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## Risks, shocks, building resilience: Philippines

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Philippine Institute for Development Studies  
*Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas*

## Risks, Shocks, Building Resilience: Philippines

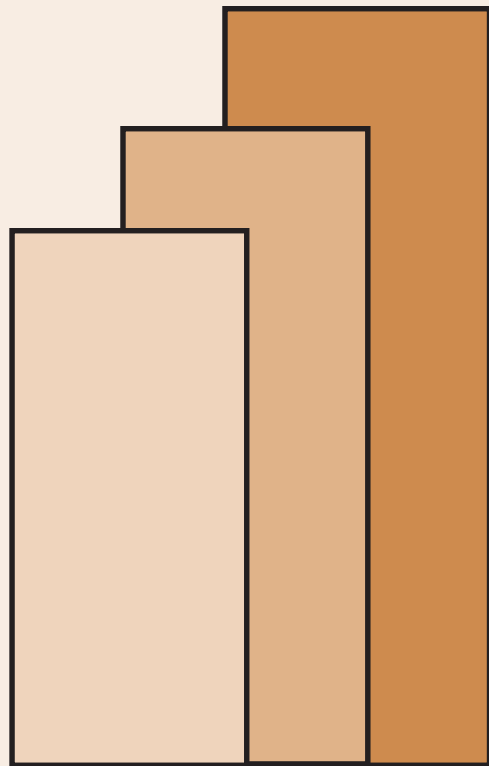
*Gilberto M. Llanto*

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## **Abstract**

Globally, the rise of new and unexpected risks and shocks has impacted stable and poor societies alike, and some, especially the latter, have become increasingly dysfunctional. The Philippines is peculiarly challenged to build economic resilience as indicated by its high risk exposure and vulnerability. The objective of this paper is to point to policymakers the importance of resilience thinking and the formulation of appropriate policy interventions to build economic resilience. Policymakers should be aware and conversant about risk analysis, risk management and what policies can best respond to exogenous shocks. This is to say that such policies should be underpinned by policy analysis and research on resilience systems. There is also need for a shared vision in the communities and in the larger polity about what to do about those risks. Building economic resilience requires finding effective instruments, that is, policies and interventions to deal with different risks, shocks, for example, natural disasters, pandemics, financial crisis, and the traumatic effects of those shocks.

**Keywords:** resilience, risk, exposure, vulnerability, external shocks, natural disasters, financial crisis, pandemics, adaptability, absorptive capacity, structural transformation

# Risks, Shocks, Building Resilience: Philippines

Gilberto M. Llanto

*The bamboo that bends,  
is **stronger** than the oak that resists.  
- Japanese proverb<sup>1</sup>*

## 1. Introduction

The chapter discusses risks, shocks, and resilience in the economy. The objective of this chapter is to point to policymakers the importance of resilience thinking and the formulation of appropriate policy interventions to build economic resilience. The idea is very simple: the economy has to be resilient to withstand adversities (risks and shocks) and good economic policies have a large role to play in building the economy's resilience. The policy challenge is the identification of policy interventions, that is, policies, programs, and projects that lead to economic resilience<sup>2</sup>. There is a growing global awareness of the adverse impacts of exogenous shocks to economies and the importance of identifying critical responses to enable affected economies to recover from shocks and rebuild. OECD (2014) pointedly explains that economies with resilient systems are more capable of bearing various environmental, political, economic, and social risks, stresses, and shocks. Building resilient systems is a very timely issue in view of experiences in the immediate past showing the vulnerabilities of both developed and developing countries to various risks and shocks when they occur.

The Philippine economy has performed well in the past decade; to sustain growth and end poverty, it has to undergo deep structural transformation. This certainly is a herculean task given strong barriers to transformation but it is doable. An often-cited pathway for inclusive growth is greater openness, more foreign direct investments, and greater connectivity and interlinkage with regional and global production and financial systems. This pathway brings

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<sup>1</sup> <http://www.quoteland.com/author/Japanese-Proverb-Quotes/105/> (accessed February 16, 2016)

<sup>2</sup> In this respect, the PIDS has formulated a new five-year research agenda that focuses on policy research in the context of building resilient systems in the economy (see Clarete et al. 2015).

along capital, technologies, and markets, but also magnify the probability of risks and shocks given the interconnectedness of economies through trade and regional and global production and financial systems. Risks are interconnected. They are also constantly evolving. Globally, the rise of new and unexpected risks and shocks have impacted stable and poor societies alike, and some, especially the latter, have become increasingly dysfunctional. The Philippines is peculiarly challenged to build economic resilience as indicated by its high risk exposure and vulnerability. The Philippines has been ranked as the third among the top 15 most exposed countries in the world, after Vanuatu and Tonga (Table 1). It is second, after Vanuatu, among the top 15 countries worldwide that are most at risk (Table 2). For the Philippines, building economic resilience assumes critical importance because it is impossible to insulate the economy from interconnected risks and shocks.

**Table 1. Top 15 most exposed countries worldwide in the *World Risk Report 2014***

Country	Exposure (%)	Rank
Vanuatu	63.66	1
Tonga	55.27	2
Philippines	52.46	3
Japan	45.91	4
Costa Rica	42.61	5
Brunei Darussalam	41.1	6
Mauritius	37.35	7
Guatemala	36.3	8
El Salvador	32.6	9
Bangladesh	31.7	10
Chile	30.95	11
Netherlands	30.57	12
Solomon Islands	29.98	13
Fiji	27.71	14
Cambodia	27.65	15

Source: UNU-EHS and Alliance Development Works (2014)

The ranking of countries based on exposure, susceptibility, vulnerability, and overall risk is an annual exercise done by the United Nations (UN) University and the Alliance Development Works. 'Exposure' is defined in the *World Risk Report 2014* as entities (population, conditions of built-up areas, infrastructure component, environmental area) being exposed to the impacts of one or more natural hazards (earthquakes, cyclones, droughts, floods, and sea level rise). The majority of Philippine cities and municipalities are coastal communities; many are in low-

lying areas that are very vulnerable to rising sea level, and are located along the paths most often taken by destructive typhoons.

Meanwhile, ‘susceptibility’ refers to the “likelihood of suffering from and experiencing harm, loss, and disruption in an extreme event or natural hazard. Susceptibility describes the structural characteristics and framework of conditions of a society.” Vulnerability “comprises the components of susceptibility, lack of coping capacities, and lack of adaptive capacities. It relates to the social, physical, economic, and environmental factors that make people or systems susceptible to the impacts of natural hazards, the adverse effects of climate change, or other transformation processes” (UNU-EHS and Alliance Development Works 2014, p. 42).

‘Risk’ is the interaction between exposure to natural hazards including the adverse effects of climate change and the vulnerability of societies arising from their geographical location (UNU-EHS and Alliance Development Works, p. 42).

**Table 2. Top 15 countries most at risk worldwide in the *World Risk Report 2014***

Country	Risk (%)	Rank
Vanuatu	36.5	1
Philippines	28.25	2
Tonga	28.23	3
Guatemala	20.68	4
Bangladesh	19.37	5
Solomon Islands	19.18	6
Costa Rica	17.33	7
El Salvador	17.12	8
Cambodia	17.12	9
Papua New Guinea	16.74	10
Timor-Leste	16.41	11
Brunei Darussalam	16.23	12
Nicaragua	14.87	13
Mauritius	14.78	14
Guinea-Bissau	13.75	15

Source: UNU-EHS and Alliance Development Works (2014)

The chapter is organized as follows: after a brief Introduction, section 2 sets the stage for the discussion of the main point of this paper—building economic resilience—by presenting the evolving global risk landscape and the most impactful natural shocks affecting the Philippine economy. People are more familiar with natural disaster risks and extreme weather events and

most discussions gravitate around building resilience against these types of risks. However, there are many different types of risks and they are interconnected, making resilience building more difficult and challenging. The local narrative of building resilience should also go beyond disaster risk reduction and management. Section 3 discusses resilience thinking and the need to build resilient systems. The section focuses on building economic resilience<sup>3</sup> and points out the great role of policy-induced resilience in shielding economies, especially vulnerable economies, from adverse exogenous shocks. Section 4 presents an overview of research done in the country along the concept of resilience and building economic resilience. Reading the section, the observant reader will realize how little thinking and analysis has been devoted so far to this important topic. During the post-crisis or post-shock period, researchers suddenly find a 20/20 vision of what has ailed the economy or the community. Studies in this genre are no doubt useful because present policies may be framed by past experience. However, it is also equally useful to find out what policy interventions boost economic resilience. There is a gap here in so far as policy-oriented research is concerned. The concluding section throws a challenge to the policy community to find evidence-based policies and steps that the country should take in order to prepare and strengthen itself from the impact of interconnected risks and adverse shocks.

## **2. The evolving global risk landscape**

Before one can meaningfully discuss resilience, one has to first understand the risk landscape, which translates to shocks when those risks occur. As experience shows, the adverse impact of such shocks is oftentimes traumatic and painful especially to a developing country. The problem is that different types of risks are so interconnected that when they occur, varying shocks can impact an economy or a cluster of interconnected economies or even the global economy. Economies are interconnected and interlinked through trade, technology, mobile capital, and labor. What happens in China or in the United States (US) impacts their trading partners and the global economy in general. To use a metaphor, different risks are intricately woven in a complex tapestry that envelops interconnected units in the global village.

