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INTRODUCTION

Financing for Sustainable Development Goals (SDGs) in the Era of COVID-19 and Beyond

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Abstract

The economic and social impact of covid-19 pandemic both on developing and developed countries has been significant. In addition to the impact of the pandemic, the current Ukraine war has also led to severe supply chain disruptions leading to a sharp increase in food and commodity prices globally. Due to a combination of external shocks and the impact of the pandemic global economic growth is expected to slow down from 6.1% in 2021 to 3.2% in 2022 and further to 2.7% in 2023 (IMF in: World economic outlook, International Monetary Fund, 2022). The above factors have led to a sharp increase in government expenditure constraining both developed and developing countries' fiscal capacity. This has further implications for the achievement of SDGs especially for low-income countries. The challenge for developing countries in the current scenario is to mobilise adequate resources both from domestic and international sources, not just for the achievement of SDGs as such, but also to sustain the livelihoods, health, and welfare of people. This special issue aims to examine some of these issues in the context of developing countries.

Keywords Finance · Sustainable development goals · Developing countries · Covid-19

Résumé

L'impact économique et social de la pandémie de COVID-19, tant sur les pays en développement que sur les pays développés, a été important. Outre l'impact de la pandémie, la guerre actuelle en Ukraine a également entraîné de graves perturbations de la chaîne d'approvisionnement, entraînant une forte augmentation des prix des denrées alimentaires et des matières premières dans le monde. En raison d'une

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combinaison entre chocs externes et impact de la pandémie, la croissance économique mondiale devrait ralentir de 6,1 % en 2021 à 3,2 % en 2022, puis à 2,7 % en 2023 (FMI 2022). Les facteurs ci-dessus ont conduit à une forte augmentation des dépenses publiques, limitant la capacité budgétaire des pays développés et en développement. Cela a d'autres implications pour la réalisation des ODD, en particulier pour les pays à faible revenu. Le défi pour les pays en développement dans le scénario actuel est de mobiliser des ressources adéquates provenant de sources nationales et internationales, non seulement pour la réalisation des ODD en tant que tels, mais aussi pour maintenir les moyens de subsistance, la santé et le bien-être des personnes. Ce numéro spécial vise à aborder certaines de ces questions dans le contexte des pays en développement.

Introduction

Coronavirus has wreaked huge havoc in both emerging and developed countries, on various fronts including economically and socially (Baldwin and di Mauro 2020; Fornaro and Wolf 2020; Fetzer et al. 2020; Henson et al. 2020). The economic and social impacts, however, have not been uniform with some sectors such as hotels & restaurants, tourism, SMEs, and retail trade contracted, while some such as the ICT sector has thrived during this period with speculations on the shape of recovery (Abay et al. 2020). With economies under stress, development outcomes such as poverty and inequality are expected to increase significantly. The impact on economies as a result of the lockdown is expected to push about 70 million into extreme poverty increasing the global extreme poverty rate from 8.4% in 2019 to 9.3% in 2020 (World Bank 2022a, b). In addition to the impact of the pandemic, the current Ukraine war has also led to severe supply chain disruptions leading to a sharp increase in food and commodity prices globally. In many African countries, the war has led to disruptions in the financial markets, increased risk aversion by investors, and increased outflow of FDI impacting resource mobilisation efforts of the countries in the region and achievement of SDGs (UNDP 2022). Assessing the impact of the war on SDGs at a disaggregate level, Pereira et al. (2022) grouped SDGs into biophysical SDGs, social SDGs, economic SDGs, and Goal 17 on partnership for development. The authors find that while biodiversity SDGs are impacted at the regional level, social SDGs at the local and global levels, and economic SDGs are impacted at the global level.

Inflation has soared high above 5% (even double-digit inflation in some countries) in all countries around the world including both developed and developing having a significant impact on poverty levels. Globally inflation is expected to rise from 4.7% in 2021 to 8.8% in 2022 and is expected to decline to 6.5% in 2023 and 4.1% in 2024 (IMF 2022). Food trade restrictions to prioritise domestic supply have been imposed by at least 22 wheat exporting developing countries (World Bank 2022c). Overall, according to the 2022 State of Food Insecurity in the World Report, the number of people affected by hunger rose to 828 million in 2021, an increase of about 46 million since 2020 and 150 million since 2019 (FAO 2022). Most recent growth projections by IMF in its recent World Economic Outlook show that due to a combination

of external shocks such as war and the impact of the pandemic global economic growth is expected to slow down to 3.2% in 2022 from 6.1% in 2021 and further to 2.7% in 2023 (IMF 2022). While advanced economies are expected to slow down to 2.4% (from 5.2% in 2021), growth in emerging and developing countries is likely to decline to 3.7% in 2022. The shortfall in the financing of SDGs prior to covid was expected to be US$2.5 trillion for developing countries, in the post-covid period it has increased by 50% to reach US$ 3.7 trillion (OECD 2021).

