15. Fiscal insurance: a new tool of fiscal stability

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1. INTRODUCTION AND CONTEXT

Exogenous shocks, ranging from disasters triggered by natural hazards, pandemics, or sudden commodity price adjustments, can have an extremely negative impact on the fiscal balances of both developed and developing economies. When such shocks occur, governments implement the necessary fiscal adjustments, which could be severe and long-lasting, while they mobilize national and international resources to deal with the short-, medium-, and long-term consequences.

Historic trends show that emerging and developing economies (EMDEs) have been the least equipped to prepare for and deal with the aftermath of exogenous shocks. In addition to the obvious lack of resources, these economies typically do not have the necessary expertise and the legal and regulatory frameworks with which to anticipate and deal effectively with consequences of the crisis. Thus, following the initial impact of the shock, EMDEs are forced to divert already scarce resources from their developmental and social agendas, which are often either temporarily postponed or permanently canceled. The inefficient allocation of resources negatively impacts debt levels and sustainability, credit ratings and economic growth.

Disasters that are triggered by natural hazards can have an extremely adverse economic impact on all countries but can be especially calamitous for EMDEs, since they usually have lower construction standards, poorer land use planning, and insufficient levels of insurance penetration. Therefore, the negative impact of disasters on the gross domestic product (GDP) of developing nations has in the past shown to be much higher than that of the advanced economies. With the increasing trend in urbanization and the exacerbating effects of climate change, including the frequency and severity of extreme meteorological events, the fiscal burden on these economies is expected to continue to rise noticeably.

The Southeast Asia and Pacific regions—especially the Philippines, Indonesia, and the Pacific islands—are particularly prone to disasters because they are either located within active seismic regions or because recurrent and strong meteorological events occur periodically in the area. Although almost all Asian economies are now considered to be middle-income, they are the most heavily affected by natural hazards, which turn into widespread catastrophes. They are also among the most exposed to the consequences of climate change. For example, eight out of 10 people affected globally by disasters triggered by natural hazards during 2001–2020 lived in emerging and developing Asia.² Furthermore, Asia's insurance-to-loss ratio of approximately 4 percent in 2020 compared unfavorably to that of the United States (US) (68 percent) or Europe (29 percent) (Dure 2021).

Commodity price volatility also presents a distinct high risk to EMDEs as their economies are often pegged to the export or import of a specific good or small group of products. Commodity prices are highly volatile and unpredictable, and their variability has created havoc in the fiscal balances of EMDEs in the past. For example, Indonesia and India are net exporters and importers of oil, respectively, and subject to pronounced price swings, while Viet Nam's economy is highly geared to and dependent on the production of coffee and is vulnerable to prolonged periods of insufficient or excessive rainfall and other weather-related events.

Exposure and vulnerability to exogenous shocks invariably strain public finances and can lead to potentially sizable debt spikes generated by emergency operations. This, in turn, can have damaging and long-lasting effects on a country's debt rating, overall creditworthiness, and ultimately, perception of financial sustainability. Indeed, the negative impact of disasters has led to limited accessibility to international financial resources by affected countries and significant downgrading of their credit rating, which in the case of EMDEs, create difficulties in financing post-disaster recovery costs compared with developed countries (An and Park 2019). More recently, several EMDEs (such as South Africa) have suffered either specific credit rating downgrades or negative forward outlooks in the aftermath of the COVID-19 global crisis, increasing the debt servicing burden for those countries for years to come.

EMDEs are therefore encouraged—and some have already made significant advances in this area—to take a renewed look at their risk management practices and address their vulnerability to exogenous shocks with a more targeted approach. This necessarily entails that EMDEs (1) better understand, internalize and quantify the risks they face; and (2) formalize in a more systematic manner a process of “risk-layering” to determine which risks (according to their frequency and severity) are worth retaining, which are to be self-insured and/or financed, and which risks ought to be transferred to the market.

To that end, there are persistent calls for EMDEs to engage more actively in programs of targeted “fiscal insurance”, which aim to transfer to the market a specific layer of risk, thus partially insulating a country's fiscal accounts from the harmful impact of exogenous shocks and achieving a greater degree of sustainability in their development programs. These fiscal insurance programs need to be construed not as a complete solution in and of themselves, but rather as focused, partial solutions ingrained within a more comprehensive and systemic risk management strategy.

Consequently, policy actions need to be twofold. First, countries need to shift from an arcane ex-post approach (i.e., crisis response *after* the occurrence of a specific event) to a more explicit ex-ante framework (i.e., risk reduction, preparedness, insurance, etc., *before* the event occurs). Second, policy makers need to take advantage of a readily available full menu of well-tested products and services in international financial markets in order to address the risks more efficiently.

Clearly, EMDEs have a compelling need to engage more actively on the issue of fiscal insurance. Still, and as we will see, a series of obstacles and constraints on both the demand and supply sides are now contributing to these economies' insufficient uptake of readily available financial products and services that are routinely utilized by advanced countries. In this light, there is rekindled pressure for multilateral development banks (MDBs) to step in and correct this “market failure” to remedy the mismatch between supply and demand. While some MDBs have already taken on this challenge, their efforts have proven so far timid and insufficient. This has prompted questions as to whether a specialized, independent, sole-purpose

agency is required to bridge this gap and enable EMDEs a wider and deeper use of fiscal risk management tools.

2. DEVELOPED ECONOMIES AND FISCAL INSURANCE: A WELL-ESTABLISHED FRAMEWORK

Sufficient evidence exists among advanced, industrialized economies of state-run programs for fiscal insurance to provide a “safety net” to the population at large or to specific subsets of that population. These programs are anchored on the concept of risk-layering, a conceptual framework that, within the context of a government’s chosen risk preferences and tolerance, determines the risks to be retained, self-insured, financed, or transferred to the market.

On issues of disaster financing, for example, several successful sovereign programs have been in place for decades (some of them dating back to the 1950s), including the Federal Flood Recovery Fund of Australia, the National Disaster Compensation Fund of France, the Earthquake Reinsurance Program of Japan, the Earthquake Commission of New Zealand, and the Flood Insurance Program of the US.