The *2016 Global Risks Report* describes the evolving risk landscape perceived to significantly affect the global economy and individual economies in the coming years (World Economic Forum 2016). The Report is based on a perception survey of 750 experts and

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<sup>3</sup> There are other areas of resilient systems, for example, ecological, political that are not covered in the paper but are nevertheless worthy of attention.

decisionmakers in the World Economic Forum’s multistakeholder communities<sup>4</sup>. It defines global risk as “an uncertain event or condition that, if it occurs, can cause significant negative impact for several countries or industries within the next 10 years” (World Economic Forum 2016, p. 11).

Figure 1 presents the global risk landscape and the interconnection of risks. This map shows that risks are not isolated but are linked to several other risks, which magnify the impact or shocks on economies when they occur. Those risks also evolve, meaning they are not static but change over time. A major difficulty is defining how best to manage or respond to those risks. The global risks interconnection map shows that environmental, economic, geopolitical, societal, and technological risks are interrelated and can jointly impact economies on a regional or global scale.

The world is a global village where economic activities are significantly interconnected, interlinked and interdependent. Under this setting, a changing and complex risk landscape and the relatively fast transmission of shocks that can easily cascade on a wide scale accentuate the vulnerability of individual and regional economies, and the global economy in general. Pandemics, energy price volatility, rising food prices, financial crisis, interstate conflicts, and failure of climate change mitigation and adaptation, among others, figure prominently in present-day conversations of the policy community. The annual discussions at the World Economic Forum in Davos, Switzerland, would include an assessment of the evolving risks affecting the global and individual economies.

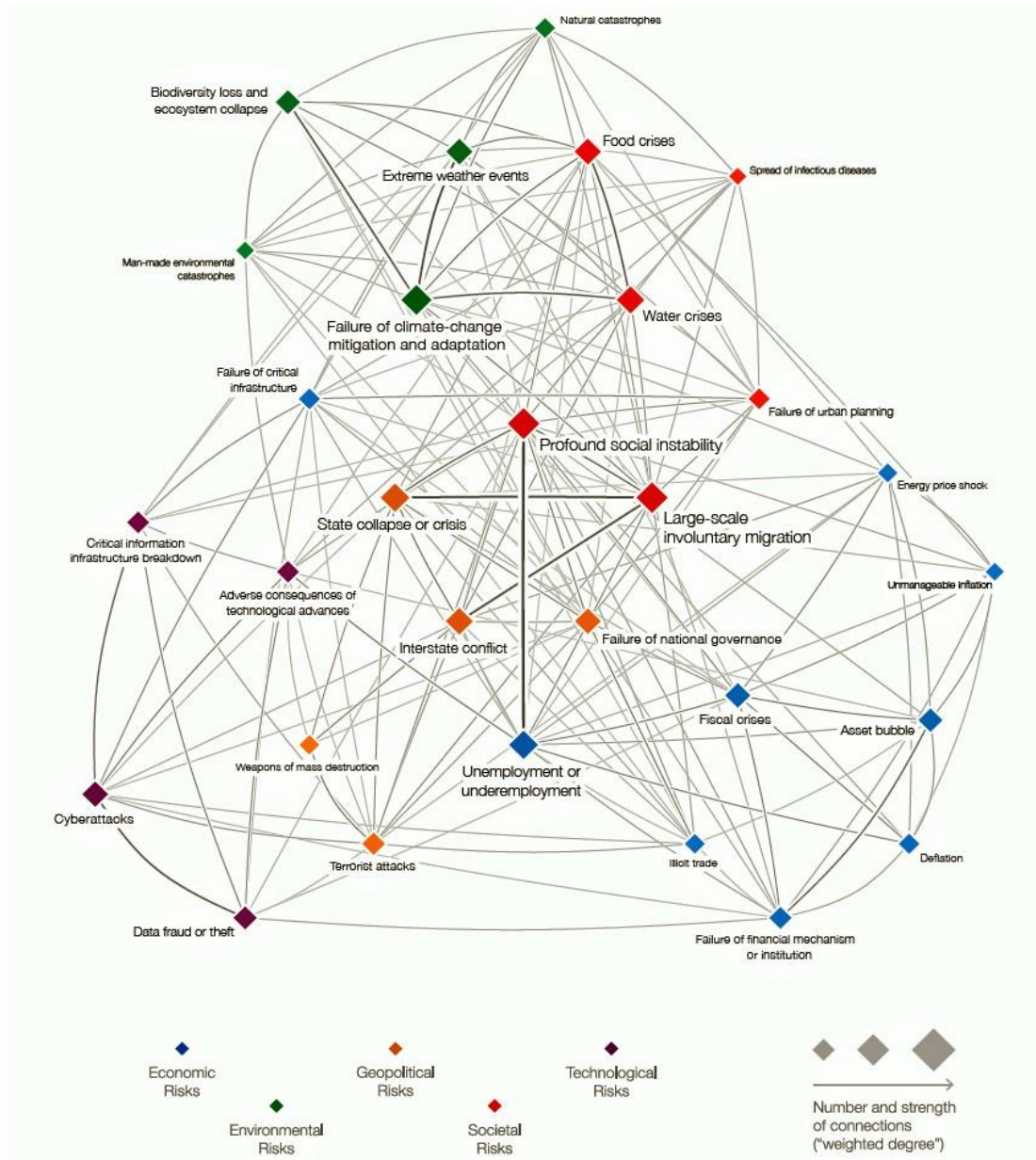
The Global Risks Interconnections Map also shows that extreme weather events, failure of climate change mitigation and adaptation and water risks are intricately linked to food crises. In particular, rapidly rising food prices drive poor people deeper into poverty because poor people in developing countries often spend upward of 60–80 percent of their income on food (Clapp and Cohen 2009).

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<sup>4</sup> Respondents are drawn from business, academia, civil society, and the public sector, and span different areas of expertise, geographies, and age groups. The survey asked respondents to consider 29 global risks—categorized as societal, technological, economic, environmental, or geopolitical—over a 10-year time horizon, and rate each according to their perceived likelihood of it occurring and impact if it does (World Economic Forum 2016).



**Figure 1. Global risk landscape and interconnection of risks**



Source: World Economic Forum (2016)

Studies have identified both demand-side and supply-side factors explaining the spike in food prices (Table 3) and they mostly are economic or related to bad economic policies. However, the ultimate factor behind a food price crisis could be political or some factor that is

totally unanticipated and unexpected, for example a coup d'état in a major food producing country.

**Table 3. Factors in food price crisis**

Demand side	Supply side
<p><b>Long run</b></p> <ul style="list-style-type: none"> <li>✓ Growth, rising incomes in developing countries, leading to increased demand for meat, dairy products and indirect demand for grains</li> </ul>	<ul style="list-style-type: none"> <li>✓ Inadequate investments in research and development, infrastructure, extension services to increase productivity</li> </ul>
<p><b>Effect of long-run trends:</b> Demand growth exceeding supply growth</p>	<p>= Declining stocks</p>
<p><b>Short run, emerging</b></p>	
<ul style="list-style-type: none"> <li>✓ Biofuels demand</li> </ul>	<ul style="list-style-type: none"> <li>✓ Rising energy, other costs</li> </ul>
<p><b>Short run, cyclical</b></p>	
<ul style="list-style-type: none"> <li>✓ Financial speculation?</li> </ul>	<ul style="list-style-type: none"> <li>✓ Adverse weather</li> <li>✓ Bad policies, including export restrictions, hoarding and pre-emptive buying, price controls, untargeted subsidies</li> </ul>

Source: Table 5.1 in Eliot (2009) cited in Clapp and Cohen (2009)

The situation is compounded when economic recession hits major food-producing countries and impacts developing countries dependent on food imports and whose economic health is linked to the fortunes of the global marketplace (for example, remittance-dependent poor countries). Rising food prices devastate poor communities and for people who are already “living in or on the edge of poverty, sudden changes in their ability to command food are destabilizing. The food price riots of 2007 and 2008 are not at all surprising when seen in this light” (Clapp and Cohen 2009, p. 3).

The spread of infectious diseases and profound social instability are consequences of water and food crises spread on a wide scale. The threat of another influenza pandemic is always present, with three influenza pandemics happening three times (1918, 1957, and 1968) in the 20th century alone. More than 20 million people died in the 1918 influenza pandemic (Meltzer et al.1999).<sup>5</sup> Another estimate by Ott (2008) puts fatalities due to the influenza

<sup>5</sup> Meltzer, M., N. J. Cox, and K. Fukuda (1999) “The Economic Impact of Pandemic Influenza in the United States:

pandemic (“Spanish flu”) of 1918 at 40 million lives in just a period of over 18 months. In the 20th century, there have been several outbreaks of severe acute respiratory syndrome (2003), H1N1 subtype of the influenza A virus (2009), and sporadic outbreaks of H5N1 influenza subtype (Smith 2009). Unfortunately, influenza is a modern-day repeat offender (Ott 2008).

Meanwhile, horrifying pandemics have hitched on mobile humans, goods, and animals to move around the globe. The *2016 Global Risks Report* said that over 2 billion global passengers travelled annually by air in the first decade of the 21st century, compared with just 68.5 million in the 1950s. The same Report cited a recent study led by the University of Cambridge that identified 20 known infectious diseases, including dengue, chikungunya, typhoid, West Nile, artemisinin-resistant malaria, the plague, H1N1 Swine Flu, MERS-Cov, and Ebola fever that have either re-emerged or spread geographically. There is a grave concern about the impact of pandemics (Box 1), such as substantial and widespread fatalities (Table 4).