At the regional level, most of the new extreme poverty is estimated to be in the South Asian and Sub-Saharan African regions (World Bank 2020a). Within country inequality in both the regions has increased since the emergence of the pandemic as sectoral, labour, and gender impacts have differed significantly (Adams-Prassla et al. 2020). As a means to address this, almost all countries across the world adopted various policy measures, both fiscal and monetary, to deal with the economic, health, and social fallouts of covid-19 (see IMF policy tracker 2020; Gentilini et al. 2022). This has severely impacted countries' existing fiscal capacity and revenue available for developmental purposes at all levels including local governments (for instance see Haroutunian et al. 2020 for fiscal impact on Euro area countries; OECD 2020; McDonald and Larson 2020). The impact also has been more severe for those working in the informal sector and migrant workers especially in South Asia, India in particular (Rajan et al. 2020; Suresh et al. 2020).

A 'great finance divide' has emerged between developed and developing countries since the pandemic. The divide has been both in terms of divergence in policies adopted and also in terms of costs and terms of capital (UN 2022). While developed countries adopted aggressive fiscal and monetary policies to mitigate the social and economic impact of covid-19, the responses of developing countries were limited. Overall, the fiscal policy responses of developed countries formed 11.7% of GDP, while for low-income countries, due to lack of adequate fiscal space it was 3.2% and for developing countries overall was 5.7%. Also, sovereign borrowing costs for a large number of developing countries are much higher compared to developed countries.

High governmental expenditures have substantial implications for developing countries' (including heavily indebted poor countries) governments' ability to achieve UN Sustainable Development Goals (SDGs) (Shulla et al. 2021; Wang and Huang 2021, United Nations 2020; 2022a). Among 17 SDG goals, Goal 8 specifically targets decent work and economic growth—promoting sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. The disruption in economic activity as a consequence of external shocks and the pandemic has impacted the achievement of Goal 8 in terms of per capita economic growth, productivity, and employment. Furthermore, a fall in economic growth and incomes, as mentioned earlier, is also expected to increase extreme poverty, thus impacting the achievement of Goal 1. Overall, Benedek et al. (2021) using a dynamic macroeconomic framework estimated that on an average additional 14% of GDP expenditure (public and private) would be required until 2030 to achieve SDGs in the areas of education, health, roads, electricity, and water and sanitation. Increases in government expenditure due to the crisis have also led to an escalation in debt levels and impacted debt sustainability.

Besides the fall in domestic resources and huge fiscal impacts on governments at all levels, external sources of finance have also declined. Among external sources of finance, the global foreign direct investment which declined by about 35% in 2020 to 1US$ trillion recovered in 2021 to pre-pandemic levels to reach US 1.6 trillion (an increase of 64%) mainly due to cross border deals and international project finance. However, it is expected to decline in 2022 mainly due to the current Russia-Ukraine war accompanied by the food and fuel crisis, the impact of the pandemic, investor uncertainties, prolonged lockdown in China, and climate change (UNCTAD 2022a, b). The decline in FDI in 2020 was driven mainly by the developed countries where it declined by 58% (UNCTAD 2021). In developing countries, the decline was only about 8% mainly due to strong growth performance in Asia. Nonetheless, the decline in developing countries was mainly borne by new Greenfield projects and infrastructure projects and projects related to SDGs (UNCTAD 2020). Remittances, in contrast to earlier projections of a decline by 20%, remained resilient and increased marginally by 0.8% to reach US$558 billion in 2020 from US$553 billion in 2019 (World Bank 2020b, World Bank 2022a, b). In 2021 remittance flows increased by 8.6% to reach $US 605 billion. In 2022 however, the remittances are expected to grow slower by 4.2% to reach 630 US $ billion mainly due to the impact of the Russian war on Ukraine (World Bank 2022a, b).

Consequently, in this current scenario when both internal and external sources of finance are volatile and uncertain, the challenge for developing countries is to mobilise adequate resources, not just for the achievement of SDGs as such, but also to sustain livelihoods, health, and welfare of people. Bolch et al.'s (2022) poverty eradication capacity index and political influence concentration index showed that many countries do not have domestic resources to finance their development and poverty eradication. While institutional development is certainly one of the channels to improve revenue collection efforts domestically, for instance, strengthening revenue collection efforts and reducing corruption, this may not be enough due to the sharp dip in economic growth and concomitant revenue losses as a result of covid-19. Innovative measures would need to be adopted by countries to overcome financing challenges and achieve various development goals (Runde et al. 2020; Barbier and Burgess 2020).[1] This is further compounded by the current war in Ukraine which has made the task of achieving SDGs even more difficult (UN 2022). As mentioned earlier, rising commodity prices and disruptions in international trade are fuelling inflationary pressures globally with severe implications for developing countries especially the least developing countries. High food prices around the world have severe implications for poverty. This special issue aims to examine some of these issues in the context of developing countries.

[1] For instance, Barbier and Burgess (2020) suggest fossil fuel subsidy swap for renewable energy, reallocating irrigation subsidies and tropical carbon tax on fossil fuels.

