FINANCIAL STABILITY LESSONS FROM HURRICANE DORIAN

(with additional lessons from the Covid-19 outbreak)

Central Bank of The Bahamas

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Commencing 1 September 2019, Hurricane Dorian made landfall in The Bahamas on Abaco and Grand Bahama islands. The hurricane was by some measures the strongest ever recorded in the Atlantic. Furthermore, upon striking land, Dorian remained near-stationary for over a day, ensuring maximum damage from winds exceeding 200 MPH, storm surges exceeding 20 feet, and four feet of rain.

Dorian caused over $3 billion in damage, or 25 to 30 per cent of Bahamian GDP.

This paper considers the lessons learned from Dorian's economic damage, and suggests methods we might deploy to improve Bahamian financial resilience in the face of natural disasters.

From March 2020, along with the rest of the world The Bahamas has been grappling with the Covid-19 outbreak, which turns out to be a much larger economic challenge than Dorian. To the extent the early lessons from the Covid outbreak are relevant, we will note these in this paper.

The main lessons from Dorian

As will be outlined in more detail later in this paper, the main financial stability lessons from Dorian include:

1) Global warming may cause more hurricane damage in the northern Bahamas, compared to previous decades. A catastrophe that does not materially affect New Providence is unlikely to generate an unrecoverable economic loss for The Bahamas. A Dorian-like catastrophe impacting New Providence, on the other hand, may generate economic losses from which The Bahamas cannot recover without suffering economic and financial system crises.
2) The Bahamian financial system needs to consider how to better storm-proof itself in an operational risk sense. One core issue here is ensuring near-total use of electronic documents with sound backups, and enabling multiple non-physical communication methods with clients.
3) The Central Bank must similarly consider how to storm-proof its operations, and how to facilitate universally available electronic and mobile phone enabled payments in Bahamian Dollars.
4) Bahamian insurance arrangements are currently reasonably good, and well-integrated with banking exposures. At the margin, we have identified several steps that would improve the insurance/banking links, and we intend to pursue these improvements.
5) The Bahamian fiscal position is insufficient to simply write cheques to cover catastrophic losses. We must encourage Bahamian households and businesses to better protect themselves from catastrophes.
6) These protective measures must be considered holistically, and include:
   - Purchasing better insurance coverage;
   - Building up savings; and
   - Ensuring that buildings meet relevant codes for catastrophic damage.
7) The Bahamas needs to consider how collective action schemes, for example national catastrophe insurance and reinsurance programs, might increase our national financial resilience.

Is climate change increasing Bahamian financial system risk?

We do not propose to review the vast literature on climate change in this paper, but instead note that global warming may lead to more frequent and more intense hurricanes. Furthermore, hurricane physics suggest that increased intensity may torque hurricanes to break north earlier (more to the east) than has historically been the case.

The Bahamian archipelago occupies about the same area as Florida's peninsula, though the great majority of that occupation is water rather than land. There are 14 islands sufficiently populated to warrant public services such as schools and utilities, spread over 700 miles. About three quarters of the national population and economy is on New Providence/Nassau. Grand Bahama and Abaco are the second and third largest centres, comprising about 16 per cent of the national population and economy. Put another way, the northern Bahamas comprises about 90 per cent of the national population and economy.

One reason for this geographic outcome is that historically, hurricanes often progress from east to west through the southern Bahamian islands, then break north either east or west of Florida, creating Atlantic or Gulf hurricanes respectively. These hurricanes track to the south and then the west of the bulk of the Bahamian population. Historically, hurricanes rarely track over New Providence.

In 2016, hurricane Matthew broke this pattern, tracking west of New Providence, and striking Grand Bahama. Only three years later, Hurricane Dorian was not only record-setting in its intensity, but followed the historically unusual pattern of breaking more to the east, tracking through Abaco and Grand Bahama.

Two major hurricanes on historically rare tracks in three years may be a coincidence, but this "coincidence" is a reasonable prediction from the world's climate change models. Following the precautionary principal, the Central Bank considers it necessary for the Bahamian financial system to prepare itself for more frequent, more intense, and more northerly/easterly hurricanes than have been the case in the past. As a useful simplification: we need to be prepared for a Dorian-equivalent storm to track over New Providence, and also to track over Grand Bahama.

