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FISCAL MULTIPLIERS: A REVIEW OF FISCAL STIMULUS OPTIONS AND IMPACT ON DEVELOPING COUNTRIES

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EXECUTIVE SUMMARY

The socio-economic collapse induced by the Covid-19 pandemic in 2020 has called for stronger government intervention to support the most vulnerable households, firms and sectors. In response, fiscal stimulus packages announced globally from January 2020 to June 2021 have reached \$17 trillion (IMF, 2021b). Options for spending fiscal resources have evolved from measures to address immediate health needs, to addressing the economic fall-out from social distancing measures and lockdown, and to building the foundations for more resilient, climate-friendly, gender-sensitive and transformative economic recovery. However, the fiscal resources available to low-income countries (LICs) remain extremely limited, pushing governments to be highly selective in deploying the interventions that would have the most positive short-term and long-term impact.

This paper reviews 94 cross-country, regional and country-level empirical and descriptive studies to identify evidence on fiscal multipliers – the output growth impact of fiscal policy¹ – to provide evidence-based insights to low- and middle-income countries on using fiscal interventions to have the most impact in boosting inclusive and sustainable economic growth. Across countries and all else being equal, a 1% increase in public expenditure tends to increase output by 1%, or a fiscal multiplier close to 1. In reality, countries are not equal, and specific characteristics and economic circumstances influence the effectiveness of fiscal policy on stimulating growth. The following are the key findings from the literature review.

Determinants of the size of fiscal multipliers

Countries' specific structural characteristics and conjunctural economic circumstances determine the size of fiscal multipliers. Structural factors such as greater trade openness, a more flexible exchange rate regime, high public debt, large automatic stabilisers, and low share of hand-to-mouth population and liquidity-constrained firms tend to decrease the size of fiscal multipliers. Meanwhile, conjunctural factors such as downturns and financial crisis tend to increase the growth impact of fiscal interventions.

The literature is also consistent in highlighting that monetary policy accommodation provides fiscal stimulus -reinforcing positive effects on growth. In LICs, the composition of fiscal spending matters: public consumption tends to have a relatively high fiscal multiplier in the short run, driven by the high marginal propensity to consume of the hand-to-mouth population and liquidity-constrained firms pervasive in LICs; public investment tends to have a more lasting impact on growth. Improving institutional inefficiency also increases the average size of fiscal multipliers in LICs by as much as 18%. There is also recent evidence that LICs benefit more from externally financed (e.g., aid and debt) fiscal policy, since households need not to have Ricardian saving behaviour with the expectations in the case of aid.

Relationships* between the size of the fiscal multiplier and its determinants cited in selected cross-country studies

Determinants	Impact on size fiscal multiplier**
Trade openness	(-)
Exchange rate flexibility	(-)
Initial level of capital stock	(-)
High public debt	(-)
Size of automatic stabilisers	(-)
Hand-to-mouth population	(+)
State of business cycle	(+) downturn > (+) upturn
Financial crisis	(+)
Degree of monetary policy accommodation	(+)
Income level	(+)
Type of fiscal instrument	Short-term: mixed; Long-term: public investment > consumption > tax and transfers
Institutional efficiency	(+)
Source of funding the fiscal policy	External financing > domestic financing

Notes: *The relationship summarised here are based on the most common relationships that are cited in most existing literature, but there may be a few studies that find contrasting or insignificant results as discussed in text. **Positive (negative) sign indicates that the determinant tends to increase (decrease) the size of the fiscal multiplier.

¹ This paper focuses on fiscal multipliers that measure the impact of government measures on output. However, the literature also offers alternative measures of fiscal multipliers in terms of responses from trade, investment, employment and unemployment, and inequality, among others.

Multipliers from targeted fiscal stimulus

There are few empirical studies that examine multipliers from sectoral public spending in the context of developing countries and LICs, and results are mixed. However, they do suggest that the most common growth-inducing sectoral public spending is on education and social protection, with multipliers reaching close or more than 1. There are mixed results on the direction of influence of public expenditure on health and defence sectors on output, but most studies indicate a positive impact. The growth impact from public spending on general and economic services tend to be negative. While the short-term contribution to growth of public spending on manufacturing is mixed and tends to be insignificant in the fiscal multiplier literature, this should be interpreted carefully and under specific country contexts. There is ample evidence in the structural transformation literature (such as for many of Asia’s industrial pioneers) on the critical role of public interventions in the agriculture and manufacturing sectors in enabling the movement of labour and capital from low- to high-productivity employment and production, and hence, in expediting not only the speed but also the quality of growth (see McMillan et al., 2017).

Commonly* cited growth-inducing or reducing sectoral spending in selected cross-country studies

Sector	Sign of sectoral public spending multiplier**
1) By functional components	
Agriculture	Mixed, mostly insignificant
Defence	Mixed, mostly (+)
Economic services	(-) and/or insignificant
Education	(+)
General public services	(-) and/or insignificant
Health	Mixed, mostly (+)
Manufacturing	Mixed
Social protection	(+)
Transport and communication	(+)
2) Green stimulus	(+)
3) Gender-sensitive fiscal stimulus	(+)

Notes: *The relationship summarised here are based on the most commonly growth impact of sectoral spending cited in most existing literature, but there may be a few studies that find contrasting or insignificant results as discussed in text. **Positive (negative) sign indicates that the sectoral public spending has positive (negative) fiscal multiplier.

Meanwhile, empirical investigation on the impact of climate- and gender-related government interventions commonly focus on employment and social effects, while estimates in terms of impact on output remain extremely scarce. Green fiscal stimulus in the context of European Union during the global financial crisis indicates an output multiplier of around 0.6 to 1.1; more recent data in mostly G20 countries indicate short-term (public and private) investment multipliers of 1.4 in renewable energy versus 0.6 from fossil fuel; and forecast estimates considering the Covid-19 context estimates 1.6 multiplier effects from public and private spending on sustainable energy sector from 2021–2023. Meanwhile, De Henau et al. (2017) find substantial multipliers from gender-related public investment (particularly health and care sector) in emerging economies, namely Brazil, Costa Rica, China, India, Indonesia and South Africa, ranging from 3 in Indonesia to 5 in Costa Rica.

Distributional impact of fiscal stimulus

Cross-country studies suggest that public spending has a significant positive contemporaneous contribution to per capita GDP growth with an elasticity of 0.67. There is also robust evidence that over the medium term, an increase in total government expenditure by 1% of GDP over five years leads to a decrease in the Gini market income index (or lower inequality) of about one percentage point – an ‘inequality multiplier’ of about 1. However, the type and composition of fiscal spending also matters. Public expenditure related to social protection and transfers has the dominant reducing effect on inequality. At firm level, however, public investment tends to benefit formal sector and large firms at the expense of the output of informal smaller firms.

Short-term fiscal multipliers cited in selected studies

Country	Size of fiscal multiplier
Advanced economies	1.8
Developing countries	0.8
East Africa	0.8
Kenya	0.01 to 0.4
Tanzania	0.22
Latin America	-1.5 to 1.7 (depends on country and instrument)
Peru	-0.3 to 2.5 (depends on instruments)
South Asia	0.4
Bangladesh	0.1 to 0.7
Sri Lanka	0.3

Fiscal multipliers in Southern countries – Bangladesh, Kenya, Peru, Sri Lanka and Tanzania

Fiscal multipliers tend to be lower in developing countries compared to high-income countries (HICs) (about 0.8 vs 1.8), but country-level literature shows that the growth impact of fiscal spending is even lower in Southern countries. Fiscal multipliers range from around 0.01 to 0.4 in Kenya, Sri Lanka and Tanzania,

and 0.1 to 0.7 in Bangladesh. The ample fiscal multiplier estimates for Peru generally point to the relatively higher growth impact from public consumption (0.3 to 1.0) than investment (1.5 to 2.5), and negative multipliers from tax-related stimulus. The country-level studies discuss key factors that drive the size of fiscal multipliers in Southern countries, highlighting issues such as absorptive capacity and institutional efficiency (Bangladesh and Kenya), source of financing for fiscal spending (Kenya and Tanzania) and time-varying factors and level of informality (Peru).

Policy implications for low- and middle-income countries

Several factors affect the size and the sign of fiscal stimulus in low-income and developing countries. The literature highlights that fiscal interventions will have stronger growth impacts under the current recessionary economic environment, and there is room to tailor government measures to maximise positive outcomes. Depending on the fiscal resources available to achieve certain objectives, the following targeted policy options may be considered:

- **Restarting the economy.** Short-term fiscal multipliers tend to be highest if targeted to hand-to-mouth population and small liquidity-constrained firms, highlighting the importance of increasing public spending on education, social protection and cash transfers to boost short-term demand. Implementing gender-sensitive fiscal spending associated with the health and care economy can also produce substantial positive impacts on growth. Countries can implement measures to reinforce the effect of fiscal interventions, such as keeping public debt at bay and extending monetary policy accommodation.
- **Reshaping the economy.** While public investment and climate-friendly fiscal stimulus can help improve the quality and resiliency of economic growth, their impact has longer lags, making these measures more appropriate for *reshaping* the medium- to long-term economy. However, if these types of public spending are labour-intensive and are targeted to rural areas in dire need of social and physical infrastructure, the fiscal intervention will have the potential to achieve multiple objectives of having relatively faster impact on growth, building infrastructure conducive to increasing productivity (initially in agriculture and then in the manufacturing sector), thus facilitating economic transformation while widening the distributional impact of fiscal spending.
- **Strengthening institutional efficiency.** The effectiveness of fiscal stimulus depends on a number of factors, but most importantly on institutional efficiency that facilitates the proper identification and delivery of fiscal interventions, builds government credibility that feeds into household and investor decisions, manages aid absorption and debt sustainability, accelerates crowd-in effects (of private investment) and helps in ensuring inclusiveness of fiscal policy.
- **Tailoring complementary country-context policies.** The cross-country fiscal multiplier literature review indicates general patterns of fiscal multiplier size and determinants. In practice, fiscal multipliers can differ drastically between countries (as illustrated by the varying fiscal multipliers among Southern countries), and the effectiveness of fiscal policy in stimulating and sustaining growth will also ultimately depend on the presence or absence of other complementary policies (e.g., private-public sector and donor cooperation, trade diversification, fiscal-monetary policy coordination and political economy considerations, among others) in particular regional and country contexts.

Further research on fiscal stimulus packages with multiplier effects in the context of Covid-19.

Against the backdrop of a protracted Covid-19 pandemic, fiscal responses have evolved from health measures, to mitigating the economic fall-out, to efforts to increase resiliency against future shocks (e.g., incorporating climate-related measures in fiscal packages). Recently, there has been growing discussion on how to mitigate the scarring effects and growing inequality between and within countries related to access to vaccines, size of fiscal policy support, as well as the ability of households and firms to adopt technology to conduct work remotely (see IMF, 2021a; Fresnillo, 2020). Existing fiscal multiplier estimates have not previously incorporated a shock of similar magnitude to this pandemic. Urgent research is needed to better understand appropriate fiscal interventions that can achieve the multiple objectives of short-term recovery and long-term resilient and equitable growth.

