocco, and United Arab Emirates.

The mixed picture of Export Diversity shows countries where the sub-index remained relatively unchanged (Jordan,

Figure 9: Resilience Index for Middle Eastern & North African EMDCs

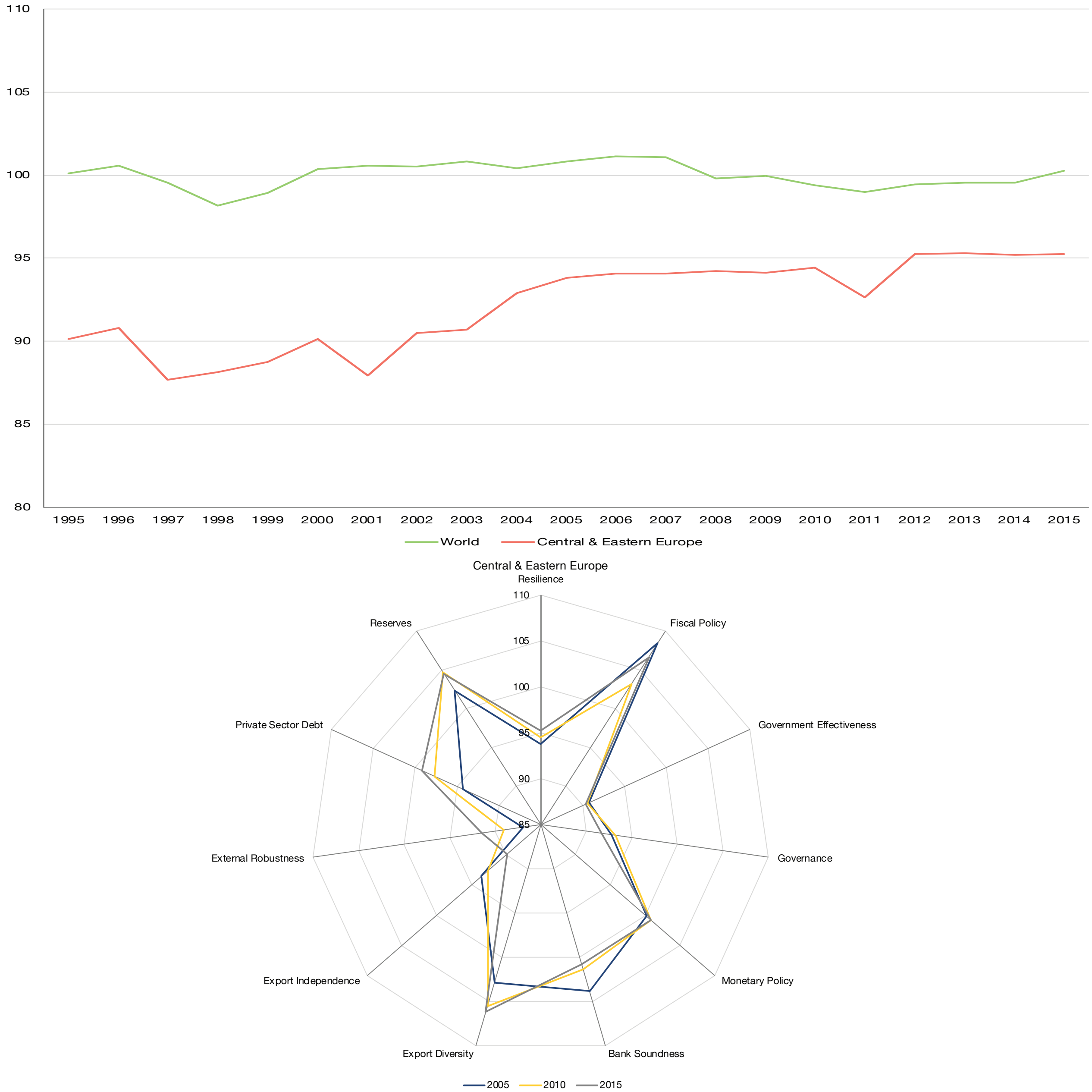


Lebanon, Saudi Arabia), countries with some improvements (Bahrain, Egypt, United Arab Emirates) and countries with important declines in the mid-2000s and significant recoveries subsequently (Algeria, Israel, Morocco, Tunisia). By contrast, the scores for Export Independence have declined in Egypt, Saudi Arabia, and United Arab Emirates, while remained relatively stable in Israel, Jordan, and Morocco. Most of the countries of the region show very high or improving scores in International Reserves. If the various wealth funds were to be included, these scores would have been markedly stronger.