On issues of commodity price volatility and for agriculture production in particular, advanced economies also provide state-run programs that can be considered fiscal insurance mechanisms. Two prominent programs include the often-maligned Common Agriculture Policy of the European Union (EU), which is essentially a system of subsidies paid to EU farmers for the main purpose of guaranteeing both minimum levels of production and ensuring a fair standard of living for those dependent on agriculture. Similarly, in the US, an elaborate government-run scheme of subsidies, insurance price, disaster aid, and export promotion aim to achieve a similar objective of ensuring price and production stability for US farmers.

Although these advanced economies’ schemes are often not considered instances of strict fiscal insurance, they all nonetheless highlight the fundamental *political*, albeit implicit, premise of the government as “insurer-of-last-resort”, and rest strongly on the almost universal belief that the consequences of exogenous shocks, no matter their frequency and severity and their costs, are ultimately the government’s responsibility. Therefore, rather than react *ex post* after a shock has occurred, advanced economies have deliberately chosen to design policy frameworks (public and/or private) to address their country’s specific vulnerability either in the form of self-insured sovereign funds, government-sponsored insurance pools, or compulsory private sector insurance or reinsurance schemes. These policy frameworks and insurance schemes serve as a “first line” of defense by advanced economies, to some extent, by exonerating them from having to react after an event has occurred.

3. EMERGING AND DEVELOPING ECONOMIES AND FISCAL INSURANCE: A GROWING TREND?

For EMDEs, however, such fiscal insurance programs are exceedingly rare, due to a combination of scarce resources, deficient expertise and, arguably, lack of political will. Few EMDEs, as we shall see, have already started in recent years to address their vulnerabilities to exogenous shocks. A noteworthy example in the developing world is the case of Mexico, which has implemented for many years fiscal insurance programs in both disaster financing as well as commodity (i.e., oil) price volatility.

3.1 Mexico

Disaster risk management

Mexico is exposed to a wide variety of geological and hydro-meteorological phenomena. Ranked as one of the most seismically active countries in the world, it experiences annually an average of more than 90 earthquakes with a magnitude of 4.0 or above on the Richter scale. In addition, approximately two-fifths of Mexico's territory and over a quarter of its population are exposed to storms, hurricanes and floods (World Bank 2012). Within this context, Mexico stands at the forefront of initiatives to develop comprehensive disaster risk management structures and programs, including disaster risk financing and insurance strategies to manage the fiscal risk posed by disasters. Mexico was an early adopter of disaster risk management financing schemes through the establishment in the late 1990s of the Natural Disaster Fund (Fondo Nacional de Desastres Naturales, or FONDEN), which was created as a mechanism to support the rapid rehabilitation of federal and state infrastructure affected by adverse natural events. FONDEN was first created as a budget line in the Federal Expenditure Budget of 1996 before it became operational in 1999. Funds from FONDEN could be used for the rehabilitation and reconstruction of (1) public infrastructure at the three levels of government (federal, state and municipal); (2) low-income housing; and (3) certain components of the natural environment (e.g., forestry, protected natural areas, rivers and lagoons). In the early 2000s, however, in recognition of the need to promote stronger ex-ante disaster risk management, the Government of Mexico began to allocate funding expressly devoted to *preventive* activities. Although resources for prevention remain significantly smaller than those for reconstruction, the Mexican government has continued its effort to shift focus and funding from ex-post response to ex-ante disaster risk management. To that end, in 2005, the Government of Mexico empowered FONDEN to develop a catastrophe risk financing strategy to leverage its resources, relying on a layered combination of risk retention and risk transfer instruments which culminated in 2006 with FONDEN issuing the world's first government catastrophe bond (CAT bond).³ The bond has since been periodically renewed. FONDEN has provided to date one of the most sophisticated disaster-financing vehicles in the world, continuously evolving to meet Mexico's financial requirements for addressing the effects of disasters triggered by natural hazards and it has become an efficient mechanism to partially insulate the government's budgets in the event of such disasters.⁴

Commodity hedging

On the commodity front, as the 12th largest oil producer in the world, Mexico has also been a leader, with the Mexican government systematically hedging oil price risk for at least during the last 20 years through a commodity hedging program. Known to be the largest in the world, this program was formally and officially set up in 2001, although there is anecdotal evidence of Mexico having used market instruments as early as the 1990s to reduce their exposure to oil price volatility.

Mexico's oil sector is controlled by the fully state-owned company, Petroleos Mexicanos (PEMEX), with oil-related risks directly affecting Mexico's public finances. This has prompted the Mexican Treasury to actively conduct oil hedging operations. On average, during 2000–2016, oil-related revenues represented approximately 32 percent of total fiscal revenues, of which 47 percent corresponded to oil exports and the remainder to net domestic

sales of petroleum products. Over the same period, oil exports averaged 11 percent of total exports. While the importance of oil for the economy and Mexico's public finances has deteriorated since the mid-2000s, oil revenues still represented approximately 16 percent of total fiscal revenues and nearly 5 percent of total exports in 2016 (Ma and Valencia 2018).

The Mexican Treasury conducts these operations with the main objective of reducing the risk of fiscal revenue shortfalls during any given fiscal year. It includes in its annual budget an assumption on the export price of its oil for the subsequent fiscal year, computed as the weighted average between historical prices and futures. To reduce the risk of a decline in oil-related revenues, the Mexican Treasury purchases Asian put options with strike prices equal or close to the oil price assumed in the budget.⁵ The use of Asian (e.g., average price) options allows the Treasury to lock in a minimum price for the whole fiscal year. The program is executed through several contracts with private foreign banks as counterparts. While Mexico produced an average of 1 billion barrels of oil annually in 2000–2016, of which it exported roughly half, it also imported about 178 million barrels of petroleum products annually, over the same period. The domestic sale of imported petroleum products at regulated prices, which did not move one-for-one with international prices, compensated losses (or gains) in crude oil export revenues that resulted from fluctuations in international oil prices. After taking these offsetting factors into account, the Mexican Treasury hedged, on average, 29 percent of total production over the past 10 years. Since 2001, the cost of the options has averaged 0.1 percent of GDP per year and they have been exercised only on four occasions—in 2009, 2015, 2016 and 2020—with payoffs reaching, on average, 0.43 percent of GDP.

