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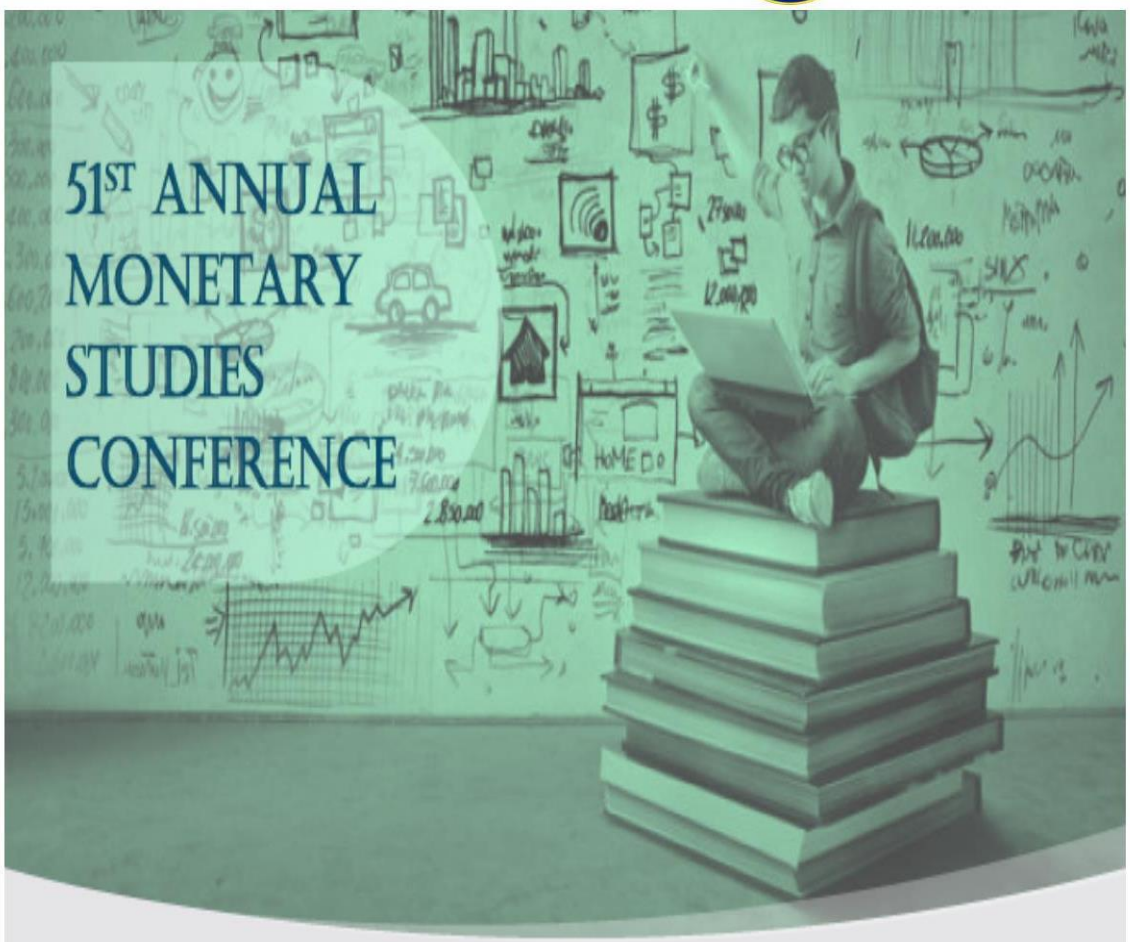

# 51ST ANNUAL MONETARY STUDIES CONFERENCE

Hosted by the Eastern Caribbean Central Bank

Basseterre, St. Kitts and Nevis.

19th—21st November,2019.