Related Literature

Theoretical Framework

The role of finance in economic growth and development has been acknowledged by a large body of literature (King and Levine 1993; Levine 1997). Recent literature further highlights the links between access to internal finance and local economic development that can help achieve the sustainable development agenda (Inoue and Hamori, 2016; Hishan et al. 2019). A developed financial sector enables efficient allocation of resources through monitoring of borrowers both before and after the project and allows new investment and entrepreneurial activities to take place and enables the build-up of physical and human capital leading to economic growth. Financial intermediaries, while playing an important role also enable the generation of savings through deposit mobilisation and allocate credit for various innovative activities thus promoting growth. Several studies have also noted that an inclusive financial sector can lead to a reduction in poverty, increase consumption, and improve overall well-being (for instance see Banerjee and Newman 1993; Galor and Ziera 1993; van Niekark 2020; Omar and Kazuo, 2020).[2] In reality, this process of credit allocation and generation of savings may not be smooth due to asymmetric information and resulting problems of adverse selection and moral hazard. This could lead to credit constraints. Also, credit flows especially in developing countries could also be hampered by the problems of transaction costs, inadequate information, high risk and uncertainty in project outcomes, missing and incomplete markets, and imperfect competition (Becks and de la Torre 2006).

The markets (i.e., private sector) with their primary objectives of maximisation of profits with cost minimisation, may be less interested when social returns are greater than private returns. Due to above-market failures, government (including multilateral development organisations) intervention may sometimes be deemed necessary (Stiglitz 1989, 1994). Also, their (market and government) mutual roles depend on the country's stages of economic development (Panizza 2012). Despite several measures adopted by developing countries to develop their financial sector in recent years, financial development as measured by the proportion of credit to GDP, high non-performing loans, and low taxable capacity is still considerably low compared to developed countries.

Empirical Literature

There has been extensive literature examining financing for SDGs. Several studies have expressed concern about the financing gap in the achievement of SDGs (Griffiths 2018, Barua 2020). OECD (2021) stated that while the annual financing gap before the onset of covid-19 was US$ 2.5 trillion, post-covid this has escalated by

[2] World Bank (2022a, b) defines financial inclusion as "Financial inclusion means that individuals and businesses have access to useful and affordable financial products and services that meet their needs – transactions, payments, savings, credit and insurance – delivered in a responsible and sustainable way".

50% in 2020 and reached USD 3.7 trillion. Durán-Valverde et al. (2020) estimated financing gaps for targets 1.3 and 3.8 of SDGs relating to social protection and health care for about 134 countries. According to the authors, the financing gap in 2020 taking the pandemic into account to achieve universal coverage of the social protection floor (SPF) is US$1191.6 billion, or 3.8% of GDP of developing countries. Of this, about 63% of the gap was in upper middle-income countries, 30% in lower middle-income countries, and 6.5% in low-income countries.

Kharas et al. (2014) group development finance into three sources: (a) concessional public finance; (b) market-related public borrowing; (c) private finance. While concessional finance is for developing infrastructure for sustainable development, market- related public borrowing is for meeting basic needs and social progress, and finally, private finance is for financing global public goods such as climate change. The authors note that those countries emerging from a very low-income group and moving up the growth ladder find challenges in mobilising resources for sustainable development goals. Schmidt-Traub and Sachs (2015) laid down the roadmap for financing SDGs and highlighted the public–private partnership to achieve SDGs.

Moving specifically to development finance and regional requirements, Kedir et al. (2017) estimated that in order to end extreme poverty by 2030, Africa overall, would need to achieve an annual economic growth rate of 16.6% between 2015 and 2030, with an annual investment-to-GDP ratio of 87.5% and financing gap to GDP ratio of 65.6 per cent per annum, respectively.

Among other studies, Shetty (2020) examined the factors influencing the progress of low-income countries toward the achievement of SDGs even prior to the pandemic. The author argues that the recent literature focuses on how additional sources of finance can be mobilised to finance SDGs in these countries, with hardly any attention being paid to the institutional environment and domestic policy reforms. Among the factors impacting LICs in post-covid period are low global economic growth, low fiscal space, likely worsening of external debt, challenges in mobilising domestic revenue, low prospects of economic reforms in such an economic environment, and low inflows of private finance.

Trends in Finance to Developing Countries

In this section, we highlight current trends in development finance in developing countries. Figure 1 provides a snapshot of key potential sources of development finance, both from domestic and external sources.

Domestic Resource Mobilisation

Domestic resource mobilisation to finance SDGs has been much emphasised in the 2015 Addis Ababa Action Agenda adopted at the Third International Conference on Financing for Development.According to World Bank data, tax/GDP ratios have fallen in least developed countries and upper middle countries. In less developed countries it declined from 11.1% in 2010 to 10.2% in 2018 (more updated data are

