

# Chapter 3

## Macroeconomic-Financial Policies and Climate Change Nexus: Theory & Practices



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### 3.1 Introduction

One of the most significant issues of the recent century is climate change and its adverse effects on human health, environmental well-being and sustainability. It is clear that immediate action is necessary to minimize the adverse impacts and a huge amount of funds is needed to fight the deteriorations in the environment. Global warming is 1.5 °C above pre-industrial levels and minimizing greenhouse gas emissions is a first step to coping with climate change (IPCC 2018). To cut down emissions all around the world a change in the policies of governments should change towards new technologies and financing of these technologies that will replace fossil fuel dependency with renewable energy usage. United Nations report suggests that every year a massive amount of investment \$1.5 trillion is required to reach the goals of the Paris Agreement. It is apparent that governments will lead the financing of the projects to cope with climate change, thus macroeconomic and financial policies of the governments will shape the financial environment to ensure financing green technologies. Recently, many central banks report an additional duty to create an environment by influencing the money supply and credits in the economy (Campiglio et al. 2018; Baer et al. 2021) that will provide green financing

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for renewable energy technologies. Despite that green innovation projects of the firms enhance business performance (Farza et al. 2021), many firms especially in emerging countries are reluctant to show ecological responsiveness due to the high costs of these projects. Thus, it is inevitable that environmental financing should be backed by macroeconomic and financial policy adaptations of the governments.

The discussion in this chapter mainly rekindles the association between climate change and macroeconomic and financial policies. In this chapter, some principal ideas based on literature have been discussed in the context of the nexus between macroeconomic and financial policies and climate change and some important insights on the underlying theories, empirical evidence, methods adopted in previous studies to identify and discuss the association. This chapter also contextualizes the relationship in the form of monetary policy, fiscal policy dimensions and regulatory dimensions to provide useful contextualization for financial development and fiscal capacity in the financial system. Some crucial critical reflections on the extant to understand the macroeconomic and financial policy relationship add crucial debate in this chapter. It is important to discuss the debate on macroeconomic and financial policies and climate change nexus in the current paradigm. This discussion is based on multiple theories and empirical evidence to postulate and discuss that macroeconomic and financial policies influence climate change (Stern 2016; Pigou 1932). In contradiction, other studies from literature also mention insignificant association or no links between macroeconomic and financial policies and climate change (Deegan 2004; GonzalezBenito 2005; Cormier and Magnan 2007). Yet there is some evidence available that macroeconomic and financial policies adversely impact climate change (Murphy and Hines 2010; Batten et al. 2016).

This chapter further discusses a comprehensive overview of different theories and empirical evidence that have currently emerged in the literature about the studies focusing on the macroeconomic and financial policies and climate change nexus. Some conventional theories on macroeconomic and financial policies and climate change relationships need to be explored further to include policy coordination elements in models. Different concepts such as financial inclusion and financial sector importance through green financial derivatives have emerged in financial policy models and have gained significant importance by the United Nations climate change financial conferences on sustainable development. The literature has been revived macroeconomic and financial policies and climate change debate, both on a theoretical and empirical basis and identified the significance of various policies and channels at the global level. The consideration of macroeconomic-financial policies relevant to public policies is receiving tremendous attention and it has now become more popular under the current regime of COVID-19 pandemic crises around the globe. The adverse effects of the lockdown have created a devastating impact on the loss of jobs of people, financial investments in different projects and businesses, huge financial losses of the corporate sector due to poor performance of loans, and climate projects financial risk have been increased. If special repercussions are not taken, macroeconomic and financial policies and climate change in most economies will sharply decline and it can lead crises situation.

The chapter provides suggestions regarding a greater role for stabilization of financial-economic policy having balancing impact on environmental crises to encounter the adverse effect of the COVID-19 pandemic. The major importance of this discussion is to focus on financial policymakers and who can extract some important lessons on how macroeconomic and financial policies impact climate change and vice versa. Different green investment groups and individuals having a close connection to financial institutions and regional financial bodies supporting climate change mitigation projects and other statutory organizations such as financial loaning institutions and government may find close relevance of this discussion specifically encountering the upcoming financial crisis and recession which are also expected having a severe impact on climate change mitigation program due to COVID-19 pandemic. However, the major focus of this chapter remains around the discussion that macroeconomic and financial policies issues and their nexus with climate change can provide beneficial outcomes for financial-economic institutions in different parts of the world, especially in developing economies to support financial stabilization that would be advantageous for climate risk control. The chapter aims to contribute to the literature by providing an extensive discussion about macroeconomic, financial policy and environment nexus with an emphasis on developing countries. The chapter contributes to the literature by also considering the impacts of the unprecedented pandemic situation on this framework.

