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## Economic Outlook and Resilience

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## Economic Outlook

Despite an unfavorable external environment, developing Asia is expected to maintain 5.7% growth in 2016 and 2017, buoyed by resilience in the region's largest economies, the People's Republic of China and India.

The recovery in the Group of Three (G3) economies of the euro area, Japan and the United States (US), continues to stall. The US growth in the first half of 2016 was softer on low investment and weak trade. Going forward, there are lingering concerns that significant policy changes by the Trump government—repeal of the Dodd-Frank law, restructuring of energy and immigration policies, and imposing more trade restrictions—could affect growth prospects. In Japan, growth improved, although the rising yen in the second half of 2016 weighed heavily on exports. While the growth outlook in the euro area held steady in 2016, political uncertainties have added to downside risks (Table 1.1).

Growth in the People's Republic of China (PRC) in the first half of 2016 eased to 6.7% from 7.0% in the same period last year, as reforms to restructure the economy away from export-led growth toward consumption continued. Private consumption and services contributed most to growth, in line with the government's goal of attaining balanced and sustainable growth. In India, steady progress of reforms boosted its growth prospects. In June 2016, the approval of wage and pension increases enhanced private consumption; and a new law creating a national value added tax are expected to strengthen India's fiscal position and lift investor confidence.

**Table 1.1: Regional GDP Growth** (% , y-o-y)

	2013	2014	2015	Forecast	
				2016	2017
<b>Developing Asia</b>	6.5	6.3	5.9	5.7	5.7
<b>Central Asia</b>	6.6	5.2	3.0	1.5	2.6
<b>East Asia</b>	6.8	6.6	6.1	5.8	5.6
People's Republic of China	7.8	7.3	6.9	6.6	6.4
<b>South Asia</b>	6.2	6.7	7.0	6.9	7.3
India	6.6	7.2	7.6	7.4	7.8
<b>Southeast Asia</b>	5.0	4.5	4.4	4.5	4.6
<b>The Pacific</b>	3.9	9.4	7.2	2.7	3.5
<b>Major Industrialized Economies</b>					
Euro area	-0.2	1.1	1.9	1.5	1.4
Japan	1.4	-0.1	0.6	0.6	0.8
United States	1.7	2.4	2.6	1.5	2.4

GDP = gross domestic product, y-o-y = year-on-year.

Notes: Developing Asia refers to the 45 regional members of ADB, while subregional groupings are based on ADB's *Asian Development Outlook*. Aggregates weighted by gross national income levels (Atlas method, current \$) from World Development Indicators, World Bank. Figures are based on ADB estimates except for the People's Republic of China, India, euro area, Japan, and the United States, which are actual values. ADB forecasts from *Asian Development Outlook Update 2016*.

Sources: ADB calculations using data from ADB (2016b); CEIC; World Bank. World Development Indicators. <http://data.worldbank.org/data-catalog/world-development-indicators> (accessed October 2016).

Strong growth is expected to continue in Southeast Asia on higher export prices for commodities and rising infrastructure investment. This should offset the impact of the drought that caused agriculture to contract during the first half of 2016 across the region, except in Indonesia. In Central Asia, low oil prices continue to cloud growth forecasts. The recession in the Russian Federation is affecting growth in remittance-dependent economies. In the Pacific's large economies, cyclone damage and fiscal difficulties are weighing heavily on growth this year, although stronger tourism receipts could help stimulate growth in South Pacific economies in 2017.

## Economic Shocks and Risks

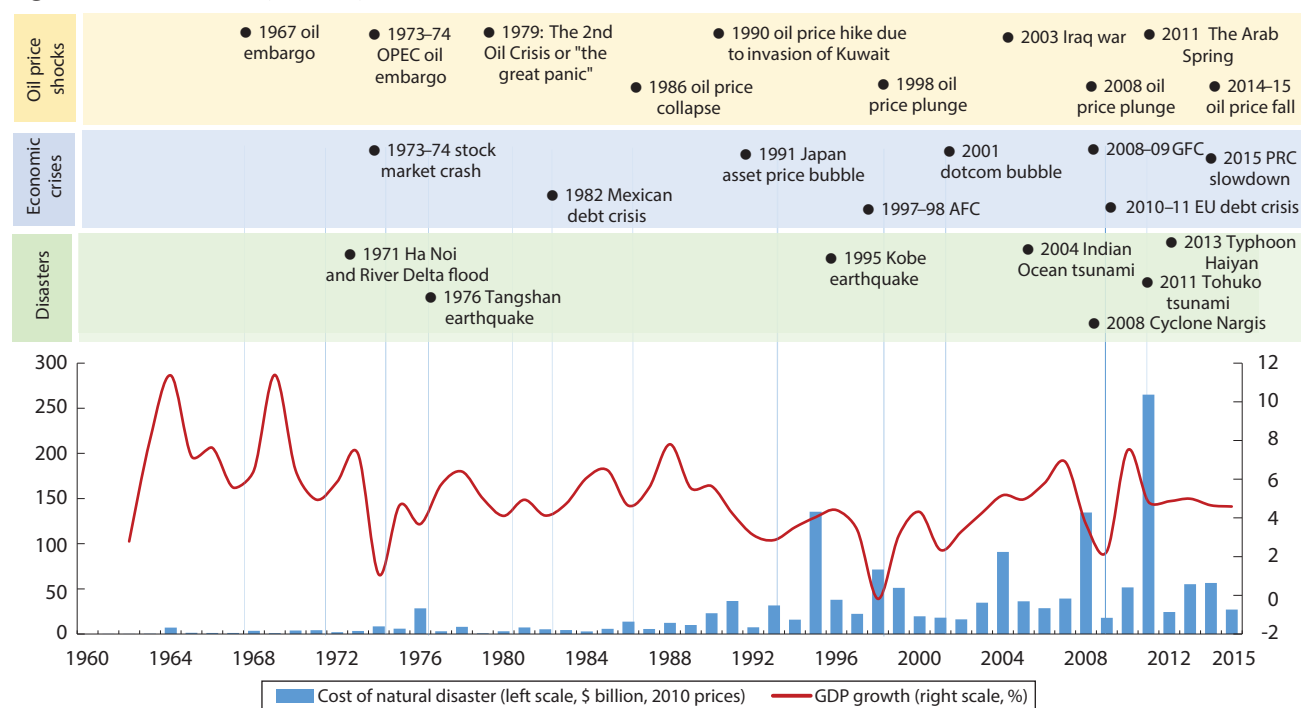
Asia has been hit by a multitude of shocks with high cost implications.

