Maintains

Research supporting social services to adapt to shocks

Rapid Literature Review: Disaster Risk Financing and Public Finance

COVID-19 Series

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About Maintains

Maintains aims to save lives and reduce suffering for people in developing countries affected by shocks such as pandemics, floods, droughts and population displacement. This 5-year programme, spanning 2018-2023, will build a strong evidence base on how health, education, nutrition and social protection can respond more quickly, reliably and effectively to changing needs during and after shocks, whilst also maintaining existing services. Maintains will gather evidence from six focal countries — Bangladesh, Ethiopia, Kenya, Pakistan, Sierra Leone, and Uganda — to inform policy and practice globally. It will also provide technical assistance to support practical implementation.

Maintains is funded by UK Aid from the UK government and implemented through a consortium led by Oxford Policy Management (www.opml.co.uk). For more information about the programme, visit Maintains Webpage and for any questions or comments, please get in touch with maintains@opml.co.uk.

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1 Introduction

Large health shocks such as COVID-19 carry an expensive price tag – for the response, the recovery, as well as more long-term economic losses. The response phase is typically characterised by a great sense of urgency as the public financial management (PFM) system attempts to provide funding quickly in order to curb the outbreak early. However, in many low-income countries (LICs) and lower middle-income countries (LMICs), PFM systems lack robustness, with weaknesses across the board (De Renzio, 2009). Frequently, there is a minimal degree of preparation to accommodate sudden large and urgent financing needs. All of this can lead to PFM systems being overwhelmed. This review provides a quick overview of the literature on how large health shocks impact PFM systems in LICs and LMICs and what lessons we have learned.

In this context, it may be worth recalling the large funding amounts that are currently being mobilised in response to the COVID-19 crisis. Immense fiscal packages are being prepared, including the G20's announced US$5 trillion to inject into the global economy. The World Bank (WB) has announced its readiness to invest up to its maximum lending capacity for the next two fiscal years (US$160 billion) to support COVID-19 measures. Donors such as the BMZ and DFID are reallocating vast resources and making COVID-19 their only target of attention. While most of the details are still unclear, substantial resources may be available to LICs and LMICs and it will be important to consider how to maximize investment value.

This literature review is subject to several constraints:

- There is little literature dealing specifically with health shocks and PFM systems. Thus, much of the review draws on (1) literature on disaster risk financing (DRF); (2) general PFM literature; and (3) currently emerging expert commentary on COVID-19 and PFM.
- Many financing questions during the recovery phase revolve around reviving the economy, including via fiscal stimulus. The macroeconomic-technical body of literature concerned with this has not been reviewed.
- This review does not explicitly account for compounding crises, i.e. different shocks occurring at the same time. The reason for this is that from a PFM perspective, the impacts and response strategies will, while elevated, not be conceptionally different.
- This review has aimed to cover a lot of ground in relatively little time. It looks at the economic impact of large health shocks, the impact of such shocks on PFM systems, and LIC/LMIC coping strategies during the response and recovery phases. Given that only three days were available to draft the review, it cannot be complete.

Finally, while much of the literature reviewed here stresses the importance of financial planning, it is important to recall that for exceptionally large crises such as COVID-19, all financial planning may not be enough. Experience over the last few weeks has shown that the world, including almost all high-income countries and their highly sophisticated financial systems, was taken by surprise by COVID-19. Expecting to create fully resilient PFM systems in LICs and LMICs is unrealistic. The objective can only be to strengthen existing systems.

2 Economic impacts of a large health shock on LICs and LMICs

Large health shocks engender direct cost, mostly related to the response, recovery and potentially needed fiscal stimulus. They can also create indirect losses such as workforce absenteeism, wages not earned, lower tax revenue, informal health costs (e.g. for patient transport), impacts on the healthcare workforce, losses in the agriculture sector, reduced tourism and travel, reduced trade and retail activity, environmental impacts, or educational losses (Bloom and Canning, 2006).

