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for banks and monetary policy:
“Breaking the tragedy of the horizon,
climate change and financial stability”**

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Assessing COVID Impacts, Sustainable Finance, Current and Future Implications for Banks and Monetary Policy: “*Breaking the Tragedy of the Horizon, Climate Change and Financial Stability*” *

Abstract

Purpose – As well as considering the current implications of measures that have been instigated to address the impacts of the pandemic, drawing from past and current lessons from selected jurisdictions, this paper also considers why the transition to a net zero carbon economy may prove more challenging than may first appear. However, jurisdictional differences and historical developments will play a part in determining how sustainable certain implemented policies and measures are – as well as in facilitating a transition to normality. The paper also aims to highlight not only the growing importance of the roles of central banks in financial stability, in particular with reference to the management of risks associated with climate risks, in managing financial stability risks, but also place an emphasis on longer term perspectives and a need to incorporate greater uncertainty elements, particularly consequential of COVID impacts, in monetary policy setting instruments. In respect of longer term perspectives, the relevance and importance of other financial sector regulators, namely the insurance and securities sectors, in managing other forms of risks, namely, liability risks, will be considered.

Design/methodology/approach – The paper adopts a predominantly qualitative based and interdisciplinary approach to the study. Reasons for adopting this approach will be highlighted later in the paper. As a result, the literature review section will focus on conceptual and theoretical aspects – as opposed to predominantly empirical related data. In consolidating on those conceptual aspects of the framework already introduced under the literature review section, namely definitions ascribed to physical and transition risks, the next section illustrates how the above primary source related categories extend to a far reaching third category which presents fundamental relevance, not only in terms of climate risks, but also in respect of uncertainty, third party liability – and particularly for non common law jurisdictions which do not recognize principles of tort law which deals exclusively with related principles and concepts of remoteness of damage, foreseeability and the neighbor principle introduced through the leading case of *Donoghue v Stevenson*. These principles are linked to liability risks whereby the insurance sector will increasingly have an important role to play, in respect of addressing climate risks, in years to come.

In highlighting and illustrating the issues and arguments, particularly those relating to sustainable finance, monetary policies and climate risks, as well as the links between monetary policy responsibilities and the need to mitigate financial stability risks attributed to climate risks, reference will be made to evidence and discussions, as well as analyses and results obtained from the “Climate Risk Europe Virtual Week”, September 2021, as well as other reports and analyses documented in the manuscript and highlighted in the references section of this paper.

Findings - Even though it is a widely held consensus that banks should not assume the primary responsibility of regulating climate risks, insurance companies will assume greater roles in the months and years to come. Depending on the structure of financial regulation, such roles will impact other sectors of financial regulation – namely the banking and securities sectors – for as we have seen, with increased digitalization and an increasing shift to central bank digital currencies, it will become more increasingly difficult to isolate completely, the impact of one sector’s activities, on the other. Which in itself, is not really a bad thing. Whilst a degree of independence is healthy for purposes of governance and accountability, sectors are interdependent on each other, and with the implementation of green finance and sustainable finance, the securities sector and its participants, with the rise in digital finance, innovative tool kits for a sustainable future, will have a wider and more defining role in climate change and regulation.

Originality/value – The paper contributes to the uniqueness of a topic – such that further clarity, guidance and direction is required in relation to several areas and elements of the discussions and questions raised therein. Such uncertainty, further compounded by recent unprecedented developments in the areas of climate risks, and particularly in respect of liability risks, the importance of climate disclosures, the redefining of the role of regulators – and not just in respect of central bankers, but also in relation to the insurance and securities sectors.

This paper is also unique because it highlights the need for interaction with legal disciplines, as well as an interdisciplinary approach to addressing economic issues. The pandemic is indeed also unique since it is not merely a financial and economic pandemic, but also a medical pandemic. As such, a mere economic perspective, cannot resolve all issues at hand.

It will demonstrate that depending on the structure of financial regulation which operates in different jurisdictions, as well as whether common law principles of tort law apply in these jurisdictions in addressing liability risks, it will be feasible, realistic and possible to break the tragedy of the horizon.

Key Words: EU Green Deal; sustainable finance, interest rates, inflation, pandemic asset purchase program (PEPP), APP asset purchase program, longer term financing operations, transition risks, financial stability, CBDCs

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Introduction and context

The role of central banks during the pandemic in instigating asset purchase programs (also see pandemic emergency purchasing programs (PEPP), longer term financing operations), which were crucial in facilitating the flow of credit to households and businesses, which serve as engines of the economy, as well as government implemented fiscal policy measures, furlough packages etc, which responded effectively to what would otherwise have generated unsustainably high unemployment levels, underline the vital roles played by monetary and fiscal policy measures during the ongoing pandemic.

The PEPP is considered to have become “the main tool for adjusting monetary policy stance in the context of the COVID-19 crisis” with one of its key objectives being “to counter the downward impact of the pandemic on the projected path of inflation” – such an objective being considered to have guided the recalibration over time of the PEPP’s envelope and the horizon of net purchases (see Banco de Espana, 2021:6).

