

Review of the World Bank Pandemic Emergency Financing Facility (PEF) Pandemic Bond with Reform Proposals

This report analyses the World Bank Pandemic Emergency Financing Facility (PEF), with the focus on the “insurance window” (Pandemic Bond). It raises the two crucial weaknesses of the bond, which are financial ineffectiveness and medical inefficiency. It proposes four reforms in terms of source of financing, funding trigger mechanism, the use of the fund and the role of the private sector.

Background

The World Bank’s Pandemic Emergency Financing Facility (PEF) aims to provide emergency funding to the poorest countries in the world during potential pandemics. This purpose is very plausible. Firstly, it provides the “emergency” funding. This fits well with the nature of epidemics. Infectious viruses spread at an exponentially increasing rate during epidemics, making time extremely crucial. The earlier the effective intervention is delivered, the much likely the epidemic can be controlled, with a much lower cost and damage. Secondly, it targets at the poorest countries. The poorest countries are the most vulnerable countries during the potential pandemic outbreak. They have inadequate health facilities in terms of hospitals, equipment and medical experts. They have little financial resilience due to low GDP and heavy foreign debts. They also have a large impoverished population living in the unhygienic environment, creating the perfect condition for virus spread. If the pandemic hits these countries, the scale of human loss and financial breakdown will be disastrous. In a nutshell, PEF aims to minimize the potential harm of pandemics to the poorest countries via immediate financial support.

The PEF has two components. The “insurance window” and the “cash window”. The “cash window” mainly takes a supportive role¹. It is not the focus of our analysis. “Pandemic bond” refers to the “insurance window”. It consists of two types of bonds, Class A and Class B with different risk levels and payoffs (see Table 1). The mechanism is similar to classical parametric insurances. The bondholder is paid a high premium at beginning and guaranteed a very high fixed interest. If bond conditions are not triggered before the maturity date, all the principles will be returned to the bond holder. If the bond is triggered, and principle is appropriated to handle the pandemic, the bondholder will not be able to redempt the used portion of the principle.

¹ It is used to provide the financial assistance for diseases not covered by the “insurance window” or immediate usage before the approved funding is released from the “insurance window”.

IBRD Pandemic Bonds Summary Terms and Conditions*

Type of Note	Class A	Class B
Issuer:	International Bank for Reconstruction and Development	International Bank for Reconstruction and Development
Trade Date:	June 28, 2017	June 28, 2017
Final Size (Bond only)**	USD 225 million	USD 95 million
Settlement Date:	July 7, 2017	July 7, 2017
Scheduled Maturity Date:	July 15, 2020 extendable monthly in whole or in part, up to a maximum of 12 months following the Scheduled Maturity Date	July 15, 2020 extendable monthly in whole or in part, up to a maximum of 12 months following the Scheduled Maturity Date
Issue Price:	100%	100%
Bond Coupon:	6m USD LIBOR +6.50%	6m USD LIBOR +11.10%
Covered Perils:	Flu, Coronavirus	Filovirus, Coronavirus, Lassa Fever, Rift Valley Fever and Crimean Congo Hemorrhagic Fever
Redemption Amount:	The Notes will not be fully repaid if an event occurs	The Notes will not be fully repaid if an event occurs

Table 1 (World Bank, 2017)

Weaknesses

There are two vital weaknesses of PEF-medical ineffectiveness and financing inefficiency.

- **Medical ineffectiveness**

Medical ineffectiveness is caused by irresponsive delivery. PEF fund needs to be fast and in-time to be effective. Without responsive delivery, the epidemic cannot be addressed at the early tamable stage. This problem can be traced to two reasons.

Firstly, it has the wrong targeted fund recipients. Currently, only pandemic-hit² IDA countries are eligible for PEF funding application³. Indeed, PEF primarily protects the IDA countries. However, the most effective protective approach is to prevent the virus from entering the country. On the one hand, massive resources should be devoted to the epicenter to try to prevent it from evolving into a pandemic. Regarding PEF funding, it should go to all IDA countries when the perceived risk of pandemic is high, before there are domestic positive cases. It is crucial to minimize viruses entering IDA countries, by increasing IDA countries' resilience, maximizing their short-term healthcare capacities (in prevention, diagnosis and treatment). These are effective, relatively cheap measures. They will lose their maximum effectiveness after the pandemic hits IDA countries.