2019

# BRACING FOR THE NEXT IRMA

## HURRICANE IMPACTS ON THE ECCU BANKING SECTOR

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# Bracing for the next IRMA

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# Abstract

The Caribbean remains particularly vulnerable to natural disasters. The impact on its fragile economies can be devastating, with national outputs declining sharply in the year of a storm. With the changing weather patterns the consequences are likely to worsen. The damage to public and private infrastructure can have secondary effects on the financial sector - particularly banks and other lending institutions. As a result the Bank of England and other Central Banks have initiated the discussion on climate change, insisting financial institutions include climate change risks in its risk management strategies.

This paper seeks to explore the heightened exposure to natural disasters in the Caribbean, the potential impact on the financial sector and steps that can be implemented to mitigate the credit risks to lending institutions. It will examine the literature on probability of loan default and how climate change risks can affect the loan portfolio. It will also look at the impact of underinsurance in the property market particularly in the Caribbean and how this can affect the exposure of lending institutions to a natural disaster.

JEL: G21, G22, Q54

Key Words: Insurance, Natural Disasters and their Management, Climate, Mortgages

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# Introduction

The changing weather patterns globally has become ever more apparent with rising global temperatures and the growing intensity of natural disasters. These climatic changes have altered the frequency of these disasters and the vulnerability scale of affected states (Clay 2004). The risk is more heightened in the Latin America and the Caribbean region which is more prone to disasters (Borensztein 2009). In particular in the Caribbean their remote location, size and insularity makes these small island states more vulnerable and at a special disadvantage (Briguglio 1995).

The focus of the paper is on hydro-meteorological hazards such as tropical storms and hurricanes which reoccur in the Caribbean more often than other natural hazards such as earthquakes. Notably recently was Hurricane Dorian in 2019, a category 5 storm which hit landfall in Bahamas and Hurricane Irma and Hurricane Maria both major storms in 2017 which devastated Dominica, Barbuda, Anguilla, St. Maarten, Puerto Rico and the British Virgin Islands. Dominica has a "substantially higher incidence with at least a 4 per cent a year probability of a direct hit by a category 4 hurricane" (Clay 2004). They have been affected by category 4 storms in 1979, 1989 and in 1999.

These "recurrent shocks can have cumulative effects on both rate and the pattern of development" (Clay 2004). On the one hand they have devastating impacts on a small island economies particularly from the impact of land slippage and flash floods on loss of life, livestock and crops, and private and public infrastructure. Yet it forces the economies to invest in resilient housing and agriculture practices. "Banks can play an important supporting role in providing additional funding for the necessary reconstruction. Individuals and business owners suffering damages can withdraw deposits and apply for loans at banks to obtain additional funding for reconstruction efforts" (James R. Barth 2019).

In contrast significant amounts of deposits may be withdrawn reducing the bank's liquid reserves and placing pressure on the financial institutions (Brei 2019). Post disaster "loan repayments may be deferred or defaulted on" (Clay 2004). The loss of property and productive assets erodes the capacity of customers to repay (Thompson 2005). The stability of the banking sector may be at risk unless suitable strategies are in place.

Even if mortgages are initially issued with homeowners 'all risk' insurance, policies may lapse once the homeowners have settled in and they are faced with other outstanding obligations (Grislain-Letremy 2018). Financial institutions, especially banks in the Caribbean (Auffret 2003), are not always vigilant of whether property insurance payments are kept current. It is likely that most homes are underinsured, although this may be changing with the occurrence of recent major hurricanes and storms.

There is an urgency for public discourse and research on risk management strategies to reduce the impact of natural disasters on the economy and the financially vulnerable. Financial institutions should be at the forefront of this discussion given their financial intermediary role in the economy. As one of the largest private sector organisations financial institutions can "dramatically step up climate risk management practices, including the assessment, quantification and management of climate related financial risk in their investments" (Swann 2019).

In 2017 Central Banks and supervisors globally – 34 in total – have created a voluntary coalition called the Network for Greening in the Financial System. One of their recommendations is the assessment of climate related financial risks in the financial system. This includes the transmission channels of risk to the financial sector and the potential impact on macroeconomic and financial stability. Through this initiative financial Institutions have now been considering default risks to their mortgage portfolio from climate related risks. Further climate-related financial disclosures are recommended to provide assurance and

ensure the public is aware of the risks which are being mitigated.