Since the Spring of 2020, several industries have considerably impacted inflation – consequential of the impact of COVID on sectors such as the airline industry. Such industries include the energy and oil sectors. These will be considered in greater depth in the methodological section (after the literature review). As highlighted under the abstract, this paper also considers why the transition to a net zero carbon economy may prove more challenging than may first appear.

In addition to monetary policy setting responsibilities, central banks will be tasked with more challenging roles relating to climate related risks – and more so, given the impacts of the recent pandemic – whereby increased use of digitalization and innovative platforms such the rise of cryptocurrencies, distributed ledger technologies have taken place - as well as growing considerations of the introduction of CBDCs. There will be need to consider how to enhance the implementation of these innovative tools in reconciling the goals in the move towards a sustainable future.

This paper adopts a predominantly qualitative based approach to the study. As a result, the literature review section will focus on conceptual and theoretical aspects – as opposed to empirical related data. In consolidating on those conceptual aspects of the framework already introduced under the literature review section, namely definitions ascribed to physical and transition risks, the next section illustrates how the above primary source related categories extend to a far reaching third category which presents fundamental relevance, not only in terms of climate risks, but also in respect of uncertainty, third party liability – and particularly for non common law jurisdictions which do not recognize principles of tort law which deals exclusively with related principles and concepts of remoteness of damage, foreseeability and the neighbor principle introduced through the leading case of *Donoghue v Stevenson*.

The remainder of the paper is structured as follows. The next section, the literature review section, which sets out the framework for the qualitative based approach adopted in this paper, introduces the conceptual framework, as well as other theoretical and empirical related aspects of the topic. The methodology to be used in this paper, focusing on qualitative based, as opposed to quantitative based research. As a result, the literature review section will focus on conceptual and theoretical aspects – as opposed to empirical related data.

The third section, in consolidating on those conceptual aspects of the framework already introduced under the literature review section, namely definitions ascribed to physical and transition risks, illustrates how the above primary source related categories extend to a far reaching third category which presents fundamental relevance, not only in terms of climate risks, but also in respect of uncertainty, third party liability – and particularly for non common law jurisdictions which do not recognize principles of tort law which deals exclusively with related principles and concepts of remoteness of damage, foreseeability and the neighbor principle introduced through the leading case of *Donoghue v Stevenson*.

This section, hence underlines the importance of other risks which are not frequently attributed to the categorization of climate risks. Climate risks being generally considered to embrace physical and transition risks. Other risks such as liability risks, its contribution to financial stability risks, the need to identify, quantify and manage such risks, and more importantly, who to assign and delegate those tasks, also raise important discussions. The need for consideration of liability risks, particularly in respect of its growing relevance in the insurance sector, as well as the widely held view and consensus that central banks should not be responsible for climate risks, also highlights the need for adequate disclosures and appropriate regulation in this area.

In expanding on the concept of Liability Risks, the notion of “Breaking the Tragedy of the Horizon – Climate Change and Financial Stability”, is introduced, as well as the need to regulate climate risks – along with growing evidence and impacts for the insurance industry. In this context the relevance of the Law of Torts, third party liability, forward looking and judgment based supervision, as well as contributory and proportionate liability, is also highlighted.

The fourth section, provides further evidence on why the transition to a net zero carbon economy may prove to be more challenging than appears through references to lessons from the ongoing pandemic, as well as further consequences of the ongoing pandemic.

The Recommendations section then highlights the Role of Digital Finance and the Need to Engage the Finance Sector in the Reduction of Carbon Emissions. In this context, the role of The Task Force on Climate Related Financial Disclosures (TCFD) is incorporated.

The final section concludes with explanations and demonstrations on how financial stability risks Post Covid Era can be regulated , the role of third party liability, as well as the role of the structure of financial regulation in climate change regulation.

The literature review section now considers why jurisdictional differences and historical developments will play a part in determining how sustainable certain implemented policies and measures are – as well as in facilitating a transition to normality.

Literature Review and Background to the Study

According to the Basel Committee on Banking Supervision, report “Climate-related risk drivers and their transmission channels”,

climate risk drivers can be grouped into one of two categories:

- Physical risks, which arise from the changes in weather and climate that impact the economy; and
- Transition risks, which arise from the transition to a low-carbon economy.

In his speech, “Breaking the Tragedy of the Horizon – Climate Change and Financial Stability”, Mark Carney adds a third category, *liability risks* (2015:6), which he defines as “the impacts that could arise tomorrow if parties who have suffered loss or damage from the effects of climate change, seek compensation from those they hold responsible – such claims possibly coming decades in the future, but having the potential to hit carbon extractors and emitters – and if they have cover, their insurers, the hardest.”

The consequences of climate related risks are therefore not only significant, in respect of matters of insurance, but also in relation to third party claims, remoteness, causation and foreseeability.