Natural disasters, economic and financial crises, and oil and food price shocks affected Asian economies over the last half-century. Some of these shocks ended in loss of lives, economic and social dislocations, and financial losses and economic costs (Figure 1.1). The frequency of these shocks appears to have increased, with nine shocks hitting the region since 2005. While there is no simple way to quantify the full impact of these shocks,

anecdotal evidence suggests the costs of these shocks are increasing. For instance, the \$70 billion estimated annual average damage to the region from natural disasters since 2005 is almost double the estimated \$36.6 billion in annual average damage recorded since 1975 (both in 2010 prices).

Table 1.2 presents a peak versus trough analysis of the cumulative impact economic shocks had on Asia's gross domestic product (GDP) growth.<sup>1</sup> It clearly shows these shocks brought down average GDP growth in the region by 4–13 percentage points, with the largest decline in growth (almost 28 percentage points) observed during the 1997/98 Asian financial crisis. The effects of these

**Figure 1.1: GDP Growth, Shocks, and Cost of Natural Disasters—Asia**



AFC = Asian financial crisis, PRC = People's Republic of China, EU = European Union, GDP = gross domestic product, GFC = global financial crisis, OPEC = Organization of the Petroleum Exporting Countries.

Notes: Aggregate GDP growth weighted using gross national income (Atlas method current \$). Natural disasters include epidemic, insect infestation, extreme temperature, drought, flood, mass movement (wet and dry), wildfires, earthquakes, volcanic eruptions, and storms. Total damage costs hold direct (e.g., damage to infrastructure, crops, housing) and indirect (e.g., loss of revenues, unemployment, market destabilization) consequences for the local economy.

Sources: ADB calculations using data from Centre for Research on the Epidemiology of Disasters. EM-DAT The International Disaster Database. <http://www.emdat.be/> database; and International Monetary Fund. World Economic Outlook April 2016 Database. <https://www.imf.org/external/pubs/ft/weo/2016/01/weodata/index.aspx> (both accessed September 2016).

<sup>1</sup> The peak versus trough analysis is applied to huge shocks that affected the output growth of economies in the region. The analysis compares the highest growth prior to the occurrence of a shock with the lowest growth after the shock. The impact is then calculated as the growth differential in percentage points and the duration as the number of quarters before the lowest point of the growth path is reached.

**Table 1.2: GDP Growth Impact of Economic Crises on Developing Asia** (peak versus trough)

Crisis	Drop in GDP growth <sup>a</sup> (y-o-y, % points)			Duration of Impact <sup>b</sup> (no. of quarters)		
	Average	Minimum	Maximum	Average	Minimum	Maximum
1991 Japan asset price bubble	-4.0	-0.8	-13.2	4	2	7
1997/98 Asian financial crisis	-12.9	-3.1	-27.8	6	3	9
2001 dotcom bubble	-7.1	-0.8	-14.5	6	3	8
2008/09 global financial crisis	-10.7	-4.2	-17.5	6	5	9
2010/11 EU debt crisis	-8.1	-0.8	-15.9	8	5	11

EU = European Union, GDP = gross domestic product; y-o-y = year-on-year.

<sup>a</sup>The drop in GDP growth was computed as the difference between peak and trough during each crisis period.

<sup>b</sup>The duration of impact is the number of quarters covering the peak and trough during each crisis period.

Notes: Minimum, maximum, and average values across sample economies in developing Asia, which includes the People's Republic of China; Hong Kong, China; India; Indonesia; the Republic of Korea; Malaysia; the Philippines; Singapore; Taipei, China; and Thailand. For each shock, the drop in GDP growth and duration from the peak up to trough was computed.

Source: ADB calculations using data from Oxford Economics.

shocks persisted for nearly six quarters on average. Their magnitude and duration have also fluctuated, with big shocks observed during the Asian financial crisis and the global financial crisis, and smaller shocks recorded in between. Some economies in the region cope better with shocks than others.

### Downside risks to the outlook could disrupt the region's growth trajectory.

Externally, the slow recovery in the euro area, Japan, and the US continues to pose downside risks to developing Asia's projected economic growth. Interest rate hikes by the US Federal Reserve, though the timing remains uncertain, could disrupt the region's capital flows and complicate the macroeconomic environment. The pushback against globalization and increasing political pressures against trade openness could create more hurdles to the trade environment, potentially slowing the progress of regional integration. More so, recent political events—such as the Brexit vote in June 2016 and Trump's victory in the US election—suggest a rising tide of anti-globalization and anti-establishment sentiment among parts of the electorate worldwide. These events could increase global uncertainty and erode confidence on global institutions.