Central European and Baltic Countries

The Resilience Index for this group of countries improved considerably following the decline in 1997-98—largely due to the impact of the Russian Crisis (Figure 10). The dip in 2011 reflected a drop in the Private Sector Debt and the External Robustness sub-indices because of the effects of

Figure 10: Resilience Index for Central & Eastern European and Baltic EMDCs



excessive consumer borrowing, particularly in foreign currency,[10] in some countries of the group. The Fiscal Policy sub-index has been generally strong throughout the period under review, except for some weakening in 2001-03 and in the aftermath of the global financial crisis of 2008. The Monetary Policy sub-index shows a considerable improvement through 2005 and then remained relatively strong and stable thereafter, as many of the countries of the group adopted and implemented effectively inflation targeting frameworks.

The Bank Soundness sub-index shows a significant deterioration starting in 2008, owing to the impact of the global financial crisis and associated devaluations in some countries. These devaluations in the context of large debts in foreign currency (including mortgages) resulted in a sharp increase in non-performing loans. As this problem was addressed, the Private Sector Debt sub-index shows a significant strengthening after 2008. The region has experienced

10. We intended to identify the effect of excessive borrowing in foreign currency, but unfortunately we could find a consistent data source.

a major improvement in Export Diversification, especially after 2003, as its trade with the rest of Europe rose; for the same reason Export Independence declined, as the trade to GDP increased. The External Robustness sub-index has remained relatively stable throughout the period, while International Reserves increased steadily.

The resilience of the group as a whole increased fairly steadily and strongly up until 2005 and continued to increase more gradually thereafter (with a temporary dip in 2011 owing to a temporary drop in the External Robustness sub-index). Several countries of the region have shown sustained increases in resilience (Czech Republic, Estonia, Hungary, Latvia, Lithuania, Romania) while the remainder countries have displayed quite diverse patterns in their overall resilience during that period. For instance, in some cases the Resilience Index strengthened initially but could the momentum could not be sustained (Albania, Bosnia and Herzegovina, Slovak Republic, Slovenia) while others declined initially and then rebounded significantly (Bulgaria, Poland). In the case of Turkey, the financial crisis of 2001 interrupted its resilience's fairly strengthening path, and slight declines were recorded more recently. The global crisis impacted all countries in the region, but some countries were able to sustain or strengthen their resilience (Estonia, Hungary, Romania).

The Fiscal Policy sub-index for most of the countries in the region has been strong (Bulgaria, Czech Republic, Estonia) although some of them experienced significant fluctuations (Poland, Slovak Republic, Romania, Turkey). A number of countries have shown considerably strong Government Effectiveness and Governance (Czech Republic, Croatia, Estonia, Hungary, Latvia, Lithuania, Slovak Republic, Slovenia). The Monetary Policy sub-index shows considerable improvements in virtually all the countries of the region; a large number of them, if not all, have been able to maintain low inflation through the implementation of inflation targeting frameworks. Similarly, most the countries have made important efforts to strengthen Bank Soundness, although Bosnia and Herzegovina, Croatia, Hungary, Latvia, Lithuania, Romania, Slovenia, and Turkey have seen some reversals since the global financial crisis. The banking systems of some of these countries were badly affected by the deterioration of foreign currency loans following depreciations of the local currencies. Most countries raised somewhat their International Reserves during the period under review.

The Commonwealth of Independent Countries

Following an impressive improvement through 2002 and subsequently through 2006, the Resilience Index fell significantly due to the impact of the global financial crisis, and remained relatively flat until 2013, when it fell again, most likely reflecting the decline in the region's terms of trade (Figure 11). Most sub-indices played a role in the initial improvement of the Resilience Index, but the Fiscal Policy, Monetary Policy, Bank Soundness, and External Robustness sub-indices stand out. But the weakening of these sub-indices, except for the latter, explains the fall in resilience in 2014-15. This weakening, the high dependence of this group of countries on commodity exports, and the low likelihood of a recovery in commodity prices in the near term raise questions about the resilience of these countries to a possible external shock.

Being the largest country of the region, the path of Russia's Resilience Index has obviously had a preponderant role in the region's Resilience Index. Actually, the path is virtually the same. This also applies to the sub-indices mentioned above.