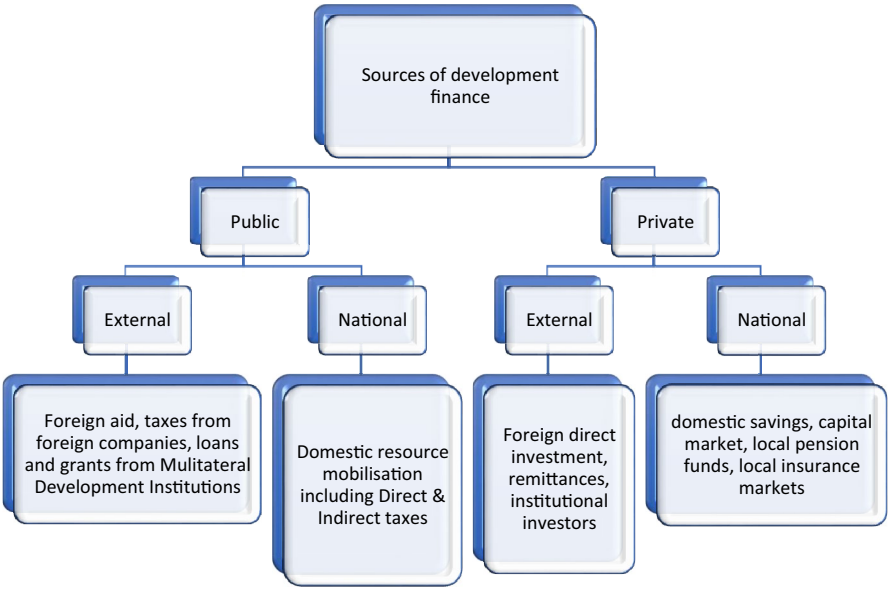

Fig. 1 Sources of development finance. *Source* Adapted from Runde et al. (2020)

not available), while in the upper middle income countries it declined by 1.4% from 12.0% in 2010 to 10.6% in 2020. In contrast, tax/GDP ratio rose in the lower middle-income countries from 11.6% in 2010 to 12.2% in 2018. In high income countries this ratio rose from 14.2% in 2010 to reach 15.8% in 2017, however, since then declined to 15.0% in 2020.

Within the tax structure, it is corporate income tax and goods and services tax crucial for developing countries especially for LDCs and African countries, while for developed countries personal income tax and social security contributions are important. A high level of informality across all income levels in developing countries has also impacted tax collections. Ordonez (2014) in the Mexican context finds that incomplete enforcement of taxes affects the economy by reducing capital-labour ratio; allowing entry of low productivity firms into the informal sector and also leading to misallocation of resources impacting overall output. Other studies too have found that small changes in tax rates led to a decline in informal sector employment and tax rate reductions along with stricter tax evasion measures are effective in reducing the informal sector (Ihrig and Moe 2004).

An agenda of much concern in so far as the domestic mobilisation of resources is concerned is the issue of illicit financial flows. Illicit financial flows are also included as a target 16.4 of the sustainable development goals. The Sustainable Development Goal (SDG) targets 16.4. calls for "[b]y 2030, significantly reduce illicit financial flows and arms flows, strengthen the recovery and return of stolen assets and combat all forms of organised crime". However, the monitoring of illicit financial flows is not currently possible due to a lack of data and issues of measurement. The issue of measurement of these flows is very relevant for the Asia Pacific region due to the

Table 1 Trends in grant element

	2015	2016	2017	2018	2019
Average grant element- new %	78	75	75	73	70
Average grant element -old %	81	78	78	77	73
Maturity period (years)	35.7	33.4	32.6	32.0	28.3
Interest rate (%)	0.34	0.49	0.59	0.67	0.80

Source OECD, Financing for Sustainable Development Report 2022

presence of transnational organised crime activities, money laundering risks due to the region's high economic growth rates and large volumes of international trade, inadequate legal framework, and low institutional development especially in certain Asian Pacific nations (UNCTAD 2022a, b).

External Finance

As per the latest data released by OECD in June 2022, during the period 2018–2020 about US$50 billion annual average was mobilised from the private sector for various developmental interventions. Of this, direct investment in companies or Special Purpose Vehicles (SPVs) mobilised around 38% followed by guarantees (26%), credit lines (12%), syndicated loans (11%), shares in collective investment vehicles (8%), and simple co-financing (5%).

Official development assistance by the donor countries to developing countries rose by 4.4% in real terms over 2020. Interestingly covid-19 assistance for vaccines was included in total ODI and formed 3.5% of the total ODA. As a share of GNI, it was only 0.32% compared to the UN target of 0.7%. Five donors which met or exceeded the target were Denmark, Germany, Luxembourg, Norway, and Sweden. Furthermore, in contrast to the target of 0.15-0.20% in less developed countries the total amount of foreign aid was lower at only 0.09% in 2018 and 0.08% of GNI in 2019 (OECD 2022).

Within the ODA components, the average grant element has declined and interest rates on loans have increased over the years as can be observed from Table 1.

The role of multilateral development banks is also another important source of countercyclical support to developing countries. Broccolini et al. (2021) in their study employing data on syndicated lending in a large sample of developing countries for the period 1993 to 2017 to examine the ability of MDBs to crowd in capital from private creditors, showed that multilateral development banks' lending has a significant and positive impact on the size of bank inflows.

The less developed countries' fiscal capacity is also severely constrained especially in post- covid period. Globally public debt was about 99% of GDP in 2021 (UN 2022). Figure 2 shows gross government debt as % of GDP in various countries. The number of low-income countries with a high level of risk of external debt distress has increased considerably between the period 2011–2021 from 32 in 2011 to 53 in 2021 with those in the low-risk category declining from 32 to 14 during the same period (World Bank 2022a, b).