Although it is of widely held consensus that banks should not assume primary responsibility for regulating climate risks, it is evident that other sectors such as the insurance sector, particularly, and even securities sectors will have an increasingly greater role to play - with increased climate related risk events. Insurance companies have witnessed unprecedented climate risk related claims following floods which destroyed several regions in parts of London, Western Europe (Germany and the Netherlands), recently. Such has been the magnitude of destruction and unexpectedness in preparations – particularly for businesses and homes which had been inadequately insured for such unexpected events.

Role of Insurance in Ensuring Financial Stability and Addressing Climate Risks

During the discussions held during the Climate Risk Europe Virtual Week, “Role of Insurance Industry in Fostering Resilience” the following recommendations and observations were highlighted (2021):

- The need for the insurance industry to work with customers with risk mitigating tools;
- The need to mitigate threats to the society.
- The need for stakeholder engagement: How government can be engaged, how the insurance sector can engage private sector with public sector in educating the public on climate related issues.
- Need for considerations on how to remove or mitigate political elements from the decision making process.

In addition to classifying “resilience” into physical safety, and financial resilience, issues arising from the political and governmental process in the decision making process were highlighted. It was acknowledged that whilst the insurance sector was much far ahead in establishing climate risk scenarios, the political process was slow, the political will to adapt to climate change has been taking longer than expected, and that there were “no clear directions on building codes”, amongst other issues.

This prompted the following issues:

- How the silence between different levels of government and insurance companies could be broken down;
- The need for deployment of mitigating elements – with proactivity being implored on part of the insurance

sector;

- The need for review of contract language – in respect of coverage of the contract or insurance cover.
- Whether governments still had the funding capacity to assist towards a post COVID sustainable future – particularly after having expended huge sums of money during the pandemic – with governmental concerns more geared towards education and health sector burdens than climate related issues.

Communities with insurance protection were adjudged to recover much quicker than those without. Further, it was acknowledged that even though the pandemic was not the cause of the strain from previous years, that it exacerbated the effects of climate change.

In view of the concerns related to the political process, funding capacity of governments, the growing role for science, as well as the role of financial regulators was also acknowledged. Forward looking risk management was considered to be “key to success in insurance in Canada”.

In countries such as the United Kingdom, the law of torts covers third party liability: product liability, liability risks, causation, remoteness of damage – embracing concepts such as the neighbor principle and reasonable foreseeability. In terms of subjectivity and judgement, case law has revealed how difficult it is for a precedent to remain binding for a considerable period of time. Such levels of uncertainty have not on their own, been exclusively disadvantageous – offering a level of flexibility where the legal environment has had to embrace environmental changes: such as the admission and allowance for digital media and impacts. However, in jurisdictions where third party liability is rarely recognized or where there is a mix of such level of non recognition – as well as a certain level of recognition (as is the case in the Netherlands), a degree of certainty in respect of i) who is able to make claims, ii) the appropriate cover, iii) the levels of compensation deemed by courts as appropriate, will not only be welcomed by insurance companies who are likely to be on the receiving end in floodgates claims, but also for businesses and individuals who require a just and acceptable level of compensation.

Recent Covid developments exemplify why greater elements of uncertainty and variables will need to be incorporated and provided for, in planning and decision making processes. Climate related impacts in regulation and supervision, on the other hand, will also have a greater role to play, as these look set to continue for a greater time range and scale – well into the future.

As highlighted by Carney (2015:6), the Prudential Regulatory Authority (PRA), is responsible for protecting policyholders – as well as ensuring the safety and soundness of insurers – with a “forward looking and judgement based, supervision, risk-based and proportionate, tailored to different business models around the sector.” The importance of quantification is also highlighted “what is measured can be managed” (see 2015:12). Quantification of risks depends not just on the type of business and how the nature of such business contributes to levels of risks inherent in such a business or sector, but also to the levels of controls operating

within a business and the effectiveness of such internal controls to detect possible risks. A kind of contributory liability or proportionate liability has been recommended in the case of climate related risks – where an individual or business bears a proportionate form of liability, with a commensurate reduction in the level of what is deemed acceptable for compensation in cases where such individuals or businesses fail to take necessary and adequate measures in preventing such risks. Further, it is added by Carney (see 2015:9) that with *claims* on third party liability insurance, in classes like public liability, directors’ and officers’ and professional indemnity, *could be brought “if those who have suffered losses show that insured parties have failed to mitigate risks to the climate, failed to account for the damage they cause to the environment, or failed to comply with regulations.”*

The developments and lessons drawn from the recent and ongoing COVID crisis, has illustrated how difficult it has been, and how difficult it still is, for businesses to be granted claims in respect of unforeseeable and unprecedented developments such as the COVID pandemic – such an event having not been covered by many insurance policies. Even in more ambiguous worded policy documents, many insurers have been able to evade the responsibility of paying out business interruption insurance attributed to COVID related events and have been able to transfer such responsibilities to government schemes aimed at providing loans instead. Whilst it is fair to say that such insurance companies should be offered a certain level of protection – given the magnitude of the impact of recent events and developments, the levels of insurance contributions already made by individuals and businesses – as well as the number of prior claims made by such businesses and individuals, should also be taken into consideration.