### 3.2 Climate Change

The literature on the climate change effect starts from the Fourier (1827) and Tyndall (1861) studies. For greenhouse gases factors identification, Tyndall (1861) finds that carbon dioxide and water vapor are major factors. For greenhouse effect identification as a major issue, which was first raised by Arrhenius (1896). Callendar (1938) extended the work after highlighting the temperature rise of 0.05 °C per decade relative to the previous century. Climate change comprises high temperatures of earth, acute hazards inform of high heat waves and rapid floods, the intensity level is rising day by day (Deryugina and Hsiang 2014, IMF 2017; Bathiany et al. 2018; Mersch 2018; Pigato 2019). The climate change impact on the socio-economic environment can be classified into different essential areas.

Platt (1956) extensively discussed 30% carbon emission concentrations in the twentieth Century. Platt further provided information regarding future temperatures rising by 1.1 °C relative to previous centuries. Climate change creates substantial physical impacts on geographical regions. The physical climate change risks are generally increasing around the globe, which alternatively has a positive impact on most economies like increased agricultural productivity level in Canada, as well as a different part of northern Europe and Russia. The spatial impact of climate change is also observed in geographical regions. Climate change affects the extreme level of human activities (Weitzman 2009). Climate change affects the earth system and makes it warmer, as mentioned in the report of the IPCC (2018). Climate change

informs of physical resource degradation is dynamic. Climate change models based on physical resources degradation also predict continuous warming can increase socioeconomic technological inertia for carbon emissions reduction (IPPC 2018; IPBES 2019).

It has multiple effects in the form of exposure to multiple hazards, and vulnerabilities like the financial capacity requirement to investments, and heavy dependence on a sector that is victimized by climate hazards (Krogstrup and Obstfeld 2018). It has a direct impact on the socioeconomic and financial systems of the economy (Nordhaus 2014; Raworth 2017; Svartzman et al. 2019). For instance, a flooding area can not only have a damaging impact on houses but it can also raise financial burden in terms of high insurance costs. Many financial systems are designed in such a way that could add vulnerability to climate change issues. Climate change affects the social system (Aglietta and Espagne 2018). The most affected population in the world belongs to the poorest communities, which are the most vulnerable. Poorer communities in most parts of the world rely on natural capital as a major financial source (Pandey et al. 2017). Climate change can bring potential loss due to natural capital degradation, which could add costs to specific geographic locations. The potential impact of climate change is observed due to the under-preparation of climate disaster challenges. The communities around the globe have been working on climate change adaptation, the scale of climate change adaptation is likely to be slow and it can significantly increase to manage rising levels of physical climate change risk. Adaptation is likely to entail rising costs and tough choices that may include whether to invest in hardening or relocating people and assets. It thus requires coordinated action across multiple stakeholders.

Most economists believe that climate change mitigation is only possible through macroeconomic-financial policy intervention (Bhattacharya et al. 2015; Dasgupta et al. 2019; Campiglio 2016). There are multiple ways by which climate change can be mitigated through financial policy interference. Firstly, macroeconomic-financial policies can impact climate change projects through regulatory frameworks (Campiglio et al. 2018). Secondly, various financial instruments can be introduced to boost investment in climate change adaptation projects. Third, financial stabilization policy builds a fiscal capacity for national resource allocation to depute wealth for green investment projects. Financial capital accumulation can support cleaner technology to improve the positive outcomes of financial policy on climate change risk (Levine 1997). Fourth, a financial policy stabilization or uncertainty reduction policy can have a spillover impact on investors who are seeking green energy investments (Admati 2017). Finally, a borrowing capacity for the economy is improved for climate change mitigation through a stable financial structure.