1. INTRODUCTION

The Covid-19 pandemic resulted in severe economic and social collapse in 2020. World output contracted by 3.2%, with acute adverse impacts on contact-intensive sectors, the poor, low-skilled workers, women and young people (IMF, 2021b). In response, monetary policy accommodation was swiftly and widely implemented across countries. This was shortly followed by sizable fiscal stimulus, initially to mitigate the spread of the virus by strengthening health systems, evolving to address the impact of social distancing measures and lockdowns on vulnerable households, firms and sectors, and more recently to build resilient economic recovery. As of June 2021, Covid-19-related fiscal support worldwide amounted to almost \$17 trillion (IMF, 2021b). Public debt reached close to 100% of global GDP in 2020 and is expected to remain around that level until 2022 (ibid.).

While there is optimism on global growth outlook following the successful development of vaccines, low-income countries (LICs) have substantially lower resources to address the Covid-19 impact than high-income economies. Announced fiscal support in LICs are worth 1.9% of GDP, substantially lower than the support packages in the G20 of an average of 17.3% of GDP (see Raga and te Velde, 2021). The IMF and the World Bank have increased the available Covid-19 financing envelope to \$250 billion and \$150 billion, respectively, but this falls short of what is needed to finance government interventions in LICs. For instance, as of March 2021, the IMF has extended \$16.4 billion (equivalent to 0.9% of 2019 GDP) financing to sub-Saharan African countries, which can only partially cover the \$60 billion (equivalent to 3.4% of 2019 GDP) of the region's fiscal stimulus packages announced in 2020. The G20 helped LICs allocate their limited resources for Covid-19 interventions by suspending the latter's debt service payments (through the Debt Service Suspension Initiative – DSSI) initially until December 2020 and then until June 2021. However, since this initiative only covers official bilateral creditors and not private and multilateral lenders, the DSSI can only potentially cover 44% of the debt payments of the 46 countries that asked to participate in the initiative (Fresnillo, 2020).

Thus, while there is an active global discussion to implement a menu of government interventions, particularly on smart and 'rainbow' stimulus packages covering green and digital investment to improve the quality of long-term growth, LICs with extremely limited resources face pressure to be highly selective about choosing the fiscal measures that address their most immediate needs while also having the most positive short-term and long-term economic outcomes (see Raga and Housseini, 2020).

In this regard, this paper reviews 94 cross-country, regional and country-level empirical and descriptive studies² to identify evidence on fiscal multipliers and provide evidence-based guidance to LICs and Southern countries on the fiscal interventions that would have the most impact in boosting economic growth. This paper is structured as follows. Section 2 establishes the definition, measure and size of fiscal multipliers. It is followed by a discussion of determinants of the size of fiscal multipliers based on cross-country studies in Section 3, with a sub-section that highlights the factors that influence the effectiveness of fiscal spending in the context of low-income and developing countries. Section 4 further investigates the fiscal multipliers from sectoral, climate-compatible and gender-sensitive public spending. Section 5 discusses emerging evidence on the distributional impact of fiscal stimulus, such as on income per capita, poverty, inequality and the informal sector. Section 6 zooms in on fiscal multiplier estimates for Southern countries – namely Bangladesh, Kenya, Peru, Sri Lanka and Tanzania. The final section concludes.

² Of 94 studies, 85 address a developing and/or low-income country context and 87 provide estimates of impact of fiscal spending (aggregate and/or targeted) on economic variables (e.g., mainly growth, but also investment, employment, poverty).

2. WHAT ARE FISCAL MULTIPLIERS? DEFINITION, MEASURE AND SIZE

Fiscal multipliers typically refer to the response of the level of output relative to the discretionary policy over a given horizon. In other words, fiscal multipliers are defined as the US dollar movement in GDP for one US dollar of change in fiscal policy. The variables of interest are not limited to output, as fiscal multipliers can be measured according to the degree of responses from trade and employment as well.

This section aims to dissect the underlying components of fiscal multiplier estimates. We will limit our definition of ‘discretionary fiscal policy’ to that of expansionary fiscal policy in view of the current context of Covid-19 fiscal stimulus across countries (note that the literature offers two sides of discretionary policy – fiscal expansions and fiscal consolidation). It will discuss the following components.

2.1 Definition and measurement of ‘multiplier’

Government consumption in terms of expenditures of goods and services is an automatic component of a country’s output. Globally, government expenditures comprise about 17% of world GDP as of 2019 (WDI, 2021). Government consumption plays a relatively smaller contribution to domestic output in some countries (e.g., 6.3% in Bangladesh, 13.1% in Kenya, 11.4% in Peru, 7.8% in Tanzania, 9.4% in Sri Lanka) but a major role in others (e.g., 59.8% in Timor-Leste, 41.7% in Afghanistan). If for instance, government spending on road construction has stimulated entry of businesses which in turn generate jobs and income, then the resulting impact of the government spending on this infrastructure will be worth more than the amount of initial government spending – hence, the concept of ‘multiplier’ effects of fiscal policy.

Statistically, a fiscal multiplier can be defined as the change in \$GDP (main variable of interest) for every \$ spent on discretionary fiscal policy (\$G) in a given time horizon (see Batini, et al., 2014):

$$\text{Fiscal multiplier on impact } t = \frac{\Delta \$GDP_t}{\Delta \$G_t}$$

$$\text{Fiscal multiplier at horizon } i = \frac{\Delta \$GDP_{t+i}}{\Delta \$G_t}$$

The fiscal multiplier will be equal to 1 if an additional \$ from fiscal policy does not lead to reductions or additions in other components the GDP. The fiscal multiplier can be negative or positive. Fiscal multipliers to be discussed in this paper will refer to short-term or ‘impact’ fiscal multipliers (i.e., the impact of fiscal policy on GDP in 1–2 years) unless stated otherwise (i.e., if long-term or over a certain ‘horizon’ such as 5–10 years).

The variables of interest in the literature are not limited to output. For instance, some studies examine the impact of fiscal multipliers according to the responses of trade, investment (e.g., Karras, 2011), employment and unemployment (e.g., Auerbach and Gorodnichenko, 2013; Furceri and Li, 2017) and inequality (e.g., Furceri and Li, 2017; Furceri et al., 2018; Brinca, et al., 2014), among others. For the purposes of this paper, ‘fiscal multiplier’ will refer to the responses of GDP to overall expansionary fiscal policy, unless explicitly stated.³ Due to the aggregated variables being utilised in the measurement of fiscal multipliers, they typically do not provide information on the distributional impact of discretionary fiscal policies. However, in later sections of this paper, we explore evidence from the literature on the impact of expansionary sectoral public spending and briefly discuss the distributional impact of fiscal stimulus.

³ For instance, if the variable of interest is trade instead of GDP, we would refer to it as ‘fiscal multiplier effects on trade’ or if we refer to a particular fiscal policy instrument such government consumption instead of general expansionary fiscal policy, we will refer to it as ‘government consumption multiplier effects on output’.

2.2 Definition of ‘discretionary fiscal policy’

Discretionary fiscal policies can refer either to fiscal expansion or consolidation. In this paper, discretionary fiscal policies, fiscal shock and fiscal stimulus will be used interchangeably but will all refer to fiscal expansionary policies. Fiscal expansionary policies generally relate to (1) increase in government spending; (2) increase in transfer payments; and (3) reduction of taxes for households and firms. Fiscal spending has two main components – consumption (or current expenditure) and investment (or capital expenditure). Fiscal expansionary policies are typically deployed to boost domestic demand in periods of downturn, recession or protracted crisis, especially if monetary policy space is exhausted or ineffective.

2.3 Types of fiscal policy instruments

Expansionary fiscal instruments can be categorised as follows (Coenen et al., 2010):

- Government spending
 - 1) an increase in government investment expenditures
 - 2) an increase in government consumption expenditures
- Transfer payments
 - 3) an increase in general lump sum transfers
- Tax cuts
 - 4) a decrease in labour income tax rates
 - 5) a decrease in consumption tax rates
 - 6) a decrease in corporate income tax rates

Government spending (increases in public investment and consumption) is expected to directly contribute to aggregate output. Meanwhile, transfer payments and tax cuts indirectly contribute to output by increasing disposable incomes in the private sector (households and firms). In addition, fiscal policy can also be distinguished according to the sectoral components (e.g., agriculture, education, defence, health, manufacturing, transportation and communication, social protection, among others) of public spending.

Table 1 presents fiscal multiplier estimates by various cross-country studies, the details of which are discussed in succeeding sections.

Table 1. Fiscal multiplier estimates from selected cross-country studies

Source	Sample coverage	Fiscal stimulus measure (i.e., total public spending; or by component such as consumption, investment, revenue-related or tax cut)	Short-term fiscal multiplier (e.g., on impact, 1–2 years)	Long-term fiscal multiplier (e.g., after 3 or more years)
Alchi et al. (2019)	23 small states	Consumption	0.10	-0.08
		Investment	0.26	1.06
	34 small states	Consumption	0.12	0.72
		Investment	0.21	0.84
Asea (2016)	36 LICs	Total spending	0.78	
Auerbach and Gorodnichenko (2013)	OECD countries	Total spending	0.14 to 0.35	0.14 to 0.23
Baum et al. (2012)	G7 countries	Total spending	0.79	
		Revenue (e.g., tax cut)	0.29	
Corsetti et al. (2012)	OECD countries	Total spending	0.7	
Gechert (2015)	Studies and empirical papers	Total spending	Close to 1	
Ilzetski et al. (2013)	44 countries, 1960–2007	Consumption	-0.03 to 0.39	-0.63 to 0.66
		Investment	0.39 to 0.57	1.5 to 1.6
Karras (2011)	61 developed, developing countries, 1951–2007	Government purchases (measured as constant-price government share in GDP)	0.8 to 0.98	1.01 to 1.35

Source	Sample coverage	Fiscal stimulus measure (i.e., total public spending; or by component such as consumption, investment, revenue-related or tax cut)	Short-term fiscal multiplier (e.g., on impact, 1–2 years)	Long-term fiscal multiplier (e.g., after 3 or more years)
Koh (2017)	120 countries	Consumption	0.4 to 1.8	
Kraay (2012)	29 primarily LICs	Total spending (instrumented by World Bank disbursements)	0.48 to 0.67	
Kraay (2014)	102 developing countries, 1970–2010	Total spending (instrumented by World Bank disbursements)	0.4	
Mineshima et al. (2014)	G7	Total spending	0.79	
Shen et al. (2018)	LICs (calibrated based on 27 Sub-Saharan Africa LICs), 2000–2015	Consumption	0.3 to 0.4	-0.5 to 0.3
		Investment	0.2	0.6 to 0.7
Sheremirov and Spirovska (2019)	129 countries (36 advanced, 93 developing) 1988–2013	Total spending (instrumented by military spending)	0.75 to 0.84	
Spilimbergo et al. (2009)	Studies and empirical papers	Mixed	0.5 to 1.5	

2.4 Common fiscal multiplier estimation techniques

The quantitative literature surveyed for this paper employ several techniques that can be generally grouped into the three main categories: (a) empirical estimations; (b) model-based estimations; (c) back-of-the-envelope estimations. Some of the studies also utilised both empirical and model-based models to validate results. Table 2 provides an overview of the specific methodological approach on estimating the impact of public spending on growth (or related variable such as employment) in 87 out of 94 studies and analyses reviewed in this paper.⁴

There is little consensus in the literature on the most appropriate estimation approach (e.g., empirical vs model-based techniques) for fiscal multipliers, as methodologies have their respective limitations. For instance, econometric regressions only represent partial equilibrium and may not capture interaction in the economy; structural VAR-type models are challenged by correctly identifying exogenous fiscal shocks; and model-based simulations' results tend to be sensitive to the choice of parameters (see Batini, 2014; Spilimbergo et al., 2009). Coenen et al. (2012) tried to employ seven structural and model-based estimates and found consensus among results on common determinants of the size of multipliers (e.g., type of instrument, monetary policy stance, dynamic effects) for mostly G20 countries. However, the data-demanding nature of multi-model estimation approaches may be challenging for low-income and developing countries where disaggregated and high-frequency data are not readily available.