Physical risks are further categorized into acute and chronic events, and while some aspects of those risks are considered to have the possibility of being predictable, the increasing uncertainty as to the location, frequency and severity of these events, are also highlighted. It also notes that with transition risks, there is uncertainty as to the future pathways, and that changes in policies, technology innovation and shifts in consumer sentiment contribute to shaping or defining.

Notwithstanding the attributed benefits of the implemented fiscal and monetary policy measures and responses to the recent pandemic, the consequences of an unprecedented crisis – one aimed at preventing a solvency – as well as liquidity crisis, and one also prompted by the need to address immediate short term liquidity needs as a means of preventing far reaching longer term effects and consequences, will become evident in the coming months.

Unlike the financial crisis, the pandemic is not merely a financial but also a medical and health related crisis which extends unlike the Global Financial Crisis, to greater range of individuals and businesses. To compound matters, the disparity between income divide has become even more pronounced and even though entrepreneurs and small businesses constitute vital economic engines, they are almost certain to bear the brunt of the repayment commitments and conditions.

As highlighted in the Bundesbank report (2021:2) “one cannot rule out an adverse scenario with feedback loops to the real economy if banks deleverage to meet capital requirements imposed by regulators or markets. Hence, monitoring the interaction between debt sustainability in the public sector, the corporate sector, and the banking sector will be crucial.”

Applying Quantitative Analysis to Mitigate Climate Risk

The discussions of *The Economists' Climate Risk Europe Virtual Week*, “Credit and Climate Risk, Applying Data to Lending Decisions” (2021) also drew the following questions:

- How are banks and other lenders applying quantitative analysis to mitigate climate risk in their loan portfolios?
- Is the data robust enough for informed decision making and how can transparency be improved?
- How are lenders protecting their balance sheets from climate related exposure and to what extent are stress tests and scenario analyses impacting portfolio allocations?

Another consequence of the Covid crisis, is the rise in digital payments and the impacts of platforms such as distributed ledger technologies, applications of information technology – particularly those related to

blockchains and cryptocurrencies. There are currently numerous efforts and initiatives aimed at reducing carbon emissions to zero – particularly initiated on the part of the banking sector. Whilst the retail and whole sales sectors may have been most severely impacted by the ongoing pandemic, online sales have benefited considerably – and consequently leading to greater demand for digital payments and services.

Towards a Sustainable Post Covid Era

How realistic is it to expect that digital payments in a post Covid environment will be effectively impacted by “green“ measures aimed at reducing carbon emissions to zero?

Short Term v Longer Term Perspectives

This section highlights the role of banks in the short term economic recovery. Greater role will be assumed by insurance and securities sectors in the long term – in addressing climate risks, as well as the reduction of carbon emissions to net zero.

Longer term perspectives and sustainability issues, hence focus on:

- Consequences of greater use of digital platforms
- Climate issues
- Role of financial regulators, insurance industry in regulating liability risks
- Regulating financial stability risks Post Covid Era : Jurisdictional differences in approach to third party liability.

In addition to concluding that “digital finance, in all its forms, will be crucial to the recovery and to the post-Covid form of the economy”, Ramsen (2021:3) also highlights recent developments which have taken place, which includes the Bank’s collaboration with HM Treasury in establishing a new joint Taskforce, along with two stakeholder engagement forums, to explore a possible central bank digital currency or CBDC. He adds that “a CBDC would, if introduced , be a new form of digital money issued by the Bank of England and for use by households and businesses, existing alongside cash and bank deposits rather than replacing them.”

The increased need for engagement of the financial sector in climate regulation is also highlighted by Elderson (2021) in his speech “ The Embrace of the Horizon: Forcefully Moving With the Changing Tide for Climate Action in Financial Sector Policies” where it is noted, in accentuating the role of central banks and supervisors, that (2021:3):