**Box 1. Effects of a bird flu pandemic**

The World Health Organisation predicts that another flu pandemic is just a matter of time. A particular worry is a pandemic based on a variant of the H5N1 bird flu virus that has become endemic in poultry across Asia. Recent outbreaks of bird flu have occurred in Turkey, Europe, Africa, and India. So far, at least 83 people have died from the H5N1 virus as people have become infected from contact with diseased chickens. There is no evidence yet that the H5N1 virus has passed from human to human. But the 1918 Spanish flu pandemic—the worst the planet has seen—infected between 10 to 40 per cent of the population and around 3 per cent of those died. The 1918 Spanish flu was caused by an H1N1 bird flu virus that mutated so it could spread easily among people. If the H5N1 virus mutated to repeat anything like the 1918 pandemic, severe consequences would follow for the world’s population and economies. Even a moderate pandemic of the scale of the 1957 Asian flu will likely have significant impacts on global GDP, reducing it by 2.1 per cent relative to what it otherwise would have been. A more severe pandemic of the scale of the 1918 Spanish flu would likely cause a global recession.

Source: McKibbin and Sidorenko (2006)

**Table 4. Estimated deaths due to H5N1 bird flu virus in each region in 2006 (‘000)**

	Moderate		Severe	
	Number	Population	Number	Population
USA	201.9	0.07	1,009.3	0.35
Japan	214.6	0.17	1,073.1	0.84
UK	76.0	0.13	380.0	0.64
Europe	565.5	0.10	2,827.4	0.50

Canada	30.9	0.10	154.5	0.49
Australia	21.4	0.11	107.1	0.54
NZ	5.2	0.13	25.8	0.65
Indonesia	1,142.5	0.54	5,712.6	2.70
Malaysia	108.9	0.45	544.5	2.24
Philippines	415.5	0.52	2,077.5	2.60
Singapore	14.4	0.35	72.0	1.73
Thailand	162.1	0.26	810.3	1.32
China	2,848.6	0.22	14,242.8	1.11
India	2,423.6	0.23	12,118.1	1.16
Taiwan	55.9	0.25	279.4	1.24
Korea	117.5	0.25	587.6	1.23
Hong Kong	16.4	0.24	82.0	1.21
LDCs	3,308.6	0.22	16,543.1	1.08
EEFSU	670.7	0.13	3,353.7	0.66
OPEC	1,816.3	0.35	9,087.5	1.77
<b>Total</b>	<b>14,216.5</b>	<b>0.22</b>	<b>71,082.3</b>	<b>1.10</b>

Notes: LDCs – least developed countries; EEFSU – Eastern Europe and the former Soviet Union;  
OPEC – Organization of the Petroleum Exporting Countries  
Source: McKibbin and Stoeckel (2008)

Global warming concentrates harmful gases in the atmosphere. Carbon dioxide causes ocean acidification, which makes it harder for small shellfish to form the calcium carbonate shells they need to grow, affecting the food chain and threatening the availability of food from the seas (World Economic Forum 2016). Water crises impact least developed countries most significantly. About 70 percent of the world’s current freshwater withdrawals are used for agriculture and this could go increase to over 90 percent in most of the world’s least-developed countries (World Economic Forum 2016).

On economic risks, the current slowdown of the Chinese economy has sent ripple and knock-on effects on the global economy through linked commodities, imports, and real investment channels (Hsu 2015). This illustrates the interconnection of risks and shocks in an interlinked world. The fall in Chinese demand for commodities significantly impacts the growth prospects of commodity-exporting countries as well as global growth. Ordoñez (2015, p. \_\_\_\_ ) reported that Brazil, the largest economy in South America and a major commodity exporter, is “getting crushed by a global bust in commodity prices”. The Association of Southeast Asian Nations (ASEAN), a major trading partner of China, is likewise negatively affected. While the ASEAN region will continue to be a driver of global growth, the slowdown of China has

significant effects on the region's growth performance. Trade and regional production systems have been a vital source of growth and employment in the ASEAN and continuing weaknesses in the regional and global trade severely impacts trade-dependent countries in the region. As a defensive move, policymakers have looked at internal drivers of growth but limited domestic markets, expertise, and capital could put a natural limit to domestically-driven growth.

In addition, the impact of falling oil prices reverberates across oil-exporting and remittance-dependent economies. With declining oil revenues, oil-exporting economies draw down foreign reserves and are scrambling to borrow funds in order to continue with subsidies a lifestyle that their respective citizens have viewed as an entitlement. To do otherwise is to stoke up political discontent in a very volatile region. Meanwhile, remittance-dependent economies are bracing themselves on the imminent return of skilled and semi-skilled laborers who would be looking for jobs, which are in short supply. These remittance-dependent economies are also in a search of policy measures to offset the impact of an expected decline of the stock of foreign reserves. Remittances of overseas Filipino workers could still be flowing in relatively substantial amounts in the immediate future in as much as the bulk of those remittances comes from the developed countries, basically the US. However, the Organisation for Economic Co-operation and Development (OECD) countries, with the possible exception of the US, continue to face a growth slowdown. A cause for concern will be finding jobs for low-skilled workers whose work contracts with oil-exporting countries have ended and could not be renewed.

The *2016 Global Risks Report* provides a comprehensive overview of the evolving risks landscape in terms of likelihood of occurring and of the greatest impact. It enumerates the top five risks that are perceived to have the greatest likelihood of occurring (Table 5) and the greatest impact (Table 6).

In 2016, the top five global risks in terms of likelihood are mostly related to the environment (extreme weather events, failure of climate change mitigation and adaptation, major natural catastrophes). The other two major risks are geopolitical (interstate conflict with regional consequences) and societal (large scale involuntary migration). These contrast with the top five perceived risks in 2015: economic (high structural unemployment or underemployment), geopolitical (interstate conflict with regional consequences, state collapse, failure of national governance), and environmental (extreme weather events). The list of the top five global risks in terms of likelihood (Table 5) somewhat mirrors the risks and vulnerability of the Philippines.

**Table 5**

**Top 5 Global Risks in Terms of Likelihood**

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
1st	Breakdown of critical transformation	Asset price collapse	Asset price collapse	Asset price collapse	Storms and cyclones	Severe income disparity	Severe income disparity	Income disparity	Interstate conflict with regional consequences	Large scale involuntary migration
2nd	Chronic disease in developed countries	Middle East instability	Slowing Chinese economy (<6%)	Slowing Chinese economy (<6%)	Flooding	Chronic fiscal imbalances	Chronic fiscal imbalances	Extreme weather events	Extreme weather events	Extreme weather events
3rd	Oil price shock	Failed and failing states	Chronic disease	Chronic disease	Corruption	Rising greenhouse emission	Rising greenhouse emission	Unemployment and underemployment	Failure of national governance	Failure of climate change mitigation
4th	China economic hard landing	Oil and gas price spike	Global governance gaps	Fiscal crises	Biodiversity loss	Cyber attacks	Water supply crises	Climate change	State collapse or crisis	Interstate conflict with regional consequences
5th	Asset price collapse	Chronic disease, developed world	Retrenchment from globalization (emerging)	Global governance gaps	Climate change	Water supply crises	Mismanagement of population ageing	Cyber attacks	High structural unemployment or underemployment	Major natural catastrophes

■ Economic   
 ■ Environmental   
 ■ Geopolitical   
 ■ Societal   
 ■ Technological

Source: World Economic Forum (2016)

**Table 6**

### Top 5 Global Risks in Terms of Impact



Source: World Economic Forum (2016)

Because of its geographical location, the Philippines is naturally exposed to extreme weather events and natural catastrophes (Table 7) as well as to rising sea levels that is linked to failure in climate change mitigation and adaptation in large economies that use intensively fossil-based fuels.

**Table 7. Number of tropical cyclones by category in the Philippine area of responsibility, 1998-2014**

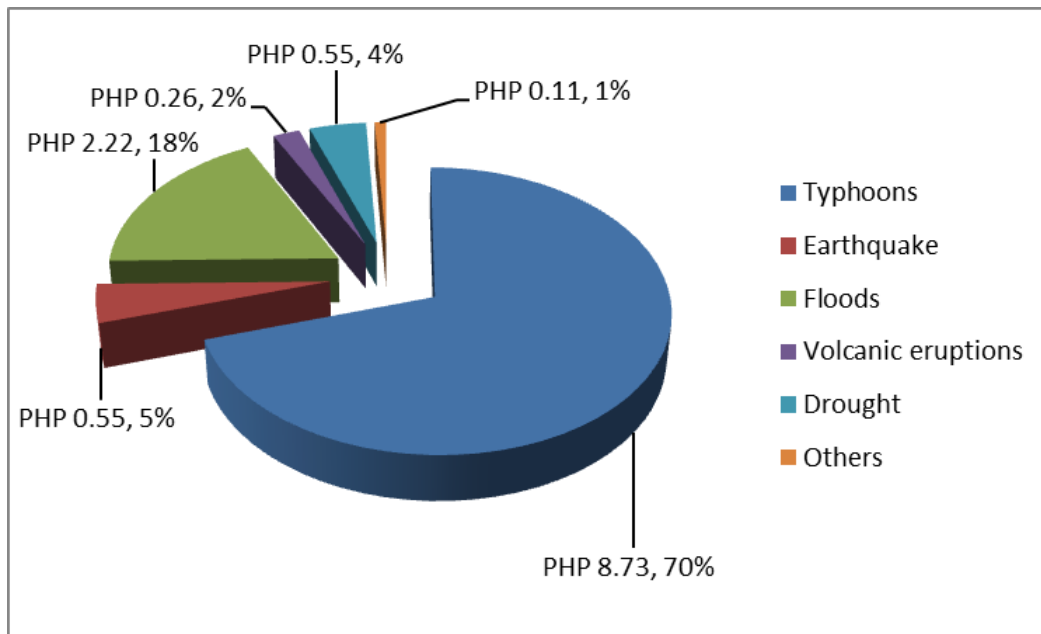
Year	Category				Total
	Tropical Depression	Tropical Storm	Typhoon	Super Typhoon	
2000	5	5	8		18
2001	6	7	4		17
2002	5	2	6		13
2003	8	8	9		25
2004	5	7	13		25
2005	11	1	5		17
2006	3	6	11		20
2007	0	3	10		13