Such a storm, which would impact over 85 per cent of the Bahamian population and essentially all the nation's financial system. As a rough estimate, such a storm could cause damage on the order of 100 per cent of Bahamian GDP. This damage level is more than sufficient to create challenges for Bahamian financial stability.

The operational risk challenge

Central Bank-supervised financial institutions (SFIs) must be able to restore services as soon as feasible after a hurricane, in this scenario a Category 5 hurricane passing over New Providence.

Dorian's damage emphasised several points that the Central Bank intends to incorporate into its operational risk preparedness requirements for SFIs.

- Are the SFIs' essential buildings and equipment sited and constructed in a fashion that will support rapid post-hurricane return to activity?
- Paper documents do not work in a world of 200 MPH winds and 20+ foot storm surges. Even if the documents themselves survive the destruction, they may be housed in sites that are no longer accessible. The Bahamian financial system has already made substantial strides towards electronic documents. The Central Bank's view is that our financial system must become fully protected against the loss or inaccessibility of physical documents.
- Electronic documents do not work in a world of 200 MPH winds and 20+ foot storm surges either—unless they are robustly backed up, either in The Bahamas or internationally. Traditionally the Central Bank has focused upon customer confidentiality when considering offshore data repositories. We will now balance this focus with a consideration of the resilience benefits attaching to multi-country electronic data storage.
- SFIs need to closely consider staff safety, and staff family safety, in the aftermath of a major hurricane. It is not enough to restore the SFI's facilities, if the SFI's staff have no place to live. For international SFIs, backup arrangements in other countries through outsourcing arrangements may be the best answer. For domestic institutions, various forms of staff emergency housing may need to feature in contingency plans.
- The Central Bank has encouraged SFIs to move away from customer verification and communication via physical documents and mail, to electronic communications channels. The current rule for SFIs is that they must be able to communicate with clients through at least two methods, only one of which can be physical mail. The Central Bank is likely to undertake more work in this space. Experience demonstrates that after a disaster, the mails will not work well, and the clients may not be at their former physical addresses. Those same clients are more likely to retain their mobile phone numbers and their email addresses.

The Bahamian Covid lockdown has reinforced most of the above lessons. The Central Bank's supervisory and operational experience has been good, in that we are able to maintain effective oversight of and communication with SFIs, even when all the relevant parties are working from home. One essential element in this outcome is the widespread but not yet universal use of electronic documents. The Bahamian financial system will need to become fully electronic to maintain the levels of disaster resilience we need.

Across our domestic SFIs, however, queue management at physical branches has sometimes presented a challenge in the Covid environment. We need to ensure that all or nearly all domestic clients have good access to electronic payments and ideally electronic banking channels.

Central Bank storm-proofing

The Central Bank intends to construct a new headquarters in Nassau, and work has commenced on this project. The new headquarters building will withstand a Category 5 hurricane and associated storm surge, and will allow not only staff but staff families to shelter on-site. The Central Bank intends similar arrangements for a new currency and coin storage and distribution centre on New Providence.

For several years, the Central Bank has moved current and archived documents to electronic storage. The Covid work from home arrangements have demonstrated that over 90 per cent of Central Bank staff are able to effectively access documents. We have some incremental work to complete in this area.

The Central Bank is progressing Project Sand Dollar, the digital version of physical Bahamian Dollars. The idea here is that any Bahamian will from this year, and much more so in the next few years, be able to make and receive all payments on his or her mobile phone, or on a smart card. Project Sand Dollar generates many benefits, but the Dorian aftermath demonstrated one major benefit: rapid payments system restoration after a disaster.

On Abaco and to a lesser extent Grand Bahama, local banking services closed as the branches and ATMs were destroyed or rendered nonfunctional. Restoring these physical assets required weeks to months, and in some cases are not yet in place.