² with strict conditions e.g. 20 domestic fatalities

³ During the Covid-19 pandemic, the first countries reaching 20 fatalities are China and Iran. Both are not IDA countries.

Secondly, the conditions for bond payout are too strict and slow to be triggered. Based on the timeline drawn by Euromoney and World Bank, even if all the conditions have been met, the theoretically earliest date for fund release April 9, more than 4 months after the first case is confirmed. I use the current pandemic to illustrate why the bond triggering conditions are poorly designed given the nature of pandemics.

Some key triggering conditions for the less risky bond Class A

- *12 weeks after start of event*

12 weeks is a desperately long period for a pandemic as the number of cases and deaths increase exponentially. World Bank has confirmed the start date for the current pandemic is December 31, 2019. This means the 12-week period only ends at March 24, 2020. However, cases outside of China increased 13-fold in the two weeks in early March (BBC,2020). 12 weeks is too much a luxury we cannot afford.

- *at least two countries affected by at least 20 deaths each*

Thanks to the draconian lockdown policy of the Chinese government, the virus was largely contained within the Chinese border. However, the effective containment also makes this geographical spread criterion harder to be met. Only until 27th February, the death number surpassed 20 in the second country, Iran.⁴ The long incubation period, large number of mild cases of the Covid-19 virus also contribute to the low death figure at the start of the pandemic. But the same features are perfect for the wide spread of the virus, leading to high fatalities at a later stage when the vulnerable groups become infected.

- *case growth rate above zero*

This is a reasonable criterion. But it requires complex calculation. Firstly, it requires another 2 weeks data after the initial 12-week period. This drags the waiting time. Secondly, it requires data report from the individual countries. The testing and reporting of the cases may be further delayed due to political reasons or inadequate testing kits.

▪ **Financial Inefficiency**

The pandemic bonds offer investors a very good deal with high premium and interest. For the bonds with the total size of \$320 million, \$72.5 million have been paid as premiums (Jonas, 2019). Bond coupon worth more than 6.5% (for Class A) and 11.1% (for Class B) of the total principles are paid as interest.

Contrarily, the use of the fund is very restrictive. Other than the unreasonably strict triggering conditions mentioned, the \$320 million face value of the bond could never be fully utilized. Additional conditions are imposed to cap the percentage of fund used for pandemics with different perceived damage indicated by fatality. A more confusing setup is the loss cap of 16.7% for the Class A bond. This means the de facto maximum assistance available is only \$195.8 million rather than \$320 million during a full-blown pandemic like Covid-19.

⁴ In the 2019 Ebola outbreak in the Democratic Republic of the Congo, the pandemic bond was never triggered as this criterion was never met, even though it was the second-largest Ebola outbreak in the world. (Jonas, 2019)

Potential pandemic bondholder losses

	IBRD/IDA deaths		
	250	750	2,500
\$225m Class A	-	-	16.7%
\$95m Class B (regional)	37.5%	75.0%	100.0%
\$95m Class B (global)	43.8%	87.5%	100.0%

Regional defined as 2-7 countries meeting the criteria.

Global defined as 8+ countries.

Table 2 (Baker, 2020)

The high cost and low usage contribute to inefficient allocation of resources. The opportunity cost is high. The fund for premium and interest could be used to improve IDA countries' much needed public-health capacity directly. Besides, there is another concern about sustainability. Currently, the premium and interest are sponsored by donation from Germany and Japan. Given the need for such pandemic emergency funding is persistent, we cannot expect the two countries to be the permanent sponsor. Sponsorship of the pandemic bond is in nature a public good, with diluted benefits to the global countries but concentrated cost for the sponsor. This financing concern is very real. The "cash window", which is sponsored by donor countries, has not been replenished in 2020, although it was envisaged to be replenished each year (Baker, 2020).

Proposals

Proposal 1: Change Fund Issuing Mechanism from Statistics to Panel Decision

The decision to issue the emergency fund should be made by a panel decision consists of top epidemiologists, rather than based on the triggering of certain fixed conditions. There are three reasons for this.

Firstly, it is challenging to set the correct conditions. The conventional indicators such as fatality and geographical spread may be suitable to measure the overall damage caused by the pandemic in retrospect, but they are not good decision-making guidelines when we require immediate reactions during the epidemic. Besides, future pandemics are likely to be caused by new, unstudied viruses whose severity may not be well captured by old models. In this field, expert judgements are more reliable than old textbooks.