Moreover, the majority of the countries in this region show a similar path for the Fiscal Policy, Monetary Policy and Bank Soundness sub-indices. Also, most of the countries (except Armenia, Azerbaijan, and Belarus) show similar developments regarding the International Reserve sub-index, with peaks around 2009 and some increases in 2015. The other sub-indices show no discernable pattern, although Azerbaijan, Georgia, Kazakhstan, and Moldova record improvements in the Governance sub-index throughout the period under review, while Armenia, Azerbaijan, Georgia, Kazakhstan and Russia show similar improvements in External Robustness.

Countries at Serious Risk

To identify the countries that are at serious risk, we ranked all countries according to their Resilience Index. We concluded that those countries at the bottom 10th percentile are seriously at risk, and include Azerbaijan, Belarus, Ecuador, Ethiopia, Kazakhstan, Mozambique, Myanmar, Venezuela, Vietnam, and Zambia. These countries need to make every effort to strengthen their resilience; they need to be watched closely.

Policy Implications

The following implications can be derived from this update:

- There has been a considerable improvement in the Monetary Policy sub-index among EMDCs. This

Figure 11: Resilience Index for the Commonwealth of Independent States

has reflected a broader adoption and use of inflation targeting frameworks, suggesting that an even broader use of such frameworks would contribute to further strengthening Monetary Policy in this group of countries.

- The Euro-area peripheral countries need to continue with the their efforts to strengthen resilience; they have a long way to return to the 2001 peak of their Resilience Index. Moreover, the average Index for this group of countries is still considerably lower than the average for the advanced countries. The key sub-indices that require close attention are Fiscal Policy and Bank Soundness.
- There are significant danger signs among most commodity exporters. They have been experiencing a considerable weakening of the Fiscal Policy sub-index in the last 2-3 years. This weakening has been associated with a drop in revenue due to a reversal in terms of trade gains and with high government expenditure covered by increased debt. Given that

commodity prices are unlikely to turn around any time soon, these countries need promptly to adopt corrective measures to regain fiscal space. This is even more urgent in the case of countries whose government revenue is heavily dependent on commodity export earnings; the sooner they act the lower the cost of adjustment will be.[11]

Conclusion

In this paper, we report on the results for the updated Resilience Index that was first reported on in 2010. The current update includes (1) some reduction in the number of underlying variables that were included in the original index; (2) a reduction of the number of countries for which the index is calculated because of data availability, while maintaining coverage of all the regions and of most advanced economies; and (3) confirmation of the capacity of the Resilience Index to highlight the major areas of vulnerability in EMDCs and advanced countries alike, identifying (i) the important risks emerging in the EMDCs associated with the decline in commodity prices and weakened fiscal policies, and (ii) the risks that are still affecting advanced countries in the Euro-area.

What main conclusions can be drawn from this work? The first is that the index appears to have the power both to identify economies that are heading for trouble and to isolate the specific policy areas of weakness that lie behind their increasing vulnerability. The second is that the Resilience Index can be meaningfully added to the traditional tools of the surveillance process and of the private sector risk-assessment process. It is an extremely powerful device by itself, as it can help identify resilience weaknesses and the policy areas were actions can be taken to address them. As mentioned in our previous paper, and of equal relevance today "It is clear from this analysis that building resilience—and making it a priority of policy makers—can pay high dividends."

11. It should be emphasized that being a commodity exporter does not mean that its Resilience Index should have weakened; there is a good number of commodity exporters whose Resilience Index has remained strong, including Canada, Indonesia, Peru, Norway, Uganda, and Uruguay.