Mobile phone coverage, by contrast, was generally restored with a few days after Dorian. Sand Dollar's mobile phone functionality will mean that the financial recovery aspects of a hurricane can progress more quickly and more safely than would otherwise be the case. To take one example: an insurance claim can be paid via Sand Dollar, even if the insured and the insurer lack access to a bank.

The Covid emergency orders have demonstrated two additional benefits from Sand Dollar:

- Removes the need to physically queue at a bank, money transmission business, or ATM; and
- Moves from high-contact to contactless payments.

In summary, the Central Bank intends not only to require SFIs to better storm-proof themselves, but is taking steps to storm-proof itself, and to facilitate a much more disaster-resilient retail payments system.

The insurance/banking boundary

The Central Bank recently surveyed the domestic banking industry on its post-Dorian experience with insurance claims by borrowers. Overall, the results were encouraging.

1) With minor variations, all banks require borrowers pledging a building as collateral to purchase all-risks insurance on that building, including hurricane-relevant risks, and require that the insurance names the lending bank as a beneficiary. Banks monitor not only initial uptake of insurance, but ongoing renewal of insurance.
2) The industry's unexpected loss experience due to effective insurance not being in place or able to meet claims was minimal. There were no such losses in the (relatively small) commercial loan portfolio. There were a minor number of partial losses associated with a few instances of poor procedures in the residential loan portfolio. These are discussed below.
3) The banking industry intends to tighten up its required insurance policies in a few areas, but overall considers that the current arrangements are adequate. The Central Bank has included insurance arrangements in its credit risk examinations for many years, and we agree with this generally positive assessment—on current risk/reward assumptions.
4) The areas where insurance outcomes were less than fully satisfactory included:

a) There is mixed practice in the industry on requiring borrowers to pay their insurance premiums monthly, often in an escrow arrangement tied to the monthly home loan payment, or to allow borrowers to separately arrange insurance, with an annual premium.
b) All banks monitor the ongoing insurance coverage of their secured loans, but some banks discovered that their monitoring was imperfect, in that lapsed insurance coverage was discovered and generated a response from the bank, but this response might take a few months to reinstate insurance.
c) In addition, some banks do not monitor insurance coverage on low value loans, on the grounds that the operational cost of this monitoring outweighs the benefits.
d) Policies on purchasing insurance coverage at the portfolio level to cover lapsed or defaulted policies are inconsistent.
e) In a few instances, local managers allowed borrowers to insure for the loan amount, rather than the full value of the insured building. Such an approach does not work, as insurance companies will pay only a proportion of the losses in such cases. Even if this proportion covers a residual loan amount, it leaves the borrower unable to rebuild, and thus in a more general disaster weakens the entire community's economic recovery capacity.
f) There were some cases where insured buildings did not meet relevant building codes for storm resistance, and this has complicated insurance recoveries. In other instances, buildings were not in good repair before Dorian, which also complicates insurance recoveries and (in need) collateral realization.
g) There were some cases where properties became under-insured with the passage of time, as the original valuations were not updated for several years.
h) There were some instances where non-building assets (such as docks, marinas, and equipment) were pledged as a material part of the collateral package, but were not insured.
i) Over all, the Central Bank's impression is that the banking industry expends considerable effort and expense to monitor borrower compliance with insurance coverage requirements. A collective approach from the banking and insurance industries would likely reduce costs and increase compliance.

5) Current lending policies do not require commercial borrowers to purchase business interruption insurance, or require personal borrowers to purchase income interruption insurance. The former is often unavailable or cripplingly expensive; the latter does not to our knowledge exist in any reasonable form. It would be fair to assert that Bahamian lending practice on insuring buildings is sound, but practices on insuring business or personal cash flows are rudimentary.
6) The industry does practice a form of macro self-insurance on cash flows, in that bankers in communities affected by a disaster more or less automatically grant several months of repayment forbearance to borrowers. This approach has also been applied at a national level during the Covid lockdown.
7) By granting broad forbearance, over the medium term the industry protects its collateral values, and maximises eventual loan collections. This approach also allows time for insured borrowers to collect on their insurance, rebuild or repair their properties, and resume business and salary cash generation.