The slowdown in the PRC continues to cast a shadow on trade growth in the region (Box 1.1). Private sector debt—incurred either through direct borrowing or intercompany lending—continues to rise in many economies. Alongside borrowing by Asian companies, growing household debt

is also an increasing concern in some economies. These debts could prove unsustainable should interest rates rise sharply.

Given these frequent and costly shocks, economies need to build economic resilience in the region through early identification of potential vulnerabilities.<sup>2</sup>

## Building Economic Resilience

### The concept of economic resilience is complex and can mean many things to many people.

Broadly speaking, the word resilience comes from the Latin word *resilire*—to recoil or leap back.

In economics, resilience refers to an economy's ability to withstand the impact of exogenous shocks such as those arising from financial contagion, commodity price volatility, or external demand shocks. This is similar to dampening the amplitude or the degree of change in economic activity arising from a shock (Duval et al. 2007). The literature refers to this as enhancing the

<sup>2</sup> In this section, the discussion is confined to economic shocks arising from economic interdependence and global and regional spillovers. Necessarily, the notion of building resilience will also be limited to measures that can help economies mitigate the impact of these types of economic shocks.

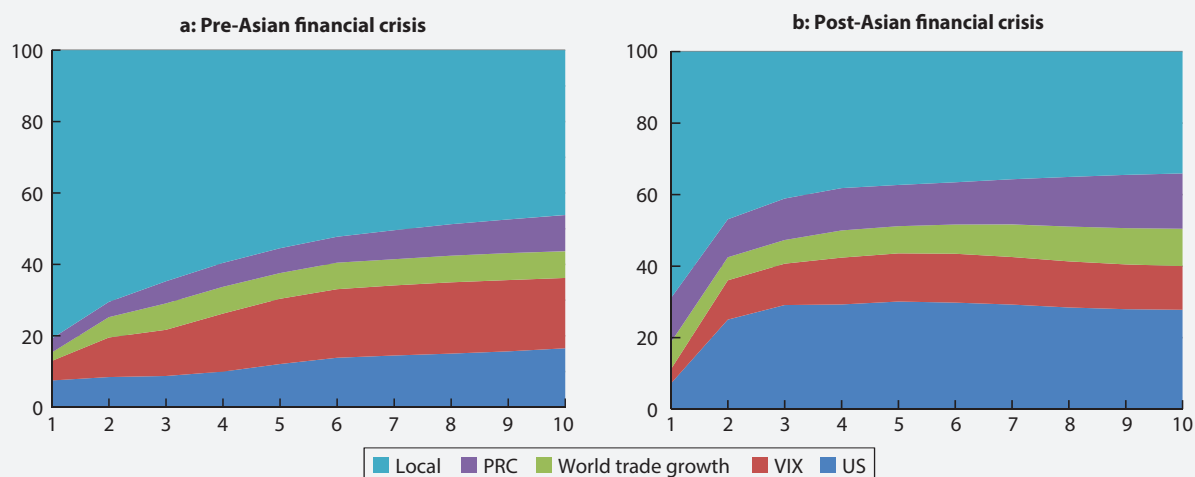
### Box 1.1: Drivers of Asian Output

A vector autoregression model is used to estimate the effects of external shocks on business cycles in emerging Asia. Asian business cycles are measured as the de-trended gross domestic product using a Hodrick–Prescott filter. External factors represent global and regional economic conditions that affect output in regional economies, including (i) the United States (US) output shock, a proxy of business cycle in advanced economies; (ii) the Chicago Board Options Exchange’s Volatility (VIX) index, a measure of global financial risk; (iii) world trade growth; and (iv) an output shock in the People’s Republic of China (PRC). These external factors

are assumed unaffected by contemporaneous domestic shocks. Further, shocks to external factors are assumed to be transmitted in the same order as above.

The result from the variance decomposition shows that external factors drive most of the variation in output among the region’s economies. This was particularly evident following the 1997/98 Asian financial crisis, when the impact of both US and PRC output shocks increased and became more persistent.

**Share of Asia ex-PRC Output Variance Due to External and Local Factors (%)**, x-axis = number of quarters



Asia ex-PRC = Asia excluding the PRC, PRC = People’s Republic of China, US = United States, VIX = Chicago Board Options Exchange’s Volatility Index. Note: Pre-Asian financial crisis covers Q1 1987 up to Q1 1997. Post-Asian financial crisis covers Q1 1999 up to Q2 2016. Asia ex-PRC includes Hong Kong, China; Indonesia; the Republic of Korea; Malaysia; the Philippines; Singapore; Taipei, China; and Thailand. US, PRC, and individual Asia ex-PRC (local) output based on the Hodrick–Prescott filtered seasonally adjusted gross domestic product at constant prices. Source: ADB calculations using data from Bloomberg; CEIC; Oxford Economics; and World Bank. World Development Indicators. <http://data.worldbank.org/data-catalog/world-development-indicators> (accessed November 2016).

absorptive capacity for resilience. Similarly, resilience could also be used to refer to an economy’s ability to quickly recover from a shock and return to its long-term equilibrium. This is similar to minimizing the persistence of a shock and has been referred to as increasing the adaptive capacity for resilience.

An alternative notion of resilience is the ability of an economy to enhance and restructure its productive capacity so that the system improves its ability to deal

with future shocks—sometimes called the transformative capacity for resilience.