2008	4	6	11	21	
2009	7	8	7	22	
2010	1	5	5	11	
2011	6	7	6	19	
2012	1	9	7	17	
2013	13	3	8	1	25
2014	6	2	7	15	

Source: PAGASA

In 2016, in terms of impact, the top five global risks are societal (water crisis, large-scale involuntary migration), geopolitical (weapons of mass destruction), environmental (failure of climate change mitigation and adaptation), and economic (severe energy price shock). In 2015, these are societal (water crisis and rapid and massive spread of infectious diseases), geopolitical (weapons of mass destruction and interstate conflict), and environmental (failure of climate change mitigation and adaptation). While the Philippines has not been adversely affected by those top global risks in terms of impact, the impact of natural disasters and extreme weather events in terms of loss of lives, property, and infrastructure is huge and sets back growth in affected communities and the economy in general (Figure 2).

**Figure 2. Costs of natural disasters: agriculture, 1990-2006**



Source: Climate Change Commission (2012)



Individual economies try to find ways to cope with risks and vulnerability to external and exogenous shocks. When disaster strikes, ill-prepared communities, or even those thought to be prepared for such shocks, suffer catastrophic loss of lives, property, and infrastructure so huge and stressful that it could take them years to recover and rebuild from the trauma. Some communities wrestle with dim prospects of recovery and a long-term decline in population and economic activities. Some recover but only very slowly. Shimada (2015) describes the aftermath of the Great Hanshin Awaji Earthquake, which struck Kobe, Japan, in 1995. The earthquake killed 6,343 people and led to the exodus of 85,000 people away from Kobe. It took almost 10 years for the population to return to its 1994 level. Population recovery is an essential part of disaster recovery and is a reasonable proxy for recovery (Vale and Campanella 2005). Unless immediately acted upon, post-disaster trauma in terms of loss of precious lives, property, businesses, and means of livelihood can leave communities vulnerable to severe economic decline and susceptible to various societal dysfunctions such as descent to chaos after a tsunami, urban blight, breakdown of law and order, and others. Van der Vegt et al. (2015) stressed that when social structure disintegrates, whole families and, perhaps, even communities, fall deeper into poverty and want.

Coping with exogenous shocks takes many forms depending on the nature of the shock, and on the information and knowledge of how best to cope with them. The 1997 Asian financial crisis that emanated from Thailand rapidly impacted other economies of the region. The financial crisis that started in Thailand developed into a financial contagion that soon affected Indonesia, Thailand, and South Korea. Sussangkarn (2011) narrated that it became apparent that East Asian economies were inextricably linked to each other and could not afford to ignore what was happening elsewhere within the region. The financial crisis pushed countries in the region to undertake regional economic cooperation initiatives with a regional financing arrangement envisioned to supplement international lending facilities (e.g., IMF) and provide swap facilities among ASEAN member-countries. “Under the swap facilities, a participating member-country with temporary international liquidity problem can swap domestic currency for US dollars with an agreement to buy back the domestic currency at an agreed future date” (Sussangkarn 2011).<sup>8</sup> In addition, the Philippines introduced prudential regulations along

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<sup>8</sup> The CMI later evolved from a bilateral swap network into a multilateral currency swap arrangement, which covers ASEAN +3 (China, Korea, Japan) with the following core objectives: (i) to address balance of payments and short-term liquidity difficulties in the region and (ii) to supplement the existing international financial arrangements. It is envisioned to further improve the regional capacity to safeguard against downside risks and challenges in the global economy (Sussangkarn 2011).

international standards and measures to strengthen the banking system, and increase transparency in financial market transactions, among others (Alburo 1999). The economic restructuring and financial reforms undertaken by ASEAN countries during the post-Asian financial crisis period have improved economic fundamentals in affected countries. For instance, “reforms boosted bank performance and lifted the quality of bank loans significantly” (Wang 2008, p. 9) in the ASEAN.

More recently, to deal with the aftermath of Typhoon Haiyan (local name: Yolanda), which devastated a wide swathe of Central Visayas, the Philippine government mobilized local and international resources to meet the difficult task of rehabilitation and reconstruction. The government prepared a reconstruction plan dubbed Reconstruction Assistance on Yolanda (RAY) that is meant to be “a concerted, well-coordinated and adequately resourced set of programs and projects to restore and rehabilitate the economic and social conditions” in affected areas (NEDA 2014, p. i).

Indeed, the world is a global village where daily economic activities are no longer constrained by difference in time zones, distance, and geography. By the same token, global risks recognize no geographic boundaries and can strike any economy in a totally unanticipated way. According to the *2016 Global Risks Report*, the spillover effects of natural or man-made disasters are felt oceans away. At the firm level, economic and business activities are interconnected and interdependent in supply chain networks. Thus, shocks like regional conflict, for example, that impact one segment of the value chain network can easily transmit into other segments, rendering the entire value chain inoperable. Van der Vegt et al. (2015) notes that the last decades saw measures to increase the effectiveness and efficiency of supply (value) chains, which have not only reduced the costs of doing business but have also magnified the consequences of disruptions. Even small local events can escalate rapidly, thereby disrupting business continuity and performance (Van der Vegt et al. 2015).

Meanwhile, there is a very different class of events—unpredictable and unanticipated—that could impact economies and leave policymakers grappling for effective response mechanisms. These are the so-called Black Swans<sup>9</sup> events that “deviate beyond what is normally expected of a situation and are difficult to predict<sup>10</sup>. They are “large scale unpredictable and irregular events of massive consequences” (Taleb 2014, p. 6). According to experts, certain events, such as the Internet bubble of 2000, can be modeled to some extent and

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<sup>9</sup> A term popularized by Nassim Taleb, a finance professor and former Wall Street trader. See Taleb (2008).

<sup>10</sup> <http://www.investopedia.com/terms/b/blackswan.asp?layout=orig> (accessed 9 March 2016)

predicted but not Black Swan events<sup>11</sup>. Examples of Black Swans include the September 11 attacks in New York City, World War I, Indian Ocean tsunami of December 2004, and the Arab Spring. The main idea is the difficulty and impossibility of anticipating and predicting their likely occurrence; thus, devising defensive or preventive measures to cushion their impacts may be beyond the remit of policymakers. Black Swans and other complex and interconnected risks underpin the vulnerabilities of economies and the need for building the economy's resilience to withstand shocks.

### 3. Building resilient systems

Anyone familiar with elementary Latin knows that the word resilience comes from the Latin *resilire*, which means to “recoil or leap back”. The Merriam-Webster dictionary defines resilience as “the capability of a strained body to recover its size and shape after deformation caused especially by compressive stress; an ability to recover from or adjust easily to misfortune or change”.<sup>12</sup> For example, in the field of engineering, the Institute of Resilient Infrastructure in the University of Leeds is doing research on how systems of physical assets are able to survive and perform well in an increasingly uncertain future. The research seeks to find out how existing and new physical infrastructures can become more adaptable in the future.<sup>13</sup> The American Psychology Association defines resilience as “the process of adapting well in the face of adversity, trauma, tragedy, threats or significant sources of stress— such as family and relationship problems, serious health problems or workplace and financial stressors. It means ‘bouncing back’ from difficult experiences”<sup>14</sup> and this is about applying resilience to human systems.

The term “resilience” is used in many disciplines but its meaning and nuance may vary as it is applied to physical structures, environmental systems, or human behavior<sup>15</sup>. Resilience, as commonly defined, refers to the capacity of systems to bounce back from adverse experiences and adapt or adjust to a new state of nature. Resilience has been conceptualized

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<sup>11</sup>Bloch (n.d.), “Black Swan Events and Investment”, <http://www.investopedia.com/articles/trading/11/black-swan-events-investing.asp> (accessed on March 9, 2016)

<sup>12</sup> <http://www.merriam-webster.com/dictionary/resilience> (accessed February 26, 2016)

<sup>13</sup> <https://www.engineering.leeds.ac.uk/resilience/research/> (accessed February 26, 2016)

<sup>14</sup> <http://www.apa.org/helpcenter/road-resilience.aspx> (accessed February 26, 2016)

<sup>15</sup> Resilience is translated as “*katatagan*” in Filipino, defined as “ang kakayahan ng isang sistema, komunidad o lipunan na lantad sa mga peligro na labanan, tanggapin, balikatin at makabawi mula sa mga epekto ng peligro sa isang napapanahon at masinop na paraan kabilang na ang pangangalaga at pagpapanumbalik ng esensyal na mga batayang istruktura at tungkulin” (ADRRN 2010).

as a desirable characteristic of ecological systems and the literature has pointed out how ecological systems can acquire it<sup>16</sup>. This paper views resilience as a critical quality of economic systems; hence, it is building economic resilience that is discussed here. Before the discussion of economic resilience, it is instructive to have a brief overview of the original thinking on resilience as applied to ecological systems. This conceptualization was later applied to a wider system, the socioeconomic and political ecosystem in which economic agents operate.