### 3.3 Macroeconomic and Financial Policies

Macroeconomic and financial theories have been extensively discussed in economic literature for the last couple of decades. Various types of macroeconomic and financial policy models are discussed by public finance scholars (Grilli et al. 1991; Gelb 1989; Westerhoff 2016). A major group of scholars proposes fiscal theories that critically discussed the dynamic role of fiscal capacity that has a significant contribution to financial policy execution programs. Fiscal capacity means a rise in taxation and another income source of government over some time. A positive rise in fiscal capacity creates a greater level of national income resulting in forward-looking activities and execution (Besley and Mueller 2021). In financial stabilization, the economic literature in the fiscal context considers taxation revenue to GDP ratio and income tax share in total revenue as a fiscal policy stabilization (Olekalns 2000). Additionally, an extensive debate on financial policy models suggests that monetary policy regulations play a significant role through monetary transmission channels (Gertler and Gilchrist 1993; Barran et al. 1996; Ramey 1993). The major group of monetary scholars proposes monetary policy theories that critically discuss the dynamic role in financial credit disbursement and banking sectors' critical contribution for different financial projects. A credit theory posits that central bank intervention is required to ensure capital disbursement (Gertler and Gilchrist 1993). An efficient monetary policy supports credit generation. A low level of financial inclusion is the source of the poor interest rates (Kihombo et al. 2021). The level of the interest rate also affects businesses through delayed investment and monetary disruption mechanization. The inflationary theory also emphasizes an adverse impact of interest rates on the well-being of people (De Gregorio 1994). The financial inclusion theories highlight the innovative role of central banks to increase the financial literacy of residents which will accelerate deposits and savings for new investments (World Bank Group 2013).

The financial theories have been discussed in economic literature like physical resource acquisition risk discusses disruptions in investment projects due to low valuation and weak production potential that has financial regulation implications. Acemoglu et al. (2012) emphasize the deregulation and physical risk nexus in the financial policy risk framework. Macroeconomic and financial policy theories identify spillover effects on investment behavior due to market uncertainty as well as volatility through slow productivity. The recent literature also claims and discusses the same arguments (Admati 2017; Auffhammer 2018; Battiston and Monasterolo 2019). Financial policy stabilization issues are the fundamental cause of liquidity risks and it promotes the disruption in credit channels and creates legal proceedings difficulties in the economic system and corporate businesses, having outcomes in the form of financial instability in economies (Carney 2015; Campiglio et al. 2018). Recent literature focuses on the relationship between macroeconomic -financial policies and climate change.

## 3.4 Macroeconomic-Financial Policies and Climate Change

### 3.4.1 *Underpinnings*

Theories relevant to the association between macroeconomic-financial policies and climate change discuss whether macroeconomic financial policies are helpful to mitigate climate change. The seminal work in this context explains the theoretical underpinnings regarding the relationship between macroeconomic financial policies and climate change. Fiscal policy plays an important role in climate change. The fiscal policy theory in this area gives importance to Pigouvian taxes on emissions for climate change mitigation a research and development subsidization (Pigou 1932). The theory highlights that subsidies are required for positive co-benefits as well as mitigation actions, which could shift the consumption and investment habits of people toward more savings of natural capital. The fiscal policy theory in this context considers the carbon-pricing theory. The theory focuses on the significance of price allocation as environmental costs of environmental pollutants considering climate change due to local environment damages (Lagarde and Gaspar 2019; Farid et al. 2016).

Hence, an important notion of this theory is to identify the costs of carbon emissions having measurement problems. Rudebusch (2019) extended the carbon tax role of removing subsidies may be equally important. Farid et al. (2016) regard the carbon tax framework as an emissions trading system to boost firms towards the best-practice frontier, which raises innovative and clean technologies and decreases national expenditure. Alternatively, high carbon taxation does not contribute to the production of frontier innovation technology in case of other market failures in investment projects inform of heavy fuel taxation (Unruh 2000; Fay et al. 2015). The carbon taxation hypothesis is further combined with consumption redistribution. The carbon taxation perspective informs human population valuation is more critically debated considering carbon reforms through subsidization reduction on fossil fuels (Pigato 2019; Heine and Black 2019; Guillaume et al. 2011). Goulder (1995) extends the ideology for carbon tax revenues recycling is the carbon taxation debate to achieve economic efficiency.

However, some scholars have highlighted fiscal policy's role as spending and investment in public projects (Blanchard 2019; Dasgupta et al. 2019). IPCC (2018) report also emphasizes the importance of loaning schemes from banks and investment funds of the government. These mechanisms guarantee a higher level of private-sector participation in public projects. Public investment in projects seems to be a crucial factor in improving energy efficiency and renewable power generation essential for climate change mitigation. Arezki and Belhaj (2020) extend the infrastructure investment debate and further focus on public investment management systems' importance for climate change effects. Aglietta et al. (2015) suggest that fiscal policy through the tradable guarantee in the form of a climate certificate ensures a minimum agreed return. Dasgupta et al. (2019) emphasize the

importance of climate certification in investment activities. To access the carbon emission for climate certification, transparency is required in this manner.