Based on these definitions, Asia can build economic resilience by (i) improving the absorptive capacity of an economy to withstand shocks (ii) enhancing the adaptive capacity of an economy to recover or bounce back from shocks and (iii) strengthening the transformative capacity

of an economy to upgrade and restructure its systems to boost economic resilience to future shocks.

**Evidence suggests that good policies can enhance resilience to better cope with unforeseen economic shocks.**

Briguglio et al. (2008) argue that policies contributing toward greater macroeconomic stability, microeconomic market efficiency, good governance, and social protection underpin economic resilience.

Figure 1.2 presents an economic framework for building economic resilience. In addition to policies already mentioned above, the framework incorporates the role of global and regional cooperation, and provides concrete policies as illustrations. In this framework, good governance and institutions serve as a platform or fulcrum to help implement good policies or deliver programs that can buttress economic resilience.

**Figure 1.2: Building Economic Resilience—A Framework**

		Absorptive capacity	Adaptive capacity	Transformative capacity		
Quality governance and strong institutions	<b>Macroeconomic policy</b>					
	<b>Fiscal policy</b>	Countercyclical fiscal policy (stimulus)	Budget strategy and tax system	Government spending on health and education		
	<b>Infrastructure investment</b>	Rebuilding and reconstruction	Investing in efficient and world class infrastructure			
	<b>Monetary policy</b>	Countercyclical monetary policy (interest rate cuts)	Enhancing monetary policy transmission	Deepening capital markets		
			Promoting financial inclusion			
	<b>Exchange rate</b>	Flexible exchange rate	Macroprudential policy			
	<b>Microeconomic policy</b>					
	<b>Labor market</b>	Labor regulations (contractualization, hiring, and firing)	Enhancing labor mobility (training and employment promotion)	Policy reform to enhance flexibility in the labor, capital, and product markets	Industrial labor relations	
	<b>Product market</b>	Price controls and regulation Subsidies	Tax system Competition policy		Industrial policy	
	<b>Capital market</b>		Financial inclusion (support to micro-enterprises and small and medium-size enterprises)		Capital market reform	
	<b>Technology and innovation</b>		Programs to raise productivity	Fostering innovation		
	<b>Social policy</b>					
	<b>Education</b>	Cash transfer to support education and health	Inclusive and accessible education and health services	Access to education services		
	<b>Health</b>			Access to health and medical services		
	<b>Social protection</b>	Transfers and subsidies	Temporary employment programs	Insurance programs		
	<b>Global and regional cooperation</b>					
	<b>Financial assistance and cooperation</b>	Liquidity support, standby facilities, and swap arrangements		Official development assistance, grants, and loans		
	<b>Economic surveillance and policy dialogue</b>	Economic surveillance				
		Global and Regional Policy dialogues				

Source: ADB.



## Macroeconomic Policy

**In the short run, policymakers use countercyclical macroeconomic policies to cushion or mitigate the impact of economic shocks.**

Sound macroeconomic policies can build resilience by enhancing an economy's absorptive capacity to withstand shocks. A good example is the set of prudent macroeconomic and flexible exchange rate policies often employed to boost aggregate demand and spark economic recovery. During the global financial crisis—amid dwindling external demand for Asian exports and tightening global liquidity—many economies cut interest rates to boost domestic consumption and investment, and ease liquidity in the system. They also supported a flexible exchange rate—which helped by altering the return differential between assets denominated in foreign currencies and those denominated in local currency—to stabilize economic fluctuations due to volatile capital flows. These coordinated actions helped create greater economic resilience to soften the crisis impact.

Another set of useful policy tools are countercyclical fiscal policies that help prop domestic demand in times of crisis. Sometimes, fiscal stimulus comes in the form of temporary employment programs through public (re)construction. Or it could come via natural stabilizers—policies and programs that help reduce fluctuations in economic activity through price movements; or by introducing offsetting adjustments in taxes or subsidies, for example. There are discretionary fiscal policies as well, such as unemployment assistance or subsidies. These instruments can cushion an economy from changes in the business cycle as they alter business costs and allow for some income redistribution, thereby helping businesses and households endure the impact of a shock.

## Microeconomic Policy

**Policies that enhance the flexibility of labor, capital, and product markets can also contribute to greater economic resilience.**

Microeconomic policies that facilitate the reallocation of resources to more productive uses is one way to help raise the productivity of factors of production, and make the product market more efficient. In doing so, these policies enable the economy to recover more quickly from a shock and push the economy back toward its potential growth path. Augmented by strong institutions, these microeconomic policies can also raise market efficiency and help macroeconomic policies become more effective. For instance, financial sector and domestic capital market development can increase the efficiency of financial intermediation and boost productivity. Equally important, financial sector innovation—that creates new financial instruments or invests in high-technology financial infrastructure—can also enhance monetary and financial policy effectiveness, thereby increasing resilience. Similarly, flexible labor market institutions and policies can improve the effectiveness of automatic stabilizers, and multiply the impact of discretionary fiscal policy aimed at stimulating specific sectors (Sanchez et al. 2015).

## Structural Reform Policy

**Building resilient systems requires “sound and forward-looking policy options” to cope with future economic shocks.**

Berkes (2007) describes how to build resilience—by improving the organization, internal processes, and production efficiency—to deal with change characterized by uncertainty and surprises. Consistent with this notion, many East and Southeast Asian economies are pursuing a range of reforms to make their economies more resilient in the aftermath of the global financial crisis. For instance, an analysis of over 10,000 firms in 13 developing economies in Asia confirms that obstacles like judicial bias, unequal access to finance, excessive labor regulation, poor electricity supply, and corruption impede the efficient allocation of factors across firms. Therefore, structural reforms to remove these obstacles can

enhance firm efficiency, support economic dynamism, and move economies toward their frontier potential growth (ADB 2016a).