The WB (2018) has estimated the direct economic cost of selected epidemics and pandemics over the last century as follows:

Year (start)	Health shock	Estimated economic impact
1918	Spanish flu influenza pandemic	GDP losses: Australia: 3%; Canada 15%; UK 17%; USA 11%
1957	Asian flu influenza pandemic	GDP losses of 3% in Canada, Japan, UK, USA
1968	Hong Kong flu influenza pandemic	USA: US$23-26 billion
1981	HIV/AIDS pandemic	2-4 annual loss of GDP growth in African countries
2003	SARS pandemic	GDP losses: Hong Kong US$4 billion; Canada US$3-6 billion; Singapore US$ 5 billion
2009	Swine flu influenza / H1N1 pandemic	GDP losses: Republic of Korea US$1 billion
2012	MERS epidemic	GDP losses: Republic of Korea US$ 2 billion + US$14 billion in fiscal stimulus spending by GoK
2013	West Africa Ebola epidemic	GDP losses: US$2 billion in Guinea, Liberia, Sierra Leone
2015	Zika virus pandemic	GDP losses: US$7-18 billion in Latin America and Caribbean

Other cost estimates, taking into account indirect productivity losses and social impacts, are much larger: US$40 billion for the 2003 SARS epidemic; US$45 - 55 billion for the 2009 H1N1 influenza pandemic; and US$53 billion for the 2014-16 Ebola outbreak (GPMB, 2019).

Various researchers have attempted to estimate the potential economic cost a pandemic could have. One difficulty they face is that many of the greatest potential diseases remain under-researched (Bloom et al, 2018). Estimates range from an annual expected loss of US$60 billion (National Academy of Medicine, 2016), to US$500 billion (Fan et al, 2017), 2.2-4.8% of global GDP (GPMB, 2019), or even 5% of global GDP for a severe pandemic like the 1918 Spanish influenza (World Bank, 2017b).

Current economic loss estimates for COVID-19 vary widely, given the many uncertainties and the in many ways unprecedented scale of the event (Reinhart, 2020). Many expect the global downturn in 2020 to be worse than that of 2008 (e.g. Rogoff, 2020). Health impacts may be worse for LICs and LMICs – social distancing may be harder to implement, health and nutrition services were weak at the outset, influenza vaccination rates low, supply chains vulnerable, resources extremely constrained, and debt levels already high (Glassman, 2020; The Economist, 2020; Ghosh, 2020). However, while health and wellbeing in LICs and LMICs may be impacted worse, the economy may be better insulated than in higher income countries: For example, the International Monetary Fund's (IMF) World Economic Outlook for 2020 projects GDP growth to be -6.1% in advanced economies but +0.4 percent in LICs (IMF, 2020). For Sub-Saharan Africa, the WB expects economic losses of US$37 – 79 billion (2.1 – 4.6% of GDP) and sees the possibility of a COVID-19-induced food security crisis (World Bank, 2020).

3 Impacts of large health shocks on the public finance system in LICs and LMICs

Health-related shocks can have a serious impact on government revenues, including lost VAT receipts, lost taxes on companies, lost income tax (as people file for unemployment or are forced to take unpaid leaves of absence), lost indirect taxes, or loss of human capital. This was the experience in all three countries affected by the West African Ebola outbreak 2014-16 (World Bank, 2016).

The source of reallocated budget for response is often other health expenditures, leading to funding shortages there. For example, the West African Ebola crisis caused disruptions to maternal and neonatal care in Liberia, as health facility staff and resources were redirected to the response (Shannon et al, 2017). Similar effects could be seen during the most recent Ebola outbreak in the Democratic Republic of Congo (DRC), where the lack of vaccinations have helped create one of the largest measles outbreaks in a single country since the vaccine was invented in 1963 (Roberts, 2020). Things might deteriorate with COVID-19. Resource reallocations due to COVID-19 also seem to have impacted the healthcare system in China (Stevenson, 2020; Qin and Wee, 2020).

The shock can also affect the Ministry of Finance's business continuity. Like other public offices, large health shocks such as pandemics can expose the ministry to operational risks as employees fall sick or are otherwise required to stay at home. Many LICs and LMICs have processes that require manual approval of payments and their absence can jeopardise business continuity of the ministry. Business continuity planning is unlikely to be in place in most LICs and LMICs and even if it is, is unlikely to account for health emergency conditions during a pandemic (Storkey, 2011). Internet and remote work infrastructure may often be insufficient to allow for effective home-based work. Some thus recommend managers to consider back-up responsibilities, include preventive measures to protect employees and to the greatest extent possible enable remote work (Balibek, 2020).