Appendix 1

Figure A1: Structure of Resilience Index

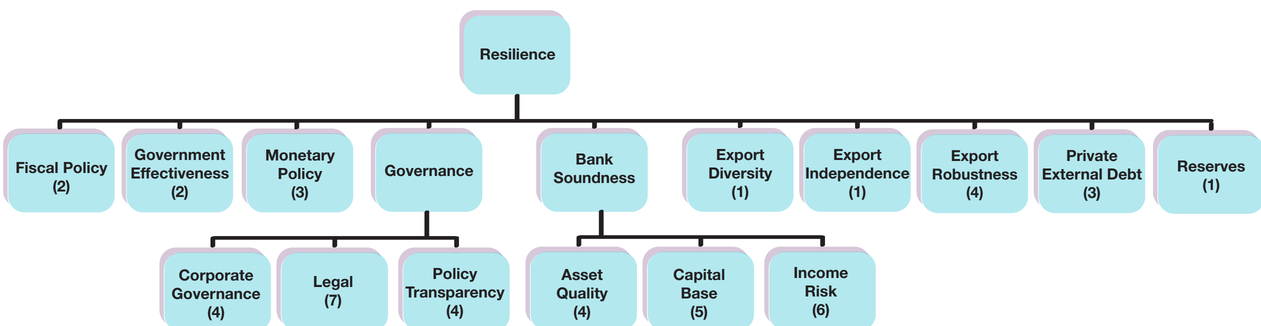


Table A1: Resilience Index Variables and Sources (Sorted by Sub-Index)

Abbreviations for data sources	
BIS	BIS Quarterly Review
BKSC	Bankscope
CBI	Central Bank of Iceland: "New Inflation Targeting Countries"
CIRI	Cingranelli Richards Human Rights Database
DB	Doing Business
DOT	IMF's Direction of Trade Statistics
EIU	Economist Intelligence Unit
ERF	Economic Research Forum: Working Paper 394
EST	Centennial Estimate
EV	Econviews
FHFP	Freedom House's Freedom of the Press
FIEFW	Fraser Institute's's Economic Freedom of the World
FSD	World Bank's "A New Database on Financial Development and Structure"
FSI	IMF's Financial Soundness Indicators
GFSR	IMF's Global Financial Stability Report
GIBR	Global Insight Business Risk and Conditions

Table A1: Resilience Index Variables and Sources (Sorted by Sub-Index)

HBSB	Harvard Business School Case: "Brazil 2003: Inflation Targeting & Debt Dynamics"
HF	Heritage Foundation's Index of Economic Freedom
IAERTR	International Advances in Economic Research: "Taylor Rule in Practice: Evidence from Turkey " (2008)
IFS	IMF's International Financial Statistics
IMFDSBB	IMF's Dissemination Standards Bulletin Board
IMFFX	IMF's Classification of Exchange Rate Arrangements and Monetary Frameworks
IMF267	IMF's Occasional Paper 266
IMFS	IMF Survey Magazine
IRAE	International Review of Applied Economics: J. Jim (2008)
ITK	Yangu: Inflation Targeting in Kenya?
JMIB	Journal of Money, Investment, & Banking 2009: "Is Nigeria Ready for Inflation Targeting?"
PAC	Packard 2007: "Monetary Policy in Viet Nam"
PRS	Political Risk Services
RJEF	Romanian Journal of Economic Forecasting: Daianu & Kallai (2008)
ROU	Roubini Global Economics
SG	Siregar & Goo 2008: "Inflation Targeting Policy"
UNC	UNCTADstat
TI	Transparency International
WBBR	World Bank's Banking Regulation Survey
WDI	World Bank's World Development Indicators
WEO	IMF's World Economic Outlook (April 2010)
WGI	Worldwide Governance Indicators
Fiscal Policy Soundness	
WEO, EIU, IFS, WDI, & EST: Public debt to GDP*	
WEO, EIU, IFS, WDI, & EST: Change in Ratio of Public debt to GDP (Average over past 3 years)*	
Government Effectiveness	
PRS: Score for Bureaucratic Quality, as calculated by the WGI for their Government Effectiveness sub-index	
Monetary Policy	
WEO & EV: Inflation (Year-End CPI) minus the Average Inflation in G7 Countries*	
WEO & EV: Standard Deviation of Inflation (Year-End CPI) over past 3 years*	
IMFS, IMF267, ITK, CBI, HBSB, PAC, IRAE, SG, RJEF, ROU, ERF, IAERTR, IMFFX, & EST: Is the country inflation targeting?	
Corporate Governance	
WBBR: Sum of 2 questions: Must Banks Disclose Their Risk Management Procedures or Off-Balance Sheet Items to the Public?	
WBBR: Do Regulations Require Credit Ratings for Commercial Banks?	
DB: Credit Depth of Information Index	
FHFP: Sum of two Press Freedom Indicators: Economic Environment and Political Environment	
WBBR: Are the Following Bank Activities Rated? Bonds Issuance, Commercial Paper Issuance, Other activity (Certificates of Deposit, Pension & Mutual Funds, Insurance Companies, Financial Guarantees, etc.)	
Legal	
GIBR: Red Tape & Bureaucratic Corruption score, as calculated by WGI for their Corruption sub-index	
GIBR: Average of 2 scores: Business Legislation & Tax Effectiveness, as calculated by WGI for their Regulatory Quality sub-index	
GIBR: Average of 2 scores: Judicial Independence & Business Crime Risk, as calculated by WGI for their Rule of Law sub-index	