**While some policies build a system’s absorptive capacity, it could also weaken future adaptive capacity and undermine its ability to cope with shocks.**

A good example is employment protection. In the face of an economic shock, this policy helps agents absorb the impact of a shock because their jobs remain secure. And if this is further linked to well-designed training programs, it will spark transformation toward a more resilient labor market system. However, employment protection could also weaken the system’s adaptive capacity because it hinders the efficient reallocation of resources toward its most productive use. For instance, it has been pointed out that *shūshin koyō*—or the ancient practice of providing permanent employment—has weakened the ability of Japan’s economy to rebound from economic recession, as companies are unable to reduce their staff complement and labor costs and become more competitive.

**While pursuing structural reforms to boost resilience is good, they can also be very difficult to implement.**

First, the gains from structural reforms are often not visible to everyone—making it difficult for policymakers to push the reform efforts. For example, the imposition of a duty on housing transactions in an attempt to manage a growing property bubble and make the housing market more resilient to potential shocks. Initially, imposing a duty would raise the cost of owning a house and would affect first home buyers, making it an unpopular policy. Second, there are also short-run adjustment costs associated with structural reform that distort perceptions on the gains from reform. For instance, while a more flexible labor market policy can strengthen an economy’s resilience through faster reallocation of labor resources, it can be perceived as contributing to greater job insecurity. Finally, the costs and benefits of a reform might accrue to different groups of people—with some benefiting more than others. This would encourage greater opposition from those who would lose from reform efforts.

## Global and Regional Cooperation

**Asia needs to cooperate more to boost national and regional economic resilience.**

To the extent that global and regional integration raises the probability of negative spillover effects through trade and finance, economic and financial policy cooperation is important to manage the risks arising from the integration process. Cooperation can focus on rule-making and monitoring to minimize negative spillovers. A good example is cooperation on establishing financial safety nets to mitigate the risks of contagion-exacerbating crises. Cooperation to increase the cross-border flows of goods, services, and people can also enhance resilience by expanding markets and improving resource allocation. This in turn helps economies diversify their markets and get better returns on their labor or capital. For instance, at the height of the global financial crisis, when external demand was weak, the big economies in the region provided alternative sources of demand for exports. Cooperation to enhance infrastructure connectivity and manage regional public goods (and public “bads”) can also strengthen many aspects of regional resilience. For one, infrastructure connectivity facilitates the flow of goods, services, and people, raising overall productivity. Managing regional “public goods” allows economies to account for the social costs in providing public goods to help optimize outcomes (ADB 2013).

**Regional policy dialogue allows authorities to prepare for global or regional contagion by better understanding its origins and transmission mechanisms.**

Regional dialogue aims to prevent financial crises by (i) promoting information sharing, policy dialogue, and coordination; (ii) collaborating on financial, monetary, and fiscal issues of common interest; (iii) detecting early macroeconomic and financial vulnerabilities; and (iv) implementing swift, remedial policies. There are already many forums for regional economic information exchange, analysis, and policy dialogue, among them, the Association of Southeast Asian Nations (ASEAN) Surveillance Process for finance ministers; the Economic Review and Policy Dialogue process for ASEAN+3 (ASEAN plus the PRC, Japan, and the Republic of



Korea) finance ministers and central bank governors; transregional processes such as the Asia-Pacific Economic Cooperation finance ministers' meeting; and the Asia-Europe Meeting of finance ministers. Cooperation between regional and global policy dialogue is also a good idea.

## Governance and Institutions

**Political stability, good governance, and strong institutions are needed to support gains from good economic policies and programs and build resilience.**

Good policies are only meaningful if they are appropriate, well-timed, effectively implemented, and delivered to those most vulnerable. This increasingly depends on political stability, quality of governance, and the presence of strong institutions.

## Correlates of Economic Resilience

Vulnerability to international spillovers and contagion can be measured in several ways. For instance, trade openness or financial openness can be used to capture vulnerabilities arising from global shocks or those originating in major trade or financial centers, such as the US, the euro area, or the PRC (Röhn et al. 2015). In the context of disaster, size can also be associated with vulnerability as it limits the distribution of losses, meaning resilience could be higher if losses can be more widely distributed or shared across a bigger population or geographic area. Similarly, infrastructure can also gauge susceptibility to macroeconomic shocks as it is key in supply-chain networks and during reconstruction (World Bank 2013). On the policy front, Briguglio et al. (2008) noted that resilience can be captured through macroeconomic stability, microeconomic efficiency, good governance, and social protection policies, among others.

Output and consumption growth volatility is examined below as a measure of vulnerability to international spillovers and contagion. The correlation of economy

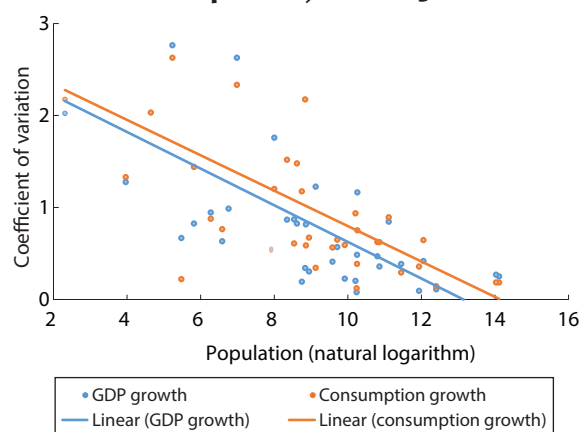
characteristics and economy policy instruments with these volatility measures are then examined to identify whether there are economy characteristics or policy instruments that can help mitigate volatility in output and consumption growth.