Macroeconomic financial policy theories mainly focus on financial markets as well as financial institutions' composite role for climate change through different channels. A low-carbon investment is a central concern of these financial policies theories (Dasgupta et al. 2019; Hoang et al. 2022). However, Campiglio (2016) suggested credit creation as well as allocation importance for carbon prices decision-making. Most scholars discuss carbon-pricing issues for long-term business agreements due to inconsistency in macroeconomic and financial policy (García-Álvarez et al. 2017; Lecuyer and Quirion 2013; Bhattacharya et al. 2015; Tahir et al. 2021). In particular, the macroeconomic financial policy requirements in literature have been discussed in dynamic ways considering the nature of climate change. Batten et al. (2016) focused on financial regulation as well as supervision to deal with climate risk through physical resource distortion associated with droughts, floods etc. which impact productive activities. An extensive theoretical debate is available regarding the significance of micro-prudential and macro-prudential regulations, credit allocations for structural transformation to mitigate the climate change effect (Meinshausen et al. 2009; McGlade and Elkins 2015; Dikau and Volz 2019; Fatica et al. 2021).

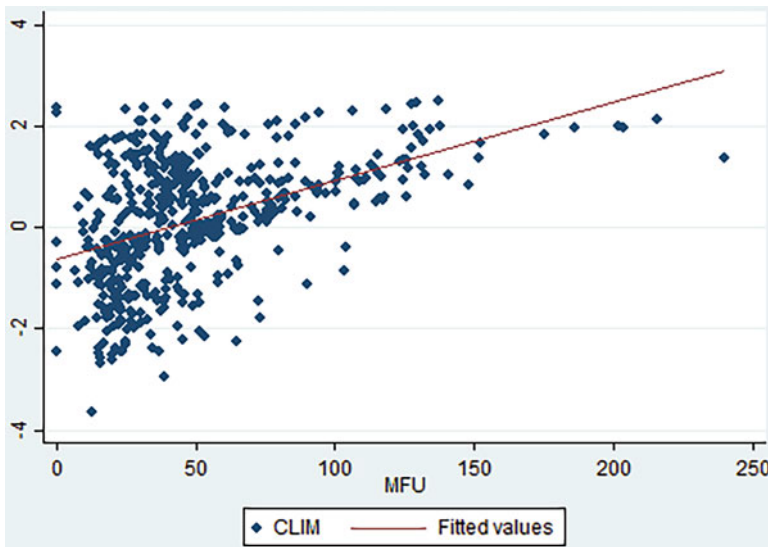
Additionally, few recent theories on macroeconomic financial policies proposed risk and uncertainty postulates during climate change mitigation strategies adaption have focused on transition risk (oil reserves loss), regulatory risks (legal actions effect on regulation) and liability risks (burden on firms) (Tracker 2013; Battiston et al. 2017; Campiglio et al. 2018; Carney 2015, 2019). Most economists focused on liquidity and capital requirements for climate change projects. Thus, climate change mitigation failure in most of the world is due to macroeconomic financial policies failure and reluctance towards financing green innovation. Following the literature theories about the nexus between macroeconomic financial policies and climate change several empirical pieces of evidence have been discussed and different conclusions regarding macroeconomic-financial policies and climate change have been reported as discussed in the next section.

### ***3.4.2 Some Basic Facts and Empirical Evidence***

The macroeconomic financial policies' role at the state level is an incontrovertible fact of the previous two centuries. To ensure the role of policies, fiscal and monetary tools have been adopted, which means introducing new taxes and revenue as well as financial development tools in the form of credit disbursement etc. A government can choose revenue from taxable income, but its level of taxable income is constrained by the financial capacity of the government. The economic structure is important to determine the financial capacity of the government via the level of income and government access to nontaxable income. However, the financial capacity varies across the countries. The richer economies in the world have more

**Table 3.1** Matrix of correlations

Variables	(1)	(2)	(3)	(4)
(1) CLIM	1.000			
(2) FPU	0.015	1.000		
(3) DC2	0.400	0.015	1.000	
(4) BM1	0.366	-0.048	0.639	1.000



**Fig. 3.1** Macroeconomic financial policies and climate change relationship

financial capacity and tend to generate more financial revenue relative to the world’s poor economies. It is interesting fact to look at the relative relation of different macroeconomic financial policies about climate change.