Finally, in the medium-term, the level of indebtedness and annual debt servicing costs may rise due to the shock. This is no different to higher-income countries that may also be forced to turn to capital markets for resource mobilisation (e.g. consider the G20's announced US$5 trillion for COVID-19). However, given often already high ratios of debt servicing to total budget, the impacts may be felt harder by many LICs and LMICs (Ghosh, 2020).

4 Response phase

How do LIC and LMIC public finance systems tend to cope with the response to large health shocks?

Large health shocks tend to require additional funds to finance response cost and possibly fiscal stimulus, thus often engender a fiscal shock. Unfortunately, many LICs and LMICs lack strong PFM systems which impedes their capacity to respond swiftly and effectively (Barroy et al, 2019). Instead, financial shock response of LICs and LMICs is often characterised by a lack of preparation, a lack of speed, and dependency on donor contributions (World Bank, 2014). Fiscal risk statements, the standard PFM tool to assess fiscal exposure to shocks and thus the first step to greater financial resilience, exist only in few in LICs and LMICs (Cebotari et al, 2009).

For example, in Ethiopia, a review of government financing practices of health-related emergencies showed that funding tended to be insufficient, slow and that its vast majority comes through external humanitarian donors (OPM, 2019). In Sierra Leone, anecdotal evidence points towards financing for health shocks being structurally arranged ad-hoc, often arriving late, and being unreliable (e.g. GoSL 2018). And in separate Joint External Evaluations (JEEs) of the Central African Republic, the Republic of Congo, Gabon, Guinea-Bissau, Malawi, and São Tomé e Principe, the WHO recently found for each country that health shock contingency funding mechanisms were largely unavailable and that health emergency response efforts were strongly dependent on donor support. For the respective indicator, each country scored the minimum number of points (WHO, 2019a-f).

What are key lessons learned for LIC and LMIC public finance systems to improve their response to large health shocks?

In a rapidly evolving crisis like the current one, IMF experts advise a “whole of government” approach in which an inter-ministerial PFM crisis committee is established to manage and keep track of public finances (Balibek et al, 2020). Generally, fiscal shocks, such as those triggered by large health shocks, require swift adjustments (1) on the revenue and (2) on the expenditure side (Barroy et al, 2020).

(1) On the revenue side, it is key to mobilise response funds quickly. Countries use different PFM tools to mobilise additional funds for emergency spending that can all be appropriate depending on the context (Cevik and Huang, 2018; Saxena and Stone, 2020):

- **Contingency appropriations.** These can be available through contingency budget lines or revolving contingency funds. The WHO’s JEE tool takes the existence of such appropriations as best practice (WHO, 2018). As evidenced in recent JEEs (WHO, 2019a-f) and the experience from DRF (World Bank, 2013; OECD, 2015), unfortunately the reality in many LICs and LMICs often looks different: Countries may lack availability of contingency funding or mechanisms may be insufficiently resourced or subject to inadequate access rules leading to premature exhaustion of funds .
- **Budget reallocations:** Funds can be shifted from one part of the budget to accommodate changing priorities as in the case of a costly health shock. This can be done in various

different ways, including through (a) virements, i.e. transfers between budget items within appropriations that do not require legislative approval, and (b) supplementary budgets (Cevik and Huang, 2018). Overall, very little is known about the size of shock-related budget reallocations in many LICs and LMICs (World Bank, 2012). To respond to the ongoing COVID-19 crisis, various high-income countries already adopted supplementary budgets, including Korea, France, Germany, Japan, the US, and Japan (Barroy et al, 2020). However, across LICs and LMICs, the timelines and processes of enacting supplementary budgets vary. In some cases, the number of supplementary budgets is strictly limited as recommended by international donors (e.g. Schiavo-Campo and Tommasi, 1999). The identification of sources for supplementary budget can also vary widely – some countries identify low-priority items while others apply cuts across the board (Saxena and Stone, 2020).