Table 2. Fiscal multiplier estimates from selected cross-country studies

Main estimation techniques (no. of studies)*	Sample of specific models utilised
Empirical techniques (68)	General methods of moments (GMM); error correction models (ECM); multivariate vector ECM; structural vector autoregressive (VAR); panel VAR; nonlinear threshold

⁴ The detailed list of main estimation technique employed by study is available upon request from the author; There are 87 studies which focus on fiscal multipliers or impact of fiscal spending (aggregate or targeted) on specific economic variable (e.g., mainly growth, but also investment, poverty, employment); the rest of the studies are utilised in this paper to understand other growth channels (e.g., labour productivity, gender) through which fiscal spending can be allocated to induce growth.

Main estimation techniques (no. of studies)*	Sample of specific models utilised
	VAR; Bayesian time-varying parameter VAR; ordinary least squares and multi-stage 2LS, 3LS), local projection method; forecast errors with fiscal shocks; input-output table analysis; meta-regression; regressions using instrumental variables
Model-based (14, 4 of which also employed empirical techniques)	Calibrated/modified general equilibrium models; dynamic stochastic general equilibrium model
Back-of-the-envelope estimates (5)	Adapting fiscal multipliers of other countries with similar characteristics in existing literature, narrative-based estimates or meta-regression estimates

3. WHAT ARE THE DETERMINANTS OF THE SIZE OF MULTIPLIERS?

This section provides a survey of the literature on the determinants of the size of multipliers. It highlights evidence from studies focusing on developing countries, and in the absence of such, evidence from studies with a large cross-country or advanced economies sample. The main aim is to summarise and describe the channels through which the determinants affect the size of the multiplier. Based on a review of related literature of cross-country studies, this section will explore the direction and available estimates of the impact of the following determinants on the size of the fiscal multiplier.

3.1 Structural factors

Trade openness. Empirical studies suggest that the less open the economy, the bigger the size of the fiscal multiplier (Furceri and Li, 2017; Ilzetzi et al., 2013; Coenen et al., 2010; Karras, 2014; Shen et al., 2018; Sheremirov and Spirovska, 2019). In particular, countries with low trade-to-GDP ratios exhibit a 0.6 impact multiplier up to a 1.1 long-run multiplier, while countries with high trade volumes as a proportion of GDP experience a non-statistically significant negative multiplier both on impact and in the long run (Ilzetzi et al., 2013). This is primarily due to the ‘import demand leakage’ of fiscal stimulus. For example, a country with high propensity to import may spend the additional income generated from fiscal stimulus (e.g., lump sum transfer for households, tax relief for firms) on imported goods and services rather than on domestically produced products. The resulting lower net exports (due to higher imports compared to pre-stimulus period) effectively lowers GDP. This mechanism is supported by empirical evidence in Miyamoto, Nguyen, and Sheremirov (2019) wherein fiscal expansions were found to lead to current account declines in advanced and developing countries. In addition, based on a meta-analysis of 104 studies, it is estimated that a 1 percentage point higher import-to-GDP ratio lowers the size of multiplier by 0.01 to 0.02 (Gechert, 2015). Similar findings were found in a study by Shen et al. (2018) with a sample of LICs, which are usually characterised by import dependency for essential food items. By contrast, Koh (2017) studied a larger sample comprising 120 countries and found that countries with higher trade openness do not necessarily have smaller fiscal multipliers. Koh (2017) finds that in countries that are relatively open to trade, net exports fall as expected, but there is also an offsetting increase in consumption.

Exchange rate flexibility. Cross-country studies indicate that fixed exchange rate regimes tend to increase the size of the fiscal multiplier (Born et al., 2013; Corsetti et al., 2012; Furceri and Li, 2017; Ilzetzi et al., 2013; Karras, 2011; Sheremirov and Spirovska, 2019). In particular, Karras (2011) finds that maintaining a fixed exchange rate substantially raises fiscal multipliers by a third. Meanwhile, Ilzetzi et al. (2013) suggest that countries with pre-determined exchange rates have a statistically significant impact multiplier of 0.15 up to 1.4 in the long run, while a flexible exchange rate regime is associated with negative fiscal multipliers in the short and long run. Sheremirov and Spirovska (2019) find similar results for a larger sample of 129 countries. The literature points to the Mundell-Fleming model to illustrate the mechanism that drives this effect – all else being equal, an increase in fiscal spending increases output, which will induce an increase in interest rates. Higher interest rates will in turn attract capital inflows, which

strengthens the domestic currency, subsequently hurting the export sector, thus limiting the effects of the initial fiscal expansion on national output. By contrast, Koh (2017) and Dellas et al. (2005) find no significant effect of exchange rate regimes on fiscal multipliers across countries, partially due to the accommodative monetary policy response to fiscal expansions (to be discussed in detail in below).

Initial stock of capital. Theoretically, fiscal multipliers are expected to be higher in countries with low initial stock of public capital since the marginal productivity of an additional public investment is large, directly improving a country's productive capacity, which can also subsequently stimulate the productivity of private investment and consumption (see Baxter and King, 1993). Empirical evidence from a sample of advanced and developing countries (i.e., OECD, European countries, US states and Argentine provinces) suggests that public investment multipliers are higher in countries with low initial stock of public capital (as a proportion of GDP) (Brinca et al., 2014; Izquierdo et al., 2019). For instance, among US states, Izquierdo et al. (2019) estimate that the public investment multiplier associated with a high public capital to GDP ratio (0.51) is less than half the size of that associated with a low ratio (1.36). In the context of a developing country such as Argentina, provinces with high initial stock of public capital to GDP ratio (instrumented by paved highways) is associated with a lower public investment multiplier (0.23), in contrast to high public multipliers (2.03) in provinces with low ratios (ibid.). In addition, the authors estimate public investment multiplier becomes larger than 1 in Argentine provinces with an initial stock of public capital to GDP ratio that is lower than 0.30. While there is a recognition that efficiency matters – such that the size of public investment multipliers tend to decrease the lower the level of efficiency (to be discussed in further detail below) – Izquierdo et al. (2019) establish evidence (using a sample of European countries) that the role of initial stock of capital in determining the size of the public investment multiplier remains virtually unaffected even after controlling for efficiency.

Public debt. The literature is in consensus that higher public debt lowers the size of the fiscal multiplier (Alichi et al., 2019; Corsetti et al., 2012; Furceri and Li, 2017; Hayat and Qadeer, 2016; Huidrom et al., 2016; Ilzetski et al., 2013; Kirchner et al., 2010; Koh, 2017). In addition, Ilzetski et al. (2013) and Koh (2017) highlight that fiscal expansions result in a negative fiscal multiplier (-3) in highly indebted countries. In particular, Ilzetski et al. (2013) indicate that fiscal stimulus tends to be ineffective in countries with a public debt higher than 60% of GDP. With existing high levels of public debt, an expansionary fiscal policy poses risks to public debt sustainability and, in effect, macroeconomic stability. These risks will be factored in and will be reflected in higher interest rate risk premium, which can dampen demand and investment. In addition, based on 'Ricardian equivalence', forward-looking households and firms spend less (and save more) during periods of fiscal expansion to smooth out consumption during anticipated fiscal tightening (e.g., expectations of higher taxes later on).

Size of automatic stabilisers. Automatic stabilisers refer to the government revenue and expenditure items that adjust automatically in a counter-cyclical way in the event of macroeconomic shock. For example, when output sharply declines, revenue collection declines and unemployment benefits increase but the effect on revenues and unemployment revenue reverses automatically once the shock dissipates (see Baunsgaard and Symansky, 2009; Bevan, 2010). Large automatic stabilisers tend to dampen the effect of discretionary fiscal stimulus through the growth channel, since the resulting boost in output from fiscal stimulus will lead to higher taxes and lower transfers, reducing the impact of the fiscal multiplier (Coenan et al., 2010; Mineshima et al., 2014). While automatic stabilisers are relatively important in more advanced countries like northern European countries and US, these automatic stabilisers may be less important in countries with lower income and smaller public sectors (see Dolls et al., 2010), and especially for LICs with limited automatic stabilisers and which tend to have procyclical government spending (see Bevan, 2010; Kraay, 2012; Ilzetski and Vegh, 2008; World Bank, 2018). For instance, automatic stabilisers lead to a demand stabilisation of up to 30% in the EU and up to 20% in the US (Dolls et al., 2010); but automatic stabilisers in form of public expenditure smooth out only 7–8% of the demand shock in China, somewhat less in the Philippines, and are ineffective in Indonesia and Bangladesh (Ducanes et al., 2006).

Level of hand-to-mouth population. Fiscal multipliers are higher in countries with high share of 'hand-to-mouth' or liquidity-constrained population (Bracco et al., 2021; Brinca et al., 2014; Carroll et al., 2013; Coenan et al., 2010; Gechert, 2015; Kirchner et al., 2010; Koh, 2017). This is because liquidity-constrained households have higher marginal propensity to consume out of the additional income from fiscal stimulus

(e.g., via transfer payments or tax cuts). Related to this, Koh (2017) finds that countries with higher credit-to-GDP ratio (indicating lower liquidity constraints for agents to borrow and smooth out consumption) tend to experience crowding out effects of ‘Ricardian equivalence’ agent behaviour on fiscal multipliers. In a meta-analysis of 104 studies, Gechert (2015) finds that a unit increase in the share of population of non-Ricardian agents (e.g., those that have low ability to smooth out consumption) increases the size of multiplier by half a unit. This is in line with the findings of Miyamoto, Nguyen, and Sheremirov (2019) where higher government purchases (instrumented by military spending) led to increases in consumption in developing countries but decreases in consumption in advanced countries. The latest analysis of social transfer multiplier effects by Bracco et al. (2021) suggests that while the social transfer multiplier is 0.3 in developed countries, it is 0.9 in Latin American economies, mainly due to the lower share of population living hand-to-mouth in the former (23%, compared to 60% in Latin America).