To better capture the macroeconomic financial policy and climate change dynamics we considered the relationship between two variables. Table 3.1 shows a correlation matrix for four measures of climate change, financial policy uncertainty and monetary policy proxies. Not surprisingly, these proxies have a positive correlation. It reflects that financial policy uncertainty and monetary policy lead to climate change degradation. This also indicates the kinds of variables, we also have emphasized. However, there is clear differentiation among the measures used.

Figure 3.1 shows a particular relationship on how macroeconomic financial policy issues in the form of risk and uncertainty impact the underdeveloped world. We use a panel data set for 70 developed and developing countries for the period 1991 to 2020. We mainly focus on low-middle-income countries and upper-middle-income countries since climate change issues are more prevalent in these countries, and there is greater cross-country variation in Macroeconomic financial uncertainty (MFU). For the macroeconomic financial policy uncertainty index, we take the Data set of Baker et al. (2016). The MFU index is based on federal budget uncertainty,



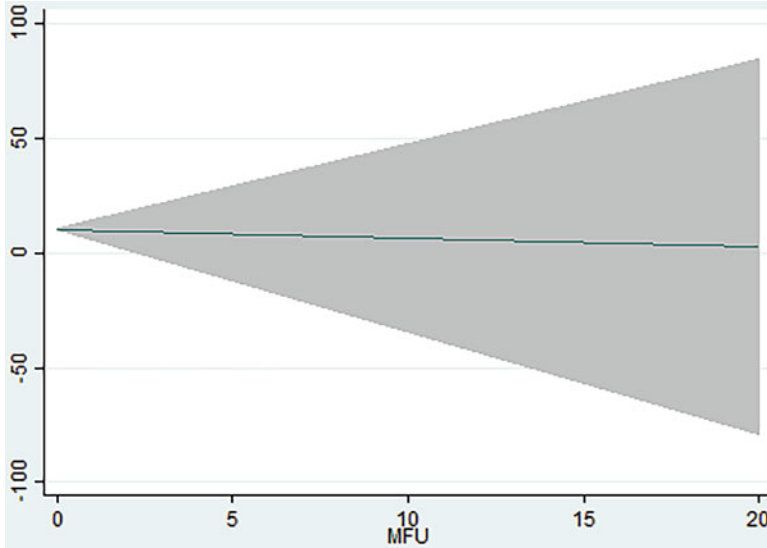
monetary policy uncertainty and legislative policy uncertainty inform of uncertain regulatory rules and regulation enforcement in the economy. In Fig. 3.1, on the vertical side, climate change (CLIM) proxy inform of carbon emission is taken. For climate change indicators, we collect annual data from the World Development Indicators (WDI) database of the World Bank. On the horizontal side of the figure, we also consider MFU data set. The graph indicates that there is a positive correlation between environmental degradation and macroeconomic financial policy uncertainty in these economies. It is evident that macroeconomic financial policy uncertainty is a major reason for environmental degradation.

Other measures for climate change are equally important, same as the temperature rise due to the carbon concentration. We thus obtain an interesting indication after plotting the graph. Climate change is shown on the vertical axis and macroeconomic-financial policies on the horizontal axis. The figure indicates the striking pattern of macroeconomic financial policies risk. It demonstrates the relationship based on data set 1990 to 2020 retried from the world bank of 80 countries and macroeconomic financial policies risk data set is based on Baker et al. (2016). Our sample selection is based on low and middle-income countries and lower-middle-income economies from the world.

Serious attention is not yet paid to risk factors associated with macroeconomic-financial policies. It is important to evaluate this relationship here. We observe clear and interesting facts that macroeconomic-financial policy uncertainty has a positive association with climate change. This fact demonstrates that public finance economists and policymakers have certainly paid less attention to develop a structure that facilitates the investors in clean innovative projects. However, the great reliance of investors on macroeconomic-financial policies in developing countries has been noted and discussed by Maynard et al. (2016). Many researchers have also found a positive association between macroeconomic-financial policies uncertainty issues and climate change (Yuan et al. 2020; Adams et al. 2020; Li et al. 2021). An early contribution by the dualistic theory presented by Higgins (1956) found that macroeconomic-financial policy risk hampers incentives for investors and governments to take initiatives for developing green financial structure as a strategy to bring back investors in climate change mitigation projects. In line with the literature, our facts support the dynamic behavior of macroeconomic-financial policy risk in poor economies. But the major key difference in our approach is that we report macroeconomic policy risk and uncertainty together with climate change.

In Fig. 3.1, the authors' own estimation is taken into consideration. We considered the Macroeconomic financial policy uncertainty index (MFU) based on Backer et al. (2016) data set on the horizontal side. The climate change (CLIM) inform of carbon emission is taken on the vertical side. The graph indicates a positive upward trend or positive correlation between carbon emission.