- **Debt instruments**. Countries can assume **new lines of credit**, whose negotiation can however be time-consuming, and which can be relatively expensive (World Bank, 2014). Countries can also pre-arrange **contingent lines of credit** whose terms are pre-negotiated – credit then becomes available upon the occurrence of predefined events such as an infectious disease outbreak to enable rapid liquidity. The WB respective product is the "Catastrophe Deferred Drawdown Option" (CAT-DDO) which was originally only accessible by countries with at least LMIC status but has been available also to LIC countries since 2018. As of the date of writing, all issued CAT-DDO have either been activated or are in the process of being activated by beneficiary countries in response to COVID-19 (Wahba et al, 2020). Finally, existing **debt can be restructured** – the approach taken for LICs during COVID-19 (Shalal and Thomas, 2020).
- **Risk transfer**. Risk transfer solutions such as insurance can be cost-effective financing instruments providing rapid liquidity upon the occurrence of predefined events such as outbreaks (World Bank, 2017b). For pandemics, the WB Pandemic Emergency Financing Facility (PEF) is a global insurance-like mechanism that was designed to provide response financing to countries eligible for financing by the WB International Development Association (IDA) in the face of a pandemic. At the time of writing, it was still unclear whether PEF would pay out for COVID-19 before maturing on 15 July 2020 (Euromoney, 2020). The African Risk Capacity (ARC), a regional sovereign insurance fund, is also considering offering African states insurance cover against different diseases and is currently piloting its outbreak cover in Guinea and Uganda (ARC, 2019). ARC recently announced it would also add coronavirus cover to the product (Evans, 2020).
- **Donor support.** Lacking many of the sophisticated systems listed above, many LICs and LMICs resort to donor support for the response. However, negotiations can be cumbersome and the size of contributions unpredictable (World Bank, 2012). One way to collect donor contributions can be via the creation of a dedicated trust fund, as for example South Africa has set up for the ongoing COVID-19 response (www.solidarityfund.co.za).

Over the last two decades, "disaster risk financing" (DRF) has made inroads into PFM policy for responding to natural hazards. DRF refers to a set of principles and instruments – such as insurance or sovereign catastrophic bonds or pools – that at their core advocate for planning for shock-related surge expenditure and arranging suitable financing solutions in advance. These ideas are increasingly also being applied to the health sector (World Bank, 2017b). One of the key principles of DRF is that no single financial instrument is suitable for all types of

shock and that a successful financing strategy will thus consist of different instruments and be based on risk layering analysis (Ghesquiere and Mahul, 2010).

(2) On the expenditure side, the goal is to enable rapid disbursement of funds while maintaining effective controls.

- In the face of crisis, some higher-income countries use a risk-based approach to controls, focusing them only on high-risk expenditure. Some also simplify parts of the payment authorisation process to allow for faster disbursement (Saxena and Stone, 2020; Barroy et al, 2020). Meanwhile, in many LICs and LMICs, expenditure controls are explicit weak points even during normal times (Schiavo-Campo, 2007), leaving little room for further relaxation.
- Many countries also allow for emergency procurement rules (e.g. single-source procurement) which facilitate and thus accelerate the purchase of required response equipment. For many LICs and LMICs, corruption is a serious challenge and procurement is one major way in which it can be exercised – even during normal times (Schiavo-Campo, 2007). Emergency procedures can exacerbate leakage risks (Steingrüber et al, 2020). For example, evidence from the West African Ebola 2014-16 crisis has shown that procurement rules were mostly not adhered to (Divjak and Dupuy, 2015).
- Institutions like the IMF and the WB also stress the importance of reliable tracking and communications systems of emergency response expenditure as they provide valuable information for policymakers and can prevent fraud (Saxena and Stone, 2020; Rivero del Paso, 2020; Gurazada et al, 2020). Given the weak state of financial accountability in many LICs and LMICs even during normal times, this is challenging for many LICs and LMICs (Schiavo-Campo, 2007). For many it will thus likely be a trade-off: spending quickly or transparently.

5 Recovery Phase

How do LIC and LMIC public finance systems tend to cope?

Surge demands of PFM systems in the recovery phase after large health shocks can be divided into three categories – (a) restoring livelihoods, (b) fiscal stimulus and (c) investments in preparedness. With regards to (b), there is a specialist macroeconomic body of literature dealing with the best approaches which is not covered here. Deliberations on (c) are likewise excluded, given that preparedness investments (e.g. in surveillance) are not necessarily tied to the occurrence of a health shock. The below refers to (a).