### *Resilience of ecosystems*<sup>17</sup>

According to Pisano (2012), the term “resilience” originated in the 1970s in the field of ecology. It was basically Holling (1973, p. 14) who introduced it to ecology and defined resilience as “a measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables”. Folke et al. (2010, p. 22) stressed “the capacity to change in order to maintain the same identity” when talking of resilient systems<sup>18</sup>. In Walker and Salt (2006, p. 1), resilience is defined as “the ability of a system to absorb disturbances and still retain its basic function and structure”.<sup>19</sup> This definition is akin to engineering resilience but viewing resilience this way may be “too narrow” (Pisano 2012, p. 9).

The concept of resilience has evolved from this narrow concept. Present discourse points to the key characteristics of a resilient system: (i) capacity of a system to absorb change and still remain within the same state or domain of attraction, (ii) capacity of a system to self-organize, and (iii) capacity of a system to build and increase its capacity for learning and adaptation (Carpenter et al. 2001). Based on these definitions, it is noted that the resilience is about building the capacity of a system or systems to absorb change or any disturbance to its existing state, to adapt, and to learn from the change experience. Subsequent literature added the characteristic of the transformability of systems. A system can absorb, adapt, or even transform itself into a more resilient system through its capacity to learn from its experience with change.

As stated above, this conceptualization was later applied to a wider system, the socioeconomic and political ecosystems in which economic agents operate. This is important

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<sup>16</sup> The next section draws from the excellent summary of resilience as applied to ecological systems by Pisano (2012) who based his paper on the copious work on the topic of Holling (1973, 1986), Walker and Salt (2006), and Folke et al. (2010), among others.

<sup>17</sup> The main source here is Pisano (2012).

<sup>18</sup> As quoted in Pisano (2012)

<sup>19</sup> As quoted in Pisano (2012)

because systems are not isolated silos that function and behave independently of each other. On the contrary, different systems—for example, social systems, political systems, and ecological systems—can be viewed as operating in one system “over many linked scales of time and space” (Pisano 2012, p. 6) referring to the comprehensive work of Walker and Salt (2006). This linked system responds to change or disturbance, adapt, and transform depending on the quality and state of resilience. In an unlinked system, Pisano (2012, p. 10) explains: “we have economists who model the economy, sociologists who explain how and why human communities behave as they do, and scientists who attempt to unravel the biophysical nature of ecosystems. They all generate powerful insights into how the world works, but these insights are partial. They are only on components of the system rather than the system as a whole.” Table 8 shows how the concept, characteristics, focus, and context of resilience differ based on the understanding of resilience as engineering resilience, ecological resilience, and social-ecological resilience (Folke 2006 and presented in Pisano 2012).

**Table 8. Different aspects of resilience**

<b>Resilience concept</b>	<b>Characterisitcs</b>	<b>Focus</b>	<b>Context</b>
Engineering	Return time, efficiency	Recovery, constancy	Vicinity of a stable equilibrium
Ecological	Buffer capacity, withstand shock, maintain function	Persistence, robustness	Multiple equilibria, stability landscapes
Social-ecological	Interplay disturbance and reorganization, sustaining and developing	Adaptive capacity, transformability, learning, innovation	Integrated system feedback, cross-scale dynamic interactions

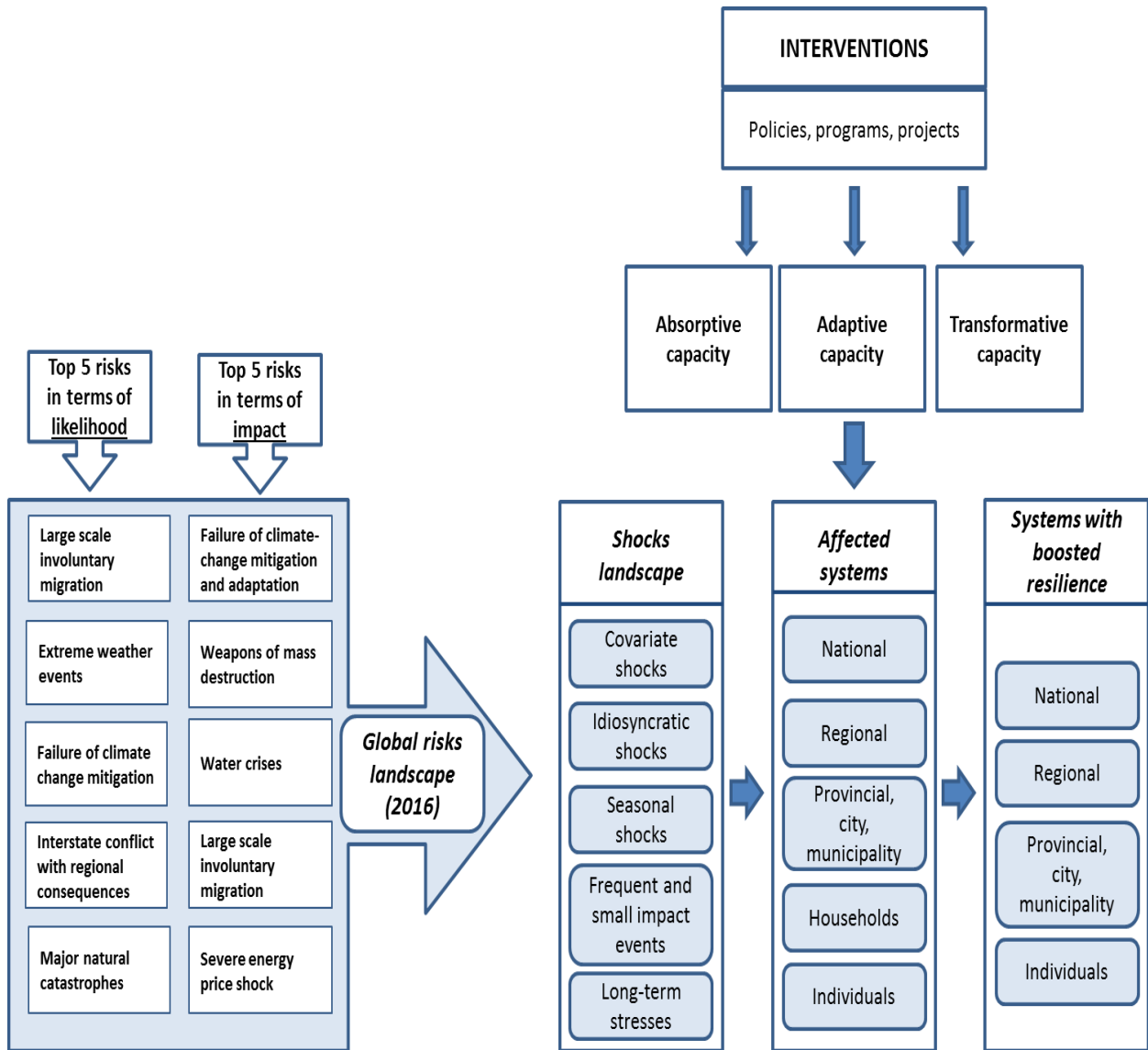
Source: Box 2.1 in Pisano (2012)

Thus, OECD (2014) explains that a system could be many things, including a unit of society (an individual, household, a community, or a state), of the natural environment (for example, a forest) or a physical entity (for example, an urban infrastructure network). A system’s resilience, broadly defined, is “the ability of households, communities and nations to absorb and recover from shocks, whilst positively adapting and transforming their structures and means for living in the face of long-term stresses, change and uncertainty” (OECD 2014, p. 37; Van der Vegt et al. 2015). The common factor in various definitions of resilience is the stress laid on capacity or ability of a body to absorb and adjust to any change or perturbation (Norris et al., 2008; ADRRN, 2010). However, beyond absorption and adjustment to change through some coping mechanisms, the idea of transforming structures to build resilience has to be emphasized.

A disruptive external shock tests the response and capacity of economic agents to deal with the shock. It is important to understand this behavior not merely in the context of being able to cope with a disruptive event but more so in terms of the following threefold responses: (i) absorption and recovery from exogenous shocks and stresses, (ii) adaptation, and (iii) transformation of society's structures and mechanisms (Mitchell 2013) that will enable different layers of society to withstand future shocks and stresses (e.g, climatic, natural, economic, and geo-political).

The transformative phase in different systems is critical because the improvement or changes in structures and mechanisms presumably empowers economic agents (different layers of society) to respond better to future shocks and stresses. The transformation of a system (e.g., the transformation of an agrarian economy to a modern, industrial economy) defines its resilience to future shocks. However, according to Walter and Salt (2006), social-economic-political-ecological systems are complex adaptive systems that do not change in a predictable, linear, or incremental fashion. It will not be easy to define a pathway toward transformation. In other words, such systems are dynamic, opportunistic, and capable of responding to change in a variety of ways, sometimes totally unpredictable, and policymakers must be totally aware of this reality so that they may structure policies driven by evidence, experience, and their best prognosis of the future. The challenge laid at the door of policymakers is to determine appropriate policy interventions that will enhance the social-economic-political-ecological systems ability to absorb and withstand shocks, adapt, and transform structures and mechanism (Figure 3).