# Data and Methodology

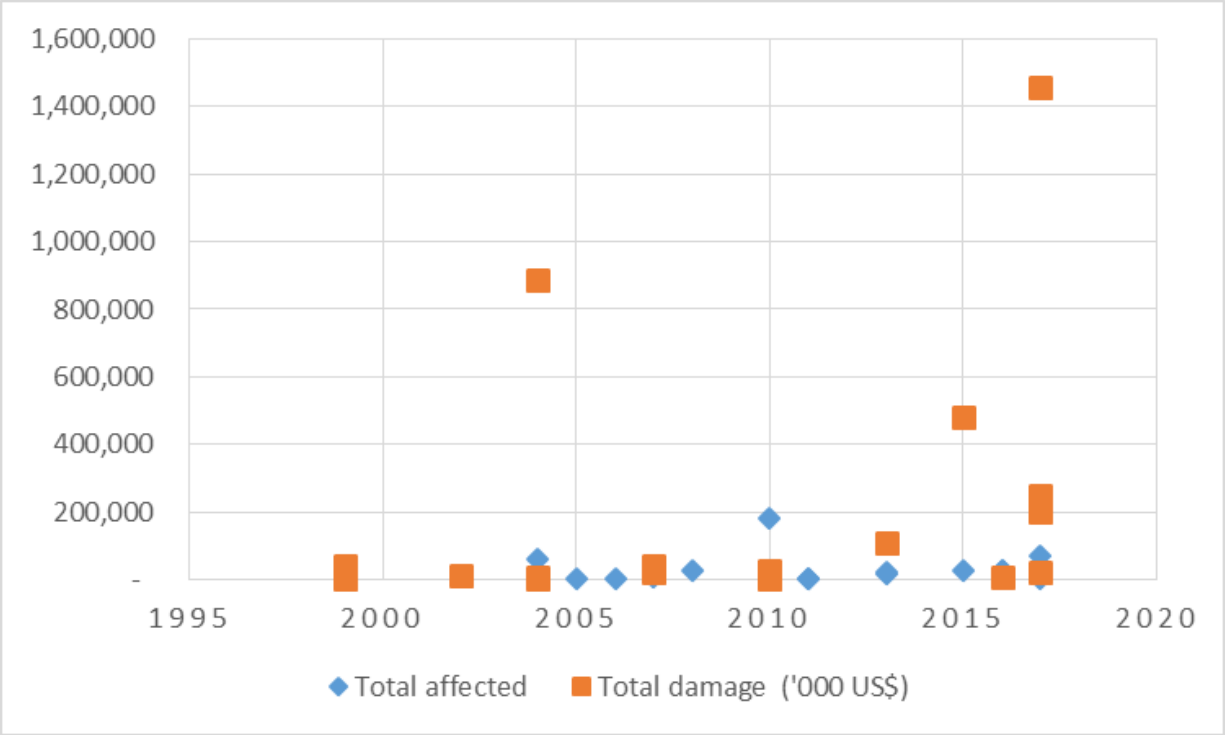
The paper utilises an event study approach in its analysis of the effects of major tropical storms and floods on the Eastern Caribbean Currency Union (ECCU) banking sector over the period 2000 to 2018. This approach is more useful in small samples. An event study observes the changes in the data set around the time of the event, t=0, compared with pre-event, t-1 and t-2, and the post-event, t+1 and t+2, outturn. This approach was used in an ECCB policy note on the fiscal impacts of hurricane Tomas on Saint Lucia and St. Vincent and the Grenadines (Riley 2010). They noted the usefulness of this approach with some caveats on the assessments of the timing and magnitude of the impacts on the variables chosen. This paper uses a monthly and quarterly dataset which should more readily observe the impact from the event. Nevertheless it is with some caution that an absolute conclusion is made on the results.