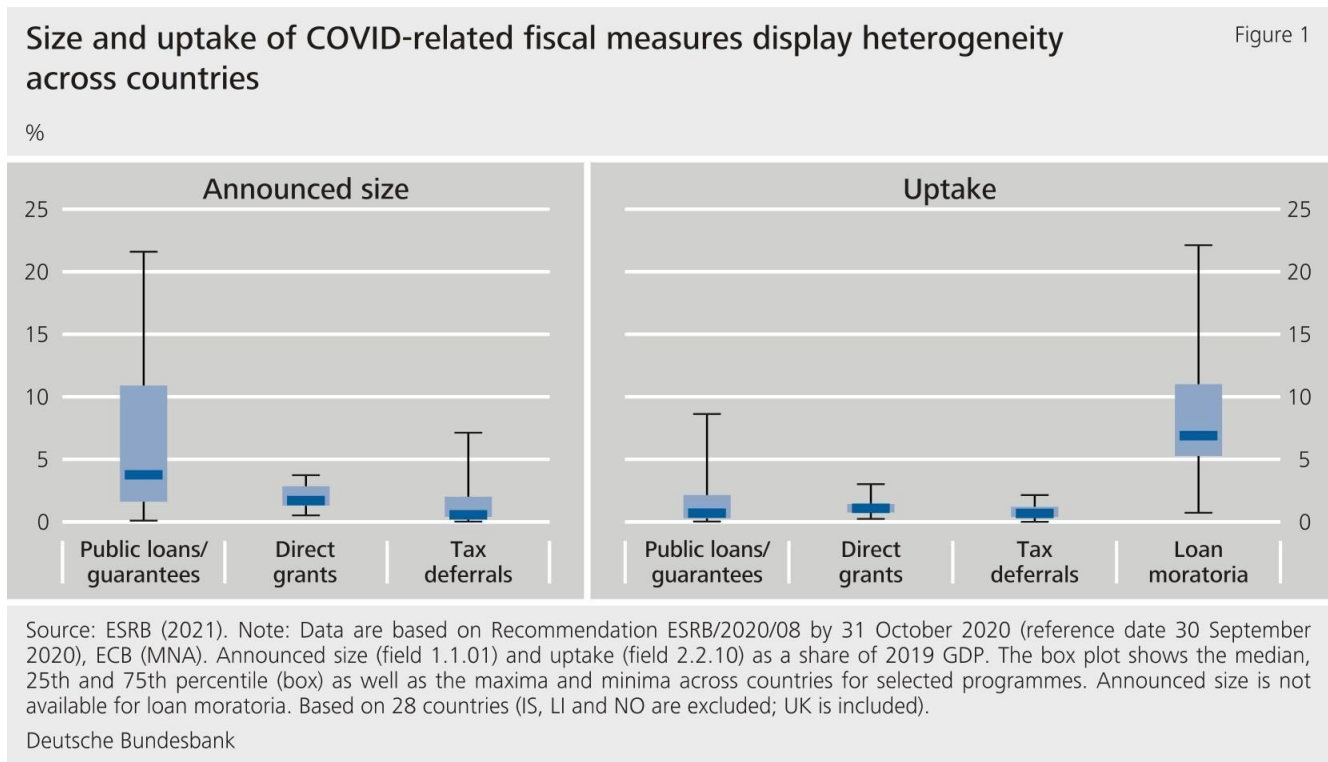
- Central banks and supervisors are also increasingly showing their resolve and dedication to contribute within their mandate to integrating the effects of the climate crisis in the exercise of their tasks. They have done so individually, but also collectively as part of the Network for Greening the Financial System (NGFS).”

In addition to the consideration of the importance of forward looking approach (whereby it is added that knowledge and expertise gathered from bridging data gaps to evaluate and update forward looking scenarios under consideration is required), it is added that central banks and supervisors must be more proactive to

enable them to fulfil their mandate while avoiding the tragedy of the horizon (2021:4).

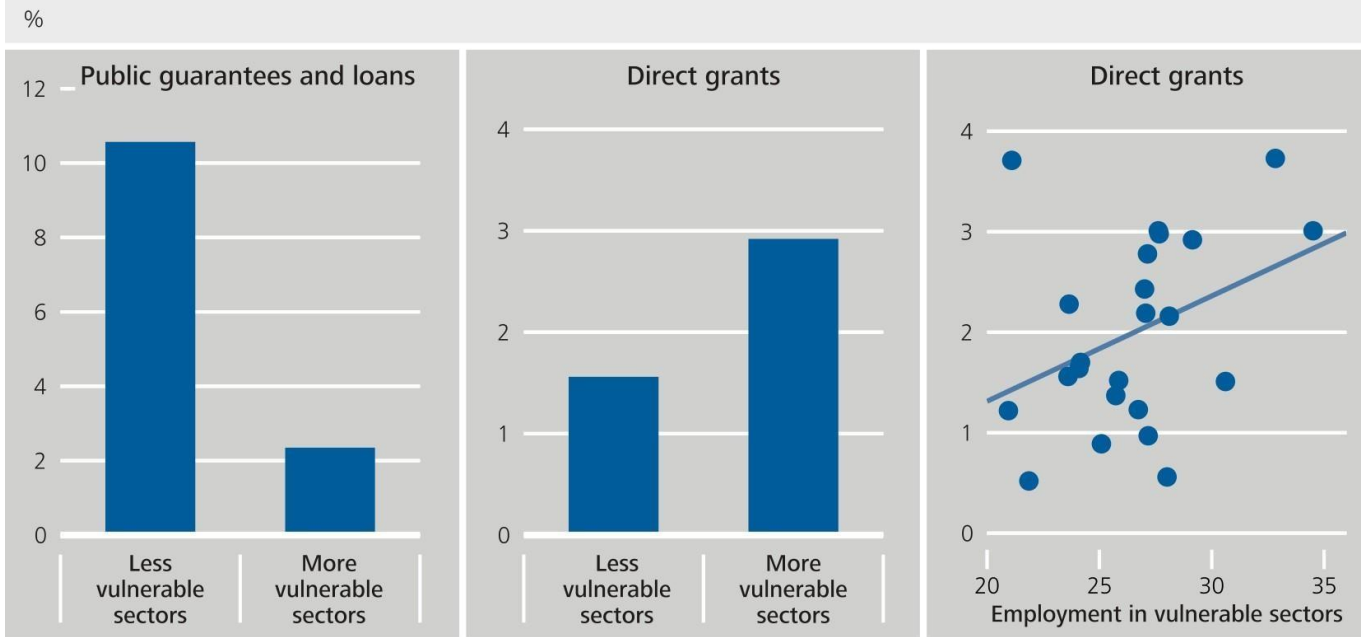
Figure One

Source: Deutsche Bundesbank (2021:2). “Covid related fiscal measures and debt sustainability”