**Figure 3. Framework for building resilient systems**



Source: Modified by the author from Figure 1 in OECD (2014) and Figure 1 in World Economic Forum (2016)

In sum, the main point in building resilient systems revolve around the need to develop the systems' capacity to absorb change or a disturbance, adjust to it, and on a higher plane, transform themselves into systems that are more resilient by adopting new structures and mechanism to function more efficiently. Figure 3 shows that there are interventions composed of policies, programs, and projects in the case of the public sector to boost the systems' adaptive, absorptive, and transformative capacities, which result in one objective: systems with

boosted resilience. “Systems” as earlier stated could be individuals, households, communities, local governments (cities, municipalities, or provinces), regions, or the nation-state.

#### *Vulnerability and building economic resilience*

Researchers have conceptualized and constructed various vulnerability-resilience models (Brenkert and Malone 2005; Briguglio et al. 2006; Briguglio et al. 2008; Rose 2004; Rose and Krausmann 2013; Seth and Ragab 2012). Economic vulnerability may be understood from both micro- and macroeconomic perspectives (Seth and Ragab 2012). Microeconomic vulnerability refers to the impact of shocks on individual households (Seth and Ragab 2012; Hughes and Hsiang 2013; Reyes et al. 2011).

This section does not discuss microeconomic vulnerability and resilience of households and communities although these are certainly worthwhile topics. The discussion is confined only to macroeconomic vulnerability and economic resilience, and a good starting point is the series of papers by Lino Briguglio and his colleagues on this subject. Table 9 shows vulnerability and resilience indices of the Philippines in comparison with a few Asian countries. Briguglio et al. (2008, p. 1) defines vulnerability as the “exposure of an economy to exogenous shocks arising out of economic openness, while economic resilience is defined as the policy-induced ability of an economy to withstand or recover from the effects of such shocks”. Seth and Ragab (2012) pointed to two different approaches in studies of macroeconomic vulnerability of developing countries. The first approach looks at macroeconomic vulnerability from the standpoint of financial or banking crises wherein vulnerability is seen as a result of macroeconomic imbalances in the financial sector. The second approach examines vulnerability from the perspective of specific structural conditions that expose economies to economic or financial risks and shocks. There is yet no comprehensive framework for assessing macroeconomic vulnerability (Seth and Ragab 2012). Baritto (2008) and Seth and Ragab (2012) mentioned the set of indicators proposed by the International Monetary Fund (IMF) in 1998 called the Macroeconomic Vulnerability Index, the World Bank’s 1999 Index of Macroeconomic Vulnerability, and the United Nations’ Economic Vulnerability Index. However, the seminal studies of Briguglio (1995, 1997), Briguglio et al. (2008), Briguglio and Galea (2003) are instructive.



**Table 9. Resilience and vulnerability of selected Asian economies**

<b>Economy</b>	<b>Resilience Index</b>	<b>Vulnerability Index</b>
Singapore	0.974	0.971
Hong Kong, China	0.877	0.713
Japan	0.674	0.106
Malaysia	0.624	0.587
Thailand	0.467	0.363
Philippines	0.353	0.485
Sri Lanka	0.328	0.415
India	0.301	0.201
Nepal	0.208	0.327
Indonesia	0.161	0.174
Bangladesh	0.136	0.313
Pakistan	0.069	0.349

Source: Briguglio et al. (2008)

According to Briguglio et al. (2008), economic vulnerability arises basically from three factors: economic openness, export concentration, and dependence on strategic imports. Economic openness is measured as the ratio of international trade to gross domestic product (GDP). A highly open economy is subject to the vagaries of external economic conditions over which it has no control. Participation of an economy in international trade confers benefits in terms of greater domestic output and employment and foreign exchange earnings, but it also exposes it to external shocks. Export concentration is measured using the United Nations Conference on Trade and Development index of merchandise trade. Dependence on strategic imports is measured as the ratio of the imports of energy, food, or industrial supplies to GDP. In constructing a vulnerability index for each economy, Briguglio et al. (2008, p. 2) argue that vulnerability is due to “permanent or quasi-permanent features over which a country practically exercises no control and therefore cannot be attributed to inadequate policies”. However, in Figure 4 below, this paper considers bad policies as contributory to the exposure or vulnerability of the economy because such policies prevent efficient structural transformation that builds economic resilience. Meanwhile, in the absence of any other estimation of the country’s vulnerability, the computation of Briguglio et al. (2008) is presented here to illustrate the extent of the country’s exposure or vulnerability relative to other countries. As depicted in Table 9, the Philippines is one of the most vulnerable countries in Asia.

Briguglio et al. (2008) hypothesized that resilience is captured by the following factors: (i) macroeconomic stability, (ii) microeconomic market efficiency, (iii) good governance, and (iv) social development. Macroeconomic stability sub-index is the simple average of three

variables: (i) the fiscal deficit to GDP ratio, (ii) the sum of the unemployment and inflation rates, and (iii) the external-debt-to-GDP ratio. Microeconomic efficiency sub-index is derived from a component of the Economic Freedom of the World Index, sourced from Gwartney and Lawson (2005), namely, regulation of credit, labor, and business. Good governance sub-index consists of (i) judicial independence and impartiality of courts, (iii) protection of property rights, (iv) military interference in the rule of law, and (v) political system and the integrity of the legal system. The social development sub-index is the sum of the education and health indices of the Human Development Index of the United Nations Development Programme. The resilience index is a simple average of the four sub-indices (Briguglio et al. 2008). It is interesting to know if there is a strong correlation between GDP per capita, on the one hand, and vulnerability and resilience, on the other. Briguglio et al. (2008) estimated it to be as shown below<sup>21</sup>:

$$\text{GDP} = 0.14 + 0.95R - 0.14V$$

$$t \text{ statistics} \quad (3.5) \quad (17.2) \quad (-2.4)$$

$$R [\text{squared}] = 0.78 \quad \text{number of observations} = 86 \text{ economies}$$

Where GDP = gross domestic product, R= resilience index, V= vulnerability index

The authors drew some interesting implications, namely that economic performance is “more dependent on man-made policies than on inherent vulnerabilities” (p. 13) and that good policies can lead to better coping ability and resilience. This explains what Briguglio et al. (2008) called as the “Singaporean paradox”, which is the seeming contradiction that a country can be very vulnerable and yet manages to register high GDP growth. Note that in Table 9, Singapore appears to be the most vulnerable economy among the lot but at the same time, it is the most resilient. What explains this? The authors’ hypothesis is that it is good man-made policies that offset significantly whatever vulnerability an economy faces. In the case of Singapore, the constraints are obvious: it is small city-state with a small (but extremely smart) population totally dependent on global trade for sustenance and investments. However, excellent performance in terms of the sub-indices of macroeconomic stability, microeconomic efficiency, good governance and social development are more than enough to override inherent and permanent factors that create vulnerability.

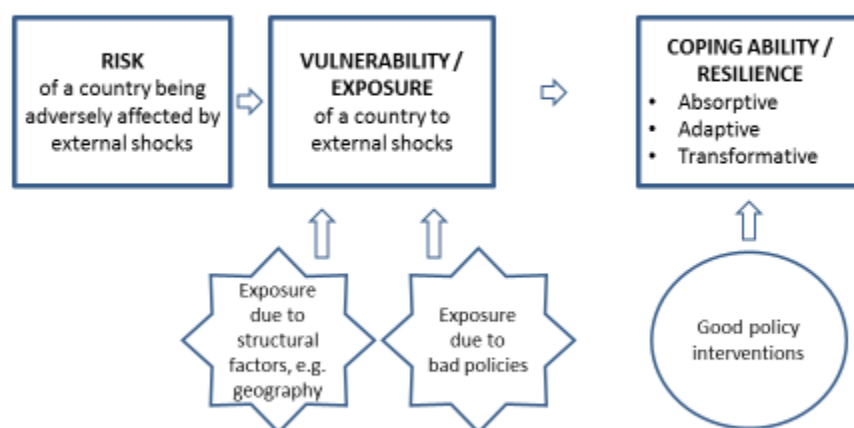
In finding ways to deal with a complex risk landscape and varying shocks, policy conversations have shifted *from* reducing vulnerability to exogenous shocks *to* building resilient systems that will enable economies to absorb shocks, adapt, and transform into modern, diversified industrial or post-industrial economies (in the case of the most advanced

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<sup>21</sup> All variables have been standardized so that their values range from 0 to 1 (Briguglio et al 2008).

economies). Building resilient systems means having good, forward-looking policy options for dealing with the vulnerability of the economy to various shocks. Berkes (2007) points to a pathway: build resilience into human–environment systems, an effective way to deal with change characterized by uncertainty, surprises, and unknowable risks. This line of thinking is illustrated in Figure 4, a revised version of Briguglio et al. (2008).<sup>22</sup>

**Figure 4. Risks, vulnerability, resilience**



Source: Author's modification of Figure 2 in Briguglio et al. (2008). See footnote for details.

<sup>22</sup> “Absorptive, adaptive, and transformative” are inserted in the box of “coping ability”. “Exposure to bad policies” is also included as a factor behind the vulnerability of an economy to external shocks. In Briguglio et al.’s original Figure 2, only “inherent and permanent” features of an economy listed as “economic openness, export concentration, and dependence on strategic imports” are the determinants of vulnerability or exposure of an economy to exogenous shocks. Briguglio et al. state that these features are not subject to policy or governance. Structural factors like geography influence the vulnerability of an economy. This author believes that bad policies also determine the vulnerability of an economy to exogenous shocks. Economic openness, export concentration, and dependence on strategic imports may also be determined by the policies a country adopts.