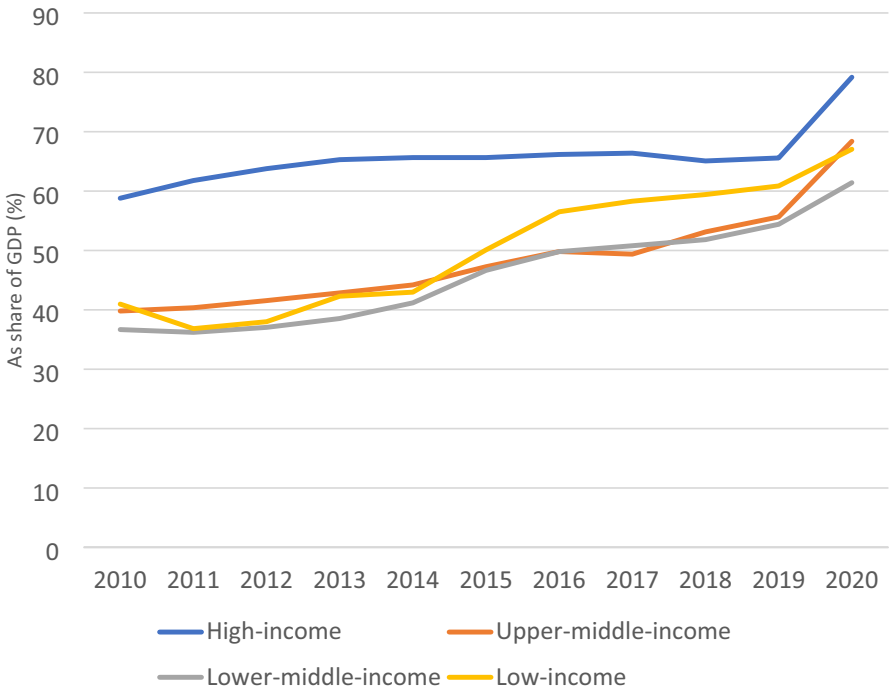

Fig. 2 Gross Government Debt as % of GDP. *Source* Constructed from World Bank Open data database

Institutional investors such as pension funds, insurance companies, and investment funds are other key participants in the financing of SDG goals. For instance, the OECD report (2021) noted that "Institutional investors can help: shifting only 3.7% of their assets towards sustainable activities in developing countries would be sufficient to fill the USD 3.7 trillion gap". Thus, only a 3.7% shift towards developing countries would be sufficient to meet sustainable development activities and to fill in the gap of USD 3.7 trillion. Currently, however, only a small share of global assets of institutional investors (for instance 8% of 36 pension funds) is invested in developing countries and that is mostly in the upper middle-income countries (OECD 2021). Several other studies have expressed their concern about the low level of involvement of institutional investors in the financing of SDGs in developing countries especially in climate financing (for instance Halland et al. 2021, Inderst 2021). Among developing countries, most of the investment from pension funds went to Asian countries. As in the case of pension funds, of insurance companies, only 2% of funds were invested in developing countries of which 90% were in Asian countries.

Among the factors influencing institutional investors in their decision to invest in developing countries are corruption levels, political and macroeconomic stability, skilled workforce, investment opportunities, and interest rate levels. Insurance companies also take into account taxation, currency risks, and the effectiveness of local administration (OECD 2021). Pension funds, in contrast, pay particular attention to

Table 2 Private flows from developed countries to developing countries (US $ million)

Income groups	2014	2015	2016	2017	2018	2019	2020
LDCs	10,377 (4.3)	3518 (2.1)	4043 (3.1)	3034 (1.8)	− 158 (neg.)	2902 (1.6)	1751 (3.6)
Other LICs	167 (0.1)	70 (0.0)	− 90 (neg.)	− 55 (neg.)	− 68 (neg.)	− 44 (neg.)	24 (0.0)
LMICs	45,954 (19.1)	50,693 (30.0)	29,405 (22.8)	54,763 (32.3)	33,408 (27.1)	80,912 (43.4)	11,345 (23.1)
UMICs	183,690 (76.5)	114,676 (67.9)	95,876 (74.2)	111,675 (65.9)	89,977 (73.1)	102,775 (55.1)	36,074 (73.3)
Total for the 4 groups	240,188 (100.0)	168,957 (100.0)	129,234 (100.0)	169,417 (100.0)	123,159 (100.0)	186,545 (100.0)	49,194 (100.0)
Total Developing Countries: of which	*411,896*	*115,933*	*127,947*	*234,710*	*96,124*	*216,698*	*− 42,475*
Unallocated	164,532	− 58,835	− 3699	72,684	− 27,017	30,155	− 88,168
MADCT	7176	5801	2413	− 7390	− 18	− 1.3	-

Source: OECD (2022)

(i) Figures in brackets show % share in total in the 4 country group

(ii) LDCs: Least developing countries; LICs: Low-income countries; LMICs: Lower Middle-income countries; UMICs: Upper Middle-income countries; MADCT: More advanced developing countries and territories;

(iii) Neg: negligible

the availability of local infrastructure and also take into account the development impact of their investments. Aggarwal et al. (2005) found that institutional investors' decision to invest is influenced by a country's level of accounting standards, shareholder rights, and legal framework.