Announced size of direct grants was larger in countries with a higher share of vulnerable sectors

Figure 4



Source: ESRB (2021). Note: Data are based on Recommendation ESRB/2020/08 by 31 October 2020 (reference date 30 September 2020), ECB (MNA). Announced size (field 1.1.01) as a share of 2019 GDP on the y-axis for the three graphs. Vulnerability is defined as the share of employment in the NACE sectors G, H, I R, T and U in Q4 2019. The bar plots depict the median over the lowest (highest) quartile of the vulnerability metric as "less vulnerable" ("more vulnerable"). The scatterplot compares the announced size of direct grants (as a share of 2019 GDP; y-axis) to the vulnerability metric (a higher share means higher vulnerability; x-axis). All graphs based on 28 countries (IS, LI and NO are excluded; UK is included).

Deutsche Bundesbank

Figure Two

Source: Deutsche Bundesbank (2021:4). "Covid related fiscal measures and debt sustainability"

In embracing the U.S approach, whose fiscal stimulus packages are considered to “have undoubtedly contributed to pushing up aggregate demand and lifting inflation expectations”, four lessons drawn from the US experience since the summer of 2020, in facilitating a review of the Euro area’s policies include the following (Banco de Espana; 2021:12):

- Following periods when inflation has been running persistently below 2 percent, appropriate monetary policy will likely aim to achieve inflation moderately above 2 percent for some time - explicitly allowing for the possibility of letting inflation overshoot temporarily its 2 percent target following periods of persistent undershooting.
- The improvement in the US inflation outlook reflects the likely inflationary impact of the fiscal stimulus packages approved since December 2020, as well as the overall economic recovery from the pandemic crisis.
- the crucial role that fiscal policy plays in the current context in supporting the economic recovery and thus improving the medium-term inflation outlook - such improvement coming through different channels.

Inflation linked swap (ILS) rates were also recommended (2021:11) in being used “to construct a real yield curve for the euro area, by subtracting them from the nominal yield curve.”

Inflationary Impacts of the Covid Pandemic

The impact of rapidly rising inflation, consequential of fiscal and monetary policy measures which have had to be implemented during the recent and ongoing pandemic, are certain to impact many sectors directly and indirectly. For example, rising food prices will impact restaurants and other businesses which primarily rely on food in generating their income. The following section illustrates how prices in other sectors have been impacted during the course of the pandemic.

Energy and Oil Prices

Falling oil prices are considered to be contributory to the sharp depreciation of the value of the krone (see Olsen : 2021). It is furthermore noted that later during the spring, when oil prices were restored to their previous levels, currency value of the krone appreciated again – with their values even rising to higher than pre pandemic levels .

The first few months of 2020 in respect of the decline in energy prices were also positively correlated by Olsen to CPI inflation. This was contrasted to the recovery of inflation and rising energy prices towards the end of 2020.

The impact of COVID restrictions and guidelines have been notable with the tourism and hospitality sectors whose operations were severely impacted by the need for social distancing and related COVID measures. The availability of accommodation that would otherwise have been provided through these channels has therefore, undoubtedly impacted the housing sector.

Based on reports by the Northern Ireland Housing Executive (2020:9), during the first half of April 2020, 73% of UK workers in accommodation and food services and 46% of those in construction, had been furloughed.

Housing Prices

Housing prices were also considered to have dropped in the immediate aftermath of the start of the crisis – with a recovery in prices as the pandemic progressed with “house prices being more than 12 percent higher, in April 2021, than at the same time in 2020.” (Olsen : 2021).

Even though the current higher than usual, inflation level is attributed to the value of the krone, other factors such as the rising prices of houses, energy and consumer spending (interest rate levels impacting exchange rates), cannot be excluded. In this respect, the impact of monetary policy and fiscal policy measures during the pandemic, in facilitating consumer spending despite consequences of the pandemic on employment, is noteworthy.

Retail and Wholesale Sector

It is also reported that 1.7 million or 22% of the total 7.6 million jobs in the retail and housing sector, were at risk (Northern Ireland Housing Executive 2020:9).

Based on reports from the Banco de Espana (2021:6), according to the ECB March macroeconomic projections, inflation in the euro area is projected to reach 1.5% in 2021, peaking at 2% in 2021 Q4 - however, in the medium term, the persistence of negative output gaps and high unemployment rates means that underlying inflationary pressures are not expected - with Euro area inflation projected to fall to 1.2% in 2022 and increase to 1.4% in 2021.

Whilst inflationary impacts of the recent fiscal and monetary policy measures cannot as of yet be ascertained with certainty, it is hoped that post pandemic effects and impacts will not generate adverse effects synonymous to those of the Great Inflation which occurred in the seventies.