#### **4. Philippine research on resilient systems<sup>24</sup>**

In the Philippines, the concept of building resilience commonly relates to the occurrence of natural catastrophes such as severe flooding, typhoons, earthquakes and landslides. The Philippine Development Plan (PDP) 2011-2016 has included disaster resiliency as an important element in its integrated strategies, programs, and projects for inclusive growth. Disaster resiliency is likewise included in the PDP 2011-2016 Midterm Update and in the Revalidated Public Investment Program and Results Matrices. This is in line with the government's policy to incorporate disaster risk reduction in development planning at various levels of government, as stated in the Philippine Disaster Risk Reduction and Management Act of 2010 (Republic Act 10121) and its Implementing Rules and Regulations (NEDA 2014).

While disaster resilience remains as a major objective, the country should also be concerned with the evolving interconnected risk landscape and shocks earlier described. The Philippine economy has become more open and integrated to the global market; thus, exposure and vulnerability to external risks and shocks have likewise risen. Because of this phenomenon, there is a need to establish and a deeper understanding of the dynamics of resilient systems as noted in Section 3 of the paper and to develop a more comprehensive approach to building the country's economic resilience.

A cursory review indicates that there are more studies looking at how the country has coped during and after the occurrence of a crisis (e.g. financial crisis, natural disaster) than those that explore how the detrimental effects of a crisis or disaster could be mitigated in the context of changing conditions. For instance, Hughes and Hsiang (2013) analyzed the post-disaster socioeconomic effects of typhoons on Filipino households in the year after the typhoon had occurred. By using data on the annual variation in the incidence of typhoons (i.e., West-Pacific hurricanes), they observed a major decline in the spending of households on items that are associated with human capital investments such as health (i.e., medicine and high-nutrient foods like meat, dairy, eggs, and fruit) and education. Interestingly, there was less reduction in expenditures on other consumption goods such as recreation, alcohol, and tobacco. Looking into infant mortality data, they found that typhoons cause a significant increase in the mortality rates of infants, mostly female infants. Female infants born sometime after the typhoon face a higher risk of mortality than their male siblings due to competition for household resources mainly food. Male siblings are prioritized when it comes to household's food resources. Overall, the study finds (the obvious) that the households are worse off in terms of loss of human lives

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<sup>24</sup> This section was written by Ma. Kristina Ortiz, research specialist at PIDS.

and means of livelihood in the year after the typhoon happened than during the year the typhoon occurred or even right after the occurrence of the typhoon.

Pasadilla (1999) found that economic crises, not just natural catastrophes, are associated with increasing poverty incidence. In a study of the social impact of the Asian financial crisis, she explained that lower income groups are severely affected for the following reasons: first, workers in the lower income groups are primarily unskilled workers, who can be easily laid off, indicating almost an infinite elasticity of the supply of unskilled labor; second, they do not benefit from the increase in asset returns due to inflation, unlike the higher income groups, because they do not own such properties; and, finally, they have less flexibility in adjusting their consumption basket when inflation hits them. Nonetheless, Pasadilla's study shows that during the Asian financial crisis, the middle to high-income groups suffer the most due to a reduction in property prices and food inflation; and this was especially evident during the earlier stages of the crisis. The author thus emphasized the need for reliable and effective safety nets to ensure food and job security, especially among the vulnerable groups. More importantly, enhancing human capital investments can be an effective means for coping with future shocks in the long run.

Looking at the social impacts of the Asian financial crisis, Pasadilla (1999) posited that the effects of the crisis to the economy were less severe than what the country experienced in 1983 to 1985. She explained that when the crisis hit, the country was more prepared and resilient due to political stability, a strong financial sector, and better confidence on the economy. Notwithstanding its relative preparedness, the country experienced a slowdown in 1998 primarily due to a major decline in investments and a slowdown in real consumption. The average exchange rate depreciation during the two crises episodes, 1984 and 1998, was almost the same at approximately 50 percent but the impact was more intense in the 1984 crisis because it occurred at a time when the economic and political environment of the country was unstable. The instability and the deep depreciation led to a significant 12-percent decline of industry output in 1984, and 16 percent in 1985. This was not the case in 1997. The decline in agricultural output in that year was due to the onslaught of the El Niño phenomenon and not from exchange rate depreciation.

Meanwhile, Reyes et al. 2011 looked into the effects of the 2007-2008 global financial and economic crisis on poverty in the Philippines. To observe its impacts on the various dimensions of poverty, the authors analyzed the core and specific indicators, including the outcome and impact indicators, that were identified based on relevant key transmission channels for the Philippines, namely, overseas employment, remittances of overseas workers,

and local employment. Using the community-based monitoring system (CBMS) data, they examined a total of 13 barangays and found that, in general, the impact of the crisis has been minimal. However, the crisis has afflicted different income groups in different ways. A case in point is the manufacturing sector that largely employs unskilled workers. Between October 2008 and November 2009, the crisis adversely impacted around 843 (46%) manufacturing establishments, mostly electronics firms, out of 1,833 establishments. Hundreds of workers<sup>27</sup> were either displaced, temporarily laid off, or given a flexible work arrangement, which meant less working hours or days, and job rotation. On the other hand, cash remittances coming from OFWs continued to increase despite growth slowdown. While deployments of OFWs also generally increased during the said period, a great number of OFWs working in the affected areas abroad, for example, Taiwan and United Arab Emirates, were either terminated or suffered from fewer working hours. Simulation results of the possible effects of the crisis at the national and household levels essentially confirmed the scenarios mentioned earlier as a result of the global financial crisis. The study also reported the characteristics of the households that were directly affected by the global financial crisis through the said transmission channels: (1) larger household size; (2) largely dependent on remittances as measured by proportion of income derived from remittances to total income; (3) with higher average per capita income; (4) not dependent on agriculture as a source of income; (5) residing in urban areas; and (6) with a higher dependency ratio of 15-year-old members and below). Women and children could also be affected by the global financial crisis through health and nutrition. Overall, the results of the simulation show an overall worsening of poverty incidence (an increase of 0.14%), poverty gap (an increase of 0.06%), and severity of poverty (an increase of 0.05%).

Looking into the coping mechanisms of the households, Reyes et al. (2011) observed that households primarily change their consumption pattern (i.e., reducing the consumption of expensive food items), followed by making adjustments in clothing expenditures, electricity usage, and human capital investments. A decrease in human capital investments that is indicated by higher dropout rates of children and a reduction in health expenditures shown by changes in health-seeking behavior was more commonly observed among poor households than nonpoor households. A decrease in expenditure for recreation and vices was more evident among nonpoor households<sup>28</sup>. The other coping strategies noted by the authors are as follows:

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<sup>27</sup> The Bureau of Employment and Labor Statistics (BLES) approximated a total of 213,420 workers who were affected by the GFC during the same period (Reyes, Sobreviñas and de Jesus, 2011).

<sup>28</sup> The authors explained that this could be because of the fact that nonpoor households used to have the luxury to spend on those items.

borrowing money, dipping into savings, pawning assets, seeking additional jobs, or looking for work abroad.

In response to the global financial crisis, the government implemented various programs to mitigate its impacts. The government prepared an Economic Resiliency Plan (ERP) to accelerate government spending, reduce taxes, and increase public-private sector investments in infrastructure. Other programs were the Comprehensive Livelihood and Emergency Employment Program (CLEEP), the Conditional Cash Transfer (CCT), and the NFA Rice Access Program. An important take-away from the study of Reyes et al. (2011) is that the CBMS data can be very useful in improving the targeting system for government intervention programs, in examining the impacts of economic shocks at the household level, and in validating the impacts of the crisis at the national level.

In times of crisis, social capital may take a very important role in enabling communities to cope. Usamah et al. (2014) found that a strong social relationship is key to the strong perception and level of resilience of the communities. Such strong social relationship is determined by “strong social cohesion, demonstrated by a strong sense of community, trust among the community members, active community involvement and respect for existing cultures and values” (Usamah et al. 2014, p. 188), which have been nurtured over the years in closely-knit communities. A significant finding in the study is that vulnerability and resilience may exist concurrently. The authors explained that households that are frequently affected by natural disasters have accepted the notion that “disasters are a part of daily life” (p. 187) This perception has helped the authors to develop what they called “inbuilt resilience”<sup>31</sup>, a form of psychological resilience working at the individual and family levels. The study indicates the importance of including social aspects and dynamics in attempts to build resilience among communities that are frequently affected by natural calamities.

Aside from household-level impacts, micro, small and medium-sized enterprises (MSMEs), which comprise around 99.6 percent of the total number of business establishments in the Philippines, are likewise adversely impacted by natural disasters and other external shocks. Ballesteros and Domingo (2015) argued that there are sufficient legislative provisions and plans as stipulated in the National Disaster Risk Reduction and Management Plan (NDRRMP), National Climate Change Action Plan (NCCAP), MSME Development Plan (MSMEDP), and Philippine PDP to assist affected MSMEs. However, there seems to be a gap

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<sup>31</sup> The authors explain inbuilt resilience as “an essential, integral and inherent characteristic of the case study communities. Their largely low incomes have meant having to live in economic hardship, which built their resistance to shocks” (Usamah et al. 2014).

in execution of policies, specifically in terms of translating the NDRRM provisions into workable subnational and sectoral action plans. The authors highlighted the need for harmonized and strong cooperation among the public sector (both local and national governments), the private sector, and the local communities to enhance business continuity and resiliency. They indicated that the resilience of small and medium enterprises may be enhanced through the following channels: (1) organizational capacity build-up; (2) policy and institutional support tackling socioeconomic drivers of risks in pre-disaster stage; and (3) prompt and sustained economic restoration and support in the aftermath of disaster.