3.2 Conjunctural factors

State of business cycle. There is a general consensus that fiscal multipliers are significantly higher in downturns than in upturns (see Alichii et al., 2019; Auerbach and Gorodnichenko, 2013; Baum et al., 2012, Gechert and Rannenberg, 2018; Hayat and Qadeer, 2016; Koh, 2017; Mineshima et al., 2014; Sheremirov and Spirovska, 2019). This is because during economic boom episodes with full employment, an increase in fiscal spending (stimulus) crowd outs private demand, while during contractionary periods fiscal stimulus can smooth out consumption of credit-constrained agents (see Koh, 2017). For instance, Sheremirov and Spirovska (2019) estimate that one-year response of output to a unit shock in government spending is 1.7 (significant) in recessions and 0.3 (insignificant) in expansions, with statistically significant differences at horizons up to four years. This is also related to empirical evidence suggesting larger multipliers during episodes of slack (a feature of recession periods) when there are relatively higher unemployment rates (Furceri and Li, 2017; Sheremirov and Spirovska, 2019). This is aligned with the findings of Auerbach and Gorodnichenko (2013), who show that the higher fiscal spending multipliers during recessions are driven by the resulting significant boost in private sector employment as well as private consumption and capital formation.

Financial crisis. In periods of financial crises, access to credit is severely tightened, making it difficult for economic agents to borrow funds to smooth consumption. In this regard, an increase in government spending effectively increases demand of these credit-constrained agents, resulting in larger multiplier effects during a financial crisis compared to a normal recession (see Koh, 2017). For instance, fiscal multipliers can be twice as big in crisis scenarios (Gechert, 2015), and twice (Corsetti et al., 2012) or three times (Koh, 2017) larger during periods of financial crisis. In addition, in the aftermath of the global financial crisis, when interest rates reached the zero-lower bound, fiscal stimulus were fully accommodated (unchanged at zero), which amplified the size of the fiscal multipliers between 2 and 4 (see Eggertsson, 2010; Christiano et al., 2011; and Woodford, 2011 as cited in Koh, 2017).

Degree of monetary policy accommodation. According to the Mundell-Fleming model, a fiscal expansion under a fixed exchange rate is more effective since the monetary policy is expected to increase interest rates to prevent sharp exchange rate appreciation that can hurt net exports (that would otherwise have been under a flexible exchange rate regime). However, Koh (2017) did not find this result in a 120-country sample, since upon deployment of fiscal stimulus, there is a mean response of an increase in the interest rate (which appreciates the exchange rate and dampens output) among countries with fixed exchange rates; while on average countries with more flexible regimes loosen monetary policy (which dampens appreciation and impact on net exports). In addition, monetary policy in countries with high capital mobility seems to be more accommodative to fiscal expansions than their counterparts, resulting in larger depreciation that supports net exports (Koh, 2017). In this regard, fiscal multipliers can also be potentially larger in flexible exchange rate regimes if exchange rate depreciates via monetary policy accommodation, supporting findings in earlier studies (see Dellas et al., 2005).

Coenen et al. (2012) argue that in circumstances where weak demand is expected to remain for some time, temporary monetary policy accommodation for 1–2 years will enable fiscal stimulus to have larger stimulating effects on the economy. Coenen et al. (2012) explain the mechanism through which

accommodative policy intensifies effects of fiscal stimulus through interest rates – fiscal stimulus increases output which results into inflationary pressure, and in turn, increase in interest rates. Without monetary policy action to ease inflation (i.e., no increase in policy rates), the resulting increase in interest rate will partly offset the effects of fiscal stimulus. With monetary policy accommodation (i.e., lowering policy rates), interest rates will decrease, complementing the fiscal policy and its expansionary effects on the economy. However, the authors highlight the need for accommodative policy to be credibly viewed as temporary in the context of a weak economy to avoid risk of overshooting inflation rate targets. Recent estimates by the IMF (2020a) suggest that baseline fiscal multipliers are close to 1; up to 1.5 if unemployment is above the historical average, and up to 2.0 when interest rates are low and close to their effective lower bound, suggesting that fiscal stimulus is extremely effective when monetary policy does not lean against it.

3.3 Level of economic development

In this sub-section, we highlight the different factors that influence the size of fiscal multiplier that is being driven by a key structural factor – level of income, particularly in LICs. Cross-country studies suggest a positive relationship between the size of fiscal multiplier and level of income (Ilzetzki et al., 2013; IMF, 2014; IMF, 2020b; Koh, 2017, Izquierdo et al., 2019; Sheremirov and Spirovska, 2019), indicating that fiscal multipliers are less effective in developing countries both in the short and long run (Table 3).

Table 3. Fiscal multipliers in low- and high-income countries in selected large panel studies

Source	Sample	Fiscal stimulus measure	Low income/developing countries		High income/advanced economies	
			Short run	Long run	Short run	Long run
Sheremirov and Spirovska (2019)	129 countries, 1988–2013	Total spending (instrumented by military spending)	0.80	0.61	1.76	1.88
Koh (2017)	120 countries, 1960–2014	Consumption	0.63	0.78	0.97	1.28
Ilzetzki et al. (2013)	44 countries, 1960–2007	Consumption	-0.03	-0.63	0.39	0.66
		Investment	0.57	1.6	0.39	1.5

Note: Short-run impact refer to fiscal multiplier in 1–2 years, long-run refer to 3 years and more.

Studies that explore the determinants on the size of multipliers in LICs and developing countries point to several conditions that affects the relatively lower or higher size of multipliers based on the structural factors discussed above that are more pervasive in low-income and developing countries than in advanced economies. For instance, LICs have high level of informality and low access to credit, characterising a large share of population living hand-to-mouth and firms that are credit constrained, and all else equal, may be expected to increase fiscal multiplier via increase in consumption as discussed in detail earlier. As of 2018, the share of employment outside the formal sector in LICs is at 73%, substantially higher than in middle income countries (MICs, 42%) and high-income countries (HICs, 23%) (ILO, 2021). Meanwhile, the share of population 15 years and older with accounts in a financial institution or a mobile service provider as of 2017 is at 93% in HICs, 65% in MICs, and only 35% in LICs. LICs' public debt levels are also vulnerable – as of 2020, 38 out of 70 LICs are in already at high risk of or in debt distress (IMF, 2020b) – and as discussed above, may dampen multiplier from fiscal stimulus.

Aside from the structural factors above, the following are also identified in the literature as determinants of the size of multipliers in low-income and developing countries:

Type of fiscal instrument. Different instruments affect fiscal multipliers via different channels and in varying magnitude: some studies argue for public spending due to full first round impact on demand, others for public investment due to its long-run effect on productivity and growth that can also influence short-run expectations, others still for tax reliefs and transfers due to relatively lower crowding out effects (see Gechert, 2015). A meta-regression analysis of 104 studies suggests that public spending (consumption and investment) has multiplier effects up to twice as high as those from tax and transfers, while public investment is relatively higher than public consumption (Gechert, 2015). In addition, the crowding-in (of private investment) from public investment is higher in developing countries than higher-income countries

– a 1% increase in public investment induces private investment to increase by 2% in LICs (see Eden and Kraay, 2014) vs 1.5% in advanced and emerging countries (see Espinoza et al., 2020).

The composition of fiscal expenditure influences the size of fiscal multiplier in developing countries, indicating the more important role of public investment compared to public consumption in stimulating short- and long-run growth in developing countries (Alichí et al., 2019; Bose, 2007; Furceri and Li, 2017; Ilzetski et al., 2013; Hayat and Qadeer, 2016; World Bank, 2018). In addition, switching public spending from consumption to investment is found to be growth-enhancing in developing countries (Haque, 2004), which may partially be explained by the growth-enhancing effect of public investment and the detrimental impact of public consumption on growth in developing countries with ineffective governments (Butkiewicz and Yanikkaya, 2011). Between these two fiscal instruments, Ilzetski et al. (2013) estimate that increases in developing countries' government investment have a positive and significant effect on impact (0.6), and larger in the long run (1.6), in contrast to the negative and insignificant effect of government consumption increases on output. Furceri and Li (2017) find similar results, highlighting the relatively smaller and short-lived multiplier effect (0.1) of increases in public consumption expenditure, and the relatively higher short- and medium-term effects (0.2 up to 0.4, respectively) of public investment shocks in developing countries. Among the LIC sample alone, Kraay (2012) and Shen et al. (2018) find about 0.3 to 0.5 multiplier of public consumption, while public investment is found to have larger multiplier of up to 1.5 (Eden and Kraay, 2014). Similarly in small states, expansionary government consumption does not significantly affect output in the short term or long run, but additional government investment has a significant and increasing multiplier from 0.2 to 0.3 on impact up to 0.8 to 1.1 in the long run (Alichí et al., 2019). However, a sub-component of public consumption in the form of social transfers could potentially have higher short-term multipliers in LICs, as indicated by the 0.9 social transfer multiplier in Latin America versus 0.3 in advanced countries, the difference between the two being largely driven by the higher share of hand-to-mouth population in the former compared to the latter (60% vs 23%) (Bracco et al., 2021).

Institutional efficiency. Compared with HICs and MICs, LICs have relatively lower stocks of capital (Izquierdo et al., 2019) and higher infrastructure gaps (Rozenberg and Fay, 2019), such that fiscal stimulus via increased public capital investment is expected to have relatively higher returns in LICs. However, LICs perform worse than middle- and high-income countries in terms of efficiency in public investment management processes, such as appraisal, selection, implementation, and evaluation (Dabla-Norris et al., 2012; IMF, 2014). Developing countries with weaker legal systems that facilitate corruption also tend to favour public spending on physical capital at the expense of investment in health and education (de la Croix and Delavallade, 2008). In addition, the relatively higher instability and uncertainty in developing countries encourage higher levels of precautionary savings (thus, lower consumption), dampening the impact of fiscal multipliers. Ineffective governments also affect the impact of sub-categories of public spending, wherein ineffective governments' consumption tends to decrease output growth while capital benefits growth (Butkiewicz and Yanikkaya, 2011).