For further exploration, we have drawn a marginal graph of developing countries 'to evaluate whether MFU for CLIM matters or not. We have found interesting evidence that MFU does not matter for Developing economies. There are many reasons to explain no relationship between MFU and Climate change policy. The MFU is ineffective for climate change because market regulations have many flaws

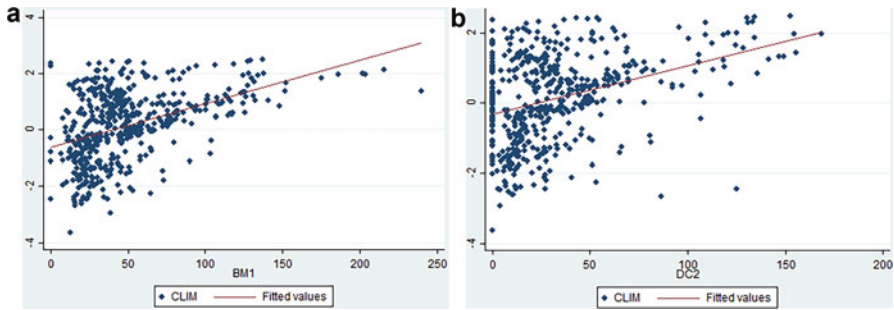


**Fig. 3.2** The marginal graph of macroeconomic financial policies and climate change

in developing economies. The developing countries also face serious challenges due to no connectivity of rules and regulations with climate policy. The most important factor is that there is no regulatory structure and enforcement mechanism by which macroeconomic financial policy impact is transferred to climate change rules and regulations (Fig. 3.2).

Relationship after applying OLS Method based on developing countries data set. We considered the Macroeconomic financial policy uncertainty index (MFU) based on Backer et al. (2016) data set on the horizontal side. The climate change (CLIM) inform of carbon emission is taken on the vertical side. The marginal graph validates no correlation between climate change and MFU.

In Fig. 3.3, broader and deeper stylized facts are represented by considering the monetary policy dimension, which is closely connected with financial facilities for climate mitigation adaptation projects in poor economies. The figure demonstrates the relationship between monetary policy tools and climate change. We use two important monetary tools to observe interesting facts that monetary policy is associated with climate change. This points that monetary policy is positively related to climate change. Figure 3.3 also points to a positive association between credit channels used as monetary policy tools. We use two measures to proxy monetary policy tools that will impact climate change; domestic credit (DC) by financial institutions and broad money (BM), which are used to represent the liquidation by financial institutions. We plot this variable against climate change. The different behavior of a monetary policy is entirely in line with factual realities in poor economies. Most poor economies have an industrial structure that is based on fuel and oil, gas consumption.



**Fig. 3.3** Monetary policy and climate change nexus

The monetary policy and industrial structure have a connection in poor economies discuss the same idea that financial institutions policies are for non-renewable industries due to smooth financial flows (Page 2013). Alternatively, there are high failure possibilities for green innovative investment projects, validation of smooth income flows is a serious concern, leads to recover financial loaning by financial institutions in poor economies. As we show, it is far from clear that monetary policy will be fully exploited for climate change mitigation purposes, especially when financial decisions are taken based on industrial performance that can capture major benefit from financial sector loaning. The incentives of pollutants primitive industrial structure may cause climate change degradation in poor economies. The government in an economy with greater power to monetary instruments leads to inefficient production due to social wellbeing's viewpoint. A major contribution to the carbon concentration is due to the adaptation of monetary policies having reliance on pollutant industrial sector growth. Since the appearance of work by Lucas et al. (1992), extensive literature has emerged showing how a monetary policy legal system shapes the aspect of economic development due to pollutant industries. The interpretation of these facts is that macroeconomic financial policies' monetary dimension influence climate change due to the support of pollutant industrial structure in poor economies.

In Fig. 3.3, on the left-hand side, we consider the relationship between climate change (CLIM) on the vertical side and broad money (BM1) as a proxy for monetary policy on the horizontal axis. We also consider domestic credit to private sectors (DC2) and climate change (CLIM) on the right side. We draw a correlation graph between monetary policy proxy and climate change proxy inform of carbon emission. The data set is taken from the World Developed indicator (WDI).