Unlike many natural hazards such as floods and earthquakes, health shocks do not cause infrastructure damage. From a financial perspective, this differentiation is important, as for many disasters, the infrastructure works needed in the recovery phase tends to be the most expensive part of disaster-related costs (Ghesquiere and Mahul, 2010). Their impact on public finances has been well documented (e.g. Fengler et al, 2008). Conversely, recovery from health shocks largely requires livelihoods support and thus can arguably cost less. In this way, it shows some similarity to the recovery from droughts.

There are no in-depth reviews of the impacts of the recovery from health shocks or droughts on the public finance system of LICs or LMICs. A 2019 review of 11 African LIC and LMICs' disaster recovery practices – including, but not only, from drought – showed that recovery tends to be financed through four different sources: government budget allocations, bilateral agencies/development partners, multilateral agencies and regional funds for disasters (UNDP, 2019). The recovery from the West African Ebola epidemic 2014-16 was largely funded by donors who pledged US$5.2 billion for recovery (UN, 2015). Some observed "problems" by the countries to absorb such large amounts of funding (Green, 2016).

What are key lessons learned for LIC and LMIC public finance systems?

During the recovery phase, the sense of urgency is lower than during response, meaning that PFM systems are mainly impacted on the revenue side rather than on the expenditure side. More time is available to mobilise required resources. This opens the door to a range of different financing instruments, context allowing, including public borrowing, tax raises, tax breaks, and donor support (Ghesquiere and Mahul, 2010). There is also some evidence showing potential to raise relief funds via voluntary taxes (Li et al, 2011).

For resource mobilisation, many of the lessons learned for the response phase also hold for recovery. In short, it tends to be more efficient to plan in advance what to do during recovery and how to finance it (Clarke and Dercon, 2016). As for emergency response, any financing framework adopted should be based on thorough analysis of the respective country's fiscal position, expected costs, and cost comparison between available instruments (World Bank, 2014; Cevik and Huang, 2018).

6 Reform

The following are potential reform interventions on financial resilience in terms of preparing for a future shock:

Reforming national health emergency financing infrastructures*:* National health shock preparedness is frequently in a dismal state in countries worldwide – for example, all countries globally scored on average only 40.2 out of 100 in a recent global preparedness indexing exercise (Cameron et al, 2019). For country governments, part of preparedness is also to ensure that sufficient funds are available at the right time to service surge needs. This was, for example, reflected in the most recent update to the WHO's Joint External Evaluation (JEE) tool in 2018 in which an indicator on national response financing capacity[1] was added (WHO, 2018). It was also reflected in the WB change of the name of its "Disaster Risk Financing and Insurance" team to the "Crisis and Disaster Risk Finance" team in 2018. There are various ways in which countries can ensure that sufficient response funding is available:

- Establish an adequate mix of government financial mechanisms to be used for health shock response, e.g. specific budget lines, contingency funds, contingent credit facilities, or risk transfer (Ghesquiere and Mahul, 2010).
- Shifting some of the responsibility to pay for shock-related cost to the private sector through regulation, e.g. by mandating companies to ensure a minimum level of protection for employees or to invest in preparedness (World Bank, 2017b).
- The private insurance sector could be encouraged to develop further suitable products, e.g. business interruption insurance (World Bank, 2017b).
- Existing country-owned regional insurance initiatives such as the African Risk Capacity (ARC) could also be used to offer health shock coverage (ARC, 2019) and ensure positive externalities in terms of preparedness and contingency planning across borders.

Reforming the global health emergency financing infrastructure: For global emergencies such as pandemics, given they are a global health, economy, and security threat, there are some response funds available at a global level but they are vastly insufficient (CSIS, 2019b). Meanwhile, one major lesson from the West African Ebola crisis 2014-16, was that rapidly available contingency financing must be available in the event of a renewed infectious disease emergency (e.g. World Bank, 2017b; CSIS, 2019b). Different solutions are proposed:

- Create incentives for investments in preparedness. Many experts have issued strong calls for international financial institutions such as the WB IDA to expand allocations and generally create better incentive mechanisms (GPMB, 2019; Cameron et al, 2019). Others argue specifically for the creation of a Global Health Security Challenge Fund that would match and thus incentivize long-term investments by LIC and LMIC in health shock preparedness (e.g. CSIS, 2019a; Cameron et al, 2019; World Bank, 2017b). Some call for at least US$1 billion to resource this fund (Glassman et al, 2020), some for at least US$750 million (CSIS, 2019a).