Other Main Issues to be Addressed

In December 2019, Mark Carney, then Governor of Bank of England, observed that “changes in climate policies, new technologies and growing physical risks, will prompt reassessments of the values of virtually every financial asset” (see TCFD, 2021:3). Further, it is added that “organizations that invest in activities that may not be viable in the longer term will likely be less resilient to the transition to a lower-carbon economy and their investors will likely experience lower returns.” The need for adequate information for purposes of disclosure is also highlighted.

In highlighting the potential financial implications of climate change, the Task Force on Climate Related Financial Disclosures, relates the following to transition to a low carbon economy (TCFD, 2021:4):

- Risks associated with an abrupt adjustment to a low carbon economy, such as rapid losses in the value of assets due to changing policy or consumer preferences;
- Climate -related financial risks could affect the economy through elevated credit spreads, greater precautionary saving, and rapid pricing adjustments.

It is thus vital that a transition to low carbon net zero emissions economy be facilitated in a manner which incorporates gradual adjustments and enough timely measures being implemented to assist, educate and facilitate such a transition. In addressing how innovation can support sustainable growth, as well as those technologies that can support the broader transition process, Carney also adds that considerations on climate stress testing, investors who are required to back these – be it in transportation sector, will be essential.

Further questions relating to what their balance sheets look like in terms of their contribution to climate change/global warming, he adds, will have to be addressed. In his opinion, one of important foundations relates to emissions – how emissions are connected through the value chains.

“ Governments clearly bear primary responsibility for addressing the climate and environmental crises we are facing. While central banks and supervisors should of course not overlap their mandate, there is also a legal risk of being sued for failing to act and comply with legal obligations. With the strong conviction that central banks and supervisors not only can, but must take into account climate related and environmental risks and act urgently to fulfil their mandate, the NGFS seeks out ways to inspire its membership.....“(Elderson; 2021:4).

The above mentioned statement, not only clearly recognizes the role of governments in addressing challenges related to environmental and climate risks, but also the growing need

of the involvement of central banks, supervisors, and other regulators from the insurance and securities sectors, to interact to address such risks in such a way that vital communication of timely, accurate, relevant and reliable information can be facilitated effectively, and in such a way as to evoke timely disclosure of vital information.

However as already highlighted in the paper, there are restrictions on funding capacities for governments who are simply currently focused on other matters such as education and health.

Vital questions raised on “Regulatory and Policy Perspectives” (see Opening Keynote Panel, *The Economists’ Climate Risk Europe Virtual Week*), as well as in relation to “insurance and pricing risk and the role of the insurance industry in mitigating the impact of climate change are as follows” (2021):

- What are the expectations of the regulators?
- How can regulators contribute to harmonization of climate risk data and disclosures?
- What can institutions expect from the shift from voluntary to mandatory reporting?
- How can insurance companies understand long term climate severity trends to effectively price climate risk?
- How can transition and liability exposure be priced?
- To what extent is the appetite for climate related insurance products changing and what new products are being developed?
- How can we make sure that the insurance industry is a positive influence in the mitigation of climate change – and what is the scope for the insurance industry to work with governments to creating joint solutions?

Having considered all the points mentioned in the paper, including current constraints on governments in climate related issues, the growing roles and relevance of the banking, insurance and securities sectors in climate risk management, the role of climate sciences as foundation for understanding of climate change and risk management through forward looking tools in the years to come, close collaboration between these authorities in the effective management, disclosure of risks, should be facilitated through tools and practices aimed at greater transparency, consistency and comparability of standards used in the decision making process.

The links with legal, liability risks – and not just climate risks are thus also acknowledged. Clearly, in matters of regulation and supervision, as well as the facilitation of adequate disclosures, the interconnection between economic and legal policies and mandates, cannot be overlooked.

Towards a Post Covid Recovery:

The Role and Involvement of Regulators Towards a Sustainable Future will be vital. Risk management and the need for adequate disclosures constitute part of those issues in need of redress.

Issues to be Addressed:

Adequacy of Disclosures

In respect of European Directive on Disclosures:

- European Directive on Disclosures. As highlighted by Lagarde, “uncertainty regarding the validity, authenticity of disclosures, who will enforce them, how well they will be enforced.”

Risk management

Need to account for liability risks – not just physical risks and transition risks (whereby climate risks are classified).

Forward Looking Risk Management Tools in Risk Management: Managing Financial Risks

The following topics were also considered during discussions on “Banking Response to Understanding, Measuring and Managing Climate Related Risks” *The Economist* Climate Risk Europe Virtual Week, (2021) :

- What market drivers are having an impact on banks and what should the response be?
- What modelling approach should be considered to better quantify and mitigate those risks posed by the climate;
- How to best utilize climate scores to measure the financial impact of climate change on the balance sheet.

The Model used and referred to, by Munich RE is as follows:

Identification of Risk -----→ Quantification of Risk-----→ Management of Risk

As well as adding that “ regulators recognize that climate change may lead to systemic financial risks”, the importance of knowledge of climate science in historical data and forward looking decision making, since climate risk, by inherent nature, evolves and changes with time, is also noted.