Currently, institutional investors do not focus much on environmental, social, and governance regulations indicators (OECD 2021). Nonetheless, a large number of institutional investors have already signed UN Principles for Responsible Investing (UNPRI 2021). The size of institutional investors varies across countries with developed countries having a large share where the financial sector is well developed. Geographically, the assets of pension funds are quite diversified across developing countries. Nonetheless, India, China, and Southeast Asia appeared to be the most favoured destinations in Asia (68%) and Latin America (22%). As far as the Norwegian sovereign wealth fund is concerned, most of its assets among developing countries were held in upper middle-income countries (77%) and lower middle-income countries (23%). Among middle income countries, sovereign wealth fund investments were mainly concentrated in China, India, Brazil, and Mexico. Among insurance companies, only 2% of their total assets were held in developing countries and within this almost 98% are in Asia. Table 2 shows private flows from developed countries to developing countries both in absolute terms and share in total.

Blended finance is another approach that is rapidly emerging in recent years to finance SDGs and has gained traction among donor governments (OECD 2020). OECD (2020) defines blended finance as 'the strategic use of development finance for the mobilsation of additional finance towards sustainable development

in developing countries.'[3] While development finance here refers to foreign aid or ODA, additional finance implies finance from commercial sources (public or private) whose objectives are commercial and not developmental and could include investment by public or privately owned pension funds or insurance companies, banks, businesses, etc. (OECD 2020). Blended finance involves two dimensions: access to concessional finance and involvement of different combinations of stakeholders such as public-public, public–private, and private-private participation. Among different participants of blended finance are philanthropists, commercial private participants such as institutional investors (pension funds, insurance companies), banks, and corporations. The objectives of blended finance are: to mobilise finance "that the private sector would not have done on its own in support of national development priorities- and to do this with minimum concessionality or subsidy" (UN 2022). Different instruments of blended finance include debt, equity, credit lines etc. For example, during the period 2012–15 blended finance mobilised by ODA used financial instruments such as guarantees, syndicated loans, shares in collective investment vehicles, and equity and credit lines (OECD 2018). Another objective of blended finance is to attract finance for sound sustainable development projects where the involvement of private investment is low. This is also referred to as financial additionality, a situation where joint mobilisation of finance between donors and the private sector leads to investments that would not have taken place otherwise.,[45] Financial additionality could imply improvement in financial conditions for targeted groups and could include improvements such as the increased size of the loan, increased loan maturity, reduced interest rates or lower collateral requirements.

Digitalization has also been much emphasised lately in policy circles and empirical literature as one of the key factors in achieving SDGs. However, there is a considerable digital divide among the population between rural–urban areas, the gendered digital divide, and vulnerable groups. The pandemic, in particular, has also exposed a significant digital divide in access to education and health. Digital finance has a two-fold effect as it strengthens financial inclusion and promotes economic growth. It also leads to increased financial development by reducing entry barriers and increasing competition in the financial sector and also leads to reduced interest rates due to lower informational barriers. The Global Connectivity Report 2022 of ITU showed that mobile money is rather contributing to all SDGs (SDGs 1 to 16). Also, internet connectivity is linked to human development, and the higher the connectivity, the higher the level of human development. According to ITU estimates

[3] Anderson et al. (2021) point out the lack of general agreement on the definition of blended finance and its related concepts.

[4] We thank our reviewers for drawing our attention to this point.

[5] Additionality can be further split into financial additionality and development additionality. Development additionality can be referred as "… the development impacts that arise as a result of investment that otherwise would not have occurred" (OECD 2016). Other types of additionality referred to in the literature are input additionality, value additionality, behavioural additionality, output additionality, outcome additionality, institutional additionality, strategic additionality and economic additionality (Anderson et al. 2021).

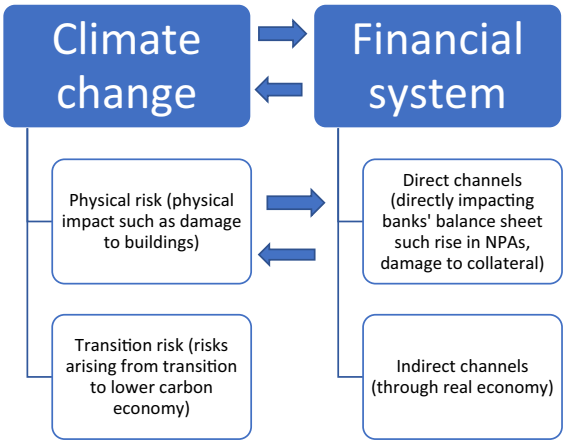

Fig. 3 Interaction between the financial system and climate change. *Source* Adapted from Furakawa et al. (2020). *Note* NPAs: Non-performing assets

about 5 billion people globally or 63% of the world population were using the internet at the end of 2021. Across the regions, the usage rate of Europe, the Commonwealth of Independent States (CIS), and the Americas is about 95 per cent, while in Africa it is only 33%. About 2.9 billion people globally are still offline with countries in Asia–Pacific mainly China and India as the main contributors (1.7 billion) followed by Africa (738 million). Further, the World Bank's Global Findex data for 2021 showed that globally 78% of men and 74% of women have an account at financial institutions, while in developing countries the numbers were 74% and 68% respectively. Overall, about 740 million women globally do not have an account at a financial institution. Among the reasons for the exclusion of women from financial services lack of documents for formal identification, low mobile ownership, and lower financial capability (World Bank 2022a, b). Digital solutions have been used to reduce the gender gap in some countries. Among the digital technologies, blockchain solutions have also gained acceptance for sustainable development (Aysan et al. 2021). However, concerns have been raised about the use of technology and its impact on inequality, poverty, risks, and accountability (Eubanks 2018; Faith et al. 2022).

