Effect of climate change on financial institutions and the financial system

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Abstract

Climate change is emerging as an important issue, and has been a cause for increasing uncertainty in the business sector. It is important to understand the effects of climate change events on financial institutions and the financial system. This study analyzes the effect of climate change on financial institutions and the financial system, and show that climate change has serious consequences on the stability of financial institutions through its effect on the counterparties and clients of financial institutions. Climate change also has serious consequences on the stability of the financial system through its effect on financial institutions.

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1. Introduction

This paper discuss the effect of climate change on financial institutions and the financial system. Financial institutions are firms actively involved in the flow of money and credit from surplus units to deficit units of the economy. These generally comprises of banks, investment companies and insurance companies. Severe climate change can hurt the financial system through the negative effects of climate change on financial institutions.

Nature disrupting the delivery of financial services is nothing new in world history. Financial institutions have coped with floods, typhoons, mudslides, earthquakes, droughts and storms since the 19th century and will continue to do so in future. But what has changed now? Two things have changed! One, financial institutions have grown complex and global. This is true because many financial institutions have contractual cross-border financial obligations and claims with financial institutions in many countries around the world, and many financial institutions have at least one branch in countries that are prone to climate change events. Secondly, as the number of financial institutions' branch networks continue to multiply in tropical areas where there are extreme weather conditions, so also the risk of physical damage to financial institutions' fixed assets increases too.

The risk of severe climate change is rising and posing physical threats to many firms, not only financial institutions (Campiglio et al, 2018). It is important for us to start worrying about climate change now. Climate change is both a short-term and long-term risk to businesses, and it affects every industry in some way. It manifests differently in nearly every industry with varying impacts across several industries. In financial institutions, climate change can have serious consequences, making it important to bring it to the attention of everyone.

2. Effect on the financial sector

2.1. Climate change can damage physical collateral

When banks lend to corporate and individual borrowers whose ability to repay is doubtful, banks would require physical collateral whose value is greater than the loan facility issued to them. Such physical collaterals may include residential estates, commercial properties, fleet of automobiles or aircraft, equipment, lands, etc. Extreme weather events such as flooding, landslide and typhoons can significantly damage some or all of the physical (and immovable) collateral intended to mitigate the exposure to credit risk. The resulting damage to collateral value caused by climate change would be reflected as a loss in the bank's profit and loss statement which would negatively affect the profitability of the affected bank.

2.2. Climate change can disrupt the operations of financial institutions.

Financial institutions rely heavily on communication systems through information technology infrastructure. Any damage to such infrastructure due to severe weather or hurricanes can disrupt the business of financial institutions for a considerable period of time before recovery. Climate change events such as hurricanes can damage the infrastructure used by financial institutions to communicate within the firm such as the internet, information technology systems and mast. Severe climate change can also disrupt the ability of banks to communicate internally within the firm, thereby disrupting their operations.

2.3. Climate change can disrupt the business of bank's customers

Climate change events such as hurricanes, landslide and floods can damage the business of banks' clients and customers. Bank customers such as manufacturing firms and agricultural firms are very prone to significant damage during hurricanes and flood events. Although the impact on banks is indirect, such events would lead to low profit margin to banks that have high exposure to the agricultural sector since the affected companies will not be able to conduct business for a considerable period of time until recovery.

2.4. Severe climate change will lead to increased insurance claims and liabilities

Climate change events will increase costs for companies in the insurance industry (Dlugolecki, 2008)[1]. Businesses and individuals that have some comprehensive insurance policy with insurance or reinsurance companies are often the first to make a claim on their policy whenever climate change events occur that affects the insured object. When such events simultaneously affect multiple businesses and individuals, the insurance payouts will be higher, and could lead to financial difficulty for insurance companies who may have insufficient funds to pay to policyholders. Also, since other financial institutions are the major lender to insurance companies, these financial institutions could also be affected indirectly by climate change events.

2.5. Increased insurance premiums and reduction in insurance coverage

Insurance companies can increase insurance premiums and the associated deductibles in anticipation of climate change events which the insurance company believe is likely to occur. In other cases, insurance companies can either decrease the availability of insurance coverage for climate change events or may refuse to give any cover for climate change events when it becomes difficult to measure the likelihood and severity (or frequency) of climate change events.

[1] Despite the recent awareness of climate change in financial institutions, some insurance companies still understate the likelihood that a severe climate change event will occur. Even when insurance companies anticipate such events, the difficulty to accurately measure the likelihood of specific climate events is an issue that insurance companies are currently dealing with. Severe climate change events are likely to increase costs for companies in the insurance industry because of increased claims related to extreme weather events, which are unpredictable.