The impact of monetary policy on environmental pollutants is empirically evaluated in Shahbaz et al. (2013) on Pakistan's data set from 1971 to 2009. Many other studies investigate this relationship in developing countries contexts and report similar findings. Odhiambo (2020) identified credit importance for climate change for sub-Saharan Africa. Tamazian and Rao (2010) suggested that financial development is a crucial factor for climate change after analysis of 24 transition countries over the period 1993 and 2004. Some recent studies in this

context also consider a dynamic modeling approach to validate the relationship between monetary policy and climate change. Ishiwata and Yokomatsu (2018) adopted a dynamic stochastic general equilibrium approach for Pakistan and found no empirical evidence regarding climate change's impact on investors' financial loaning and investment. In a recent study by Shobande and Shodipe (2019) monetary policy links through the monetary transmission mechanism with climate change are validated on the data set of (Nigeria, United States and China). Keen and Pakko (2011) validated that a high nominal interest rate level during a climate change after the adaptation of dynamic stochastic general equilibrium approach.

Brede (2013) used the Keynesian approach and revealed a low savings pattern of people due to climate change. Some recent empirical evidence highlighted fiscal policy as well as monetary policy importance for climate change (Sachs et al. 2014; High-Level Commission on Carbon Prices, 2017). Dafermos et al. (2018) calibrated an ecological model based on data set for the period 2016 to 2120 and concluded that climate change matters for macroeconomic-financial stability. Controversial empirical literature also exists regarding monetary policy and fiscal policy's role in aggregation or disaggregation. One strand of literature potentially supports monetary policy's role in climate change in a different part of the world. Shahbaz's (2013) study validates this argument. Shobande and Shodipe (2019) state that monetary policy and fiscal policy play a composite role in climate change in China, United States, and Nigeria. In contrast, Dafermos et al. (2018) confirmed monetary policy used as a tool for climate change can bring economic instability due to credit disruption. The literature also supports the carbon bubble theory due to the adaptation of monetary policy as an instrument for climate change mitigation (Murphy and Hines 2010; Batten et al. 2016). Empirical evidence also proves that inflation is directly connected with climate change issues (Heinen et al. 2019; Mukherjee et al. 2021).

### 3.5 Critical Reflections

A discussion on the association between macroeconomic-financial policies and climate change remains controversial based on evidence in the literature. While the extensive discussion in literature is based on macroeconomic-financial policy theories that strongly support this relationship, numerous studies also show an insignificant relationship between macroeconomic-financial policies and climate change. The literature argues that macroeconomic-financial policies are a critical concern to mitigate climate change. However, macroeconomic theories have been extensively debated from the last century, scholars have expressed their viewpoints, some evidence through empirical analysis also supports theoretical debates, while some macroeconomic financial policies are still questionable in the environment and social development perspectives.

The traditional macroeconomic-financial policies thinking, critically consider economic development perspective through economic growth and profitability and

excluded welfare maximization ideology or no serious efforts for environmental impacts of macroeconomic policies. Most of the macroeconomic-financial policies revolve around the most prominent ones like classical and neo-classical theories, Keynesian and new Keynesian thought and monetarist schools of theories having central concern is economic growth through industrialization and mass production. Macroeconomic policies proposed by these theories have ignored the climate change cost of damages through economic progression. The wellbeing of climate change impacts is compromised in most of the theories.

Hence, macroeconomic-financial policies utilization in purely traditional economics theories excludes environmental relevance as a key concern. Although macroeconomic-financial policies are key indicators of financial capacity and financial machinery usage for the sake of climate mitigation programs. Since macroeconomic-financial policies impact societies. The classical economists mainly focus on less fiscal policy intervention for macroeconomic stabilization. Keynesian economists mainly focus on fiscal policy's role in demand generation in economies. Monetarist economists mainly focus on monetary policy as an important tool of government for the financial and economic development of different economies. New Keynesian and new classical economists focus on the active role of these two policies (fiscal and monetary policies) for macroeconomic financial policy adjustments at the national level.

In capitalist societies around the globe, an extensive discussion is available to determine the underlying objectives of the macroeconomic-financial policy adaptation. Macroeconomic-financial policy adjustments are purely a matter of economic stability. However, a major question of concern is whether these economies could achieve sustainable development objectives or not. Economies only formulate rules and policies with quantifiable impact. Most of the instrumental approaches are preferred over environmental and social considerations. Most of the macroeconomic approaches in these societies are based on capital valuation. Fiscal policy's major focus is on the taxable income of the government due to industrial progression. In addition, fiscal policy expansion in these economies should not only focus on economic progression. Governments must focus on the fiscal capacity extension to deal with some other issues. The policy leaders should mainly focus on carbon imposition of taxes during the economic progression phase. This climate protection approach should be a focal concern of these fiscal policies to remain on a sustainable path. Macroeconomic-financial policies relevant to monetary should be adopted by the central banks mainly in the context of climate change protection. Monetary policies recently require sustainable development dimensions.