The role of the financial sector in relation to climate change has also gained immense significance in recent years. The United Nations Framework Convention on Climate Change (UNFCCC) defines climate finance as "local, national or transnational financing—drawn from public, private and alternative sources of financing—that seeks to support mitigation and adaptation actions that will address climate change" (UNFCCC). Both the financial system and climate change mutually interact with each other through various channels with their joint impact felt on the real economy (Fig. 3). For example, climate change impacts the financial sector through two related risks- physical risk and transition risk and could lead to financial instability, while the financial sector through mitigation and adaptation can reduce the cost of climate change and could also slow it down (Furukawa et al. 2020).

Highlighting the important role of the governments in mitigating climate change, Atsu and Adams (2021) for BRICS economies covering the period 1984 to 2017

found that the consumption of fossil fuels and policy uncertainty contribute to CO_2 emissions, while innovation, renewable energy, bureaucratic quality, and financial development reduce carbon emissions. Fan et al. (2021) also showed that regulation on green credit (that is, capital allocation taking into account environmental factors) increases the costs of a loan and thereby reduce loan size for non-compliant firms. The impact also varies from small firms to large firms. Increasingly, in recent years the research agenda has moved to pricing and hedging of risks emerging from climate change, climate risks, and its impact on investment decisions (Giglio et al. 2021). Among various climate finance measures being adopted, Bhandary et al. (2021) using multi-dimensional criteria focus on nine types of climate finance policies- target lending, green bond policy, loan guarantee programmes, weather indexed insurance, feed-in-tariffs, tax credits, national development banks, disclosure policies, and national climate funds. The study finds that while policy instruments such as feed-in tariffs, tax credits, loan guarantees, and national development banks are successful in mobilising private finance, others such as national climate funds, targeted lending, disclosure, and green bonds have not been effective. For example, the greening of bonds is really in question due to the lack of enforceable international standards (Bhandary et al. 2021).

Contributions to Special Issue

In this special issue, as the theme suggests the focus is on financing mechanisms in the post-covid period with the overall objective of achieving SDGs. Some papers have also addressed the economic and social impact of the pandemic besides financial implications. For instance,

Belaid and Tiba using monthly data examine the impact of the pandemic on poverty, inequality, well-being, and environmental quality for 14 African economies for the period 2018 to 2020. They particularly examine this in the context of SDGs. With these objectives in view, the authors employ the generalized method of moments (GMM) approach and find that the pandemic had a significant impact on poverty and inequality. Their results also showed that a 1% increase in covid cases led to a 1.64% increase in carbon emissions. The authors argue that this primarily could have taken place due to a shift from public transport to increased private car usage and also a move to online working/learning leading to higher demand for energy.

Zhao et al. in their paper 'Effects of COVID-19 on Global Financial Markets: Evidence from Qualitative Research for Developed and Developing Economies' using decision making approach, that is, the Analytic Hierarchy Process examine the impact of Covid-19 on financial markets in developed and developing countries separately. The study finds that impact differs between developed and developing countries. In the case of developed countries, the study finds that the impact is felt through economic factors, such as a reduction in demand and supply and economic stability. In developing countries, on the other hand, the impact is felt through social factors- expectations and confidence, changes in consumption patterns, and the bandwagon effect.

In their paper 'Can banks sustain the sustainable development goals? Covid-19 and its implications' **Choudhary et al.** have a concern about the shift to renewable energy and the lack of adequate support from the banking system. In the first such study, employing data from a sample of 80 international banks from 20 countries for the period 2006–2017, the authors using the 2SLS regression model find that increasing the share of renewable energy in the total energy supply of a country reduces banks' default risk. They explore the relationship between the share of renewable energy in the total energy supply and banks default risk measured by distance -to-default. In terms of SDGs, the paper's contribution to the issue is important as it is the fear of default that is a crucial factor resulting in a reluctance of banks to invest in renewable energy projects. The probability of default is due to a potential fall in profitability for firms and consequently failure to repay the bank loan. The authors find that the use of renewable energy enhances firms' profitability and thus their capacity to repay loans.

Li et al. in their paper 'Sustainable Development and SDG-7 in Sub-Saharan Africa: Balancing Energy Access, Economic Growth, and Carbon Emissions' explore the relationship between external energy aid (foreign aid given for energy purposes), carbon emissions, and per capita GDP and access to electricity for 30 low income SSA countries for the period 1995–2016. The authors do not find a positive relationship between energy aid and economic growth in the long run. They also find that energy related aid helps mitigate carbon emissions and economic growth. The study raises three questions- energy aid and its relationship to carbon emissions; aid and its impact on economic growth and whether enhanced energy aid led to increased energy access. The authors conclude energy aid to low income SSA countries can directly facilitate climate friendly growth and can also help in electricity access helping with poverty reduction. The paper deals directly with the issue of the pressing need for finance in developing countries especially in low-income countries to meet various SDG goals and the impact of covid in constraining the availability of finance.