Table A1: Resilience Index Variables and Sources (Sorted by Sub-Index)

DB: Legal Rights of Borrowers and Lenders Index
HF: Property Rights
FIEFW: Legal Structure and Security of Property Rights
DB: Sum of two Doing Business Indicators: Shareholder Suits & Director Liability
Policy Transparency
TI: Corruption Perceptions Index
FHFP: Laws & Regulations Influence on Media Content
IMFDSBB: Does the country subscribe to the IMF's Special or General Data Dissemination Standards
Asset Quality
FSI, BKSC, GFSR, & WDI: Bank Nonperforming Loans to Total Loans*
FSI, BKSC & GFSR: Impaired Loans Net of Provisions to Equity* (floor set at –20%)
Capital Base
FSI & BKSC: Equity to Total Assets*
FSI & BKSC, FSD: Return on Equity*
FSI & BKSC: Tier One Ratio (Aggregate)*+
Income Risk
FSI, FSD, GFSR, & BKSC: Bank Return on Assets
FSI & BKSC: Interest Margin to Gross Income*
Export Diversity
DOT & EST: Coefficient of Variation of Export Shares by Destination**
UNC: Merchandise Exports: Concentration Index+
Export Independence
IFS & WEO: Exports to GDP*
External Robustness
WEO: Current Account Balance to GDP*
BIS, IFS, & EST: Reserves to Short-Term Debt**
IFS & EIU: Import Cover: Total Reserves Minus Gold to Months of Imports**
IMFFX, WEO: Measure of Exchange Rate Regime's Ability to Weather Crisis (Exchange Rate Regime adjusted for Reserves)
Private Debt
IFS, WEO, & EST: The Average Growth Rate over Three Years of Domestic Credit by Deposit Money Banks Minus the Average Growth Rate over Three Years of GDP* (floor set at +10%)
BIS & WEO: Total Foreign Claims Excluding Public Sector of BIS-Reporting Banks to GDP to GDP per Capita *
IFS, WEO, & EST: Private Credit by Deposit Money Banks to GDP to GDP per Capita*+
IFS, WEO, & EST: Total Private-Sector International Claims of BIS-Reporting Banks to GDP *+
Reserves
IFS, WEO, & EIU: Total Reserves to GDP*

/ indicated that a log transformation was applied to the variable:* * represents ln(1+x) and ** represents ln(x).

Note: A two-year moving average was applied to all Asset Quality, Capital Base, and Income Risk variables. A three-year moving average was applied to the first and fourth Private External Debt variables.

Note: The types of financial firms included in the Bankscope search criteria used for all Bankscope data are Commercial Banks, Savings Banks, Cooperative Banks, Real Estate and Mortgage Banks, Islamic Banks, Other Non-Banking Credit Institutions, Micro-Financing Institutions, and Credit Card, Factoring, and Leasing Finance Companies.

Table A2: List of countries

Advanced countries: Australia, Austria, Belgium, Canada, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Portugal, , Spain, Sweden, Switzerland, United Kingdom, United States
Central & Eastern Europe: Bosnia & Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic, Slovenia, Ukraine, Turkey
Commonwealth of Independent States: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Moldova, Russia, Ukraine
Developing Asia: Bangladesh, Cambodia, China, Hong Kong, India, Indonesia, Korea, Malaysia, Myanmar, Pakistan, Philippines, Singapore, Sri Lanka, Thailand, Vietnam
Middle East and North Africa: Algeria, Bahrain, Egypt, Israel, Jordan, Lebanon, Morocco, Saudi Arabia, Tunisia, United Arab Emirates
Sub-Saharan Africa: Angola, Botswana, Côte d'Ivoire, Ethiopia, Ghana, Kenya, Mauritius, Mozambique, Nigeria, Senegal, South Africa, Sudan, Tanzania, Uganda, Zambia
Western Hemisphere: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Mexico, Panama, Peru, Uruguay, Venezuela, Trinidad and Tobago,

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