In addition to the notable case of Mexico, and only starting in recent years, a small subset of EMDEs have already started to address—often on a multi-country, regional basis—their vulnerability to external shocks via sovereign and/or subsovereign fiscal insurance programs. Below is a brief description of their experiences.

3.2 Philippines

The Philippines is among the world's most vulnerable countries to disasters triggered by natural hazards, and expected to incur on average \$3.5 billion in asset losses annually due to typhoons, earthquakes and other natural hazards. In 2013, for instance, the impact of typhoon Haiyan (also known as typhoon Yolanda) resulted in the loss of 6,300 lives and an estimated \$12.9 billion in damages, equivalent to approximately 4.7 percent of the country's GDP that year (World Bank 2020).

The Government of the Philippines embarked on a comprehensive countrywide catastrophe risk model and in 2016 adopted a specific Disaster Risk Finance Strategy. This was followed in August 2017 with the implementation by the government (with support from the World Bank and the Department for International Development of the United Kingdom) of a new catastrophe risk insurance program to help it better respond to losses from climate and disaster risks.

In 2016 this program culminated with the government obtaining the Philippine peso equivalent of \$206 million in insurance coverage against losses from major typhoons and earthquakes to national government assets and to 25 participating provinces against losses from major typhoons. Insurance payouts are made when predefined parametric triggers are met.⁶

Consequently, and for instance, in December 2017, typhoon Vinta triggered a partial payout of ₱83.5 million (\$1.6 million) payable to the province of Davao del Sur.

This payout was four times the premium paid under the insurance contract and highlights the value of market-based catastrophe insurance solutions. This insurance program significantly supported the country in responding to impacts of severe disasters, acting as the last line of defense and complementing other funding sources such as the national and local disaster risk reduction management funds and contingent credit that protect against less severe events. Total annual coverage in the first year of this provincial program (2017–2018) was, as mentioned, \$206 million, with coverage nearly doubling to \$389 million in the program's renewal for the period 2018–2019.

In 2019, the World Bank provided the Government of the Philippines with a nationwide insurance coverage for a maximum of \$225 million (\$75 million for earthquakes and \$150 million for tropical cyclones) for a 3-year period through the issuance of a \$225 million CAT bond. The types of events that will trigger a payout are predefined based on the requirements of the government. If and when a qualifying event occurs, the Philippines will issue a notice to an independent calculation agent to determine the insurance payouts. The World Bank then transfers the payouts to the government as soon as a calculation report is available, within approximately one month for earthquakes and five months for tropical cyclone events, without the need to assess real losses incurred by the country. The Philippines pays an insurance premium for the coverage, which the World Bank transfers to the CAT bond investors. The premium is fixed during the life of the bond, removing the uncertainty of the cost. The CAT bonds are issued under the World Bank's Capital-at-Risk Program, which collects the proceeds from the investors and includes a swap agreement that allows the transfer of the insurance premium from the Philippines to the investor and, in the case of an eligible event, transfers the payout proceeds to the government in a timely manner. The CAT bond attracted 24 global investors, ranging from asset management companies, dedicated CAT bond funds, pension funds, and insurance and reinsurance companies. It is the first CAT bond sponsored by an Asian sovereign and listed on an Asian (Singapore) exchange. This transaction exemplifies a multilateral development bank's ability to help member countries access insurance mechanisms through the international capital markets. This CAT bond is the latest step in the Philippine government's exemplary programmatic, multi-year approach to address and minimize the negative fiscal impact of disasters in the country.

The Government of the Philippines has emerged as a leader among Asian countries in the area of financial preparedness for disasters. To help meet its post-disaster response efforts, the government makes annual allocations to the National Disaster Risk Reduction and Management Fund, standing at ₱20 billion in 2019 and ₱16 billion in 2020. In addition, the Local Government Code of 1991 mandates local government units to set aside a minimum of 5 percent of their estimated revenue from regular sources as an annual lump sum appropriation for use in relief, rehabilitation, reconstruction and other works or services in connection with calamities (ADB 2020b).

3.3 The Pacific and Caribbean Islands: Regional Risk Pooling

Disaster insurance schemes have always benefited from risk diversification across national boundaries. This fact is based on the simple principle that, although the probability of any

specific event (e.g., a typhoon) is broadly considered as *certain*, its specific *location* and *timing* are, by definition, *unknown*. Thus, addressing disasters triggered by natural hazards on a regional rather than on a limited national basis has proven to be a positive value proposition by diversifying risks and reducing premia. To that end, it is worth reviewing the examples of the ad hoc consortia of countries in the Caribbean and the Pacific islands to address their vulnerability to disasters triggered by natural hazards.

Pacific Islands: the Pacific Catastrophe Risk Insurance Company

A notable example of pooled disaster risk management financing at the sovereign level is the group of five Pacific island countries (the Marshall Islands, Tonga, Solomon Islands, Samoa, and Vanuatu), which joined forces in 2013 to address their vulnerability to natural hazards. These countries are among the top 30 countries that are most vulnerable to disasters and where, every year on average, such events cause damages worth an estimated \$300 million. Vanuatu and Tonga, for example, experience annual losses estimated at 6.6 percent and 4.4 percent of their national GDP, respectively. Over any 50-year period, it is also estimated that the region has a 50 percent chance of suffering losses in excess of \$1.3 billion, or 8 percent of the regional GDP (World Bank Treasury 2015a).