The most recent Report to APEC Economic Leaders, published by the APEC Business Advisory Council, also emphasized the need to build resilient communities and small businesses through micro-insurance and disaster risk-financing. The Report stated that roadmaps for building resilience would be done in collaboration with experts from the private sector and international organizations (ABAC 2015). The APEC Economic Leaders concurred that in today's context, the following measures are needed to promote a resilient and inclusive growth among economies in the Asia-Pacific region: (i) achieving food security; (ii) promoting health and productive workforce, (iii) increasing energy security; (iv) developing information and communication technology infrastructure resilience against natural disaster; and (v) promoting good regulatory practices. Meanwhile, in developing disaster-risk financing, the following should be in place: (i) sound financial and insurance markets to secure public trust in disaster-risk financing products; (ii) improved disaster risk evaluation methodologies; (iii) efficient capital markets that source disaster risk financing from pension funds; (iv) public awareness on disaster risk; and (v) investments in disaster resilient infrastructure (ABAC 2015).

The concept of resilience may also be examined in terms of the quality and availability of basic infrastructure services in the country. In 2014, Aviso et al. (2014) attempted a way to determine the optimal allocation of electricity to economic sectors in times of crisis. Given that an energy crisis affects a specific sector in the economy and also creates "ripple effects" to other sectors, the authors used the process-graph model (P-graph) and the input-output table of the Philippines to quantify those sectoral linkages to be able to minimize GDP loss. The authors identified the key sectors that should be prioritized in times of electricity crisis based on their findings as follows: a 10-percent power shortage results in 10-percent reduction in the output of the electricity sector, 4.04 percent in the industry sector, 1.69 percent in services, 1.17 percent in agriculture, and 4.95 in all other sectors of the economy in Mindanao. They pointed out that their approach may also be applied, in general, to enhancing disaster preparedness.



Current available literatures on disaster and crisis preparedness in the Philippines are still quite limited in scope and in number. In order to develop effective strategies necessary in building a resiliency framework, the government should realize the need for more in-depth studies that would help and guide policymakers in understanding the dynamics of today's risks and shocks. As pointed out by Ballesteros and Domingo (2015), the mere presence of legislative frameworks at the national level is not enough in ensuring that individuals, households, communities, and businesses (especially the MSMEs) are resilient to occurrences of disasters and other economic shocks. Embedding these frameworks and regulations at the local level and making these policies work are necessary to make these government efforts effective.

Studies exploring the resilience and coping mechanism of the Philippine financial system during economic and/or financial crises are also still limited. Jannsen et al. (2016) explored the effects of monetary policy on GDP output of advanced and emerging economies during financial crises using an interacted panel vector auto-regression (IPVAR) model. They found that expansionary monetary policy is significantly more effective in raising GDP during the recessionary<sup>34</sup> period of a financial crisis than in all other regimes (i.e., expansionary period of a crisis, recessionary period of noncrisis times, and expansionary period of noncrisis times), as shown in the model constructed by the author. Its effect on GDP during the expansionary (or recovery) period of the crisis, which usually occurs during the later stages of the crisis, is found to be very minimal. After analyzing the results, they found that during the recessionary periods of the financial crisis, expansionary monetary policy shocks are most effective in regaining growth primarily because of higher share prices and stronger consumer confidence on economic activity. The authors explained that these findings support the existing literature on how expansionary monetary policy during the recessionary stage of a financial crisis can significantly stimulate growth through the consumer channel. First, it is capable of reducing uncertainty, which, in turn, enhances consumer sentiment by improving the ability of the agents to make probabilistic assessments about subsequent events (Ilut and Schneider 2014). Second, it increases consumer confidence by giving signals about future economic prospects (Bachmann and Sims 2012; Barsky and Sims 2012). An increase in consumer confidence, therefore, can revive interest rate responsiveness of spending, borrowing, and investing on durables. As for the increase in share prices, expansionary monetary policy may raise the value of collateral that can result in relieving credit constraints, thus higher credit demand (Bernanke and Gertler 1995; Dahlhaus 2014).

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<sup>34</sup> This usually occurs at the earlier stage of the financial crisis.

Vital and Laquindanum (2005) examined the implications of asset price bubbles on approaches to monetary policy and financial stability. The authors noted that the asset price bubbles were already evident prior to the Asian financial crisis and that the monetary authorities had focused more on the deterioration of the economic environment rather than the volatility of asset prices. Although they found that the direct effect of changes in the asset prices on banks' financial situation was limited, an indirect impact in terms of a decline in asset quality (resulting from loss of investor confidence) and capital adequacy ratio of banks was observed. The authors emphasized that the best precautionary measure against price reversal is an environment conducive to growth, which includes price stability and financial stability.

Tuaño-Amador (2009) provided some key explanations as to how the Philippine economy remained resilient and surpassed the economic challenges brought about by the Asian financial crisis, which severely affected the majority of the Asian economies. The first factor is that even before the crisis, the country was under a floating exchange rate system, which served as the cushion to pressures coming from foreign capital flows. Second, the Philippine banking system's relatively limited loan exposure to real estate and low foreign investments inflow to the Philippines made the country less likely to develop asset price bubbles. Third, the debt roll-over risk was lower because of the country's lower external debt vulnerability. The share of short-term debt to the country's total external debt was low during the said period. Also, Philippine banks as well as the private sector relied less on foreign borrowings for financing. Fourth, the IMF funding and reform programs that were still in place were believed to have further boosted the market confidence despite the crisis. Fifth, and possibly the most critical explanation among the five, is that the challenges faced during the "external debt *cum* financial crisis" in the mid-1980s imparted very important lessons on both risk management and crisis management to the policymakers and the Bangko Sentral ng Pilipinas. As Canlas (2000) observed, the 1983 financial crisis was basically a result of inconsistent fiscal, monetary, and exchange-rate policies; this was the crisis that motivated policymakers to accelerate banking reforms.

Medalla and Jandoc (2009), meanwhile, took a gloomy different perspective on the validity of the official statistics produced in the Philippine National Income Accounts, which illustrated a faster-growing Philippine economy after the Asian financial crisis. They concluded that the reported higher GDP growth after the Asian financial crisis—attributed to the growth in personal consumption and the services sector and accompanied by import growth compression—which was uniquely different from the experience of the majority of Asian countries was due to the weaknesses of the country's national income accounting system. It is

also possible, they said, that the GDP figures were overstated. The said growth, they concluded, was not a reflection of economic resiliency.

## **5. Conclusion and recommendations**

It is important to adopt resilience thinking that understands how interacting systems, say of communities and the ecology, or social-ecological systems, can be managed in order to make them resilient (Stockholm Resilience Centre 2014). Boosting resilience involves: (i) understanding the risk landscape and how shocks impact systems, including how society functions in each context; (ii) determining at which layer of society those risks are best managed; and (iii) applying a set of resilience principles to strengthen the system's capacity to absorb shocks, adapt, and transform so that the system will be less exposed to shocks (OECD 2014). It is important to find out which layer of society can best deal with and manage the identified risks and, more importantly, handle those risks (Mitchell 2013).

The global risk landscape and the experience with past crises and shocks provide information as to what risks affect economic agents and the impact of exogenous shocks. There are numerous risk analysis tools, showing where and when conflict is likely and which areas are exposed to natural disasters, and modelling how economic shocks and pandemics might spread or how climate change will affect different communities and regions (OECD 2014). Policymakers should be aware and conversant about risk analysis, risk management, and what policies can best respond to exogenous shocks. This is to say that such policies should be underpinned by policy analysis and research on resilience systems. It is obvious that policymakers, especially the budget department, should give a premium to evidence-based policy research<sup>39</sup>.

There is also a need for a shared vision in the communities and in the larger polity about what to do about those risks, what priorities for action there are, and, more importantly, how to boost the resilience of various entities to the risks they face every day. The crucial questions facing policymakers are: where and when should a household, community, or nation-state invest time, skills, and money, and what form of investments should be taken in order to empower at-risk communities, help them to better absorb shocks, and adapt or transform so that they become less exposed to shocks.

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<sup>39</sup> Unfortunately, it seems that politicians and the government ignore the importance of policy-oriented research by scrimping on research resources.

Building economic resilience requires finding effective instruments, that is, policies and interventions to deal with different risks and shocks (e.g., natural disasters, pandemics, financial crisis) and their traumatic effects. This is the present day's biggest challenge facing policymakers because catastrophic shocks can quickly unravel hard-earned economic gains. Finding effective policy responses to risks, shocks, and post-disaster trauma, and efficiently implementing them are not easy tasks. An immediate issue is identifying policies or instruments that could effectively "deal with an increasingly complex, interconnected and evolving risk landscape, while retaining the (economy's) ability to seize opportunities to increase overall well-being" OECD 2014, p. 1). Assuming that those policies or instruments could be identified, the next issue is effective policy design and implementation.

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