The importance of institutional quality on the effectiveness of fiscal stimulus has been examined empirically across low-income and developing countries. Cavallo and Daude (2011) use a large panel of 116 developing countries and find that public investment tends to crowd-out private investment, and only those countries with higher institutional quality experience a resulting crowding-in of private investment from an increase in public investment. In terms of overall multiplier effects, public investment is still associated with positive growth, but this impact is dampened by public sector inefficiencies in LICs (Asea, 2016; Dabla-Norris et al., 2016; Furceri and Li, 2017; IMF, 2014; Shen et al., 2018). For instance, a one standard deviation change in the government's absorptive capacity⁵ (measure of efficiency) in LICs leads to an 18% larger fiscal multiplier compared to the average level of absorptive capacity (Asea, 2016). In 25 sub-Saharan African LICs, public expenditure strongly accelerates growth (0.34 multiplier), but this effect becomes insignificant once efficiency is factored in in estimations (0.005 multiplier) (Kimaro et al., 2017). The importance of institutional quality on growth also resonates in 11 sector-level case studies in African and Asian countries by Balchin et al. (2019), where the authors find political economy to be a key factor

⁵ In Asea (2016) study, absorptive capacity is defined as the ability of the government identify, attract and efficiently use financial resources (domestic and external).

that distinguishes successful from failed attempts at sectoral transformation, and hence transformative growth.

Source of funding the fiscal policy. The output multiplier with domestic financing (0.3) tends to be slightly lower than the fiscal multiplier with external (debt and aid) funding (0.4) in LICs in the short run (Shen et al., 2018). This is in line with Kraay's (2012) findings of a positive but insignificant (0.5) output multiplier of World Bank projects (proxy for public spending) in LICs. However, in the long run (after five years), Shen et al. (2018) finds that the output multiplier remains positive (0.3) with external financing and turns negative (-0.5) with domestic financing. Shen et al. (2018) suggest the mechanism as follows – as the government increases its domestic borrowing, savers will demand higher interest rates, which in turn will crowd out private investments. This would have been mitigated if countries have high levels of financial development, where fiscal multipliers can be large since governments have access to borrowing in efficient markets with lower interest rates.

However, LICs are characterised by underdeveloped financial markets and limited access to international capital. Thus, while fiscal spending with external financing (debt and aid) is found to hurt trade output more in the short run due to exchange rate appreciation following capital (debt and aid) inflows, on net output, however, fiscal spending with external financing has a relatively higher multiplier. This is because external funding increases the resource envelope in LICs at relatively lower cost and generates less negative investment and more positive consumption effects (Shen et al., 2018). Multiplier effects are larger if external financing is in the form of aid, since households and firms expect that aid financing does not require repayments and higher taxes in the future (ibid.). In a country such as Tanzania, it is the recurrent expenditure and development spending from foreign sources that significantly boost growth, while there is some evidence of negative growth impact from domestically sourced development expenditure (Paul and Furahisha, 2017). Sheremirov and Spirovska (2019) offer an alternative explanation – since developing countries typically operate in tight fiscal space, they resort more to increasing taxes to finance government spending (versus developed countries that have the capacity to issue debt), offsetting the initial impact of fiscal stimulus.

Table 4 Relationships* between the size of the fiscal multiplier and its determinants in selected cross-country studies

Determinants	Impact on size fiscal multiplier**	Sources
Structural factors		
Trade openness	(-)	Furceri and Li, 2017; Ilzetzki et al., 2013; Coenen et al., 2012; Ilzetzki et al., 2013; Karras, 2014; Shen et al., 2018; Sheremirov and Spirovska, 2019
Exchange rate flexibility	(-)	Born et al., 2013; Corsetti et al., 2012; Furceri and Li, 2017; Ilzetzki et al., 2013; Karras, 2011; Sheremirov and Spirovska, 2019
Initial level of capital stock	(-)	Brinca et al., 2014; Izquierdo et al., 2019
High public debt	(-)	Aliche et al., 2019; Corsetti et al., 2012; Furceri and Li, 2017; Hayat and Qadeer, 2016; Huidrom et al., 2016; Ilzetzki et al., 2013; Kirchner et al., 2010; Koh, 2017
Size of automatic stabilisers	(-)	Coenan et al., 2010; Mineshima et al., 2014
Hand to mouth population	(+)	Bracco et al., 2021; Brinca et al., 2014; Carroll et al., 2013; Coenen et al., 2012; Gechert, 2015; Kirchner et al., 2010; Koh, 2017
Conjunctural factors		
State of business cycle	(+) downturn > (+) upturn	Aliche et al., 2019; Auerbach and Gorodnichenko, 2013; Baum et al., 2012, Gechert and Rannenberg, 2018; Hayat and Qadeer, 2016; Koh, 2017; Mineshima et al., 2014; Sheremirov and Spirovska, 2019
Financial crisis	(+)	Corsetti et al., 2012; Gechert, 2015; Koh, 2017
Degree of monetary policy accommodation	(+)	Coenen et al., 2012; IMF, 2020a; Koh, 2017;

Determinants	Impact on size fiscal multiplier**	Sources
Factors related to level economic development		
Income level	(+)	
Type of fiscal instrument	Short term: mixed; Long term: more robust that public investment > consumption > tax and transfers	Alichì et al., 2019; Bose, 2007; Bracco et al., 2021; Butkiewicz and Yanikkaya, 2011; Eden and Kraay, 2014; Furceri and Li, 2017; Gechert, 2015; Haque, 2004; Hayat and Qadeer, 2016; Ilzetski et al., 2013; Kraay, 2012; Shen et al., 2018; World Bank, 2018
Institutional efficiency	(+)	Asea, 2016; Butkiewicz and Yanikkaya, 2011; Cavallo and Daude, 2011; Dabla-Norris et al., 2016; de la Croix and Delavallade, 2008; Furceri and Li, 2017; IMF, 2014; Kimaro et al., 2017; Shen et al., 2018
Source of funding the fiscal policy	External financing > domestic financing	Paul and Furahisha, 2017; Shen et al., 2018 Sheremirov and Spirovska (2019)

Notes: *The relationship summarised here are based on the most common relationships that are cited in most existing literature, but there may be a few studies that find contrasting or insignificant results as discussed in text. **Positive (negative) sign indicates that the determinant tends to increase (decrease) the size of the fiscal multiplier

4. IS THERE A CASE FOR TARGETED FISCAL STIMULUS? MULTIPLIERS FROM SECTORAL, CLIMATE-COMPATIBLE AND GENDER-SENSITIVE PUBLIC SPENDING

4.1 Sector-level multipliers

While the aim of fiscal stimulus is to boost immediate demand, especially in a recession, the benefits from government spending would be maximised if positive impact persisted over a long horizon, boosting not only the short-term magnitude and speed of growth but also its long-term quality. This suggests that fiscal stimulus spending should target sectors that can facilitate economic transformation – or in other words, fiscal interventions that support the process of shifting labour and other factors of production from lower to higher productivity (both within or between) sectors, which in turn can result in higher labour productivity and diversified and complex activities (see McMillan et al., 2017). The economic transformation process typically starts in agriculture, then moves to industry or higher productivity services over time.

There are few empirical studies that examine the impact of sectoral public investment on growth. The latest is Asea (2016), which investigates the sectoral multiplier (which the author also called the ‘functional multiplier’) in 36 LICs from 1984 to 2013. Conditional on countries’ absorptive capacity (instrumented by State Antiquity Index or length of statehood), the author finds that while government spending multiplier is 0.7, sectoral multipliers vary from 0.4 for public spending on general services, to 1.1 for economic services, 2.7 for defence, 3.2 for health, 1.4 for education and 1.8 for social protection (transfers).

Asea (2016) highlight that the largest multiplier from social protection is aligned with previous theoretical works which explain the expansionary effect: of transfers on employment and output if targeted to households that cannot borrow in economic environments with uncertainty, imperfect credit markets and nominal rigidities (see Oh and Reis, 2012); and of investment if targeted to economic agents that have access to productive investment opportunities but are liquidity-constrained (see Woodford, 1990). A recent analysis focusing on the multiplier of social transfers from 1960 to 2019 in 23 developed and Latin American countries by Bracco et al. (2021) confirms this. They find that the size of social transfer multiplier is up to three times larger in Latin America than in developed countries in the short run (0.9 vs 0.3) and four times larger in the long run (0.15 vs 0.04), mainly due to the higher share of hand-to-mouth in the former, resulting in statistically significant increases in output via consumption but not via investment. In

Africa, eight experimental and quasi-experimental evaluations on large-scale government unconditional cash transfer programmes in seven countries (Ethiopia, Ghana, Kenya, Lesotho, Malawi, Zambia and Zimbabwe) reveal local multiplier effects ranging from 1.3 in Malawi to 2.5 in Ethiopia (Thome et al., 2016).

Other literature that observes sectoral public components are limited to studies using earlier data around 1970s to 1990s. Bose et al. (2007) investigate the impact of sectoral government expenditures (total and disaggregated public consumption and public investment) by functional classification (namely agriculture, defence, education, health, manufacturing, and transport and communications) in 30 developing countries from the 1970s to 1990. Among these sectors, their baseline regressions indicate that only public expenditure (consumption and investment) on defence, education, and transportation and communication (T&C) as well as sub-categories of public investment in education and T&C matter significantly on economic growth. The highest multiplier effects are reflected from public investment in education (1.5 to 2.0), public expenditure in education (0.7), public expenditure on defence (0.5), and public expenditure and investment in T&C (both 0.4 to 0.5). However, when budget constraint variables (i.e., tax revenues, other expenditure items, budget surplus or deficit) are factored in in the regression, only public expenditure and investment in education remains significant to growth, with multipliers of 1.9 and 0.7, respectively. This is consistent with Churchill et al.'s (2015) meta-analysis of 31 studies on the impact of government expenditure on education or health and growth nexus, suggesting that controlling for other factors, the growth impact of public expenditures on education and health indicate a positive (0.3) effect of the former but negative (-0.5) of the latter in the context of LDCs.

Earlier studies at the sector level were conducted by Easterly and Rebelo (1993), who found that public investment in T&C significantly impacts growth, but this has been criticised for including public state-owned enterprises sectoral expenditure, which may not have the same objective with pure public spending (see Bose et al., 2007; Devarajan et al., 1996). A study conducted by Devarajan et al. (1996) found insignificant impact of sectoral public expenditure on per capita growth, except for the positive impact of sub-categories of public health spending on preventive care and research, and public education spending on education-related services such as transportation and lodging for students and teaching method research and training. Bose et al. (2007) criticise this study for not considering budget constraints in their estimations.

At the regional level, Fan and Rao (2003) estimated the growth impact of government spending at the sector level, including agriculture, education, health, T&C, social security and defence sectors in 43 countries across Africa, Asia and Latin America from 1980–1998. Among all sectors, public spending in health and agriculture are particularly strong in Africa's growth, with multipliers of 0.22 and 0.05, respectively. In Asia, there are significant and positive multipliers from public spending in agriculture (0.09), education (0.26) and defence (0.13). Meanwhile in Latin America, only public spending on health (0.18) significantly boosts GDP growth. Across regions, public spending on social security appears to be insignificant to output.