**Size and reliance on resources appear to contribute to greater economic vulnerability as measured by output and consumption growth volatility.**

The volatility of GDP and consumption growth was plotted against size (measured by population) and reliance on resources (measured by terms of trade) (Figure 1.3).<sup>3</sup> The results—size is inversely correlated to GDP and consumption growth volatility while terms of trade is positively correlated—are not surprising and are generally consistent with economic theory (Figure 1.4).

Generally, small economies tend to be highly concentrated in a narrow set of economic activities, making them more vulnerable to natural disasters like cyclones or economic shocks (such as the global financial crisis). Many small economies also tend to face higher costs—due to limited scale—for providing

**Figure 1.3: Volatility of Output and Consumption Growth versus Population, 2006–2015**



GDP = gross domestic product.

Sources: ADB calculations using data from United Nations Statistics Division. <http://unstats.un.org/unsd/default.htm>; and World Bank. World Development Indicators. <http://data.worldbank.org/data-catalog/world-development-indicators> (both accessed October 2016).

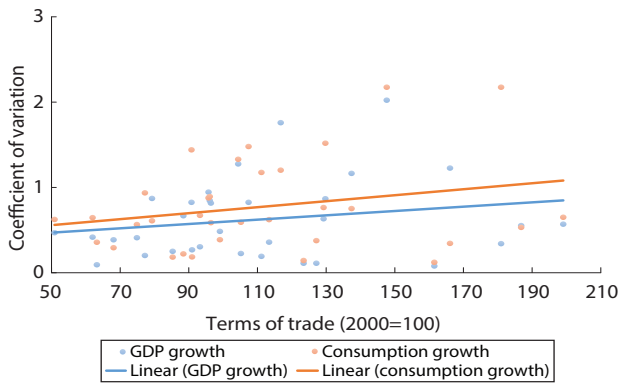
<sup>3</sup> In this report, volatility is measured through the coefficient of variation in GDP growth and household consumption growth.

infrastructure such as power, health, and education. Size also coincides with geographical remoteness or sea- or land-locked economies. Thus, prices for food and energy will tend to be higher for small economies, making them more vulnerable to shocks. Similarly, relying on exports of natural resources could propel an economy toward greater output and consumption growth

volatility, as prices of natural resources tend to exhibit greater volatility, which is also captured in output and consumption volatility.

**Openness through trade and financial flows seems to increase economic exposure to the effects of global or regional shocks, increasing the volatility of output and consumption growth.**

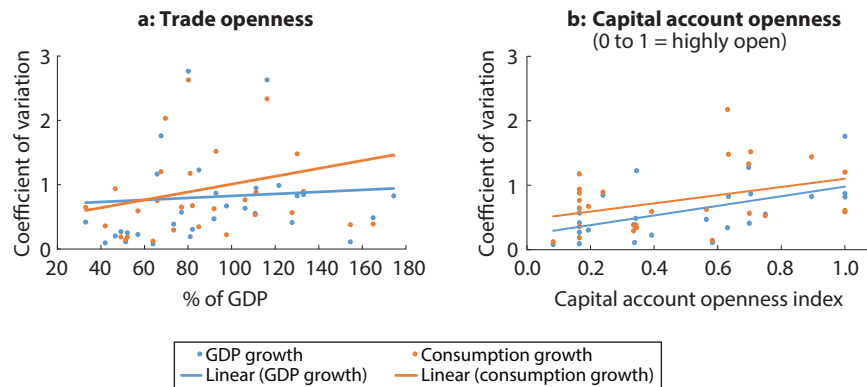
**Figure 1.4: Volatility of Output and Consumption Growth versus Terms of Trade, 2006–2015**



GDP = gross domestic product.  
 Notes: The terms of trade is the percentage ratio of the export unit value index to the import unit value index. The value index is the current value of exports or imports converted to the United States dollars and expressed as a percentage of the base period (2000).  
 Sources: ADB calculations using data from United Nations Conference on Trade and Development. <http://unctadstat.unctad.org/EN/Index.html>; and United Nations Statistics Division. <http://unstats.un.org/unsd/default.htm> ( both accessed October 2016).

As seen in Figure 1.5, the volatility of GDP and consumption growth increases with both trade and capital account openness. Capital account openness shows a stronger positive link to volatility in both output and consumption growth. This result seems to confirm that capital flow volatility has become an important driver of economic vulnerability in Asia and the Pacific. Prior to the global financial crisis, Asia received strong capital inflows from nonresidents, reaching almost 10% of GDP of emerging Asian economies in 2007. However, during the crisis, in the fourth quarter of 2008, the region saw massive capital outflows equivalent to 14% of GDP. With open capital accounts, the region became more vulnerable to changes in risk appetite and global uncertainty, which affected output and consumption growth volatility (Box 1.1).