Economic rationality remains a major concern in macroeconomic financial policy discussions in the last century. However, a critical consideration is of great necessity in current times with the COVID-19 pandemic issue. More than 16 million human life suffer from this disease around the globe, with adverse effects on most of the world economies. The economic rationality is based on macroeconomic-financial policies is currently a challengeable debate without considering the climate change issue, a macroeconomic-financial policy refinement is required in its directional aspect. There is a need for macroeconomic financial policies coordination due to

the unpredictable climate challenge nature. The macroeconomic-financial policies mix for climate change mitigation has not to be considered so in the economic literature. These macroeconomic-financial policies should be based on market regulations, carbon prices allocations and green investment strategies. The major concern of macroeconomic financial policies should be energy efficiency strategies, carbon pricing strategies, and green technological policy strategies. In this way, sustainable development agendas can be merged with macroeconomic policies. Since the importance of sustainable development started in the 1980s to fulfill the next generation's requirements. Climate change and its issues were discussed by the United Nations members' countries in 1992, United Nations Conference theme was based on Environment and Development under Agenda 21, sustainable development received tremendous importance. In subsequent meetings UN conferences started from 1993 to the current period, macroeconomic-financial policies and climate change nexus have been acknowledged. During the same era, most of the scholars have presented their viewpoint regarding financial and monetary policy instruments for climate change mitigation in substitutes or complements forms. The COVID-19 pandemic has highlighted some uncertainty due to government failures as constrained for macroeconomic policy instruments to work. It is unclear up until now whether macroeconomic-financial policies would enable economies towards sustainable development solutions due to the collapse of economies based on severe climate change crises in the form of health in the twentieth century. If no proper solutions are figured out by policy experts, economic development may lead to the worst crises in the future. The societal well-being of macroeconomic financial policy implications should be based on political desirability and urgent action is required for climate change mitigation for the stability of economies after COVID-19 pandemic. This also requires adopting a new instrumental macroeconomic financial policy perspective, based on policy mix approach to consider such fiscal and monetary policies along with institutional approaches considering the circumstances of economies for efficiency achievement in climate change mitigation programs. In the future, the macroeconomic financial policies' survival lies in consideration of wellbeing approaches not capitalistic approaches, due to the emerging importance of socialist theories in upcoming days.

### **3.6 Conclusions**

The macroeconomic financial policies have significant importance to mitigate upcoming challenges of the world. The major objective of this book chapter is to discuss the impact of macroeconomic-financial policies on climate change. By boosting green investments through capital savings, improving fiscal capacity through carbon taxation and carbon pricing as tools for fiscal policy, improving Prudential Financial regulation, credit channels and liquidation channels improvement as a monetary policy tool, and structural transformation in the macroeconomic financial system can work efficiently for climate change mitigation in different

economies. The causal association between macroeconomic financial policies is crucial due to their wider impacts. One could claim macroeconomic financial policies should aim to increase and encourage investments in green infrastructure projects, and productive capacity and through innovation techniques development in economies. This chapter can help policymakers, especially from poor economies by providing practical directions where macroeconomic financial policies stand to mitigate climate change aspect. This chapter is fruitful to provide information regarding the underlying association between macroeconomic policies and climate change. This study will help policymakers in multiple ways for macroeconomic financial policy instruments can be utilized for climate change mitigation, especially in poor economies. A broad green financial derivative could be an option for policymakers. An efficiency in monetary and fiscal policies could strengthen the financial system to work smoothly and effectively to regulate investment in climate change mitigation projects.

Policymakers should be aware of the significance of the policy tools they can use to allocate some of the available funds to green projects. Especially, central banks should take a more active role and should reshape their objectives to create a financial environment for green financing. Despite theoretical and empirical exploration between macroeconomic financial policies and climate change, a macroeconomic policy mix is an unexplored area of research considering different macro, micro and institutional policies linkage for the effectiveness of climate change mitigation. In particular, the major failure of macroeconomic financial policy models avoiding climate change issues required urgency to be focused on the current paradigm. A new policy challenge due to climate change mitigation like pricing stability issues, inclusive approaches of development should be considered in the macroeconomic-financial policy framework.

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