In the aftermath of a disaster, governments need immediate cash to start recovery efforts while maintaining essential public services. Traditionally, Pacific island countries have relied on donor assistance to meet such needs. But the disbursement of donor assistance is more suitable for medium-term reconstruction rather than for immediate liquidity following a specific event. Furthermore, it has been difficult for countries to access catastrophe insurance individually because coverage levels are small. As a result, the governments of these small island states often face serious liquidity shortages after a disaster, which has reduced their capacity to respond quickly to emergencies.

Working together since 2007, the Secretariat of the Pacific Community, the Asian Development Bank, the Government of Japan, the Global Facility for Disaster Reduction and Recovery, and the World Bank have helped the Pacific island countries to increase financial resilience to natural hazards and climate-related disasters through the Pacific Catastrophe Risk Assessment and Financing Initiative and also the Pacific Disaster Risk Financing and Insurance Program. A key component of the program was a catastrophe risk insurance pilot operation that was designed to cover a portion of each participating country's fiscal exposure by providing immediate liquidity in the event of a major natural catastrophe.

This pilot operation, in which the World Bank acted as an intermediary between the Pacific island countries and four reinsurance companies, placed the country-specific catastrophe risk policies on the international reinsurance market as a single, well-diversified portfolio and provided aggregate cover of a maximum of \$45 million to the participating countries, with the Government of Japan financing the premia payments. Payouts of this pilot program will be triggered by the impact of an earthquake, tropical cyclone, or tsunami (estimated by an independent modeling agency) after the occurrence of any such event. The affected country or countries will receive funds within two to three weeks.

This operation consolidated the individual country risks and presented to the market a well-diversified pool of risks, helping participating countries to achieve better terms with regard to the cost of the premium and the speed with which the affected countries will receive payment in the event of a disasters triggered by natural hazards. This pilot operation has also

helped build capacity within the participating countries, enabling them eventually to enter into financial contracts for catastrophe risk transfer on their own in the future.

Caribbean Islands: the Caribbean Catastrophe Risk Insurance Facility

The Caribbean Catastrophe Risk Insurance Facility (CCRIF) was established in 2007 with the support of the Government of Japan, the World Bank, and other donors. CCRIF provides insurance coverage against earthquakes, hurricanes and excessive rainfall to several Caribbean and Central American countries by pooling the risks of these countries and transferring a portion of the pooled risks to the reinsurance market. CCRIF's portfolio has grown since 2007 to about \$135 million, with multiple payments made to date to affected countries. CCRIF was designed as a parametric facility, which, as seen before, provides a fast and transparent payment when triggered. As a reference, the payout from CCRIF was the first to reach Haiti in the aftermath of the 2010 earthquake (World Bank Treasury 2015b).

So far, CCRIF has accessed the reinsurance market, leveraging on its portfolio diversification to provide attractive coverage to its members, with the World Bank Treasury intermediating catastrophe swaps between CCRIF and the reinsurance market for the top-risky layer of the portfolio. Additionally, and building on its long-standing operations and reputation, CCRIF decided to approach the CAT bond or insurance-linked securities (ILS) market to diversify its sources of risk capital. This market has grown considerably in recent years, attracting large amounts of capital from new investors looking for attractive returns and uncorrelated risks. The influx of new capital has pushed down pricing and created attractive opportunities for public sector issuers to obtain catastrophe risk coverage.

Consequently, on 30 June 2014, the World Bank issued a 3-year CAT bond with a principal amount of \$30 million linked to hurricane and earthquake risk in CCRIF member countries. Simultaneously, the World Bank entered into a swap with CCRIF that mirrors the terms of the bond. The proceeds of the bond were kept on the World Bank's balance sheet. Had a disaster of the magnitude specified in the terms of the bond contract occurred within its tenor, the World Bank would have passed the proceeds to CCRIF through the swap. If no such event occurred, investors would have received the principal when the bond matured. What made this CAT bond particularly innovative was the elimination of the use of a special purpose insurer. Traditionally, special purpose insurers are used to issue CAT bonds. In this case, the World Bank issued the CAT bond directly, using its new Capital-at-Risk Notes Program under the Global Debt Issuance Facility. Under this approach, the World Bank faced the capital markets, while CCRIF continued to face the World Bank in a swap format. This significantly streamlined the time and cost of the issuance process and provided investors with access to new geographic areas and perils.

Pacific Alliance multi-country catastrophe bond

Another example of risk pooling across national boundaries is the Pacific Alliance, a regional initiative that promotes the economic integration of Chile, Colombia, Mexico, and Peru to foster the mutual growth and development of members. Coincidentally, the four countries of the alliance are situated along the western part of the seismically active Pacific Rim and are prone to earthquakes, along with other disasters triggered by natural hazards. By incorporating disaster risk management as an essential part of development planning, the Pacific Alliance

countries aim to build the foundation that will support long-term recovery and sustainable development.

In 2016, the Pacific Alliance countries started to explore the use of CAT bonds to (1) expand financing options for earthquake risk beyond the scope of budget funds and without increasing sovereign debt; (2) gain access to quick-disbursing and cost-effective financing from the international capital markets; and (3) build governments' technical capacity to make use of market-based risk transfer instruments. This process culminated in February 2018 with the World Bank issuing CAT bonds that provided Chile, Colombia, Mexico, and Peru a total of \$1.36 billion in earthquake cover (World Bank Treasury 2019a). The World Bank worked with each government to accommodate its legal and regulatory frameworks and customize documentation of agreements. Five different bond classes were issued, resulting in more competitive pricing and greater investor appetite.

The 2018 Pacific Alliance CAT bond was the first simultaneous issuance by four sovereign entities, as well as the largest earthquake CAT bond ever issued, offering a combined \$1.36 billion in earthquake cover. The CAT bond attracted more than 45 global investors, ranging from dedicated ILS funds to pension funds to reinsurance companies; and it resulted in approximately \$2.5 billion in investor orders. The high demand resulted in lower premium rates that ranged between 2.5 percent and 8.25 percent of the individual country amounts under coverage (see Table 15.1).