While the short-term contribution to growth of public spending on manufacturing tends to be insignificant in the above fiscal multiplier studies, this should be interpreted carefully and in relation to specific country contexts. There is ample evidence in the structural transformation literature (such as in many of Asia's industrial pioneers) of the critical role of public interventions in agriculture and manufacturing in enabling the movement of labour and capital from low- to high-productivity employment and production, and hence, in expediting not only the speed but also the quality of growth (see McMillan et al., 2017).

A more recent analysis by the IMF (2020b) investigates the impact of public investment on employment (hence, 'employment' multiplier rather than traditional output multiplier) in developing country contexts. It finds that public investment in water and sanitation and electricity displays greater job intensity than that in roads, schools and hospitals. Public investment in clean energy infrastructure can also be labour-intensive and create large employment in the short term and is likely to crowd in private investment. However, they warn that some jobs in green infrastructure may require specific skills and may not be job-rich in the long term and have less straightforward distributional effect in LICs (ibid.).

While empirical estimates on multiplier effects of sectoral public spending on growth are scarce, recent qualitative sectoral-level cases provide a deeper understanding of factors that drive sectoral impact on

quality of growth. Balchin et al. (2019) identify that common success factors in sectoral transformation in Ethiopia (air transport and logistics services), South Africa (automotive), Ghana (cocoa), Indonesia (staple food), Bangladesh (garments) and Mauritius (sector-based strategies) include correct identification of economic opportunity, but more importantly, positive political relations at the sector level, credible public commitment to investors, easing of public-private sector coordination problems, and government support to investors and first-mover firms. The findings of Balchin et al. (2019) appear to provide support to empirical findings discussed earlier on the importance of public spending for stimulating private investment, as well as the critical role of institutional efficiency on the size of fiscal multipliers in LICs.

4.2 Climate-compatible fiscal stimulus

The Covid-19 lockdown has led to calls for large-scale fiscal stimulus to boost demand and enhance recovery, including investments in the green economy. International organisations such as the IMF and World Bank have been proactively encouraging countries to incorporate green investment as part of their recovery plan from the pandemic. As of 2020, announced stimulus packages to address the impact of Covid-19 reached \$14.6 trillion, but only \$368 billion of this (2.5%) is expected to enhance sustainability (O’Callaghan and Murdock, 2021).

Politt (2011) estimated the multiplier effects of green fiscal stimulus deployed in the European Union (EU) during the global financial crisis from 2008 to mid-2011. The author finds that the size of the multiplier from the green elements (mostly related to energy efficiency and climate mitigation) in fiscal stimulus packages are around 0.6 to 1.1 at the national level, and up to 1.5 at the EU level. Related recent estimates by Engel et al. (2020) suggest that deploying low-carbon stimulus (from both public spending and crowded in private sector capital) of around €75 billion to €150 billion would produce €180 billion to €350 billion of gross value added (hence, multiplier from mobilised green capital at 2.3 to 2.4), 3 million jobs and 15–30% emissions reduction by 2030.

Batini et al. (2021) estimates the multiplier effects on public and private investment based on the types of green and non-eco-friendly investment. They find higher impact multiplier effects of investment in renewable than in non-renewable energy (1.4 vs 0.6), with an increasing and longer output impact of the former than the latter (four vs two years) years after the spending shock in 13 mostly G20 countries (Table 5). The authors suggest that the higher impact from green energy investment is driven by the renewable sectors’ relatively higher labour intensiveness, higher domestic content, and inducing employment at all levels (including lower-paying jobs) than the carbon-based energy sector. Meanwhile, the authors also estimated a higher impact multiplier of 4.1 from nuclear energy investment in six countries, but the impact dissipates two years after the spending shock, indicating the front-loaded nature of nuclear energy investment.

Table 5 Cumulated multipliers associated to green (renewable) and non-eco-friendly (non-renewable) energy investment spending

Horizon	[A] Green (Renewable) Energy Investments Multiplier	[B] Non-Eco-Friendly Energy Investments Multiplier
Impact	1.40*	0.62*
1 Year	1.46*	0.58*
2 Years	1.49*	0.54*
3 Years	1.51*	0.51
4 Years	1.53*	0.48
5 Years	1.54	0.47

Source: Batini et al. (2021)

Notes from Batini et al. (2021): *denotes multipliers with credible intervals, delimited by 16th and 84th percentiles, that exclude zero.

Meanwhile, spending on green land use in 20 African countries tends to have a substantial contractionary impact multiplier effect (-5.4); however, positive gains on output start to materialise in the medium term – ranging from 1.45 up to 6.67 after two and five years after the spending shock, respectively (Table 6). The authors indicate that the increasing impact from green land use spending in the African context is driven by: the donor-driven spending which complements domestic resources; the labour-intensity of beneficiary sectors such as hospitality and tourism; and the resulting lift in prices paid to rural producers. This is in contrast with below 1 multiplier from non-eco-friendly land use investment, which is typically associated with the typically low value added associated with the high costs of machinery, fossil fuel energy and imported inputs (ibid.).

Table 6 Cumulated multipliers associated to green (renewable) and non-eco-friendly (non-renewable) energy investment spending

Horizon	Green Land Use Multiplier	Non-Eco-Friendly Land Use Multiplier
Impact	-5.36	0.55*
1 Year	-1.60	0.85*
2 Years	1.45*	0.95*
3 Years	3.75*	0.96*
4 Years	5.45*	0.95
5 Years	6.67*	0.94

Source: Batini et al. (2021)

Notes from Batini et al. (2021): *denotes multipliers with credible intervals, delimited by 16th and 84th percentiles, that exclude zero.

Previous estimates are aligned with recent IEA (2020) estimates considering the Covid-19 context. IEA (2020) suggests that \$1 trillion (or 0.7% of global GDP) of annual private and public spending on a global sustainable recovery plan for the energy sector for 2021–2023 will increase GDP by 1.1% each year through 2023 – a multiplier of roughly 1.6. The study also estimates stronger growth effects in developing countries, with 1.3% annual GDP growth, since the suggested plan is expected to provide around 420 million people with access to clean-cooking solutions in LICs, and nearly 270 million people would gain access to electricity.

Instead of using the ‘output’ multiplier, a study by Popp et al. (2020) is the first to evaluate the ‘job’ multiplier effects of green subsidies in the context of the green components of the US fiscal stimulus (about 17% of \$350 billion direct government spending stimulus) after the global financial crisis in 2009. The authors find that every \$1 million of green stimulus results in 15 new jobs in the long term but no significant effect on employment in the short run. Their findings indicate that green stimulus appears to be more effective in reshaping rather than restarting the economy. In addition, the authors find that green subsidies ‘pick winners’ by creating jobs in communities with the highest level of pre-existing green skills. By sector, the jobs are largely created in construction and waste management (8) and in green-related employment (3), with no significant job-creation effect in manufacturing or professional scientific and technical services. By type of occupation, nearly all jobs (14 out of 15) created by the green stimulus are manual labour occupation (requiring more than high school education), but their wages did not increase.

Meanwhile, other studies assess the employment multiplier from green spending from both private and public sectors. For instance, per \$1 million spending, fossil fuel creates 2.7 jobs, while the same spending will create 7.5 jobs in renewables or 7.7 jobs in energy efficiency, indicating that a shift of spending from brown to clean energy will result in net increase of 5 jobs (Garret-Peltier, 2017). In the context of Covid-19, IEA (2020) modelling results suggests that spending on a sustainable energy sector worth \$1 trillion a year for three years (2021–2023) will result in 9 million new energy-related jobs in construction and manufacturing over those three years (or 3 jobs per million dollars of spending every year).

4.3 Gender-equalising fiscal stimulus

Aside from the fundamental human rights of all genders to have access equal opportunities (Joint SDG Fund, 2015), gender equality also broadens the productive base of the economy. If women were enabled to have access to the same economic opportunities as men, global output could increase by up to \$28 trillion annually in 2025 or equivalent to 1% incremental GDP growth per year relative to business-as-usual (historical) forecasts (Woetzel et al., 2015). In Africa, \$316 billion could be added to GDP by 2025 if each country matches the gender equality efforts of the region's best-performing country in terms of gender parity (Moodley et al., 2019). However, female labour force participation across countries is still 20 percentage points lower than the male rate, and gender gaps in wages and access to education persist (Fabrizio et al., 2020), hampering potential economic growth.

Klasen and Lamanna (2008) summarise the main arguments from literature on how gender inequality may reduce growth. First, it reduces the average amount of human capital that could have contributed to economic performance. Second, increasing female education and employment has externalities in bringing down levels of fertility (and thus the dependency ratio, which increases the unpaid care burden on women). Education also increases women's labour productivity, which in turn increases the likelihood of education for the next generation. Third, increased female participation in certain sectors such as manufacturing industries has shown to contribute to international competitiveness, albeit translating into lower wages for women (Seguino, 2000; Busse and Spielman, 2006).

In recognition of the missed opportunities of gender-blind fiscal policies, there have been more active efforts towards crafting gender-responsive approaches in public expenditure (see Welham et al., 2018), with at least 80 countries implementing gender-responsive fiscal policy interventions to reduce gender inequality as of 2018 (Fabrizio et al., 2020). Existing studies focus mostly on the growth and productivity impacts of more gender-balanced indicators (e.g., reduced gender bias in education, lower cost of care for dependents, higher female labour force participation, higher women's access to infrastructure such as transport, water and electricity) rather than growth impact of specific gender-sensitive public spending (e.g., Cuberes and Teignier, 2016; Dinkelman, 2011; Klasen and Lamanna, 2008; Ostry et al., 2018). For instance, gender inequality due to discrimination in education and employment is estimated to cut per annum GDP growth in South Asia and sub-Saharan Africa by 0.8 and 0.4 percentage points, respectively (Klasen and Lamanna, 2008). In Asia, eliminating gender inequality has stronger effects in increasing annual GDP growth (by 1%) than aggregate output (0.2%) (Kim et al., 2016), suggesting potentially higher distributional impact. Related to this, Trenczek (2016) finds evidence that improvements in gender equality in education correlate with larger gains from structural change, especially in developing countries with flexible labour markets.

Multiplier effects of gender-related public investment were examined by De Henau et al. (2017) in six emerging economies, namely Brazil, Costa Rica, China, India, Indonesia and South Africa, plus Germany as a benchmark country. Specifically, they compare the output (and employment) multiplier effects of two highly gender-segregated sectors – public investment in the health and care sector and the construction sector. The authors build a case that investment in the health and care sector would be more effective in creating female employment (given that the sector predominantly employs women), thus narrowing the gender employment gap overall. Based on their estimations, public investment in either sector produces large fiscal multipliers, ranging from 3 in either sector in Indonesia to almost 5 in Costa Rica's health and care and South Africa's construction sectors. In terms of employment effects, investing 2% of GDP in the health and care and construction sectors would generate substantial increases in employment in all the countries by 1.2% to 3.2% and 1.3% to 2.6%, respectively.