Secondly, expert panel decision can make fast and efficient responses. It is flexible and able to circumvent many cumbersome conditions. Also, expertise can compensate for lagging and inaccuracy in country data due to various reasons.

Thirdly, there are successful applications of such expert panel decision model. Prominent examples include defining recessions by National Bureau of Economic Research (NBER) in US and Centre for Economic Policy Research (CEPR) in the Euro area. Much experience can be learnt for establishing a pandemic panel of the same kind.

Proposal 2: Change Source of Financing from Private to Public

The two weaknesses of the current scheme, medical ineffectiveness and financial inefficiency, are mostly caused by the involvement of private investors. A structural trilemma is formed (Diagram 1) among investibility (attractiveness to private investors), financial efficiency (resources allocation) and medical effectiveness (easiness to trigger⁵).

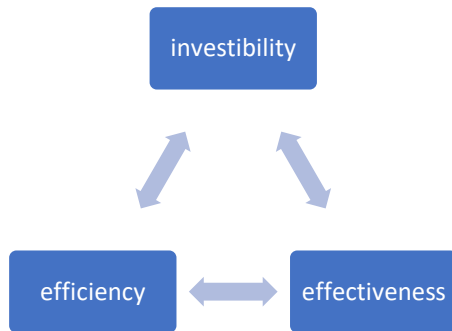


Diagram 1

The basic economic model assumes investors use expected return to make investment decisions. This can be summarized using the following formula.

Expected Return of PEF for investors

=Certain Gain -Uncertain Loss

=Premium + Interest – Pr (Triggered) * Expected Principle Loss when triggered

In the current PEF scheme, investibility is prioritized at the cost of other two goals. High interest and premium are offered to increase certain gain (at the cost of financial inefficiency). Strict triggering conditions and principle loss caps lower the uncertain loss (at the cost of medical effectiveness). We end up with a “very attractive but terrible” funding scheme⁶.

The structural trilemma means at most two out of three goals can be achieved simultaneously.

- sacrifice efficiency

High premium and interest are paid to bondholders. The conditions are easy to be triggered. It is a risky but very profitable business, so it worth investing for high-yield seeking investors. However, such inefficient scheme will merely solve liquidity crisis (if World Bank is facing any). Little financial burden is shared by the private sector as the fund raised are mostly paid back via premium and interest (even overpaid).

- sacrifice effectiveness

The conditions are made hard to be triggered. Low premium and interest are paid. This scheme is not lucrative but safe, attracting the high-safety seeking investors. However, given PEF’s priority is swift emergency financing, the scheme utterly fails.

- sacrifice investibility

To maximize efficiency and effectiveness, we should abandon investibility.

⁵ here it only refers to the strictness of conditions rather than timing.

⁶ the scheme was oversubscribed by 200% when it was launched (World Bank, 2017).

There are some other advantages of public financing. One of them is retaining flexibility. With the great uncertainties in the nature and development of the pandemics, the scheme should be flexible in terms of issuing conditions, targeted countries and specific usages in order to maximize effectiveness. Involvement of private sector means the flexibility is constrained by the commitment to the contracts due to legal concerns. Very limited room for adjustment can be made. In the current pandemic, despite making several small amendments for the triggering conditions⁷, World Bank is unable to make substantial amendments such as skipping the 12-week period and immediately activating the bond, although the need for funding is so obvious without any complicated calculation.

Proposal 3: Reposition the Fund as a Preventive Financing Scheme

The Pandemic Emergency Fund should position itself as a “epidemic-preventing”, rather than “epidemic managing” financing scheme for the most vulnerable countries. The scheme can be designed to *be guaranteed to be wasted*. However, it is not squandered in the form of investor profits, but for international “over-reaction” and “panic-buying”. It serve as the de facto insurance premium for IDA countries and the world.

The scheme should be triggered whenever there is a high-risk level of pandemic (based on expert opinions). The designated fund should be immediately released to sponsor the purchase and transport of the preventive and diagnostic equipment to the targeted countries, building the first line of defense.