Table 15.1 Transaction summary

Nominal aggregate amount	\$1.36 billion
Bond classes	Chile: \$500 million Colombia: \$400 million Mexico (a): \$160 million Mexico (b): \$100 million Peru: \$200 million
Tenor	3 years for Chile, Colombia, and Peru; 2 years for Mexico
Risk premium	Chile: 2.5% Colombia: 3.0% Mexico (a): 2.5% Mexico (b): 8.25% Peru: 6%

Source: World Bank (2019a).

3.4 Uruguay

Another noteworthy example of fiscal insurance, this time on issues relating to energy dependency and commodity price volatility, is the case of Uruguay, which has since 2013 started to systematically address its vulnerability to both climate change and oil reliance.

Climate change hedging: \$450 million weather derivative transaction

Uruguay's economy is highly dependent on rainfall, not only for agricultural production but also, and arguably more importantly, for energy production. With almost 80 percent of

Uruguay's energy needs being fulfilled by hydropower, the country is highly dependent on rainfall and exposed to the effects of climate change on prevailing weather patterns. When rainfall (and/or accumulated water reserves) is low, Uruguay is forced to purchase alternative fuels (mostly oil and natural gas) to use as inputs for electricity production. When the price of oil is high, generation costs become prohibitively expensive, creating problems for the national budget as these cost spikes are difficult to fully transfer to consumers. In 2012, for instance, water shortages meant that Uruguay needed to purchase other sources of energy, precisely at a time when crude oil prices were comparatively high.⁷ Hence, that year's cost of supplying demand for electricity far exceeded the country's original projections, with the government needing to finance that gap.

To insure against this fiscal and economic vulnerability, in December 2013 Uruguay executed a \$450 million weather and oil price insurance transaction (World Bank Treasury 2015c), which was also intermediated by the World Bank. The transaction insured Uruguay for a period of 18 months against the simultaneous eventuality of a pronounced drought and high oil prices. To measure the extent of a drought and potential insurance payouts to Uruguay, the transaction measured and collected daily rainfall data at 39 weather stations spread throughout the two affected river basins. If precipitation were to fall below the level set up as the trigger of the contract, Uruguay would receive a payout of up to \$450 million based on the severity of the drought and oil price levels, with such payout being larger if oil prices were high, to offset the high cost of fuel purchases. This transaction, still considered today the largest sovereign weather-derivative transaction ever executed in the market, was part of a broader legislative framework approved by the Government of Uruguay to reduce their fiscal vulnerabilities, including stabilization funds and contingent financing with private banks, and the government's commitment to a comprehensive national plan aimed at reducing vulnerability in the energy sector.

Sovereign oil hedging program

Uruguay has embarked on an ambitious, decade-long renewable energy program aimed to eventually derive 95 percent of the country's energy needs from clean, renewable resources. However, while oil makes up a declining share of Uruguay's energy mix, the country still retains a residual reliance on crude oil, importing an average 12–14 million barrels annually. As a result, an unexpected increase in oil prices could force the government to divert budgetary resources from priority areas. It can also negatively impact individual consumers and increase production costs for businesses that rely on oil and its derivative products.

Countries like Uruguay are increasingly facing uncertainty from volatile global economic conditions and are seeking support to reduce fiscal exposure to commodity price shocks. To that end, and in line with the government's risk management strategy, Uruguay's finance ministry wanted to insulate the budget from abrupt and significant increases in oil prices. Consequently, Uruguay's Debt Management Office of the Ministry of Finance designed an oil hedging program as part of the government's comprehensive risk management framework to protect the economy against global volatility and to buttress the country's macro-financial resiliency framework.

This process culminated in June 2016 with the World Bank intermediating, on behalf of the Uruguayan government, the execution of a series of derivative transactions (12-month Asian call options) with market counterparties for an aggregate notional amount of \$330 million

and on an underlying 6 million barrels, or approximately half of Uruguay's total annual oil imports. This hedging program aims to moderate the negative impact of significant oil price increases on Uruguay's fiscal budget and the overall economy. This program continues to be implemented and has since been routinely renewed by Uruguay (World Bank Treasury 2016).

3.5 Tunisia

Also relating to fiscal insurance against oil price volatility, we have the case of Tunisia, another net oil importer. Like Uruguay, Tunisia is vulnerable to increases in the prices of oil products that can impact the government's fiscal and current accounts and diminish its ability to deliver on its social programs and domestic investments.

The Tunisian government has faced significant challenges in the energy sector over the last decade, with demand for energy products growing steadily by 5 percent to 11 percent per year, while crude oil and natural gas production decreased by 15 percent and 5 percent, respectively over the same period. As a result, energy import dependency reached 49 percent of consumption in 2017, while energy subsidies accounted for 2 percent and 2.8 percent of GDP in 2017 and 2018, putting further pressure on the current account and fiscal deficits (World Bank Treasury 2019b). To address this vulnerability, in mid-2018 the country created, with the assistance of the International Monetary Fund and the World Bank, an interministerial task force on energy subsidy reforms and developed a technical assistance roadmap to shift toward market-based hedging of energy prices. The roadmap developed concrete objectives and principles, including the sustainable and progressive reduction in the cost of the country's subsidy program. To support this objective, the government launched an oil insurance program to protect the budget against the risk of large oil price increases and their direct impact on the fiscal accounts.

In December 2018, the World Bank intermediated, on behalf of the Government of Tunisia, the purchase of oil call options from market counterparties for an aggregate notional amount of \$520 million on an underlying 8 million barrels and a tenor of 12 months. This operation brought several benefits to Tunisia, such as (1) protection of the budget and the fiscal accounts from oil price shocks for the duration of the coverage; (2) reduced pressure on the capital accounts due to lower foreign reserves volatility; and (3) fostering of a risk management culture and development of the necessary skill set. This transaction was an essential component of the government's efforts to address the budgetary impact of growing energy demand and to shift the energy mix toward renewable resources.