Box 1. Using fiscal spending for gender equalising outcomes – closing the loop

Spending on social infrastructure (health, care, education) and hard infrastructure (water sanitation, energy production) that primarily benefits women either due to job creation or by freeing up time for women to engage in more paid work may seem difficult in a recovery context geared to short-term impacts. Fiscal multiplier effects of social spending deliver most over a longer timeframe. In the shorter term, such fiscal spending has a direct employment and output effect (as explained in the main text). But in the longer term, such stimulus increases the productive capacity of the economy and increases productivity. The longer-term transformation of the economy can, by increasing incomes and generating tax revenues, loop back into the public budget. In other words, spending on gender equality has the potential to be self-sustaining in the long term and provide its own financing framework.

Source: Elson and Seth (2019); Seguino (2019a, 2019b)

Other estimates of output multiplier effects of interventions for gender equality cover not only the role of government expenditure but also of private spending. In LICs, Fabrizio et al. (2020) estimate the growth and distributional impact of closing gender gaps in education; increasing spending on water sanitation infrastructure, which benefits women given that women and girls are primarily in charge of water collection in LICs; and cash transfers to women living in poverty and participating in the labour market. The authors find that long-run impact of fiscal policy that aims to close educational gaps between men and women worth 0.4% of GDP annually will increase output by 8.8%; increasing spending on infrastructure for safe water (hence freeing up women's time to participate in the labour force) by 0.7% of GDP will boost output by 13.2%; extending cash transfers to all working women below the poverty line by 1% of GDP will increase output by 3.4%. The relatively stronger effect on growth in LICs of increasing access to education for women works via the substantial increase in female wages and decreases in wage gap, poverty and extreme poverty among women.

5. IS THERE EVIDENCE ON THE DISTRIBUTIONAL IMPACT OF FISCAL STIMULUS?

5.1 Impact on income per capita and poverty

Based on 23 developing countries from Asia, Latin America and Africa, Gaiha et al. (2009) estimated a significant positive contemporaneous contribution of government expenditure to per capita GDP growth with an elasticity of 0.67, slightly higher than their simulated GDP growth elasticity of 0.65. From counterfactual exercises, the authors also find that a 1% increase in fiscal stimulus is associated with a decline in the poverty ratio of about 0.8%.

However, when sectoral public expenditure is grouped according to infrastructure (i.e., electricity, gas and fuel, transport and communication sectors) and non-infrastructure (total expenditure less infrastructure expenditure), the authors find that the former contributes much less to per capita income growth than the latter (0.31 vs 0.05). Through a counterfactual exercise, the authors simulated that a 1% increase in non-infrastructure spending reduces the poverty ratio by 0.74% (vs by 0.67% from infrastructure financing). Gaiha et al. (2009) suggest that the higher income per capita impact of non-infrastructure spending is operating via the impact of this spending in accelerating agricultural value-added per capita growth (i.e., an elasticity of 1.1 compared to 0.06 from infrastructure spending), indicating a potentially higher impact of public expenditures if directed to rural areas with inadequate physical and social infrastructure. This is somewhat consistent with the higher contemporaneous or short-term output multiplier from public consumption, potentially due to the larger share of hand-to-mouth population with higher marginal propensity to consume in developing countries.

5.2 Impact on informal sector firms

We found one study that compares the impact of public investment in formal and informal sectors by using firm-level data in the context of India's manufacturing sector. Chatterjee et al. (2020) find that public investment strongly and positively increases the output of firms in the formal sector. Output elasticity of formal manufacturing firms to public investment ranges from 0.08 to 0.17. By category, public investment in economic services (i.e., transport, communication, energy) is associated with higher productivity spillover to formal sector relative to public investment in social services (i.e., health, education, water and sanitation, welfare programmes). However, the authors find no systematic association between public investment and informal sector firm productivity.

In addition, through a natural experiment utilising a publicly upgraded highway network, the authors find that a completed public investment in infrastructure (i.e., highways) disproportionately hurt the output of informal manufacturing firms. Quantile regressions show that the complementarity between public and private investment tends to accrue mainly to larger firms, crowding out the output of smaller informal firms (ibid.). This crowding out occurs both within and across sectors – larger informal (within sector) and formal (across sectors) firms have relatively higher capital intensity production, so additional public investment increases their marginal productivity and market share.

A related study on which firms benefit from public investment suggests that the multiplier effect of public investment on private firms' investment is higher for firms with low leverage⁶ (0.5) than those with high leverage (-0.5) (Espinoza et al., 2020). While public investment both positively increase investments for both less and more financially constrained⁷ firms, the impact is larger in the former (1.4 vs 0.4) (ibid.). This implies that government support to financially constrained firms and to highly leveraged firms is going to be crucial to maximise the effect of public investment on private investment (ibid.).

5.3 Impact on inequality

Most of the literature examining the impact of public spending on inequality and poverty focuses on the detrimental distributional effect of fiscal consolidation in the context of emerging and advanced economies (see Agnello and Sousa, 2014; Ball et al., 2013; Woo et al., 2017). In OECD countries, Brinca et al. (2014) find that government consumption has a positive and significant effect in countries with high levels of wealth inequality (characterised by a higher share of credit-constrained households with higher propensity to consume and lower stock of capital), but insignificant in countries with low inequality. In particular, the authors estimate that a one standard deviation increase in Gini coefficient (higher inequality) leads to an increase of 0.015 in the size of multiplier (or about 17% higher than their estimated average multiplier). Meanwhile, Furceri and Li (2017) provides the first attempt to estimate the distributional impact of increased public investment and find that it tends to lower Gini income inequality among 79 emerging and developing countries. In particular, they find that a 10% increase in public investment is associated with a reduction in the Gini coefficient of about 0.2%.

By extension, Furceri et al. (2018) examine 103 developing countries from 1990 to 2013 to estimate the 'inequality multiplier' – basically the inequality response to government spending – by total and composition of public expenditure. Theoretically, for example, the effect of public investment on inequality will depend on many factors, including the diffusion of productivity gains within and beyond the target sector of the public investment or the relative wages of workers who will directly benefit from the public investment and those that will not (ibid.). The authors find that an increase in total government expenditure of 1% of GDP over five years leads to a decrease in Gini market income index (or lower inequality) of about one percentage point – an 'inequality multiplier' of about 1 that is robust regardless on whether the

⁶ Refers to high level of debt relative to assets

⁷ Refers to firms that do not have enough internal sources of funds (e.g., retained profits) to finance their investment.

government expenditures are stimuli or consolidations, in booms and busts, or across LICs and emerging markets.

By composition of public expenditure, Furceri et al. (2018) indicate that higher government investment has a higher and significant distributional effect (0.7) than the lower and insignificant impact of government consumption (0.2), although total public expenditure has the largest effect (close to 1). The authors suggest that the higher distributional effect of public investment is potentially explained by the augmenting role of public investment on private input productivity for production compared to public consumption, which is largely unproductive. Meanwhile, the higher distributional effect of total public expenditure than its composition highlights the potentially strong redistributive role of the government transfers component of total expenditure. Based on their findings, the authors suggest that a budget-neutral shift of the composition of government expenditures away from consumption and toward public investment could be not only output-enhancing but could also help reduce inequality in the medium term.

6. COUNTRY MULTIPLIERS IN SOUTHERN COUNTRIES – BANGLADESH, KENYA, PERU, SRI LANKA AND TANZANIA

6.1 Bangladesh

Ducanes et al. (2006) estimated that short-term fiscal multipliers in Bangladesh range from 0.13 to 0.4, depending on the fiscal instrument. Untargeted fiscal spending in Bangladesh results in relatively higher short-term fiscal multipliers compared to its Asian counterparts (i.e., China, Indonesia, Philippines), partially due to relatively higher liquidity constraints. Multipliers tend to be the largest from targeted government capital expenditures (0.4), followed by government current spending, and lowest for tax cuts (0.13). The authors found that the impact of fiscal spending in Bangladesh resulted mainly from higher investment on the demand side, and industry sector output from the supply side; while the impact of tax cuts occurs primarily through consumption on the demand side, and services sector output on the supply side. In the medium term (after 3–5 years), they estimated that Bangladesh' fiscal multipliers would turn negative at around -0.02 to -0.05.

Ducanes et al.'s (2006) estimates are consistent with regional multipliers for South Asia (including Bangladesh. Hayat and Qadeer (2016) estimate a short-term fiscal multiplier of 0.38, and by component, higher multiplier from government investment (0.38) than consumption (0.26) and taxes (0.06). The authors also estimate an increasing and significant long-term multiplier from government investment in South Asia of up to 1.0 in the ninth year, and a negative and insignificant tax (decrease) multiplier from after 3 to 10 years. This is aligned with the regional fiscal multiplier estimate of the World Bank (2018) at 0.3 on impact and up to 0.6 in the long run, with the impact coming almost entirely from capital expenditure multipliers (0.6 on impact and close to 1 in the long run).

Meanwhile, controlling for absorptive capacity, Asea (2016) finds a higher and significant short-term fiscal multiplier (government consumption and investment) of around 0.71 for Bangladesh. Per sector and controlling for absorptive capacity, Asea (2016) estimates that Bangladesh' government spending on social protection, education and defence has positive and significant multipliers (1.4, 1.12, and 0.62, respectively); a positive but insignificant multiplier for spending on health sector (1.12); and negative and insignificant multipliers for spending on economic affairs (-1.12) and general services (-0.1).

6.2 Kenya

Existing estimates for Kenya show that growth responds weakly to changes in fiscal policy. For instance, the World Bank (2010) estimates that a 10% change in cyclically adjusted primary balance leads to a 1% change in GDP (roughly 0.1 fiscal multiplier). Accounting for potential tax increases to compensate for public spending, Walaa (2017) finds a negative fiscal multiplier on impact (-0.03) up to a weak but positive

value of 0.01 after 10 quarters. The author also indicates that the weak and non-persistent multiplier can be partially explained by Kenya's high government debt and propensity to import. Meanwhile, after controlling for absorptive capacity, Asea (2016) finds a slightly higher but insignificant short-term fiscal multiplier of 0.4 for Kenya. These estimates are lower than the size of multiplier for East Africa (including Kenya), where a 1% increase in total government expenditure is expected to increase growth by 0.8% (Mose et al., 2014).

Investigating sectoral public spending (e.g., in agriculture, education, economic affairs, health, defence, and transport and communication), Mudaki and Masarivu (2012) also find a strong evidence of growth impact of Kenya's public spending on education (0.95 multiplier), as well as weak evidence of positive impact of public expenditures on economic affairs and transport and communication. In contrast, the authors find insignificant roles of public spending on health, defence, and manufacturing in Kenya's growth, and a significant and negative multiplier of public spending on agriculture (-0.08). The authors suggest that the counter-intuitive impact of public spending on agriculture, defence and manufacturing may be due to inadequate public investments and inefficiencies, slow adoption of technology, corruption and embezzlement. After controlling for absorptive capacity, Asea (2016) estimates that Kenya's government spending on the health sector, defence and education also results in positive and significant multipliers (1.12, 0.56 and 0.66 respectively). There is also a positive but insignificant multiplier for spending on social protection (1.51), and a negative and insignificant multiplier for spending on economic affairs (-0.86) and general services (-0.76).