If the foreseen pandemic does not arrive, the proportion of “panic-buying” in terms of equipment supplies will be transferred into public-health inventories, building up the medical and financial resilience of the targeting countries. The short-term expenditure will automatically turn into long term investment.

To maximize the incentive for the receipt countries, the fund should be provided as a grant rather than a loan to minimize the financial burden. Also, it can be tied with the other later-stage financial schemes. In order to qualify for the financial schemes in the future (if unfortunately, the epidemic still break out in the country), the state must demonstrate its good usage of these preventive and diagnostic equipment. This helps reduces the moral hazard as the country could otherwise rely on the international funds to save the country after it is severely hit, rather than putting adequate efforts to prevent the epidemic from happening in the first place.

This scheme is crucially helpful. If given the option, most countries will choose preventing the virus from entering the country rather than containing it after positive cases are found domestically. It is simply far less costly and more effective approach. This is especially the case for the vulnerable IDA countries who have minimum epidemic managing capabilities. However, so far, there are no financing schemes serving this purpose. All existing epidemic schemes are for “management” purpose after domestic outbreaks.

⁷ On March 5, World Bank removes the requirement for IDA country to suffer at least 20 deaths to apply for aid. On March 6, it amended the trigger condition for “at least one IDA country to be affected” to “at least one IDA/IBRD country to be affected” (Baker, 2020).

Proposal 4: Private Sector Re-engagement in non-IDA Financing

As a huge financial agency, World Bank has the capacity and responsibility to support other areas of the counter-pandemic struggle. If private sector can play a role in other schemes, it is equally desirable as it would save World Bank resources to be used in schemes like PEF that directly serves IDA countries' needs.

The conventional thinking for private sector involvement in natural disasters is to let them play the role of the insurer, sharing the financial risk and burden. However, the private sector also suffers during pandemics, in terms of liquidity crisis and solvency crisis. National governments and International organizations such as World Bank and IMF are also required to provide financial support for these groups, to avoid the negative social spillover of their collapse.

Other than giving principles to IDA countries, the private sector may be more incentivized if themselves are the receipts of the principles during pandemics. When the conditions are triggered, the principles are appropriated. But rather than being channeled to IDA countries, these funds go back to bondholders to increase their liquidity. This frees World Bank more public resources to support IDA countries, as the private sector could finance a large portion of its own emergency need.

In other words, the private sector becomes both the insurer and insured. It insures itself against the trouble it faces during natural disasters, just like pension fund.

Expected Returns for investors for this “pension fund” like scheme

=Certain Revenue + Uncertain Liquidity
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=Interest + Pr (Triggered) * Full Principle returned during pandemic
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+ [1-Pr (Triggered)] * Full Principle returned at maturity
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This makes the scheme riskless (as long as the interest fully compensate the investor for liquidity loss). If it is hit by pandemics, private sector will get the much need cash. If there is no pandemics, the private sector will get the money back after the bond matures.

Other complementary measures can be deployed to further incentivize the private sector. This includes competitive interest (compared to similar long-term investment), additional financial support during pandemics (i.e. instead getting the total principle back, bondholders will receive principle + extra cash). This extra cash can be sponsored by donors. This will be much effective usage of donor's money compared to giving them to bondholders as premium during peace time.

The problem of moral hazard usually occurs when the insured and the insurer are the same party. However, this will not happen in this pandemic bond because the insured have no influence over the natural disaster as well as the bond triggering condition.

However, there are many details requiring further investigation. Does the scheme attractive enough for firms? Should we make it mandatory? Will the cash release during pandemics adequate for the private sector? Who should issue the bond (National governments or international organizations)? Will the bond buyers be the same group who need liquidity during

pandemics? Should we expand this scheme to other natural disasters? Or even non-natural disasters? All of these questions need to be addressed before the actual policy implementation.

Conclusion

In conclusion, the Covid-19 pandemic will not be the last pandemic human faces. We cannot foresee when the next pandemic will arrive and how destructive it will be. However, the need for early and effective responses will always exist. While global efforts are crucial to strengthen the inadequate public-health capacities for individual countries (not only the IDA countries), being vigilant is equally crucial. An emergency fund designated for financial first-aid will be helpful in alerting the world when containment is still possible. Facing the great destruction of a pandemic, appropriate over-reaction is better than non-reaction. A properly reformed Pandemic Emergency Fund has the great potential to serve this role well.

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