3.6 Morocco

Finally, and also on the subject of vulnerability to commodity prices, is the case of Morocco, whose fiscal standing is exposed to oil price volatility arising from its butane gas subsidy program. In 2009, the Government of Morocco began eliminating, one by one, the subsidies on oil products, including diesel, gasoline, heating oil, and so on. Butane gas, however, is used by lower-income and remotely located households for cooking and heating purposes, with few environmental, safe and cost-effective alternatives. For this reason, the government decided to continue subsidizing small bottles of butane gas as a social protection program for the lower-income segment of its population. This social program, however, exposes the

government to swings in the price of butane—when market prices rise, the government's cost of maintaining the program also rises, potentially reducing the government's budget for other social and developmental projects. In 2018, the butane subsidy program cost 1.5 percent of GDP but had flared up to 6.6 percent in 2012.

To partially reduce this exposure, in June 2019 Morocco's Ministry of Finance executed the purchase of a series of call options covering an aggregate total volume of 840,000 metric tons of butane, or approximately 80 percent of Morocco's exposure until December 2019.

The government's hedging program caused an immediate improvement in its sovereign credit rating and helped the government solidify its BBB-rating. After the execution of this first round of hedges, S&P improved Morocco's international credit rating outlook from negative to stable, which it partially attributed to the kingdom's effective control of one of its largest ongoing sources of fiscal instability.

4. EMERGING AND DEVELOPING ECONOMIES AND FISCAL RISK INSURANCE: A ROAD STREWN WITH OBSTACLES

As we have seen, unpredictable exogenous shocks constitute a substantial fiscal risk in the form of contingent liabilities in either disaster-prone countries or commodity-dependent economies. If such shocks are not anticipated and financially planned for, there can be considerable delays in post-shock response, significantly exacerbating the adverse human and economic consequences of such an event. Governments may also be compelled to draw heavily on budgets intended for development purposes, hindering long-term growth and development.

Against this backdrop, governments are becoming increasingly aware that they can no longer ignore the fiscal risks posed by such shocks. Many governments face trends of rising disaster losses as capital stocks increase and, while exposure of populations and assets rises, insufficient attention is still paid to resilience against shocks. Increases in the incidence and magnitude of climatological hazards are anticipated because of climate change, fueling the trend of rising agricultural damages and losses. Much greater emphasis on proactive fiscal risk management is essential in stemming this tide.

These facts are particularly true in the Asian context, where the incidence of fiscal insurance measures (with, as we have seen, the notable exceptions of the Philippines and the Pacific islands) has so far been exceedingly hesitant. However, several countries in the region (e.g., Fiji, Nepal, Pakistan, and Sri Lanka) have recently undergone diagnostic assessments relating to the enabling environment for disaster risk financing, with a particularly strong focus on potential insurance mechanisms (ADB 2020a). The region as a whole is highly exposed to natural hazards (both geological and climatological) and is also greatly exposed to commodity price swings with several large importer/exporters of oil and other mining products (such as Indonesia, Malaysia, Kazakhstan, and Mongolia, among others).

4.1 Demand Constraints

Despite the high demand for, and the many potential benefits of, fiscal risk insurance, the abovementioned examples are still few. What prevents a more rapid development of this market? Experiences so far suggest five main obstacles.

1. *Inadequate institutional framework and capacity*

Debt management issues are traditionally handled within each country's ministry of economy and/or finance by the Office of Public Credit, often under the supervision of or in coordination with the country's central bank. However, the Office of Public Credit has traditionally handled matters such as debt issuance levels, debt servicing, treasury operations and settlement, and so on. It is rare, certainly in the context of EMDEs, that such offices' perimeter of supervision and action include the country's level of disaster risk or commodity prices. Specifically, on commodity hedging, it is also typical within the country context to handle commodity export/import issues by ministries other than the Ministry of Finance (e.g., ministries of energy, agriculture, mining, etc.), which significantly complicates coordination and implementation. Therefore, there often exists an institutional vacuum as to which entity is supposed to act; and accordingly, in-country expertise and know-how have not been allowed to develop and prosper. There is clearly a knowledge and capacity gap on issues of fiscal risk management.

2. *Incomplete debt management strategy*

Similarly, developing economies have, in general and over the last decade, made a substantial effort to develop and modernize their respective debt management practices. A cornerstone of this process has been the development and implementation of comprehensive, multi-year, consensual debt management strategies. This strategy characteristically serves three purposes simultaneously. First, it identifies and quantifies the specific risks affecting the government's finances and their level of vulnerability within the context of trade-offs between cost and risk and the government's risk tolerance preferences. Second, it delineates and codifies the actions to be taken to limit such vulnerability. And third, it provides a transparent framework for action for those entities or individuals entrusted to address those risks. However, and as reiterated before, such debt management strategies seldom clearly and explicitly include the management of contingent liabilities such as disasters and/or commodity price volatility. Hence, these "imperfect" debt management strategies have often led to both inaction and lack of expertise.

3. *Unsatisfactory legal and regulatory frameworks*

Developing economies often lack robust legal, regulatory and supervisory frameworks necessary to engage in fiscal insurance. First, specific government agencies (or offices of public credit) have not been given explicit authority on fiscal insurance issues, creating a regulatory void and bureaucratic apathy. And second, EMDEs have not yet modernized their legal and regulatory frameworks to bring them in line with the advanced world in terms of the types of instruments available at their disposal (e.g., ability to transact on derivative contracts and other financial instruments, parametric insurance schemes, etc.), which has clearly limited the execution of these fiscal risk measures.

A good example of this limiting factor is the small number of EMDEs that have signed International Swaps and Derivatives Association (ISDA) agreements with international financial institutions.⁸ The International Swaps and Derivatives Association (ISDA)

Master Agreement is the most-used legal framework for over-the-counter transactions of international derivatives. It is part of a framework of documents, designed to enable derivatives to be documented fully and flexibly. The framework consists of a master agreement, a schedule, confirmations, definition booklets, and credit support documentation. The master agreement sets out the standard terms that apply to all the transactions entered into between two parties, without a need to change the terms. Although it is often viewed as a tool for banks and financial institutions exclusively, ISDA is broadly used by a wide variety of other counterparties, including governments, international agencies, and multilateral development banks. Although the ISDA agreement is quite lengthy, and the negotiation process can be burdensome; once a master agreement is signed, the documentation of future transactions between parties is reduced to a brief confirmation of the material and timely terms of the transaction. The master agreement also helps reduce disputes by providing extensive resources defining its terms and explaining the intent of the contract, thereby preventing disputes from the beginning as well as providing a neutral resource to interpret standard contractual terms. Finally, the ISDA agreement greatly aids in managing risk and credit for the parties. Yet, despite the obvious benefits of having in place such legal and trading frameworks, very few EMDEs have availed themselves of ISDA agreements.