Egger et al. (2020) estimate multiplier effects of social transfer in the local Kenyan context by utilising one-time cash transfers of about \$1000 to over 10,500 poor households across 653 randomised villages in rural Kenya. The authors find local transfer short-term multiplier effects of 2.4, with the impact on output occurring mainly through consumption, since investment did not meaningfully increase. The large multiplier driven by the local set up is consistent with the macro-level determinants that tend to increase the size of fiscal multipliers: the recipients have high marginal propensity to consume (0.78), local transfers are from donors which prevent expectations on future increases in taxes and Ricardian consumption behaviour; there is some slack in production capacity; the targeting of just one region abstracts the responses from monetary policy and the exchange rate; and the economy is almost closed since the majority of the transfers are spent on locally produced goods. This local multiplier is also consistent with the findings of Thome et al. (2016), where cash transfer for orphans and vulnerable children programmes resulted in local multipliers ranging from 1.3 to 1.8.

6.3 Peru

Jiménez and Rodríguez (2019) identify the impact of fiscal policy shocks from 1995 to 2018 in Peru using different econometric techniques and models, and find positive multiplier from government current (0.3 to 0.7) and capital (1.0 to 1.15) expenditures, and negative multiplier from tax measures (-0.10 to -0.15). This is broadly consistent with country-level fiscal multiplier estimates for each of the eight Latin American countries studied by Restrepo (2020) as well as other country-level empirical studies estimating fiscal multipliers for Peru (see Table 7). These studies consistently find that government expenditure has a positive impact on growth in the short and medium term, and is larger via government investment than consumption; while tax multipliers have a negative impact on growth. Vtyurina and Leal (2016), who find insignificant impact of public consumption, indicate that this can be partially explained by the transfers and one-off bonuses usually associated with transfers, which in turn are intermediated by households' saving behaviour. Meanwhile, the limited effect of tax cuts was attributed to the high level of informality and low tax-to-GDP ratios in Peru, which also make fiscal spending increases the relatively more effective form of stimulus measure.

Table 7. Fiscal multiplier estimates* for Peru

Source		Current expenditure	Capital expenditure	Tax revenue
BBVA (2014)**		0.3	1.5	-0.2
Consejo Fiscal (2018)**		0.96	1.08	-0.23
Restrepo (2020)		0.75		-0.74
Rossini et al. (2011)**		0.59	2.46	-0.32
By persistence				
Jimenez and Rodriguez (2019)	Contemporaneous	0.2 to 0.4	0.5 to 1.5	Assumed to be 0
	1 year	0.25 and 0.75	0.5 and 1.1	Changing (-) to (+), depending on model
	5 years	Similar to 1-yr impact	Similar to 1-yr impact	Considered 0
By state of economy				
BCRP (2012)**	Expansion	0.46	0.75	
	Recession	1.22	1.53	
MEF (2015)**	Expansion	0.82	1.74	
	Recession	0.95	1.69	
Sanchez and Galindo (2013)**	Expansion	0.5 and 0.6		Close to 0
	Recession	1.3		-0.1 to -0.25
Salinas and Chuquilin (2013)**	Expansion	0.14	0.63	
	Recession	0.80	1.17	
Vtyurina and Leal (2016)	Expansion	*not significant	0.5	Limited effect
	Recession	*not significant	1.1	Limited effect

Source: *Refers to short-term multipliers (e.g., 1-2 years) unless otherwise stated; **adapted from cited literature in Jiménez and Rodríguez (2019)

6.4 Sri Lanka

As one of only a few empirical studies of fiscal multipliers in Sri Lanka, Gaiha et al. (2009) estimated the fiscal multiplier for Sri Lanka in terms of output per capita (instead of traditional output measure) response to changes in public expenditure. The authors found that the elasticity of Sri Lanka's per capita income growth to total public expenditure to be positive but insignificant (0.02 to 0.11), with non-infrastructure public spending having a negative and significant impact (-0.12 to -0.14) on per capita growth.

For the IMF's macroeconomic projections for Sri Lanka, a short-term output fiscal multiplier of 0.3 is assumed but this is based on evidence from emerging markets (see IMF, 2016). This is aligned with the range of regional fiscal multiplier estimates for South Asia (including Sri Lanka) of around 0.2 to 0.4 in the short run and 0.3 to 0.6 in the long run (Hayat and Qadeer, 2016; World Bank, 2018; Beyer and Milivojevic, 2021). For these regional estimates, the growth impact of fiscal expenditure is almost entirely driven by government capital expenditure. In particular, Beyer and Milivojevic's (2021) estimates for South Asia suggest that current government expenditure (consumption) has a multiplier effect of 0.1 on impact and the cumulative effect is basically zero after four years, while capital public spending (investment) has an 0.9 multiplier on impact with cumulative multiplier effects of 1.3 after 4 years.

6.5 Tanzania

Kyissima et al. (2017) empirically estimated the impact of government expenditure on Tanzania's growth for the period 1996 to 2014. The authors find that public spending positively strongly affects growth, but this impact becomes significant only in the long run. Their estimates suggest that a 100% increase in public expenditure will result in 22% GDP growth – or about 0.22 multiplier.

However, existing literature examining the growth impact of public expenditure by components and by sector show contrasting results, potentially due to different period coverage of the studies. Kweka and Morissey (2000) investigate the impact of Tanzania's public expenditure components on economic growth

over 1965 to 1996 and find that an increase in public physical investment appears to have negative impact on growth while the opposite is true for increased in public consumption. This is aligned with findings of Paul and Furahisha (2017), which depict recurrent public expenditure as well as development expenditure from foreign sources as the only components that (causally) promote economic growth, since public development expenditure from domestic sources has a bidirectional causality with output growth. In contrast, Kapunda and Topera (2013)⁸ employ estimations over a longer period, 1965 to 2010, and find it is government capital expenditures that positively and significantly lead to economic growth, while recurrent expenditures have negative growth impact. By sector, they find that public expenditure on health, agriculture, defence and general public services and infrastructure have a positive but not significant impact on output. In Morwa (2017), however, estimations using 1960 to 2015 data suggest a positive and significant impact of public spending on economic services and general public services (or administration), due to these components' contribution to long-term private investment and growth.

7. CONCLUSION

The socio-economic collapse induced by the Covid-19 pandemic in 2020 has called for stronger government intervention to support the most vulnerable households, firms and sectors. However, the fiscal resources available to LICs remain extremely limited, putting pressure on governments to be highly selective in deploying the interventions that would have the most positive short-term and long-term impact.

This paper reviews 94 mostly empirical cross-country, regional and country-level studies to identify evidence on fiscal multipliers to provide evidence-based guidance to LICs and Southern countries on deploying the fiscal interventions that would have the most impact in boosting economic growth. The following are the key messages:

- **Countries' specific structural characteristics and conjunctural economic circumstances determine the size of fiscal multipliers.** Higher trade openness, a more flexible exchange rate regime, high public debt, large automatic stabilisers and low share of hand-to-mouth population and liquidity constrained firms tend to decrease the size of fiscal multipliers. The state of business cycle, particularly downturns and financial crises, tend to increase the growth impact of fiscal interventions. Improved institutional efficiency and monetary policy accommodation also provides a reinforcing positive effect of fiscal stimulus on growth.
- **Sectoral public spending on education and social protection are the most growth-inducing in the short term, but public investment and climate-friendly and gender-sensitive stimulus have long-term growth and distributional impact.** However, the growth impact of public investment typically has long lags, and not all jobs related to climate infrastructure can absorb large-scale employment.
- **Fiscal multipliers from most Southern countries tend to be lower than those of other developing countries.** The country-level studies highlight key factors that drive the size of fiscal multipliers, including absorptive capacity and institutional efficiency (Bangladesh and Kenya), the source of financing for fiscal spending (Kenya and Tanzania) and time-varying factors and level of informality (Peru).

The lessons above highlight that fiscal interventions will have stronger growth impact under the current recessionary economic environment induced by Covid-19, and there is a room to tailor government measures to maximise positive outcomes. Depending on available fiscal resources available to achieve certain objective, the following targeted policy options may be considered:

⁸ As cited in Kyissima et al., 2017 and Paul and Furahisha, 2017.

- **Restarting the economy.** Short-term fiscal multipliers tend to be highest if targeted to hand-to-mouth population and small liquidity-constrained firms, highlighting the role of increasing public spending on education, social protection and cash transfer programmes to boost short-term demand. Implementing gender-sensitive fiscal spending associated with the health and care economy can also produce substantial positive impacts on growth. Countries can also implement measures to reinforce the effect of fiscal interventions, such as keeping public debt at bay and extending monetary policy accommodation.
- **Reshaping the economy.** While public investment and climate-friendly fiscal stimulus can help improve the quality and resiliency of economic growth, their impact has longer lags, making these measures more appropriate for *reshaping* the medium- to long-term economy. However, if these types of public spending are labour-intensive and are targeted to rural areas in dire need of social and physical infrastructure, the fiscal intervention will have the potential to achieve multiple objectives of having relatively faster impact on growth, building infrastructure conducive to increasing productivity, initially in the agriculture and then in manufacturing, thus facilitating economic transformation while widening the distributional impact of fiscal spending.
- **Strengthening institutional efficiency.** The effectiveness of fiscal stimulus depends on a number of factors but most importantly on *institutional efficiency*, which facilitates the proper identification and delivery of fiscal interventions, builds government credibility that feeds into household and investor decisions, manage aid absorption and debt sustainability, accelerates crowd-in effects (of private investment) and ensures the inclusiveness of fiscal policy.
- **Tailoring complementary country-context policies.** The cross-country fiscal multiplier literature review indicates general patterns of fiscal multiplier size and determinants of fiscal multipliers. In practice, fiscal multipliers can differ drastically between countries, and the effectiveness of fiscal policy in stimulating and sustaining growth depends on the presence or absence of complementary policies (e.g., private-public sector and donor cooperation, trade diversification, fiscal-monetary policy coordination and political economy considerations, among others) in particular regions and countries.

Further research is needed to understand fiscal multiplier effects in the context of Covid-19. Against the backdrop of a protracted Covid-19 pandemic, fiscal responses have evolved from health measures, to mitigating the economic fall-out, to efforts on increasing resiliency against future shocks (e.g., incorporating climate-related measures in fiscal packages). More recently, there has been growing discussion on how to mitigate the scarring effects and growing inequality between and within countries related to access to vaccines, size of fiscal policy support, as well as the ability of households and firms to adopt to technology to conduct work remotely (see IMF, 2021a; Fresnillo, 2020). Existing fiscal multiplier estimates have not previously incorporated a shock of similar magnitude as this pandemic. Urgent research is needed to better understand appropriate fiscal interventions that can achieve multiple objectives of short-term recovery as well as long-term resilient and equitable growth.

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