In addition to stress testing, forward looking tools used in risk management are considered to embrace the following:

- Climate Scenario Analysis

- Consideration of carbon footprints

Owing to lack of transparency, the need for a framework that is globally harmonized, such as to have a standard reference point – particularly in relation to metrics and disclosures, is highlighted. Further the incorporation and quantification of climate risks in the investment process, as well as an understanding of long term transition risks, is highlighted.

Further main concerns revolve round the:

Sustainability of debt repayments – particularly in view of prevailing uncertainty levels as regards how long the ongoing crisis may persist for.

Adequate disclosures certainly play a part in improving lending decisions being reached by banks - however, lessons will also have to be drawn from the global financial crisis. Lessons relating to consequences of excessive deleveraging by banks, procyclical effects – as well as adverse effects generated through feedback loops.

How realistic is a sustainable Post Covid recovery: With increased online sales, digitalization, and consequential increased packaging of products ?

Furthermore, considerations of the introduction of CBDCs and increased use of crypto currencies need to be highlighted. Whilst innovative, how can we enhance the implementation of these in reconciling the goals in the move towards a sustainable future?

Three steps towards a net zero emissions economy, were identified and highlighted during the “Technological Advancement and Climate Scenarios” discussions, Climate Risk Europe Virtual Week, (2021), as illustrated in the table below:

1) Use less energy	Deploying more efficient equipment etc
2) Scale up clean energy platform	
3) Use clean energy anywhere	Drive massive clean electrification of buildings, transport and industry; Use hydrogen where you can't electrify; De carbonize remaining energy use using CCS/U and sustainable bioenergy

In addition, those key technologies which will make a “material difference to combatting climate change” , as well as “uncertainty revolving round technological change fit into transition scenarios” constituted focal points. Further noted, that “ If key technologies such as carbon capture and storage, do not deliver as hoped, what will

be the impact on future climate policies.”

Conclusion

This paper has attempted to highlight how the recent and ongoing crisis has impacted several distinct sectors – consequently impacting monetary and fiscal policy responses. Even though such monetary and fiscal responses are adjudged to have addressed the overarching goal in promoting financial stability, continuous monitoring will be required to ascertain the sustainability of debt repayments – particularly in view of prevailing uncertainty levels as regards how long the ongoing crisis may persist for. How accurate is it to ascertain those businesses considered to be economically viable and for whose purposes longer term financing is (and should be) provided or those who are considered to be economically viable or systemically important such that immediate funds for addressing liquidity needs are to be provided for purposes of averting possible impending insolvencies?

Adequate disclosures certainly play a part in improving lending decisions being reached by banks – however, lessons will also have to be drawn from the global financial crisis. Lessons relating to consequences of excessive deleveraging by banks, procyclical effects – as well as adverse effects generated through feedback loops. For whose purposes the liquidity and leverage ratios were introduced under Basel regulations.

As the era of post covid digital payments draws near, consequences of a transition to a net zero carbon emissions economy will also have to be assessed – particularly in view of climate risks and its component, namely, transition risks. Even though as rightly noted, “climate change is the Tragedy of the Horizon” it can be better managed when not just climate and transition risks are capable of being adequately and reasonably quantified, but by also taking into account risks such as liability risks, and more specifically, third party related liability risks.

In this sense, the role of tort law, and particularly in jurisdictions which currently do not recognize this form of law, will be pivotal in ascertaining and establishing a degree of certainty, reducing financial stability risks related to climate, transition risks, through principles and concepts such as the proximity principle (neighbor principle), causation and remoteness of damage, as well as what is deemed by courts as reasonably foreseeable.

Even though it is a widely held consensus that banks should not assume the primary responsibility of regulating climate risks, insurance companies will assume greater roles in the months and years to come. Depending on the structure of financial regulation such roles will impact other sectors of financial regulation – namely the banking and securities sectors – for as we have seen, with increased digitalization and an increasing shift to central bank digital currencies, it will become more increasingly difficult to isolate completely, the impact of one sector’s activities, on the other. Which is not a bad thing. Whilst a degree of independence is healthy for purposes of governance and accountability, sectors are interdependent on each other, and with the implementation of green finance and sustainable finance, the securities sector and its participants, with the rise in digital

finance, innovative tool kits for a sustainable future, will have a wider and more defining role in climate change and regulation.

Jurisdictional differences and historical developments will certainly play a part in determining how sustainable certain implemented policies and measures are – as well as in facilitating a transition to normality.

Adopting the neighbor principle, which embodies other concepts such as reasonable foreseeability, remoteness of damage – which are all linked to determining liability risks, will be instrumental for the insurance sector in addressing issues related to liability risk and its growing importance in respect of climate risks.

Depending on the structure of financial regulation which operates in different jurisdictions, as well as whether common law principles of tort law apply in these jurisdictions in addressing liability risks, it will be feasible, realistic and possible to break the tragedy of the horizon.

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