**Figure 1.5: Volatility of Output and Consumption Growth versus Economic Openness, 2006–2015**

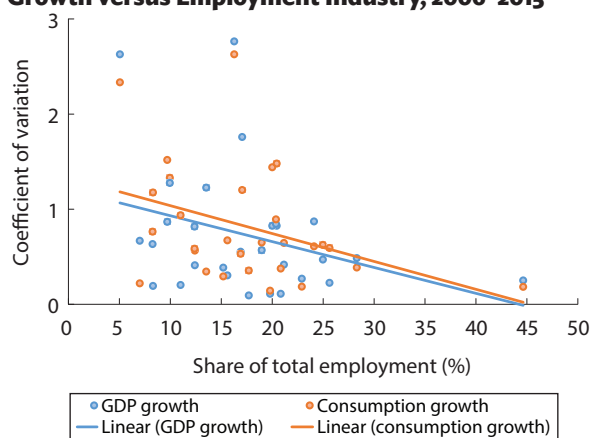


GDP = gross domestic product.  
 Notes: Trade openness is estimated as the sum of exports and imports of goods and services as a share of GDP. The capital account openness index or Chinn-Ito index is calculated using data on restrictions on cross-border financial transactions reported in the International Monetary Fund's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER). Coefficients of variation of GDP growth and consumption growth cover the period from 2006–2015; trade openness from 2006–2015; and capital account openness index from 2006–2014.  
 Sources: ADB calculations using data from United Nations Statistics Division. <http://unstats.un.org/unsd/default.htm> (accessed October 2016); and Chinn and Ito (2006).

**A favorable pattern of structural transformation, from agrarian to modern industrial economy, for example, also contributes to greater economic resilience.**

Clearly, structural transformation can contribute to resilience in many ways. Increasing the share of industrial employment, for example, tends to reduce output and consumption growth volatility (Figure 1.6). First, by their very nature, employment and income from agriculture tend to vary more than industry or manufacturing given

**Figure 1.6: Volatility of Output and Consumption Growth versus Employment Industry, 2006–2015**



GDP = gross domestic product.

Sources: ADB calculations using data from United Nations Statistics Division. <http://unstats.un.org/unsd/default.htm>; and World Bank. World Development Indicators. <http://data.worldbank.org/data-catalog/world-development-indicators> (both accessed October 2016).

changes in weather and the increasing impact of climate change. Productivity levels in industry and manufacturing are also higher than in agriculture, such that switching employment toward manufacturing will lead to a more stable form of employment and income—contributing to greater economic resilience. This consequently supports the observation that to sustain growth, end poverty, and make economies more resilient, resources should be moved from low productivity (agriculture) to higher productivity (manufacturing) sectors.

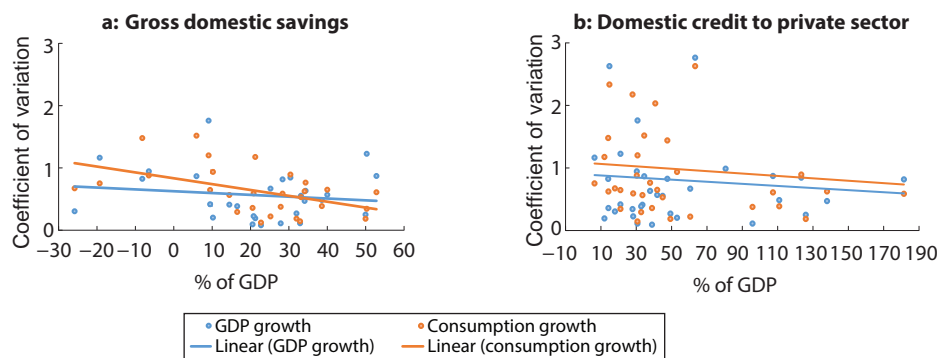
**Greater private savings and available credit can help provide greater economic resilience.**

Dipping into savings or going into debt (some examples of household's coping strategies) can help smooth output and consumption growth volatility during economic shocks (Reyes et al. 2011) (Figure 1.7). Other coping strategies with similar impact include liquidating assets, seeking additional work, or looking for overseas employment.

**Inadequate and low-quality infrastructure can undermine economic resilience.**

Economic resilience can also be affected by the quality and availability of infrastructure and infrastructure services (Figure 1.8). Based on the scatterplots, it appears that economies with higher infrastructure scores—meaning they have better infrastructure, quality

**Figure 1.7: Volatility of Output and Consumption Growth versus Saving and Debt, 2006–2015**

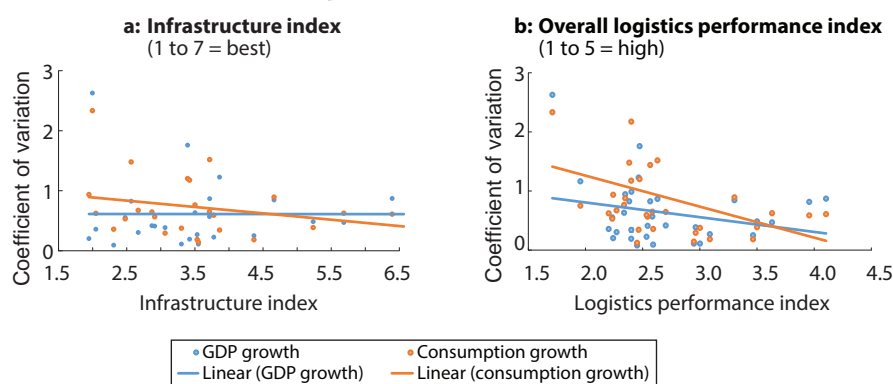


GDP = gross domestic product.