Wong et al. in their paper 'Financing Constraints and Firm's Productivity Under the COVID-19 Epidemic Shock: Evidence of A-Shared Chinese Companies explore the impact of financing constraints on firms' total factor productivity in the context of covid-19. The study in the context of China's shift in its growth strategy from high growth input driven model to quality focused model emphasising efficiency and higher TFP, employs data from A share listed companies from 2007 to 2018. The study analyses heterogeneity at two levels firm level and regional level. At the firm level, the analysis captures firm size, ownership pattern, and industry attributes. The authors find that financing constraints inhibit TFP of firms. The heterogeneity analysis indicates differences in firm type and geographic location influence effect of renewable energy policies on firms' TFP.

In close alignment with this special issue theme, **Zaman** in his study 'Financing the SDGs: How Bangladesh may reshape its strategies in the post COVID era?' raises the questions: what are the potential sources of funds for achieving SDGs keeping in view the impact of covid-19 on internal and external sources of finance, fall in economic growth rate and upcoming Bangladesh's transition from LDC status? Using ARDL forecasting technique, this study projects future flows of all SDG

funding sources including fiscal revenue, private investment, NGOs, public–private partnership, FDI and foreign grants until 2030. Due to the impacts of covid-19 on the availability of resources, the initial estimates as projected by the General Economic Division of the Planning Commission of Bangladesh have been re-examined. Overall, the study concludes that the contribution from private investment and NGOs would need to be higher during the 2021–2025 period, higher than the previous numbers projected by the GED, while in the latter period 2026–2030 private investment will be expected to share the most burden of SDG financing.

Colombage et al. in their paper COVID-19 effects on public finance and SDG priorities in developing countries: Comparative evidence from Bangladesh and Sri Lanka employed a mixed methods approach and carried out a comparative perspective of two developing countries of South Asia: Bangladesh and Sri Lanka. The authors investigated the impact of covid-19 on the public finances of two countries and whether there is any shift in public funding priorities. The study found that while the external sources of finance had declined, workers' remittances and total tax revenues of Bangladesh improved in contrast to Sri Lanka. These shifts have had an impact on the achievement of SDGs. Nonetheless, both countries have been vulnerable to pandemics amidst fiscal space constraints.

Green bond as an instrument of development finance to finance environmental projects has gained significance in recent years in developed and emerging economies. However, the adoption of this resource in developing countries has been often impacted by low institutional development, issue size, and high transaction costs (Banga 2019). **Ngyuen et al.** exploring this theme further examined the adoption of green bonds in South east Asian countries. For this purpose, the authors conducted 32 semi structured interviews with various participants in the capital market. Their results highlighted various barriers, regulatory issues, and growth opportunities in the development of green bonds in the region.

Financing constraints in the environment of the current pandemic are the subject of concern in another paper. Thus **Zhang et al.** in their paper 'How Does Firm ESG Performance Impact Financial Constraints? An Experimental Exploration of the COVID-19 Pandemic' examines the impact of covid-19 and its related shocks on financing constraints and SDG goals. Employing difference-in-difference approach to investigate the effect of the pandemic, the authors use quarterly data from a large sample of Chinese listed firms available from the China Stock Market and Accounting Research database for the period 2019–2021. Alongside their other variables of interest were ESG scores and the number of covid-19 cases. The findings suggest that covid-19 has resulted in financial constraints for firms. They also note that ESG can alleviate financial constraints. Overall, the authors conclude that a sustainable development strategy can facilitate adaptation to financial challenges and help in overcoming external shocks. Entangling the relationship between SDG performance (proxied by environmental protection, social responsibility, and corporate Governance scores-ESG in short) and firms' financial performance the authors question whether SDGs can improve information asymmetry and help in addressing firms' financial constraints. They find that better ESG scores indicate the resilience of the firm. The hypotheses, as laid down by the authors, are: i) covid-19 pandemic has caused significant financial constraints in listed Chinese firms ii) strong firm ESG

performance can help alleviate the financial constraints caused by the pandemic, and, iii) finally positive ESG performing firms alleviate internal and external financial constraints and cost of debt. They found a significant negative relationship between ESG scores and financial constraints that is, better performance on firms' SDGs can improve financial constraints. Overall, covid-19 plays a significant impact on financial constraints faced by the firms. Second, the negative impact of the pandemic on financial constraints is significantly improved by better ESG performance. Thirdly, better ESG performing firms can increase internal and external financial intermediation again alleviating financial constraints.

Concluding points

To summarise, the covid-19 pandemic and the resultant lockdowns both in developed and developing countries had a significant social and economic impact. Due to high public expenditure on public health, livelihood, and social welfare, the fiscal space of both developed and developing countries especially low-income countries is highly constrained. This also has implications for the achievement of various sustainable development goals. With limited resources of financing available, both from domestic and external sources, the task of meeting various SDGs has become even more challenging. This special issue aimed to examine the financing challenges posed by the pandemic in the context of SDGs and their varied impact on developing countries.

Overall, the papers in this special issue have been concerned with the pandemic's impact on financing SDGs at micro and macro levels at the firm level, single country, and cross-country levels. The focus of papers in this special issue has varied from concerns on mobilising adequate resources to finance SDGs in view of the challenges posed by the pandemic to specific innovative instruments of financing environmental projects such as green bonds and digital financial services. While rightly focusing on financing SDG goals as the theme of this special issue, the papers at the same time have also addressed various development objectives such as poverty reduction, access to electricity, inequality, and economic growth.

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