> The banking sector variables used are commercial banks' total saving deposits, commercial banks' residential loans, commercial banks' private business loans and three (3) financial stability ratios – the non-performing loans ratio, tier 1 capital to risk weighted assets ratio and the return on assets ratio. The latter financial stability ratios were available on a quarterly basis while the former were taken from a monthly dataset. These variables were chosen based on their use in previous papers and based on the available data for the ECCU.

Of thirty-eight (38) storm events between 1999 and 2019, there were seven (7) major tropical storms and floods which were above average by the total damages and the total number of affected persons (see figure below). These were hurricane Ivan, 2004, hurricane Omar, 2008, hurricane Tomas, 2010, an unnamed riverine flood in 2013, hurricane Erika, 2015, hurricane Matthew, 2016 and hurricanes Irma and Maria in 2017. The number of persons affected exceeded 25,000 more than a quarter of the total population of some the islands in the Eastern Caribbean. The damages

were between US$0.2m and US$1.5m. Including the other smaller events may have skewed the result.

**Fig 1: Tropical Storms and Floods which affected the ECCU**



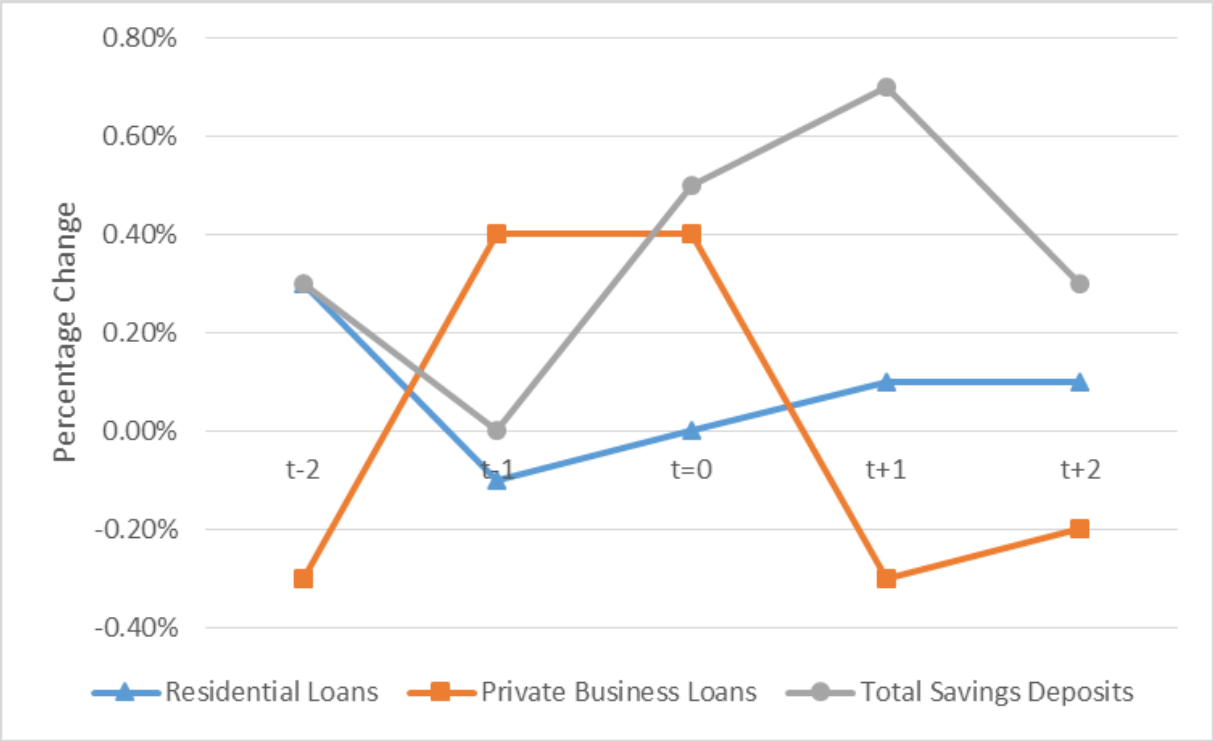

*Source: EM-DAT: The Emergency Events Database*

It should be noted that the timespan between events narrowed in the latter years possibly indicating the influence of climate change on the frequency, intensity and size of these storms. Before 2008, hurricane Ivan caused widespread devastation to Grenada, since then almost every 2 years there has been major damage in one or more members of the Eastern Caribbean.