[1] The new indicator is P.1.3: "Financing mechanism and funds are available for timely response to public health emergencies".

- Use of innovative financial mechanisms. Some call for the international community to develop a Pandemic Emergency Financing Facility "PEF 2.0" structured such that it encourages investments in preparedness (World Bank, 2017b).
- Include preparedness to epidemics in financial planning. Experts are calling on international financial institutions such as the WB and IMF to include preparedness in their economic risk and institutional assessments, including in the IMF's Article IV consultations (GPMB, 2019). This would send a strong signal to policymakers.
- Transparency around outbreak-linked costs and funding flows – proposal that they should be tracked by the UN (Cameron et al, 2019).

Identifying the best preparedness investment targets: Given that there is a lack of economic and value-for-money (VfM) evaluations of different preparedness measures, there is much room for further analysis. Some propose the development of national and regional "Best Buy" menus that list potential preparedness investment targets and evaluate their effectiveness from an economic perspective (e.g. Krubiner and Kalipso, 2020).

7 Further fields of research and areas of engagement for Maintains

Economic impact. COVID-19 will impact many parts of national economies, the form and total impact size being different in every country. Systematically assessing the total economic impact in individual countries can be useful for different purposes, as it:

- can provide critical guidance for fiscal recovery expenditure of both governments themselves and donors who are expected to spend hundreds of billions of dollars over the next few years;
- can guide future investments in preparedness ahead of future health shocks, including in more effective financing instruments; and
- can enhance the general understanding of the overall impact pandemics can have on LIC and LMIC economies as the evidence base is still thin on the subject and future large health shocks are expected to occur.

While it is important to avoid any potential duplications with work by institutions such as the WB, there is a clear rationale for Maintains to undertake this work. Firstly, this fits the Maintains mandate – both in terms of providing cross-sectoral, system-wide analysis and in delivering financial research across the country portfolio. Secondly, the Sierra Leone country research programme is already planning to undertake comprehensive economic cost assessments of selected health shocks, with experts identified to undertake this work, who could also potentially work across the other Maintains countries.

Understanding the degree of readiness of countries' PFM systems for future health shock response. While being part of the JEE since 2018, there is still no clear understanding around how countries approach shock-related financial planning. The new JEE framework is still quite rudimentary, allowing for a simple scoring between one and three, which does not reflect the complexity of the task. Instead, one could subject countries' systems to a more comprehensive PFM review toolkit, for example by building on the one developed by the WB (World Bank, 2019b) or by conducting health shock financing diagnostics (World Bank, 2017a). Enhancing the evidence base around countries' approaches is an important first step to improve them (Glassman et al, 2018). The Maintains Sierra Leone country research is already undertaking such research through the envisaged "health shock financing diagnostic". Kenya, Uganda, to some extent probably Pakistan, and Ethiopia in an advisory capacity, are planning similar, if less comprehensive, approaches. Particularly Uganda could be a good next priority country, as it is part of the ARC pilot and already has strong surveillance and detection capacity. Important lessons could be learned from response planning there.

Financing of recovery. There seems to be a significant research gap on the management and financing of the recovery phase from large health shocks. This gap also seems to extend into the DRF space, where reconstruction financing is well-covered by the literature, but livelihoods support much less so. Maintains could evaluate the approaches taken to recovery planning and financing by the six different countries and derive lessons for future emergencies.

Identifying the best preparedness investment targets: There seems to be a great lack of economic evidence on where to direct health emergency preparedness funding (Krubiner and

Kalipso, 2020). Meanwhile, in other health fields, economic research is increasingly being undertaken to rationalise spending decisions (Nature, 2020b). There is also a lack of economic evaluations of health-related humanitarian interventions. Makhani et al. (2020) evaluated 8,127 studies published between 1980 and 2018 and found that only 11 were of acceptable quality, none of which were VfM analyses. While somewhat outside the DRF space, Maintains could support country governments in assessing the VfM of different potential preparedness investments.

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