4. *Imperfect procurement frameworks*

Another serious limitation among EMDEs regarding engaging in fiscal insurance schemes has been their inability to effectively and efficiently access the international markets where such hedging products are routinely traded and executed. In addition to the deficient institutional framework mentioned earlier, accessing international markets and multiple investors simultaneously in search of the optimal product and price for any fiscal risk management transaction necessitates an effective procurement process that is often lacking and that has made such access almost impossible. Frequently, EMDEs are constrained by cumbersome and lengthy procurement processes that, while well-intentioned, were not designed for fast-changing and dynamic financial products where timely and efficient execution is essential.

5. *Lack of political will*

Finally, given the inadequate legal, regulatory and institutional frameworks for fiscal risk insurance, there are no clearly delineated “rules of engagement” and coordination among the different entities involved. Since, by definition, the outcome of any insurance scheme is uncertain as it is based on the probability of the event being insured actually occurring, a traditional path has often been that of inaction, perhaps in order to avoid the accusation of diverting public resources from urgent needs if the event does not materialize. This frame of mind is particularly pronounced regarding disasters triggered by natural hazards, which cannot be avoided or prevented. Additionally, there seems to be a deeply ingrained reluctance among governments to engage directly with nonpublic, for-profit financial institutions on a purely reputational basis, and if only to avoid suspicions of favoritism toward some of these private operators.

4.2 Supply Constraints

Private international financial institutions and investors have introduced over the last few decades a multiplicity of products and services relating to risk management. These range from widely used financial derivative contracts to highly specialized hedging instruments for disasters triggered by natural hazards. Yet, the actual penetration of such products and services in the EMDE sphere has been extremely limited. In addition to the abovementioned limiting factors on the demand side, there also exists a certain reluctance—this time on the supply side—from private international financial institutions to engage more fully with EMDEs.

First, private international financial institutions and investors are aware of and concerned about the limited capacity of EMDEs to enter into the highly specialized field of modern risk management transactions and have, so far, been unwilling to make the investment in knowledge transfer and capacity building necessary to enable these countries to enter these markets confidently.

Second, credit considerations have also weighed heavily against private international financial institutions engaging more fully with EMDEs. Since some fiscal risk management schemes might potentially generate adverse credit outcomes against such economies, their comparatively low creditworthiness has often made these insurance products prohibitively expensive.

And, finally, some private international financial institutions (particularly large international banks) might also have a significant local presence and potentially large operations in some of these jurisdictions, and have often shied away from more actively engaging in fiscal risk management operations whose outcome might jeopardize these unrelated, parallel activities, even if only on a purely reputational basis.

5. FISCAL RISK MANAGEMENT INSURANCE: MARKET FAILURE AND POLICY SOLUTIONS

Demand for fiscal risk management insurance is high among EMDEs to hedge against geological, climate, commodity, or financial risks. Conversely, private international financial institutions and investors have developed over the last few decades a full menu of financial products and services exclusively designed to address those risks but have deployed them almost exclusively in the advance world. In other words, a significant market gap exists between pent-up demand for fiscal risk insurance by EMDEs and readily available products that are not being efficiently and effectively deployed among these countries. Enter MDBs!

MDBs are uniquely positioned to correct this market failure, to fill this market gap. First, MDBs' convening power and their ability to bring all parties to the table can and have played a crucial role in connecting supply and demand for fiscal risk management products in a manner that is perceived by all to be safe and fair.

Second, the MDBs' not-for-profit status can ensure that they are seen by all participants as an "honest broker", whose sole motivation is to help their constituent countries achieve their developmental goals. This perception is critical in overcoming the reservations by EMDEs and their distrust toward the always-for-profit private international financial institutions and investors.

Third, MDBs have developed over many decades of involvement—on their own behalf—in international financial markets a significant amount of expertise on risk management issues and a deep and well-developed network of connections among international banks, insurance and reinsurance operators, international and domestic investors, and so on. This know-how and this “Rolodex” are enormously valuable assets that MDBs can and should share with EMDEs.

Fourth, while international financial markets have been so far reluctant to devote the necessary resources to build capacity among EMDEs on issues of fiscal risk management, the MDBs’ very mandate is to ensure knowledge sharing (both “north–south” as well as “south–south”) and capacity building, as a mechanism toward uniform and best-practice risk management among their constituents.

6. CONCLUSIONS: IS THERE A NEED FOR A MULTILATERAL INSURANCE AGENCY?

As we have illustrated, there is a clear need for a broader and deeper penetration of fiscal risk management products among EMDEs, all within the context of existing and well-tested products in the advanced world capable of satisfying that need. MDBs are distinctly designed and particularly adept at becoming a “market maker”, a necessary nexus between EMDEs and private international financial markets on issues of fiscal risk management.

Some MDBs (noticeably, the Asian Development Bank and the World Bank) have already identified the importance of risk management as a strategic priority and pillar within their mandates, based on a self-evident premise: long-term economic development and prosperity is simply unattainable without sustainability.

History reminds us all with stubborn frequency that decades of economic development and poverty alleviation can be wiped out—literally and figuratively—by a tropical cyclone, an earthquake, or a commodity price shock. History also confirms that countries, advanced and emerging and developing alike, need to continue to shift their risk management approaches to emphasize *being prepared* rather than simply *reacting* to a specific event once it has occurred, and its consequences are painfully apparent.