# Results

The results show that there may have been a transfer of funds to the islands most in need after the hurricane event. There was an increase in savings during the month of the event and in the month thereafter (see figure below).

**Fig. 2: Impact on Loans and Savings**




*Source: Author's calculations*

Commercial bank residential loan portfolio increased in the ECCU affected islands post a major hurricane event as shown in the figure above. The banking institutions may have been encouraged to finance the rebuilding efforts almost immediately. As with hurricane Dorian, the Central Bank of Bahamas announced an ease in its prudential requirements to encourage lending in the aftermath of the natural disaster[3]. This construction boom can also contribute to the sharp but temporary rise in national output following a major storm.

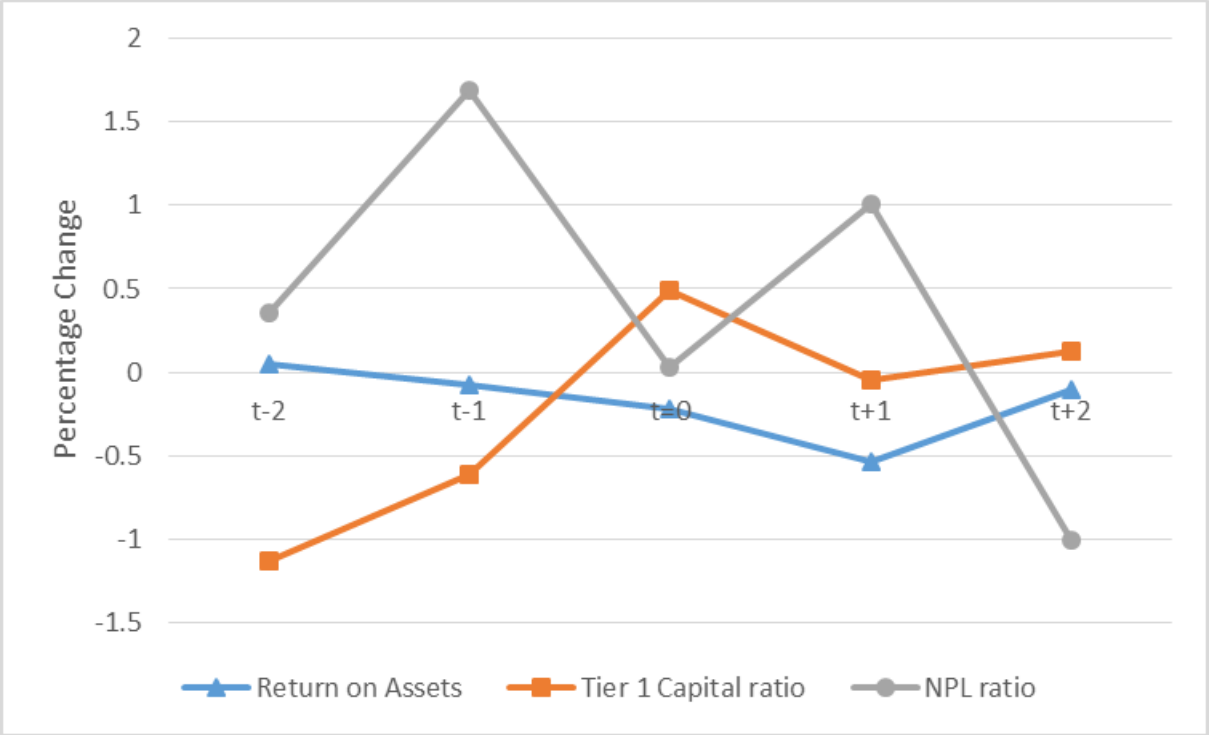
[3] The Central Bank of Bahamas published on 3rd September 2019 Relaxation of Lending Guidelines for Hurricane Relief Facilities: the mandatory 15% equity contribution would not apply and the threshold debt service ratio of 40% to 45% was waived for distressed borrowers.