2.6. Harsher working conditions

Climate change events can make employees in financial institutions become less productive especially when there are record-breaking temperatures making the day unbearable, and making it tough to get the job done. Extreme heat and hydration, especially when combined with hard work and long hours, can lead to mental and physical breakdown of employees in financial institutions. Severe climate change means it will be colder or hotter than ever before, and that the cold or heat may last significantly longer than it did in the past.

2.7. Loss of office branch networks

Financial institutions, such as banks, often prepare for climate change by furnishing the office headquarters with solar panels and other efforts to lower their carbon footprint, but the same proportional effort is not applied to protect small bank branches all over the country and in foreign locations. Consequently, a bank is likely to lose some branches when climate change events occur such as flooding, hurricanes etc.

2.8. Higher disclosure requirement and costs

Regulations or legislations may emerge that would require financial institutions to disclose information on their exposure to climate change risk. They may also be required to disclose the amount of risk capital they have set aside to mitigate such climate change risk. Regulations may also require financial institutions to disclose additional information on how climate change will affect the company's strategy and operational performance. However, such disclosures come at cost to financial institutions.

Such disclosure regulations may be imposed by the capital market regulator to ensure that investors have a good understanding of how public companies intend to manage climate change risk. In the banking sector, disclosure regulations may be imposed by bank regulators to serve as a forward-looking micro-prudential approach to deal with climate change risk. Such disclosures are costly to financial institutions because financial institutions may need to hire specialists to accurately quantify their exposure to climate change risk, and to estimate the risk capital to set aside to mitigate climate change risk.

3. Effect on the financial system

Climate change can have profound effects on the stability of the financial system (Giuzio, et al, 2019). The financial system is the system that allows the exchange of funds between lenders, borrowers and investors. Climate change affects the financial system through its effects on financial institutions, as discussed below:

3.1. Damage to payment system infrastructure

The financial system relies heavily on payment systems to settle financial obligations and to receive financial claims from counterparties engaged in business transactions. In every country, there is an interbank settlement system which helps to settle financial claims and obligations for transactions done in one or more jurisdiction. The interbank settlement infrastructure is usually installed in a physical warehouse at a disclosed or undisclosed location. Any damage to this payment infrastructure caused by severe thunderstorms, severe weather or earthquakes will disrupt the financial intermediation process since payments will not be cleared when due, which can lead to severe instability in the entire financial system

3.2. Climate change can lead to capital flight

Climate change can make cities and countries become financially unstable. This is because holders of large capital will remove their money away from cities and countries that are prone to severe climate change events, leaving such cities or countries with little financial resources to recover from unfavourable climate change events. Also, high net-worth individuals will remove their money from banks and investment firms situated in climate change prone areas, leaving such financial institutions with little capital to do business, leading to the undercapitalization of financial institutions and reduced level of financial intermediation which can make the financial system become unstable.

3.3. Uncertainty that destabilizes financial markets

Climate risks have the potential to impact financial markets. In cities that are prone to climate change events, the uncertainty about which climate change event will occur, when it will occur, and the severity when it occurs can fuel volatility in financial markets. Investors due to fear and uncertainty can hoard capital or provide capital at a high premium which firms cannot afford. Also, financial institutions that lack the ability to mitigate climate change risk may withdraw liquidity from money markets by recalling the financial instruments they have issued to the money market, which may create a ‘liquidity crunch’ or a ‘run on liquidity’ in financial markets, and this will have negative consequences on the stability of the financial system.

3.4. Climate change can confuse regulators

Financial system regulators are often economists – financial economists, business economists or academic economists. The inability of macroeconomic models to forecast the probability of a climate change event occurring, can leave regulators confused about what to expect from climate change events, and confused about what to do when such events occur. Even financial institutions that were significantly affected by climate change events will seek help from the regulator, and in some cases, the regulator may be clueless on what to do. Although most regulators facing a climate change problem would seek help from the federal government, there is no guarantee that the government has a special solution that can restore the financial system to normalcy.

4. Conclusion

This study discussed the effect of climate change on financial institutions and the financial system, and showed that climate change can have serious consequences for the stability of financial institutions through its effect on counterparties and clients of financial institutions. It also showed that climate change can have serious consequences on the stability of the financial system through its effect on financial institutions. There is no doubt that climate change is an emerging risk and a cause for increasing uncertainty in the business sector. In reality, some financial institutions still do not see the need to manage climate change risk because they feel that climate change events have an indirect, not direct, effect on them. Also, many supervisors and central banks have not issued policy statements to assess the readiness of their financial institutions for climate change events. At least, financial system regulators should give their views regarding climate change events in the financial sector so that financial institutions can understand the role they have to play in managing climate change risk before they occur. At the policy level, the efforts of governments to deal with climate change have not been transformational enough to eliminate climate change risk. More work still need to be done. Future studies can examine the effect of climate change on the non-financial sector. Future studies can also examine the effect of climate change on the macro-economy.

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