Notes: Gross domestic savings is GDP less total consumption. Domestic credit to private sector refers to financial resources provided to the private sector by financial corporations that establish a claim for repayment. For some economies, these claims include credit to public enterprises.

Sources: ADB calculations using data from United Nations Statistics Division. <http://unstats.un.org/unsd/default.htm>; and World Bank. World Development Indicators. <http://data.worldbank.org/data-catalog/world-development-indicators> (both accessed October 2016).

**Figure 1.8: Volatility of Output and Consumption Growth versus Infrastructure Quality**



GDP = gross domestic product.

Notes: The infrastructure index is the arithmetic mean of transport, electricity, and telephone quality and availability indicators included in the second pillar of the Global Competitiveness Index. The overall logistics performance index reflects perceptions of a economy's logistics based on efficiency of customs clearance process, quality of trade- and transport-related infrastructure, ease of arranging competitively priced shipments, quality of logistics services, ability to track and trace consignments, and frequency with which shipments reach the consignee within the scheduled time. Coefficients of variation of GDP growth and consumption growth cover the period from 2006–2015; infrastructure index covers the period from 2007–2015; and logistics performance index include data from 2007, 2010, 2013, and 2014.

Sources: ADB calculations using data from United Nations Statistics Division. <http://unstats.un.org/unsd/default.htm>; World Economic Forum. Global Competitiveness Index. <http://reports.weforum.org/global-competitiveness-index/>; and World Development Indicators. <http://data.worldbank.org/data-catalog/world-development-indicators> (all accessed October 2016).

of trade and transport-related infrastructure, logistics performance index, and competence and quality of logistics services—exhibit lower volatility in output and consumption growth. These results are not surprising given that connectivity through infrastructure—particularly highways, roads, and bridges—is important when responding to natural disasters and economic shocks. But an even more important point is the need to build resilient infrastructure that can withstand shocks from natural disasters or black-swan events.

### Good governance and social safety nets help build economic resilience.

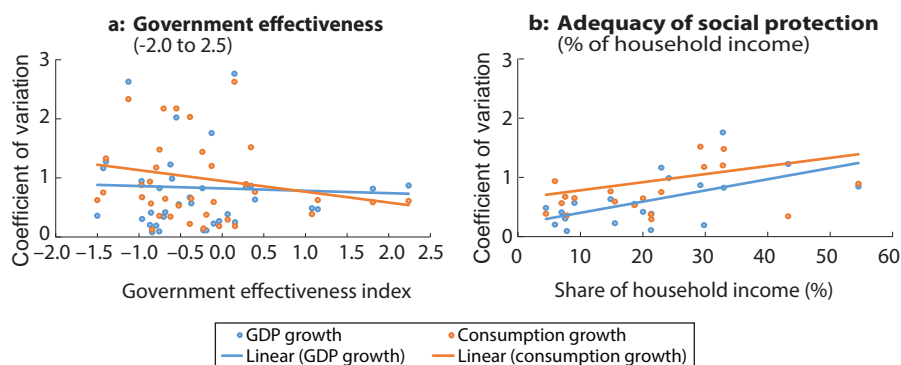
Based on preliminary analysis, good governance—government effectiveness, rule of law, and regulatory quality—seems to be associated with lower volatility in output and consumption growth (Figure 1.9). This is consistent with the general observation that good governance has always supported and reinforced gains from a range of economic policy reforms. In particular, without political stability, good governance, and strong institutions—key foundations for effective policy

implementation—good policies alone cannot contribute effectively to economic resilience.

Social protection policies as measured by the adequacy of social protection and labor programs seem to be positively associated with increased volatility in output and consumption growth (see Figure 1.9).

At first glance, this appears counterintuitive as social protection programs would be expected to offset the volatility in output and consumption growth. However, to the extent that social protection programs respond to economic shocks—function as ex-ante mechanisms—it follows that economies with greater volatility in output and consumption growth will also spend more on social protection. Hence, this result supports the observation that effective safety nets are needed to ensure food and job security, especially among vulnerable groups, during periods of economic shock.

**Figure 1.9: Volatility of Output and Consumption Growth versus Governance and Social Protection, 2006–2015**



GDP = gross domestic product.

Notes: Government effectiveness index captures perception of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. Adequacy of social protection and labor programs is measured by the total transfer amount received by the population participating in social insurance, social safety net, and unemployment benefits and active labor market programs as a share of their total welfare. Welfare is defined as the total income or total expenditure of beneficiary households.

Sources: ADB calculations using data from United Nations Statistics Division. <http://unstats.un.org/unsd/default.htm>; World Bank. World Development Indicators. <http://data.worldbank.org/data-catalog/world-development-indicators>; and World Bank. Worldwide Governance Indicators. <http://data.worldbank.org/data-catalog/worldwide-governance-indicators> (all accessed October 2016).

## Policy Considerations

From the foregoing discussions, building economic resilience will entail building the resilience of various components and systems that make up the economy. It underscores the importance of appropriate interventions (through policies, programs, and projects) to develop economic resilience that is absorptive, adaptive, and transformative.

There are five important policy considerations that can help economies respond to large and unpredictable changes in demand: strong macroeconomic fundamentals, a flexible microeconomic structure, structural reform policies, social policies and programs, and strong global and regional cooperation. It will also require good governance and strong institutions to translate these good policies into action.

Finally, resilience can only be strengthened through the collective effort of policymakers from national and regional bodies, the academe, research, the private (and business) sector, and civil society to strengthen resilience thinking, risk analysis, and risk management.

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