Lending to private business declined amongst affected ECCU member countries. It is likely that the private businesses would have been adversely affected by the hurricanes and unable to restore the collateral asset to its previous state immediately. Some of the loan payments may have been deferred or defaulted. In these cases "the insurance coverage of private assets enables countries to partially transfer catastrophic risk" (Grislain-Letremy 2018). However insurance cover of the economic losses tends to substantially low in Latin American and the Caribbean – less than 4% between 1985 and 1999.

With increasing savings deposits and lower private business loans, the profitability of the banks is likely to be negatively affected. This can possibly be part of the reason for the decline in returns on assets which persisted after the storm event in ECCU banking sector (see figure below). The stability of the banking sector is somewhat challenged during and after these events.

The other two financial stability ratios, non-performing loans ratio and the tier 1 capital ratio appear to be inconclusive. The past trajectory for those ratios was altered during the period of the shock but quickly reverted to its previous path.

**Fig. 3: Impact on Financial Stability ratios**




*Source: Author's calculations*

These results differ somewhat from (Brei 2019) where they concluded that deposit withdrawals and not lending was used to fund the rebuilding efforts in the Eastern Caribbean. Their paper used a hurricane index which may be less reliable if there is a small sample size. The event study approach may provide a more robust analysis in these cases. Further the use of monthly dataset for loans and deposits delineate the impact from the event on these variables more clearly.

# Opportunities for Climate Resilient Initiatives in the Financial Sector

The stage of development may determine the impact and vulnerability of the economy to these shocks. An economy that is in transition between under-developed and developed, in an intermediate stage, may benefit from the transfer of private small savings to persons affected by the natural disaster. "In such an economy the financial sector is likely to have a more important role in

shaping the impact of the disaster" (Clay 2004). Financial institutions can assist in the rebuilding efforts, as the risks can be shared or transferred to regional and international financial agents. The risk transfer mechanism is important to ensure stability in the financial sector and to improve private and public infrastructure through public-private partnerships.

There are opportunities to establish syndicate lending amongst institutions and to introduce micro-insurance schemes for vulnerable groups who are likely to be affected by a natural disaster. These schemes can potentially provide an avenue to broaden the financial architecture of the Caribbean while limit the economic impacts of the disaster. Coverage across geographical regions may assist in reducing this exposure through a risk pooling arrangement (Clay 2004) as "disaster losses can simultaneously affect whole communities and risk pools (so-called covariant risk)" (Peppiatt 2006).

Mobilizing financing through public-private partnerships and investment vehicles to promote climate resilient adaptation is one of the key components of the Global Commission on Adaptation report (Miller 2019). It highlights the integration of climate risks management policies across the overarching governance framework including prudential regulation, financial disclosures, and established metrics and standards for climate risk management. As small island states plagued by recurrent hurricane events, these actions urgently need to be at the forefront of policy decisions, particularly for the financial sector as we brace for the next hurricane Irma.

# Conclusion

Climate change is undeniably evident within the past few years with the increasing frequency of major hurricanes in the Eastern Caribbean. These recurrent storms affect the restoration of infrastructure, agricultural output, and economic resilience. The financial sector can aid in the rebuilding efforts, however the risks to its profitability and stability should be considered in any actions taken.

This paper looked at the impact of major hurricanes over the past eighteen years on the ECCU banking sector. Using an event study approach it found that residential loans rose possibly to fund the restoration of homes while the transfer of private savings likely led to the bolstering of saving deposits post-disaster. The decline in returns on assets however can be mitigated by a 'risk pooling' mechanism where the risk can be shared amongst financial agents.

Risk management strategies can be employed prior to the occurrence of another major hurricane. It requires financial institutions to incorporate climate change risks in their risk management framework, stress tests and financial disclosures, thereby enabling stable financing for restoration efforts. This initiative in the financial sector may be the catalyst for the improved resilience of our economies to hurricane shocks.

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