Another fundamental tenet of the MDB community rests on the shared belief that financial strength and expertise need to be shared and deployed among their constituent countries. In the same manner that MDBs have been able to pass on for decades to their borrowing countries the preferential funding levels that they have enjoyed because of their superior creditworthiness, it logically follows that knowledge, expertise, and execution capabilities on risk management issues should be another benefit that also needs to be passed on from MDBs to EMDEs.

It was recognized long ago within the MDB ecosystem that specialized products and services are worthy of independent, stand-alone vehicles exclusively dedicated to delivering these niche products in the most efficient and cost-effective manner. Accordingly, the multilateral community has evolved and organized itself along, for instance, public versus private windows, short-term budget support versus long-term development finance, or straight lending versus credit-enhancing guarantee products.

With this objective in mind, and given its crucial importance, does the issue of fiscal risk insurance deserve a dedicated institutional platform shared equally with some other entities within the multilateral financial architecture? Put differently, if the MDBs identified long

ago the need to, for instance, protect investors on cross-border financing schemes (e.g., the Multilateral Investment Guarantee Agency), or set up an independent platform for conflict resolution (e.g., the International Center for the Settlement of Investment Disputes), the debate is now open as to whether the time has finally come for a dedicated, specialized institutional body to help protect EMDE governments against exogenous shocks. The incidence and devastating impact of the COVID-19 pandemic has also heightened and recast this debate.

This need is particularly acute on issues of disaster risk prevention and financing, a highly sophisticated, multisector, developmentally impactful field with such a rich and complex set of objectives and constraints as to merit a unique, independent implementation and delivery platform.

6.1 The Multilateral Insurance Agency

We strongly believe that the issue of fiscal risk insurance in general and of disaster risk management in particular is indeed worthy of such a specialized platform, to effectively assist EMDEs in addressing their peculiar vulnerability to exogenous shocks.

Such a multilateral insurance agency could achieve several objectives, such as the following:

- Become the “go-to” entity for fiscal insurance issues and products, efficiently connecting EMDE governments with private international financial institutions and investors.
- Offer risk management “market-maker” services between public and private institutions—with negligible capital requirements—by simply intermediating products with EMDEs that are matched by mirror transactions with the private sector.
- Provide a “one-stop” entity for the preparation, execution and settlement of risk insurance products, anchored on the not-for-profit principle, and funded in either a subsidized manner or on a strictly cost-recovery basis.
- Articulate a transparent and standardized legal framework for the execution and documentation of risk management products to all its signatory members (i.e., a multilateral ISDA).
- Establish a forum for capacity building and knowledge transfer and know-how to interested governments, nurtured upon international experiences from both the advanced economies and EMDEs and distilling and disseminating experiences and best practices for the benefit of governments, investors, insurance and reinsurance operators, financial supervisors, regulators, and so on.

To date, the MDBs’ involvement on issues of fiscal risk management specifically designed for EMDEs has been, at best, timid. While the eminent need to assist these countries in their efforts to address fiscal vulnerabilities relating to disaster and commodity risks is universally believed, the implementation of such support has been unenthusiastic. Some MDBs have indeed formally endorsed the strategic significance of fiscal risk management as a sustainable development imperative. Yet, they have all, in our opinion, fallen short of the mark by simply creating ad hoc platforms and “one-off” pilot programs aspiring to create a critical mass of demonstrative examples that will eventually justify a more concerted response. So, we conclude by reiterating a simple question: is there a need for a fully dedicated, independent multilateral insurance agency?

NOTES

1. The views expressed therein are those of the authors and do not necessarily reflect the views and policies of ADB, its Board of Governors or the governments they represent.
2. Centre for Research on the Epidemiology of Disasters, Université Catholique de Louvain. EM-DAT: The International Disaster Database. www.emdat.be.
3. A catastrophe (CAT) bond is a high-yield debt instrument that allows the issuer to receive funding from the bond only if specific conditions, such as an earthquake or tornado, occur. If an event protected by the bond activates a payout to the insurance company, the obligation to pay interest and repay the principal is either deferred or completely forgiven. CAT bonds have short maturity dates of between three to five years. The primary investors in these securities are hedge funds, pension funds and other institutional investors. CAT bonds are used by governments, property and casualty insurers as well as reinsurance companies to transfer risk to investors. These bonds offer insurance and reinsurance companies an alternative mechanism of offsetting the risk associated with underwriting policies. Institutional investors can receive a higher interest rate from CAT bonds than from most other fixed-income securities. CAT bonds are a type of insurance-linked security (ILS)—an umbrella term for financial securities that are linked to pre-specified events or insurance-related risks.
4. In late 2019, FONDEN was set to be dismantled after Mexico's lawmakers in the senate voted to reform that area of public funding. However, the coverage provided remains in place to date.
5. An Asian option is a type of derivative instrument where the payoff depends on the average price (*strike*) of the underlying asset over a certain period of time as opposed to standard options (American and European) where the payoff depends on the price of the underlying asset at a specific point in time (maturity). These options allow the buyer to purchase (or sell) the underlying asset at the average price instead of the spot price, reducing uncertainty over its payout in cases of particularly volatile markets and/or products.
6. Parametric insurance is a type of insurance that makes a specified payment upon the occurrence of a triggering event, satisfying pre-agreed characteristics, such as the magnitude of an earthquake or the intensity of a typhoon. Since the payment of claims depends on parametric triggers, and not on actual losses which would take time to assess in the field, claims can be paid much more efficiently and promptly. Payments can materialize within weeks compared with several months for traditional insurance. Parametric catastrophe risk insurance can therefore be used to provide prompt financing support to governments facing risks from disasters triggered by natural hazards and reduce the moral hazard inherent in all insurance mechanisms.
7. Average annual crude oil closing prices during 2012 were \$94.05.
8. ISDA is a trade organization of participants in the market for over-the-counter derivatives. It is headquartered in New York City, and has created a standardized contract (the ISDA Master Agreement) to enter into derivatives transactions which is considered to be the industry standard.

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