What reforms are available on the boundary between lending and insurance?

Ideally, the loan/insurance interface would feature:

- All borrowers have comprehensive, effective insurance;
- The banking and insurance industries have introduced a database that allows accurate and cheap initial and renewal coverage monitoring;
- Terms and conditions are optimized to encourage full compliance;
- Terms and conditions also optimized to ensure that the subject properties are in good repair, and meet relevant building codes; and
- It is easy and automatic for the insured amount to update for increases in construction and repair costs.

The Central Bank intends to work with the Insurance Commission and both the banking and insurance industries on these matters.

Government reliance vs. self-reliance

The Bahamian government has programs in place to minimise the loss of life in a hurricane, and also programs to assist in the post-hurricane physical and economic recoveries. These programs, in the context of a country with limited borrowing capacity, cannot be expected to cover the private sector costs of a major hurricane, particularly a hurricane tracking over New Providence.

Similarly, the Government has put in place extensive programs to minimise the loss of life and health from the Covid 19 outbreak, and so far these programs are working well. The economic challenge, however, imposes a large fiscal challenge, and leaves little room for the government to financially support families or businesses.

Climate change is probably going to make The Bahamas poorer over time than would otherwise be the case. This reduction in wealth will flow from more frequent and more intense hurricanes, increasing sea levels, increased risk of pandemics, and economic contagion from other countries suffering from similar changes.

In this context, we need to encourage the household and commercial sectors to become more self-reliant. Broadly, we need these sectors to redirect some of their consumption to:

- Purchasing more and better insurance;
- Building up savings and investments, and reducing debt; and
- Ensuring that homes and other buildings are in good repair and properly prepared for a hurricane.

The Central Bank intends to work with the Bahamian public and private sectors on all these areas. To take a simple example, it probably makes sense for the Central Bank and the banking industry to work together to encourage more savings by Bahamian households. Too many of these households are living with a high risk of near-immediate privation, should the family wage earners lose their jobs.

At this point, the Covid challenge precludes some of this work, but we need to consider a 20 to 30 year plan to strengthen the typical Bahamian household balance sheet. A number of countries (such as Australia, Singapore, and Chile) have successfully followed this path, and we will need to consider what lessons we can draw from international examples.

Are there any national level programs that would improve financial stability?

In an ideal world, The Bahamas would be able to purchase climate insurance (including hurricane insurance) on a comprehensive and reasonably priced basis, and the costs of this policy would be shared equitably across Bahamian society. Several regions and countries (Florida, California, and New Zealand come to mind) have created programs from which we could learn. The Bahamas already participates in a regional reinsurance plan for hurricane risk.

It should be acknowledged, however, that any national insurance or risk mitigation plan would be expensive, and there are large practical challenges to creating a satisfactory scheme. Given the challenges confronting The Bahamas due to climate change, however, it is not the case that the "do nothing" option is costless. We need to start from the acknowledgement that climate change is already imposing large costs and risks on The Bahamas, and these could well rise quite a lot over time. Taking proactive and far-sighted steps to mitigate these costs and risks is an essential element in preserving Bahamian financial stability.

Summary: responding to climate risk challenges

In the short term, the Central Bank intends to:

1) Ask all SFIs to self-assess their ability to in the first instance protect themselves and their staff from a Category 5 hurricane striking New Providence, and in the second instance rapidly restore business operations after such a hurricane.
2) Closely monitor domestic financial institutions for potential losses from the Covid-19 outbreak.
3) Continue the Central Bank's work on new, hurricane-resistant buildings, better ability to work remotely, and Project Sand Dollar.

In the medium term, we intend to:

4) Work with the banking and insurance industries, and the Insurance Commission, on more robust links between borrowing and insurance; and
5) Refine our regulatory framework to facilitate more operational disaster resilience among all SFIs.

Over the long term, which will be measured in years to decades, the Central Bank intends to engage with all relevant Bahamian stakeholders on methods to lift household and commercial sector financial self-reliance, in the face of steadily increasing climate change risk.